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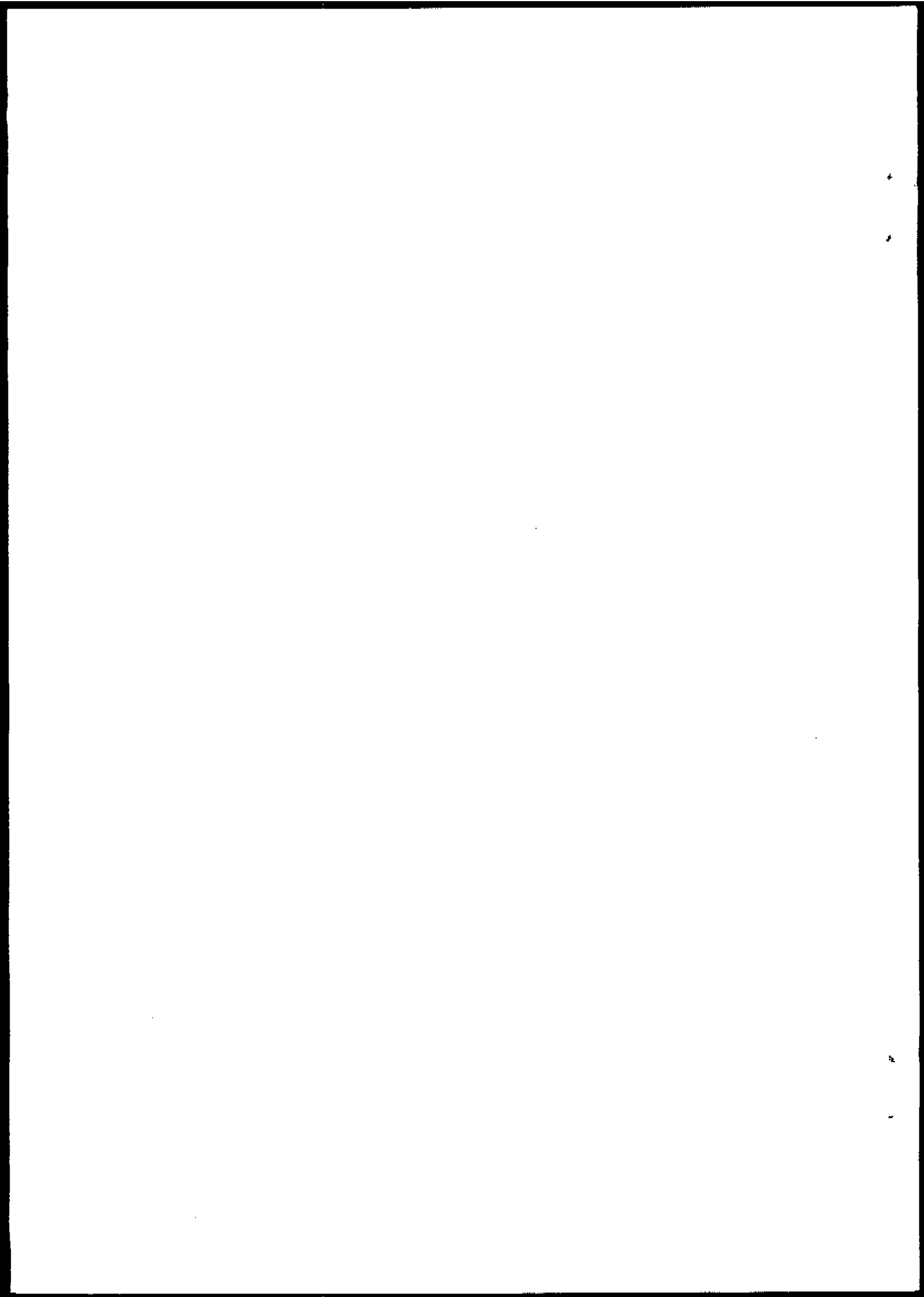
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HEALTH SERVICES RESEARCH METHODOLOGY *651.6*

Report on a Workshop

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1. INTRODUCTION

The second International Workshop on Health Services Research Methodology of the WHO Regional Office for Europe was held in Barcelona, Spain, from 15 to 26 September 1986. It was organised in collaboration with the Institut d'Estudis de la Salut, Barcelona.

The Workshop was conducted with the awareness that there are gaps in the knowledge of methods of health services research (HSR), particularly with regard to the social and behavioural sciences, and that the methods used and the levels of skills available appear to differ, both between and within countries. The purpose of the Workshop was, therefore, to improve the knowledge of methods of HSR in Member States, in the light of the regional strategy for health for all by the year 2000 and the definition of HSR established by the WHO Advisory Committee on Medical Research (ACMR)(1,2).

After the two-week Workshop, the participants should:

- have a greater knowledge and awareness of methods of health services research and its potential and limitations;
- have a better understanding of the value of epidemiology and social sciences;
- be able to judge the value of specific approaches, and have a critical approach to research designs and methods;
- understand the possible uses of health services research at every level of planning (international, national, regional and local); and
- be able to apply methods of health services research as part of a more developed curriculum in their own settings and to satisfy various needs.

The workshop built on the experience of the first International Workshop on Health Services Research Methodology which was held in Alma Ata, USSR in 1984 (3), and was conducted against the background of guiding principles for health programme evaluation (4, 5) and regional and national strategies for Health for All by the year 2000 (6, 7).

