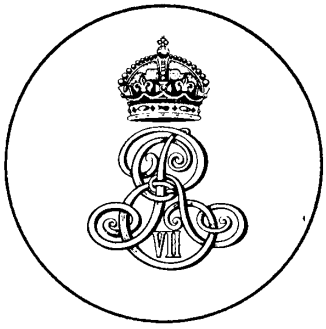

'EPIDEMIOLOGY' AND SERVICE PLANNING

A report of a conference held at the King's Fund Centre

19th November 1980

EPIDEMIOLOGY AND SERVICE PLANNING

A Report of a Conference held at the King's Fund Centre on 19th November, 1980

The King's Fund organised this conference because of its interest in and concern about the relationship between "epidemiology" and developments in service planning in the NHS. The number of applications to attend the conference indicated that this interest was widely shared. To many people, epidemiology and service planning appear to proceed in very different ways; plans produced by Health Authorities tend to take little account of epidemiological studies and insight. The idea behind the conference was to look at whether the gap between the two subjects could be closed.

The conference was chaired by Professor Ted Bennett, Head of the Department of Clinical Epidemiology and Social Medicine at St. Georges Hospital Medical School. Professor Bennett gave several definitions of planning which contained the key words: "information", "numbers", "quantitative", "probablistic". These words would be central to a definition of epidemiology. The conference programme dealt with the application of epidemiology to planning and Professor Bennett hoped that by the end of the day epidemiology would seem less remote from service planning.

WARNING : EPIDEMIOLOGY MAY IMPROVE PEOPLE'S HEALTH !

The first speaker was Dr. Mark McCarthy, Senior Lecturer in the Department of Community Medicine, University College Hospital Medical School. As there were people with very different skills in the audience, Dr. McCarthy set the broad scene by giving several basic definitions.

epidemiology	is the distribution and determinants of health and illness in human communities
prevalence	is the frequency of a disease/condition in a population
incidence	is the number of new conditions that arise at a particular time (short duration conditions such as a cold, can be described more readily by incidence and 'chronic' diseases by prevalence.

Dr. McCarthy explained and illustrated three uses of epidemiology.

1. identification of risk
2. estimation of need

3. evaluation

1. Although District Community Physicians (DCPs) have to be concerned with day to day issues, it is important that they should also be able to reflect on information available about wider issues, such as causes of death in the local population. Any one clinician may only see a few cases of, for example, a particular kind of cancer. An epidemiological study is needed to put all the cases together over a number of years to demonstrate that risk is related to proximity to a particular agent. The Health Service can then move towards control of the situation and introduce a screening programme. As a result of an epidemiology study in the 1950's looking at causes of bladder cancer, the use of particular substances in the laboratories was stopped, and people in the chemical industry no longer have a greater risk of bladder cancer than the general population. Similarly, cancer of the nose in wood workers has now been controlled.

2. Epidemiology can also be used to estimate need, as opposed to demand, for services. For example, a study carried out in Carlisle in 1961 of the prevalance of various neurological conditions in the population, gave an overview which indicated where services should be concentrated. Studies of the frequency and degree of mental handicap in the population have shown that it would be possible for substantial numbers of mentally handicapped people to live at home , but unfortunately, they are still cared for in hospitals. However, estimates of need can vary according to different studies. For example, three studies examining the need for corononary artery bypass suggested 50, 120 and 150 operations were required, per one million people per annum.

   Epidemiology also acts as a reminder that there is a need for other services such as prevention. A study of alcoholism in Camberwell has shown that the frequency of drinking in the population is greater in younger people than in older people. This corresponds with rising rates in deaths for cirrhosis in this country and a rise in risk from suicide. Drinking is also strongly associated with admission to hospital. It would not be enough as a result of this information, to provide adequate services to cope with the effects of alcohol. There is obviously a need to educate the public more broadly about safe drinking and to educate staff about counselling etc.