The Workshop was also intended to be a further step in developing a modular curriculum in methods of health services research, and thus an emphasis on the evaluation of the Workshop and the learning materials was included in the programme to provide a basis for further development.

Participants in the workshop were drawn from a wide variety of professional backgrounds with varying levels of experience in health services research, and included representatives from both developed and developing countries, a list of participants is attached as Annex 1.

2. THE WORKSHOP: ORGANISATION AND STRUCTURE

The workshop was opened by Dr J. Raventos, representative of the Government of Spain in Catalunya, on behalf of the Ministry for Health and Consumer Affairs. Dr A. Oriol F Bosch, Director, on behalf of the Institut d'Estudis de la Salut welcomed the participants to the school and Dr P.-G. Svensson Scientist, Health Research, welcomed participants on behalf of the Regional Director for the WHO Regional Office for Europe.

An abbreviated version of the programme for the workshop is shown in Table 1. The content of each of the seven modules included in the workshop programme was introduced in a plenary session by the member of faculty responsible for the module, the unfortunate absence of Professor Shigan from the workshop meant that module 3 was only introduced briefly to the participants and the exercises associated with the module were not carried out. For modules 4, 5, 6 and 7 the introductory plenary sessions were deliberately kept as short as possible in order to allow the maximum amount of time to be given to group work on the exercises. The participants were divided into three working groups for the purposes of carrying out the exercises and the faculty members served as facilitators in the working groups. Following each set of exercises the working groups met together in short plenary sessions to present summary reports of their work and to discuss their results and any major issues arising. The next three sections in the report focus in turn on the content of the modules, a report on the exercises, and on the field practice included in the programme.

The Workshop was attended by 22 participants from both developed and developing countries; three observers also attended, including Professor P. Alach, who is one of the organisers of a French speaking Workshop on health services research to be held in 1987. Faculty for the Workshop were drawn from Finland, Spain, the United Kingdom, the United States and the European Regional Office of WHO.

Table 1 The Workshop Programme

15 September	Opening session	
	Module 1.	The research process, Dr P-G. Svensson.
	Module 2.	Health services research in the WHO global strategy for health for all by the year 2000, Dr E. Kalimo.
	Module 3.	Analysis of statistical data of a abstract country: "Sunland", Dr P-G. Svensson (introduction only).
16-17 September	Module 4.	Use of household interview sample surveys in HSR at the national level, Dr E Kalimo.
18-19 September	Module 5.	Health services research and evaluation - a tool to assess the effectiveness of change in the organization of health services on a regional level, Professor S. Shapiro.
20 September (am only)	Module 6	Forecasting methodology, Ms A. Taket.
22 September	Module 6	continued.
23 September	am	Visit to Primary Health Care Centre "Cuitat Badia", Barcelona (field practice).
	pm	Module 6 - continued.
24 September (am only)	Module 7	Health Economics, Dr H. Zöllner.
25 September	Module 7	continued.
26 September	Module 7	continued.
		Evaluation of Workshop - plenary session
		Closure of Workshop

3. THE WORKSHOP MODULES

The seven modules prepared for the workshop were contained in some 300 pages of text plus relevant articles and case studies provided for some of the modules. This section presents a short summary of the content of each of the six modules covered in the Workshop. Four of the modules (numbers 1, 2, 4 and 5) were also used in the previous workshop and the summaries given draw on those shown in the report of the first workshop (3), modified where necessary to reflect changes in the module content between workshops. The remaining two modules, numbers 6 and 7, on forecasting methodology and health economics respectively, were included in this workshop as a result of recommendations made at the first workshop and were therefore in use for the first time in Barcelona.

3.1 Module 1. The research process, by Dr P.-G. Svensson

This module was directed at giving the participants a broad picture of HSR methodology as seen by a social scientist, and in which a quantitative approach is the principal method for developing information. A sample of existing definitions of HSR was presented with the conclusion that one has to decide in the first place which definition is to be adopted. This better prepares the researcher to design an appropriate study and choose relevant methods. The interdisciplinary nature of health services research was emphasised and the organisation and types of health services research were briefly introduced following the classification set out by Taylor (8). Five components of developing health services research projects were identified and discussed.

Selection and formulation of the research problem (e.g. selecting a topic, formulating the research problem and hypotheses, defining concepts, finding operational/working definitions, establishing relationships or other knowledge contributing to the formulation of theory).

Research design (exploratory study, descriptive study, studies testing causal hypotheses, action-oriented study, levels of analysis - micro or individual, meso- or organizational, macro- or societal).

Data collection (general problems of measurements, observational methods, questionnaires and interviews, projective and other indirect methods, use of available data, sampling techniques, quantitative and qualitative methods).

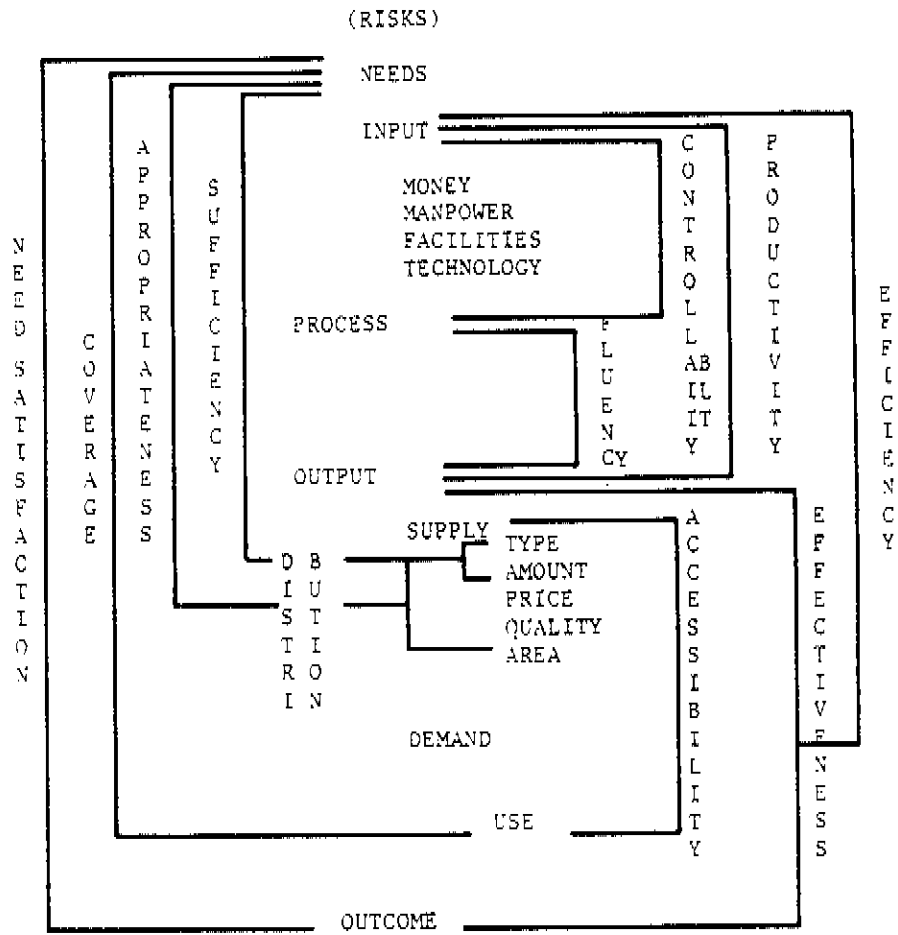
Analysis and interpretation (findings anticipated from previous steps, establish categories, coding, tabulation, statistical analysis, inferring causal relations, analysing non-quantified data).

Research report (report on all the mentioned steps, refine hypotheses and theory, recommend future societal and research action).

It was pointed out that when choosing a specific research design, method or data collection, one must take into consideration, among other things, manpower available and needed, time limits, political, ethical, cultural, social, tribal, and geographical constraints, as well as economic resources available.

3.2 Module 2. Health services research in the WHO global strategy for health for all by the year 2000, by Dr E. Kalimo

This module was designed to make the trainee aware of the conceptual basis for HSR in the light of the WHO global strategy for attaining health for all by the year 2000. Under the WHO definition, a health system includes a health infrastructure which delivers a variety of health programmes and provides health care to individuals, families and communities. The point was made that the national strategies for HFA2000 call for a reorientation of the health system. In this process, health services research is an essential tool for creating the necessary information support to planners and decision-makers. The following is a schematic diagram of the main health services system components and their interrelationships.



This provides a framework for examining the interrelationships of the following factors and their role in determining the progression from need to outcome:

- system characteristics, such as the organization, financing, management, staffing, operation and availability of services;
- social, economic, cultural, information, attitudinal and behavioural characteristics of the population;
- environmental, political and structural characteristics of the community; and
- supportive activities related to health that are outside the formal health care system.

The European regional targets and regional strategy for HFA2000 (9, 10) were briefly introduced and their role in identifying priority subjects for health services research highlighted. The WHO global strategy on reorienting research for HFA2000 was also presented. This includes, among other items, the need for governments to review the scope and content of their activities in the fields of biomedical, behavioural and HSR with a view to identifying priorities, the allocation of resources to relevant health research, the establishment or strengthening of health research councils and mechanisms to bring together researchers and planners and coordinate health research, international support to national health research, and dissemination of results to countries when available. The relationship between the medical, social and behavioural concepts of illness was discussed as an essential issue in assessing ill health and related health needs in health services research, and its role among different types of health research was clarified. Various definitions of health services research were critically examined. Finally criteria for assessing the priority of research objectives in HSR were advanced. These include scientific significance, practical prerequisites for solving the problem, social and economic significance, significance of the problem to the health system, and special significance of the problem in the country.

3.3 Module 4. Use of household interview sample surveys in health services research at national level, by Dr E. Kalimo

Through this module the participant was expected:

- to have awareness and knowledge of the principles and the essential methods of HSR for use in household interview surveys of population samples at the national level, and
- to understand the possible role of this kind of HSR in planning, designing and implementing national health services.

The module was developed on the basis of the situation in Finland. The background related that after an effective hospital-oriented health policy in Finland in the 1940s and the 1950s, the main goal of the health policy of the 1960s and 1970s was to support the appropriate use of health services, especially primary health care. Health policy measures were effected to increase the possibility of all citizens making equitable use of the health services. Consumer prices of primary health care services were reduced under national sickness insurance, the supply of health services increased and the prices of public primary health care services were further reduced under the primary health care act. The interest in primary health care was a result of the achievement of total population coverage by hospital care, the resulting hospital-orientation in the health services system, a low supply of many primary health care services, high consumer prices of many primary health care services and inequities in the use of such services.