3. A classic use of epidemiology for evaluation is the comparison of perinatal mortality in different countries or different AHAs. However, crude perinatal mortality rates can be misleading and figures need to be adjusted, for example, to take account of numbers of low birth weight babies. Overall trends (i.e. is the rate reducing?) are often more valuable than strict comparison. Administrative information can be used for epidemiological purposes as a further aid to the evaluation

of services. An example is a comparison of admission rates and length of stay for psychiatric patients identified from registers in two broadly comparable Districts. One District had a much shorter average length of stay. This suggests that people in one District may be getting a better service because they are discharged more rapidly, thus avoiding institutionalisation.

Dr. McCarthy's final point was that there are a number of ways to affect health status:

It is necessary to look at policies which might affect these various components, before looking at resources available. There is a broad range of factors affecting outcomes, but unfortunately outcomes are rarely measured in the Health Service.

Dr McCarthy admitted that he was presenting an idealistic view of epidemiology and planning: there are so many competing demands on the few people with the skills to do this kind of work in the Health Service. Nevertheless, there is room for improvement and Dr. McCarthy illustrated his argument by countering some of the common excuses given for planning without epidemiology:.

"we have no local information". There is a great deal of national information available which can be broken down if required. There is also a role for co-operation between administration and community medicine to develop local information.

"we are all too busy trying to keep within cash limits". But at the moment are we are ge tting value for money ? Surely effectiveness is more important than efficiency ?

"our services are fine". Yet there are high rates of mortality in the population aged under 65. Perhaps we need major changes in health services to cope with this?

A CASE STUDY: REQUIREMENTS FOR TOTAL HIP REPLACEMENTS IN THE ELDERLY

The second speaker was Dr. Gordon Wilcock, Consultant Physician in Geriatrics and General Medicine at the Radcliffe Infirmary, Oxford. Dr. Wilcock described

a study he had undertaken several years ago. He had done a population survey to find out how many people there were with osteoarthritis (OA) of the hip, to look at epidemiological aspects of OA of the hip in relation to health care planning. He described the context of the study, the methods employed, the results and the applicability of this method to planning health care resources.

Context: OA is the commonest form of arthritis and has been around for a very long time. There is evidence of OA in the joints of fossils of prehistoric animals, Java Man and Egyptian mummies. In 1857 it was recognised as a specific disease and the name osteoarthritis was coined in 1889. In the 1970s the name osteoarthritis began to be used for the same condition. In people over the age of 65, OA is the commonest cause of consultation in general practice; one in six patients go to their GP each year complaining of OA. OA: causes 40% of handicap in the over 65s.

Method: The study used two small Oxford populations based on the market towns of Wallingford (where a one in six random survey of people aged 66 and over had been done the previous year for a community hospital survey) and Bicester (where the majority of people aged 65 and over had been previously screened by their GP). The total population base for the survey was 838 people. Lists of patients were taken from the computerised GP list (excluding those who had died, left the area or who were too demented to give an accurate account of their symptoms) and 536 people were sent a questionnaire relating to leg problems. The survey was designed to elicit the greatest possible response. The covering letter was addressed from the GP surgery. The questionnaire included other symptoms not related to hip disease to see if the survey population was comparable with other populations and to make sure that the questionnaire was not discarded by people who did not have problems with their legs.

The questions were arranged so that people had to ring the appropriate answer. A stamped addressed envelope was included with the questionnaire, but half the people in the survey personally delivered their completed questionnaire to the surgery. Those people who did not reply to the questionnaire were sent a second questionnaire four weeks later; up to ten attempts were made to visit the non-responders.

Dr. Wilcock then visted all the people with symptoms related to OA, a random sample of half those people with mobility problems which did not appear to be related to OA, and a 5-10% random sample of people who did not appear to have any disability. the GP records of all the people included in the study were checked to look for false negatives i.e. where OA was already known to exist.