The decision was made to evaluate the National Sickness Insurance Act (1964) and the Primary Health Care Act (1972) as a major health policy measure towards strengthening primary health care with a view to further developing the health insurance system on the basis of the conclusions of the study. The role of evaluation studies and, in particular, the role of national health and social security interview surveys in decision-making on primary health care policy measures was detailed.

The evaluative objectives of the study were derived from the health policy objectives of the above two acts. From an evaluation standpoint a statement of the problem proceeded as follows:

- before the National Sickness Insurance Act - how great were the differences among population groups in use/need of health services?
- after the National Sickness Insurance Act but before the Primary Health Care Act - were the differences among population groups in use/need of health services reduced?
- after the National Sickness Insurance Act and after the Primary Health Care Act - were the differences among population groups in use/need of health services further reduced; how great are these differences now, and what is suggested for future health policy measures?

In addition the evaluation objectives of the study were concerned with whether the use of health services was equally distributed among population groups by place of residence and income; whether family health expenses had decreased; and whether the population considered its health security to have improved.

A conceptual framework was constructed to guide the development of the research. A starting point was a model of concepts of illness and of their relationships with behaviour. These identified ill health in a psycho-biological system - a system disturbance or medical morbidity - in social roles, disturbance of the social state, both interacting with perception of disharmony where ill health is perceived morbidity. This model is then used to clarify the main factors (need, predisposing, enabling and professional) that affect the use of health services. Aspects of the health service system which are important for its scientific evaluation are given. These form a diagram which includes such elements as needs, input (resources), process, output (supply, demand and accessibility), and outcome.

A series of detailed hypotheses were presented in which the major emphasis was placed on the relationship between use/need of health services and accessibility to health services. It was hypothesized that before the health policy measures use/need was higher in population groups with greater accessibility to health services; after the first health policy measure (NSI) the use/need of health services became less strongly related to accessibility; and after both health policy measures (NSI and PHC acts) use/need did not vary among population groups by accessibility, family health expenditures had decreased, and satisfaction with financial means for using health services had grown.

To obtain the necessary information three household survey interviews were planned. The first representing a base line survey was carried out in 1964 before the health policy measures were enacted; the second and third surveys were conducted at intervals following the National Sickness Insurance Act in 1968 and after the Primary Health Care Act in 1976. The rationale for selecting the household interview survey as the method for collecting the data, the basis for determining the sample size, and the method for selecting the sample were presented. Attention was given to the statistical methods used for determining differences between successive surveys for each of the independent variables included. In a series of tables, selected results of the surveys were shown and used as a basis for testing the various hypotheses. Conclusions on the achievement of the health policy goals were summarized as follows:

Care goal

- equity in the use of health services in PHC had greatly increased after the health policy measures;
- the use of primary physician services had grown;
- health policy had been more effective in alleviating the financial, rather than the geographical, obstacles to accessibility;
- coverage of the population by primary physician care had increased, but it still varied slightly by income and more by distance to the nearest physician;
- the effectiveness of the increased use of health services was not reflected in a change in the satisfaction of the population;
- the care goal had thus been partially achieved by the two PHC-oriented health policy measures.

Reimbursement goal

- although the absolute amount of funds spent directly by the families on health care had remained the same, the share of the total family income had greatly decreased. In addition, a small proportion of the total health care costs had to be borne directly by families after the two health policy measures;
- the reimbursement goal had thus to a great extent been achieved by the two PHC-oriented health policy measures.

Recommendations for action were stated as follows:

- strengthen PHC policy measures to increase access to PHC in low-supply areas by increasing supply;

- strengthen PHC policy measures to further level the financial burden of PHC-oriented services by decreasing the direct prices of services;
- strengthen health education activities to affect the factors predisposing the use of health services;
- give higher priority in health policy to measures aimed at increasing the quality, effectiveness and efficiency of PHC, since the problem of coverage is mostly solved;
- carry out phase IV of the national health and social security interview survey in the mid-1980s to assess the impact of the new and strengthened health policy measures and to point out new development needs in health services and health policy. The new survey should pay greater attention to the quality, effectiveness and efficiency of PHC. The interview survey should, therefore, be complemented with data about the PHC process in health centres and other PHC establishments;
- in general, orient health policy and the supporting evaluative studies towards the equitable satisfaction of the essential health needs of the total population.

The exercises for this module were carried out in two parts. The first consisted of questions relating to the material presented in the module and focussed attention on the changes that would have been necessary to the conclusions and recommendations from the study if smaller sample sizes had been used and the statistical significance of the differences found were changed accordingly. In this part of the exercises groups were provided with the results of all the statistical calculations requested, so that attention could be focussed on the changes in results and on the corresponding changes necessary to the conclusions and recommendations rather than on calculations.

The second section of exercises consisted of questions which required the working groups to design a study to assess equity in the coverage of the population by a specific PHC activity, using a household interview survey, for one of the countries represented in the group. The groups were requested to provide a definition of the problem to be addressed by the study against a background of the present situation and the main health policy objectives of the country. Their discussions were also to cover the justification for the study, the overall approach to the study and its evaluative framework in terms of the main determinants of coverage (need, use, family income and area of residence etc). In the report prepared by the working group the essential aspects of the research methodology were to be developed in the following order - general study design; methods for collection of data; background statistics required; and finally measurement instruments to be used.