A letter had been circulated to all the orthopaedic surgeons and rehabilitation physicians in Oxford to find out which symptoms indicated a need for total hip replacement. Twelve different answers were received. Dr. Wilcock went back and asked the consultants to grade the various symptoms and

again received twelve different answers. To find out the minimum criteria for total hip replacement, scales were applied to patients actually on the waiting list for surgery for arthritis of the hip. The methods of assessment used were the "activity of daily living index". (using the activities relating to the lower limits, of which ability to cut own toe nails appeared to be the most significant) and a "hip function index" (Charnley's modification of the French assessment scale, which gives a score of 1 to 6 to three of the major abnormalities in people with hip disease: range of hip movement, pain and mobility).

Results:			
postal questionnaire response to 1st mailing	454	85%
" " " " 2nd mailing	50	9%
" " " " non responders	32	6%
Total	536	100%

(Of the non responders, 20 did not exist, 4 refused to participate and the remainder had not got round to completing their questionnaire, but were pleased to be approached personally).

46 people had symptoms relevant to OA of the hip. So total prevalence was 5.6%. Six people (0.7%) had had previous surgery; eleven (1.3%) required total hip replacement. (As the practices surveyed had a particular interest in the wellbeing of the elderly, more cases of OA of the hip may already have been picked up. These results may therefore underestimate the prevalence).

Applicability:

1. In the current financial situation it is particularly important to plan the facilities actually required for health care, especially in the geriatric sphere. To plan properly, it is important to know the level of need. Treatment reduces prevalence, so there has to be some measure of need in an area.

2. The postal survey proved to be very easy, inexpensive,enjoyable and surprisingly effective. Other surveys have shown that a response rate of 85% or over can be expected from elderly people from two mailings. The facility exists to follow up the people who do not respond - for example, health visitors are very reliable for screening for disabilities.

3. It is important that letters and questionnaires should not be bureaucratic. Questionnaires should apply to a wide range of conditions so that the maximum number of people see the possibility of gaining something from the survey.

4. Screening should be done regularly. For example, some of those people who were not fit for an operation at the time of this survey, may have been fit at a later date.

HOSPITAL UTILISATION AND SOCIAL DEPRIVATION: DATA PROBLEMS AND THEIR SOLUTION

The last of the morning presentation was given by Dr. Kevin Woods, Lecturer in Health Care in the Department of Geography at Queen Mary's College, London and in the Department of Clinical Epidemiology at the London Hospital Medical School. The context of Dr. Wood's presentation was the recent report of the DHSS working party on Inequalities in Health. The recommendations of this working party for research were:

1. The development of area social condition and health indicators.

2. The study of the interaction of social factors and health overtime within small areas.

Dr. Woods demonstrated the problems that arise when undertaking such research at a small level by describing a study carried out in the City and East London AHA. This study was started immediately after the RAWP formula was announced. City and East London AHA was an obvious target for re-allocation because of its large number of beds. The idea of the study was to examine the relationship between the geographical distribution of social deprivation in Tower Hamlets and the geographical distribution of hospital utilisation.

Measurement of Social Deprivation

The first problem was deciding how to measure social deprivation. A literature search led to the conclusion that the term "social deprivation" is both a relative and dynamic concept, not an absolute concept. Measurement of social deprivation is constrained by the data available which is largely based on census indicators. There was insufficient time to develop an alternative such as the General Household Survey. Therefore, the 1971 census was used. There was no objective method of selecting which indicators to use so a certain amount of value judgement was inevitable. For the purposes of the study an index of social deprivation was developed using indicators which were only weakly related. In this way, each indicator could be assumed to measure different aspects. Eight separate direct and indirect indicators were identified. On every indicator Tower Hamlets did worse than the GLC area. To avoid bias from further subjective assessment, the indicators were used unweighted.

Direct Indicators

% households with over 1.5 persons per room
% households without exclusive use of inside WC, hot water, bath and shower
% males unemployed
% households without car

Indirect Indicators

retired males in social class V
children
population of pensionable age
population from the new Commonwealth

Geographical Scale

The next problem was deciding whether to calculate the values at the enumeration district level (there are 400 enumeration districts in Tower Hamlets, each with approximately 150 households), or for the 20 individual electoral wards. It was decided to calculate the values on both scales. There was considerable variation in the level of deprivation, with deprived households concentrated on the west side of the District and much better conditions in the central area.