3.5 Module 5. Health services research and evaluation, a tool to assess the effectiveness of change in the organization of health services on a regional level, by Professor S. Shapiro

The specific situation used to develop this module was the regionalization of perinatal health services. Concepts and principles in earlier modules were formulated in a series of specific topics, amplified by questions which were then dealt with in terms of the evaluation regionalization of perinatal health services as follows:

The issue. What changes had been considered? Why? Were there conflicting views about the need for change? How could these be resolved? How was priority set?

Regionalization of perinatal health services was advocated to reduce adverse pregnancy outcome; uncertainties existed about benefits to regionalization; the decision was made to conduct research on the factors involved in order to resolve the uncertainties.

The experimental variable. What are its characteristics and how is it to be implemented?

Regionalization of perinatal health services was defined and a conceptual model and components of regionalization specified.

Objectives. What questions required answering regarding the effects of change?

Hypotheses were formulated regarding reductions in adverse pregnancy outcome (low birth-weight, infant and perinatal mortality) and in the prevalence of serious morbidity among surviving infants. With respect to morbidity the issue was whether a reduction in mortality would be offset by an increased prevalence of serious morbidity among infants at one year of age.

Scope and responsibilities. How large should the demonstration programme be and could the change be tested in multiple areas to increase generalized ability of results? Who has responsibility for implementation of change and for evaluation?

A demonstration programme was organized in eight regions of the United States, geographically dispersed and with major population differences. Annual birth total equals some 200 000 or 6% of the total births in the entire United States. A clear separation of responsibility was made for programme development and the conduct of evaluation.

Research design. What is a feasible design for the evaluation of the effects of a change in health services for a total community or region? Are control groups required and if so, how are they to be selected? What time periods need to be covered and why?

A quasi-experimental design was applied for the mortality comparisons. Trends for several years pre- and post start of the demonstration programme were to be obtained; comparable information for experimental and comparison regions was essential; for morbidity changes, comparisons were to be made on the situation only in the demonstration programmes, with differentials based on findings immediately before regionalization was fully underway and two to three years after regionalization was in effect.

Sources of information. What sources are available for analysis of trends in a total community or region? What new sources of information need to be developed?

Time series data on pregnancy outcome are available from well-established vital statistic systems in all areas; morbidity information requires household surveys and observations of random samples of infants.

Independent and dependent variables defined with classifications specified for analytical use.

Data collection. What problems are encountered in data collection and preparation? How will completeness and quality of the information be determined? What discrepancies might there be about quality that would affect the interpretation of results?

Data analysis. What are the contents of the tabulation programme to measure changes in organization of health services, in effects that occurred and in the relationship between organizational change and the effects? For all regions combined; for individual regions? What measures of association and statistical significance are appropriate? Are particular sub-groups of the population more favourably affected than others?

Conclusions. What are the major conclusions concerning the effects of the change and how firm are they? What are the policy implications for introducing the change in other regions? What questions remained unanswered?

Subsidiary use of data collected. Can the data be used to develop new knowledge about health outcomes and their correlates?

Results of the regionalization evaluation were presented first in terms of all regions combined compared with their control areas and then through a selected case study involving one of the regions and its comparison area. No differences were observed between the demonstration and comparison areas in the reduction of mortality and low birth weight rates. It was found that concurrent with the introduction of the demonstration programme pressures to regionalize increased in many areas of the United States. Closer relationships had been established between hospitals with modest obstetrical facilities and those that had large and more complex facilities capable of managing high-risk pregnancies and neonates. However, the nature of changes in all of the areas indicated that antenatal assessment of risk was occurring and management of high-risk pregnancies was being transferred to perinatal centres prior to delivery. Centralization of high-risk deliveries was linked with a decrease in neonatal mortality. These observations were interpreted as consistent with regionalization and provide evidence that regionalization contributed during the 1970 decade to improvement in pregnancy outcome.

Policy implications and future research were identified. Results of the evaluation are being disseminated and regionalization is becoming more widespread. New information was needed on specific components of regionalization and how they contribute to improved pregnancy outcome; also the nature of special programmes for social, economic and ethnic groups of the population at high risk for adverse pregnancy outcome.

Conduct of the survey and results of the investigation of changes in infant morbidity associated with decreases in neonatal mortality were dealt with briefly. The issue could be stated as follows: infant mortality decreased sharply; a major factor was the decrease in mortality of low birth weights; low birth weight is associated with high-risk of birth defects; have reductions in mortality been offset by increased prevalence of surviving infants with serious morbidity?

Decisions that affected the methodology follow:

- measure changes in morbidity among one year old infants based on events in the demonstration areas;
- determine changes between 1976 and 1978/79 when large reductions occurred in neonatal mortality;
- conduct field surveys on random samples of surviving infants; train observers intensively to obtain information from mothers on social conditions, medical care received for infants, illnesses and congenital anomalies among infants; examine children for developmental delay;
- increase efficiency of sample by including almost all low birth weight infants, a subgroup at high risk for morbidity and a small subsample of mature birth weight infants;
- determine quality of observations made by field staff by reinterviewing and reexamining a 5% subsample of cases.