Data on hospital utilisation was needed to match this pattern. HAA data would have been ideal, but unfortunately patients' addresses are only coded to the Health District of residence. It would not have been possible to make any intra-District comparisons without recording the HAA data. A prospective study was considered, but this would have provided too few patients over the two month period available for data collection. It was therefore decided to use new out-patients attenders. The variables collected were : date of attendance, speciality, referal source, age, sex, occupation, address and GP. The collection of this information was fitted into the routine of the medical records department.

Using available information, it was possible to code the addresses to electoral wards, but not to enumeration districts. A special index using large scale maps had to be developed for the study. This process has since been made very easy because the Post Office has developed the postal code system of allocating addresses, which can be aggregated to the same geographical units as census data.

Possible solutions

1. As the next census is to take place in 1981 and as the NHS is being

reorganised again, this is an ideal time to reconsider the coding of addresses for HAA. With changes in boundaries for District Health Authorities, coding of addresses will have to be changed in any case.

2. Any calculation of "rates" depends on the denominator of the population. It is very difficult to obtain an accurate denominator in small areas. Births, deaths and migration continuously affect the population base, particularly in inner city areas. During 1971 -77 the population in Tower Hamlets declined by about 15,000. It is not possible to find out where these changes took place within the Districts. There are no reliable population estimates for enumeration districts, nor will there be any until the 1981 census information is published in 1983. As there is no established procedure for updating small area statistics, perhaps it would be worth considering extending the annual electoral registration system to include the age and sex of non-voting residents. Tower Hamlets Council is adopting this on an experimental basis.

3. If the objectives of the "Inequalities" report are to be achieved, there will have to be more flexibility in the collection of routine statistics. Methods need to be developed for finding out more about the populations which hospitals serve within the Districts. Routine data can only provide part of the insight required for this type of planning. Whole sections of the NHS are excluded from the routine information collection system. One of the chief roles of the new DHAs should be to promote research work on the population of their District and its characteristics.

SUGGESTIONS FOR AN IDEAL MARRIAGE BETWEEN PLANNING AND EPIDEMIOLOGY

The afternoon session was opened by Dr. Richard Madeley, Senior Lecturer in Community Health at the University of Nottingham and Specialist in Community Medicine (Medical Information Services) for Nottinghamshire AHA (T). Dr. Madeley felt that in the past there had been a tendency in planning to rely on data about the supply and use of existing health services rather than examining the needs of the population served. A more rational scientific planning method had been developed using a mathematical model, but unfortunately, this model tends to be hopelessly naive. Dr. Madeley went on to suggest a framework for a more appropriate relationship for the future between planning and epidemiology, within the difficult circumstances of the NHS.

Difficulties

1. Time Scale for Planning: Dr. Madeley illustrated this difficulty from his own experience. In 1978, Dr. Madeley and colleagues from administration, nursing and finance were involved in writing the Strategic Plan for Nottinghamshire. Trent Region wanted the Plan by November 1978, which meant that the Draft Plan had to be reviewed by the ATO by September, 1978. Allowing for the consultation period before the Plan could be considered by the ATO, this left four months to write plans for every client group and service. Epidemiological data would have been useful for compiling these plans, but none was available and it was not possible to obtain the necessary data within the time scale. There was no alternative but to use information from surveys done elsewhere (although the decisions made may not have been different or better if local information had been available).

2. Resources: There is no point in knowing the needs of the population if it is not possible to do anything about them; this just makes the job of the planner more difficult. Resources must be made available or money reallocated to carry out proposals. Epidemiology cannot help when funding is inadequate. For example, the inadequate funding of doctors' increases in salary is entirely responsible for Nottinghamshire's overspending. Resources in the health service are limited and there is no way around various fundamental choices, but how can anyone decide between providing facilities for psychogeriatrics or intensive care for babies ? There is no technocratic solution and the choice has to be moralistic.

3. Career Development: The career structure in clinical medicine and the workload of community physicians (with very little administrative support) is such that the career goal for many community physicians will be to become a Professor of Community Health or the Director of a Research Institute. To achieve either of these posts it is necessary to publish large numbers of articles. It is far more difficult to get articles about planning accepted for publication. Journals have to satisfy their international readership and are therefore more interested in findings and methodologies of wide application. Studies done for planning purposes are often very local and idiosyncratic, which obviously conflicts with the interests of an editor.

4. Politics: It is not possible for a government to block any decision which it does not like. This means that epidemiology does not have as much influence as politics. Departments are sometimes asked to conduct a survey which will take a long time, which means that the subject matter will be forgotton for a while. Some departments are

asked to carry out surveys for political reasons; for example, a survey of family planning procedures to examine whether some doctors are augmenting their salary by doing procedures which may not be strictly necessary.

Suggestions

The epidemiologist and the planner can have a fruitful relationship, provided they understand each other's job. The epidemiologist can:

1. Help in interpreting existing data. It may be possible to point out trends which were not previously apparent and point out pitfalls in the data.

2. Help with the process of making intelligent guesses where further surveys are not possible; also help to avoid unnecessary repeat surveys and needless expense.

3. Help to avoid inappropriate extrapolation to the local situation.

4. Give other technical advice, for example in priority setting.

5. Give advice on the interpretation of applied research. The monitoring of policy changes is an extremely valuable sort of research which is not pursued sufficiently.

6. Play a role in in-service training and education.

7. Write short reports, e.g. for CHCs, with the results of local surveys, health trends, local implications, etc.

Examples:

(a) Simple surveys of child morbidity and mortality have been done in Nottinghamshire. This has helped the health visitors to use their time more effectively and additional money has been obtained to help in deprived areas.

(b) A review in the medical journals of the increase in cervical cancer in younger women has led to an increase in cervical cytology. Dr. Madeley is helping to collect data on this and evaluate what happens.

(c) Dr. Madeley regularly writes reports on OPCS data. A great deal of information is currently produced in a turgid, indigestible way. Circulating raw data or indigestable

information without applying it to the local situation in an unattractive way means that useful details can be missed or misinterpreted.

No research grants were applied for or thought necessary to help in the ways described above. This type of epidemiology could be practiced anywhere, not necessarily in teaching Districts and Areas. Planners and epidemiologists could be kept fully occupied in that part of their jobs where they need to work together. Dr. Madeley closed with an apt quotation.

> "to practitioners ..... tentative or incomplete answers to significant questions are of more value than complete answers to trivial questions".

RESOURCES FOR RESEARCH INTO HEALTH CARE NEEDS

Professor Bennett was the last of the conference speakers. He pointed out that planning is a broad term and that it is useful to distinguish between policy making, determining priorities, allocating resources and other planning activities. Planning can be mechanistic, in that there is a planning system and a planning cycle. However, it is also a real life activity, for example, planning how to care for patients and how to deliver a particular service both new and old. The role of the epidemiologist depends on the level of planning activity and on the relationship between the epidemiologist and the person who is planning. The level and relationship may vary but there is no doubt about the applicability of epidemiological technique to health care planning.

The contribution of epidemiology to health care planning is essentially an evaluative process : an evaluation of situations, alternative proposals, implementation processes and outcomes. Evaluation involves appraisal and quantification. Appraisal is a subjective process undertaken by everyone all the time and is not confined to any professional group. Quantification is an objective scientific process which requires special skills, although these skills are not unique to people who call themselves epidemiologists. Quantification requires expertise in the application of epidemiological methods.

At the moment there seems to be a credibility gap between epidemiological method and planning as a day to day activity undertaken by all managers. There is no doubt that there is an indirect relationship between the body of knowledge and the activity undertaken, but this could be improved and the relationship could be made direct. A number of things are needed to

achieve this:

1. Mutual understanding: Are epidemiologists being asked to take part in a "muddling through" process or to embark on a rational planning process? Are attempts being made to give plans a spurious respectability? Movements in a desired direction can be achieved by various means.