Major conclusions reached through the analysis of the results of the comparisons between the two survey time periods were that reduced mortality in infancy had been accompanied by decreased proportions of surviving one year old infants with morbidity represented by congenital anomalies or developmental delay. The reduction was concentrated in the milder forms of congenital anomalies or developmental delay but there was no change in severe or moderate morbidity. The highly vulnerable subgroup, that is infants weighing 1 500 grams or less at birth, showed reduction at all levels of severity of congenital anomaly and developmental delay.

Several issues remained at the conclusion of this analysis; e.g. observations are needed at pre-school and school-ages because of the uncertainty of the predictive importance of the types of morbidity studied at one year of age. Secondly, available results could not be linked to specific interventions during perinatal, intra- and post-partum periods. However, for public health purposes it is important to find that in the recent period of reduced mortality, morbidity of a serious character has not increased. The quality of data was examined through a variety of comparisons with the conclusion that high reliability existed.

Two exercises were provided for the working group sessions. The first concentrated on questions relating to the subject material presented in the case study dealt with by the module and was designed to deal with some of the major technical and methodological issues covered by the module. In the second exercise the working groups were requested to prepare a proposal based on a change in health services at the regional level e.g. manpower, organization, or delivery of care, in one of their countries. The questions that were posed in relation to the regionalization of perinatal care were to be used as a basis for organizing the proposal.

3.5 Module 6 : Forecasting methodology, by Ms A. Taket

The aim of this module was to give participants a critical overview of the major approaches to forecasting that are used in health planning, especially those relevant for use at the strategic level, i.e. for planning over a time scale of five years or more. It was intended to introduce participants to the advantages and disadvantages of each forecasting method and enable them to appreciate the suitable areas of application and the factors that are important in the choice of an appropriate method for use in any particular situation. It was not intended that participants should learn in detail how to carry out forecasts. The learning material for the module was in three main parts, a general introduction to the role and objectives of forecasting studies, a review of forecasting methods, and a series of case studies drawn from two WHO publications.

The module first introduced forecasting as an essential component in the process of transforming the results of health services research into future-orientated policy options for use in planning. While health services research focuses on the past and current behaviour of the health system or health services system, strategic planning requires an assessment of how the future will differ from the past and present, and thus a forecast or forecasts of likely changes are required. Forecasting is particularly important in the current situation owing to the pace of

demographic change and the increasing proportion of elderly in the population, the increasing development, scope and cost of technology, rising public expectations and economic constraints on health budgets. A particular need was identified for methods which will allow health planners and decision-makers to explore questions relating to the future allocation of resources between different geographical areas, different population groups and different modes of care and the consequences of allocation decisions in terms of the achievement of equity, an important cornerstone in the goal of HFA2000.

After introducing the objectives of a typical forecasting study and reviewing the different purposes for which forecasts are intended and the major topics for forecasting, a checklist of the stages in a forecasting study was presented. This should begin with a clear statement of the purpose(s) for which forecasts are required, followed by the selection of the relevant variables for forecasting together with the appropriate level of disaggregation for each. The next steps will then cover the gathering of the relevant data and an investigation of any potential problems with the data. An appropriate forecasting method, or methods, is selected and forecasts then made up to the required time horizon. Assumptions on which the forecasts depend should be clearly stated and assessments made of the plausibility and level of uncertainty associated with each of them. A sensitivity analysis should then be carried out in which forecasts are recalculated with variation in the assumptions used, paying particular attention to assumptions or data about which there is a high degree of uncertainty. These last steps will result in the production of a plausible range of forecast values for the variables of interest. Finally the need for monitoring and updating the forecasts should be explored.

The second part of the learning material reviewed the major forecasting methods in use in a health planning context. A simple classification of forecasting methods was introduced and used for this section. Methods were categorized into three major groups, subjective, univariate and multivariate. The first group included methods based on expert/informed judgement and the use of this in structured frameworks such as that provided by the Delphi method; univariate methods were subdivided into extrapolative methods (often also called naive or mechanical methods) and referential methods. The third group of multivariate methods included age/period/cohort component models, multiple regression models, simulation models and other systems approaches to forecasting. Although some such classification system is useful for presenting details of the different methods, it was emphasised that in practice many studies draw on a combination of forecasting methods, in particular often combining a subjective method with some other non-subjective method. The review of forecasting methods examined for each type of method a brief description of the basic ideas behind the method, the various advantages and disadvantages associated with its use, and examples of the most frequent applications in the field of health care planning.

Following the review of forecasting methods the third part of the learning material was then introduced. This consisted of case studies dealing with the use of forecasting methods, which were drawn from two sources: a forthcoming publication from EURO entitled "Health Projections in Europe: Methods and Applications" and a special issue of the World Health Statistics Quarterly on health projections published in 1985. This material included studies examining the projection of health status, in terms of mortality, morbidity and disability, from England and Wales, Finland, Portugal and Switzerland; studies dealing with the projection of health resources and their use in England, Finland, France, GDR, Indonesia, Norway and Romania; a case study on scenarios from the Netherlands, and a more general article discussing the use of knowledgeable informants in Delphi-type methods.

Six exercises were associated with Module 6, the first three were concerned with the choice and use of forecasting methods and problems in forecasting, these involved the examination of data and forecasts taken from actual forecasting studies and parts of the exercises then required the participants to relate the general points that emerged to the situation in their own countries and to identify potential applications.