2. Agreement on objectives: It must be possible to specify objectives in measurable terms, otherwise the work is not worth doing. An epidemiologist's special expertise is brought to bear on measurement and therefore operational objectives have to be specified.

3. Idenfication of Options or Choices: "All or nothing" situations are rare. There are usually a number of options for improvement and it is essential to identify these a prior, rather than expecting them to come out of the research itself.

4. Agreement on information required and Time Scale available: It is essential to know how much information is necessary to make a decision or influence choice, and the degree of accurancy required. Academic departments tend to feel that scientific respectability is necessary, whereas a planner's requirements may be much cruder. Planners can be satisfied with data which would not be acceptable to academics. To obtain accurate, complete information takes a long time, and can be expensive: in some circumstances a much simpler approach would be adequate for planning purposes.

Having agreed on a combined epidemiological and planning approach, the next decision is whether to proceed on the basis of available information or whether it is necessary to mount an ad hoc data collection exercise.

Available Information: Five resources are needed if a problem is to be approached in terms of available information: library and literary resources or access to information systems etc. expertise, capability, facilities reference or advice. Professor Bennett was not sure whether it was either possible or necessary to develop much larger information systems, but facilities were needed for obtaining information on an ad hoc basis, perhaps by making packages available to be applied to a general data bank. Professor Bennett was concerned about the cost of ongoing collection of information and the limited use made of this information. The interpretation and manipulation of information is within the remit of the District Medical Officer and this is part of the training currently being given to trainees in community medicine. Their training consists of the acquisition of knowledge of scientific analysis followed by an exercise in the application of this knowledge.

Ad Hoc Research : Research is an exercise which requires data collection in its own right. This requires skills in the design of investigation and measurement, time resource, money and support systems (information, computing etc.) Options for research, which can be permanent, semi-permanent or temporary are:

- Authority supported and Authority based
- Authority supported and University based
- DHSS supported and University based

The Future

There is a need to nurture research expertise and a need to provide continuity and career developments for suitable individuals. Professor Bennett was concerned about how this research activity could be satisfied in the reorganised NHS. He suggested that the ideal solution would be to have a research unit undertaking scientific analysis of the Health Service, supported by Health Districts which would provide the core staff for the unit. The core staff would probably be an epidemiologist, a statistician, a social scientist (e.g. a sociologist, an economist or a hybrid), a statistical assistant and a fieldwork assistant experienced in the collection of data by interview. This unit would provide a reference centre for a Region. There would be limited capability within the core for mounting research exercises, but there would be expertise at the centre for assisting Districts to undertake research with additional staff under the supervision of the fieldwork assistant. Such a unit must be responsive to the needs of the service and must have established recognised expertise. The unit must have perceived relevance initially and would need to keep reaffirming its relevance. Computing and library resources would be required, similar to those available in the institutions of higher learning. Such a unit might be extensively engaged in training activities, not only in community medicine but for all health service professionals.

Professor Bennett felt that a regional research unit was an attractive proposal which would be worth setting up for an experimental period. Without this sort of unit the credibility gap between epidemiology and planning was likely to be widened by the next reorganisation.

DISCUSSION

Questions and points related to individual speakers had been discussed at the end of each presentation. Points of more general relevance were saved for the panel discussion at the end of the conference. Some interesting points were discussed including: -

1. The choice of which parts of a population and which problems to study to determine priorities.

2. The need for basic data packages for use at Health District level and the need for limited training in epidemiological methods for more people.

3. The errors inherent in the data currently available in the NHS

4. The conflict of interests in making information equally available to both pressure groups and planners.

5. The inevitable subjective judgements made by CHCs because of a lack of resources for independent research and limited access to information.

6. The need to identify areas of possible savings in services currently provided, rather than concentrating on growth and new developments.

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Requests for further information about this conference or suggestions for further related activities, should be directed either to individual speakers or to:

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