The fourth exercise provided an opportunity for participants to experience the use of Delphi-type methods in a "simulation" of a simplified forecasting study. Two of the three groups produced forecasts with only written communication (the pure Delphi Method) and the third group discussed members' forecasts at each stage. Exercise 5 dealt with the identification of priority subjects for forecasting in the participants own countries and the final exercise, number 6, involved the production of a critical review of one of a selected number of the case studies presented in the learning material.

During the time allocated for Module 6, each group spent some time seeing a demonstration of some microcomputer models and general purpose forecasting packages. These included: the CAP system for displaying the European regional targets and indicators which includes simple two point projections to the year 2000; the CAP planning system for the elderly; a version of the "balance

of care" planning model for the care of the elderly developed in England and based on a simulation model incorporating referential projections; a model for planning requirements for acute beds developed in England and using a combination of extrapolative and expert projections; and finally a simulation model for the planning of day hospital provision in Italy. These demonstrations served to illustrate how microcomputers can present relatively easy-to-use forecasting models in a way that is particularly accessible to health planners and decision-makers. The models enable a series of projections to be made fairly simply so that the investigation of the consequences of different policy options can be explored in an interactive manner with the active involvement of all concerned. It was emphasised that many of these models were designed to be used by planners and decision-makers themselves.

3.6 Module 7 : Health Economics, by Dr H. Zöllner

The final module provided an overview of the major concepts and developments in health economics. The role of health economics was examined first and identified as dealing with the economic aspects of health activities. Its scope includes the application of economic methods and analysis to activities in the health field and the examination of the consequences of such activities for the health and welfare of society. It was emphasised that, as a discipline, economics is characterised by its methods of analysis rather than the subject matter, although it was important to recognise the differences that exist between health care and the commodities dealt with in other branches of economics, and in particular to ensure that externalities were adequately dealt with.

Three main categories of economic studies in the field of health were identified - burden of illness studies, studies of hospital productivity and economic appraisal of health care programme/interventions. The first of these aims to examine the total cost of various different types of disease, either in terms of incidence or prevalence. Studies of hospital productivity, the second category identified, have as their aim the achievement of more efficient forms of service delivery. It is however only the third category of studies which include direct examination of the effectiveness of health care programmes/interventions in terms of health improvement.

In economic appraisal studies, the resources consumed by a health care programme (the costs) are compared with the health improvement created by the programme (the consequences). The costs included may be of three types, direct costs (physicians time, drug costs, etc.), indirect costs (cost of lost production or opportunity cost) and intangible costs (monetary "value" of pain, grief, etc.) The consequences of a health care programme can be measured in three ways: in terms of relevant units of health improvement (cases found, lives saved, etc.); in terms of the economic benefits associated with health improvement in monetary units (as with costs, three types of benefit, direct, indirect and intangible, may be identified); or finally in terms of the value (to the patient, family or society) of the health improvement itself - measured in terms of willingness to pay or receive, quality adjusted life years based on utility measurements, or ad hoc numeric scales.

Three types of economic appraisal were reviewed, cost effectiveness analysis, cost utility analysis and cost benefit analysis. A cost effectiveness analysis aims to establish a cost/effectiveness ratio, expressed in terms such as dollars per life saved, etc. This is appropriate for use in comparing alternative programmes whose effects can be measured in the same units - but is not suitable for use in assessing a single programme in the absence of alternatives, for the analysis of programmes with several types of health effects (for example reductions in morbidity and mortality), or to compare disparate alternatives such as kidney dialysis for renal patients to home care for the frail elderly.

The second form of economic appraisal discussed was cost-utility analysis, which utilises as a measure of effect the quality adjusted life year. This use of a common measure enables comparison of programmes with different purposes aimed at different target groups, and also permits the analysis of programmes with multiple objectives in terms of effects.

Both cost-effectiveness and cost-utility analysis can only be used to establish the relative value of different programmes or interventions. In the third type of economic appraisal, cost-benefit analysis, attempts are made to express the consequences of a programme in terms of economic benefits and thus to determine the net social benefit of the programme. Single programmes can thus be evaluated in terms of their ability to produce a positive net social benefit and the comparison of different programmes is achieved through an examination of the relative sizes of net social benefit achieved. In practice, a full cost-benefit analysis is particularly difficult to carry out since there are categories of health consequence that are difficult to express in monetary terms, and many studies achieve only a partial valuation of benefits.

A checklist of ten elements of a sound economic evaluation was introduced:

- a well defined question in an answerable form;
- a comprehensive description of the competing alternatives
- establishment of the effectiveness of the programme(s)/intervention(s);
- identification of all important and relevant costs and consequences;
- measurement of costs and consequences in appropriate units;
- credible valuation of costs and consequences;
- adjusting costs and consequences for differential timing;
- incremental analysis of costs and consequences;
- sensitivity analysis;
- presentation and discussion of important issues of concern to users.

Finally the topic of the financing and payment systems for health care was introduced and the effects of incentives discussed. The influences of different methods of payment to health providers and different methods of financing health care provision on the activity in the health services system was explored, using as specific examples alternative methods of funding hospitals based on the use of (diagnostic related groups) DRG.

Exercises for the module fell into four sections, the first consisting of two exercises (Medical Minimalism and Smoke Screen) which involved the groups in reviewing critically economic arguments related to particular policy issues. The second group of exercises (Mounting, Bottomless and Needless to Say) focussed on economic appraisal studies and involved the groups in analysing particular case studies or in designing their own study. The third section consisted of a single exercise (Why Others?) focussing on the contribution of economic analysis to the examination of the issue of equity. Finally the operation of incentives and the effects of different financing systems for hospitals was examined in the fourth section of exercises.

4. REPORT ON THE WORKSHOP EXERCISES

Four of the modules covered in the workshops (numbers 4, 5, 6 and 7) included exercises to form the basis for discussion by the working groups. These exercises were to provide the basis for the majority of time spent on each of these modules. Working groups were not requested to provide written reports of their discussions, but were requested instead to give short presentations at plenary sessions. Concepts central to the modules and many of the issues related to the development of an evaluation project were well dealt with and the discussions in the groups were of a very high level. However, time constraints frequently limited the amount of attention that could be given to technical details and restricted the scope of discussions of working group reports at plenary sessions.

Module 4. The exercises for this module were carried out in two parts, the first consisted of questions relating to the material presented in the module and the second consisting of questions which required the working groups to design a study to assess equity in the coverage of the population by a specific PHC activity, using a household interview survey, for one of the countries represented in the group.

In the first part of the exercises groups were provided with the results of all the statistical calculations requested, so that attention could be focussed on drawing conclusions from the results rather than on calculation. Despite this, in some of the working groups time was also spent recalculating the results, some participants commented that they found this rather frustrating and not at all useful, and it was suggested in future that the questions should be rephrased in a way so to avoid this possibility.

Brief reports on the topics selected for the second part of the exercises by each of the groups are given below:

Group 1 selected a country where in each region, health services are organised around the concept of a single central medical centre in the largest city of the region, with a smaller district hospital in each district and then health centres and family doctors providing PHC at the local level. A new health policy to develop the networks of PHC health centres is being implemented and major objectives of this are to increase coverage and to reduce the inequalities that exist between the rural and urban areas. Repeated evaluation of the implementation of the new policy is necessary in order to measure progress in meeting specific objectives, to identify any modifications to the implementation that may be necessary and to plan further developments of the system. The group designed a study that would focus on measuring need in the population (using measures based around the occurrence of episodes of acute illness and the prevalence of chronic illness) and measuring use in terms of the number and type of contacts with the health services. The necessity of using a household survey was carefully considered by the group and justified in terms of the lack of any suitable routine sources of information on need. Consideration was also given to the potential problems associated with measuring need and use through a household survey based on recall and the group emphasised that the reliability of the measures should be tested in a pilot study.

Group 2 discussed studies in two of the countries represented in the group. In both cases the discussion was focussed around studies that are actually taking place in the countries concerned. In the first, a developing country, a nutritional study combining household interview and examination of children under 5 years (with measurement of weight and height) is taking place in five out of the country's eight regions. In previous years the country has experienced severe food shortages and a major health objective is thus the prevention of malnutrition and related diseases. Information from the survey is required for use in establishing how relief aid should be distributed. The survey will be undertaken in four rounds over a period of 18 months, results from the first round are already available and have been used in the distribution of aid.

The second study considered by Group 2 concerned a national household health survey which is to be implemented in 1987, a pilot survey has already been carried out. A major integrated survey will be carried out every four years, with a prevalence study to be carried out in every other year. The survey will be used to evaluate the effects of a new national health law, due to take effect from 1987, the policy objectives of which are to achieve further development and increased coverage of the PHC system, with an emphasis on preventive programmes and on regionalisation. The survey has been specifically designed to meet information needs at both national and regional levels in the country and is being accompanied by the further development of an integrated health information system. The survey will measure population need for health services using a variety of different approaches including self-perceived and self-reported morbidity, a sub-sample in each of the major surveys will receive a medical examination as well. Utilisation of health services will be recorded and aspects of satisfaction with the health services will be examined. The group devoted careful attention in their discussions to issues raised by the measurement of need and interpretation of the results obtained.

Group 3 took as a basis for their discussions the situation in a developing country where priority policy objectives for the health services are the improvement of PHC cover in rural areas, an expansion in the number of primary health care centres and primary health care houses and the control of infectious diseases. The group designed a household interview survey, the purpose of which was to evaluate the success of a vaccination programme for infectious diseases in achieving coverage of the target population (children under five years). The survey was aimed to collect information on the numbers and types of vaccinations performed on all children resident in the households surveyed. The sample was to be stratified by province, region and health house to enable differences in vaccination coverage by province and between urban and rural areas to be explored. Information on occupation and educational level (in terms of literacy and years of formal education) of adults in the family were also to be collected in order to establish whether any links existed between these factors and vaccination coverage. Discussions in this group focussed attention on whether a household survey would actually be the best way of gathering the information required to examine vaccination coverage, with doubts being expressed about the reliability of the information obtained in this way and of the necessity of adopting such an expensive methodology. The discussions in the plenary session emphasised the need for careful consideration of all relevant factors before methods of data collection are decided upon, and in this particular case, strengthening the routine information system was suggested by many to be a more realistic approach to gathering the information required.

Module 5. As with module 4, the exercises for this module were in two parts, the first consisted of questions relating to the material presented in the module on the regionalisation of perinatal care project and the second which required the working groups to design a study to assess the effects of a specific change in health services (for example manpower, organisation or delivery of care) at a regional level in one of the countries represented in the group.

Group 1 designed a study to assess the effects of strengthening the regional ambulance service in a region of a developing country in order to speed the transportation of emergency cases to hospital. As background to the problem it was also explained that there are opinions that, even with the provision of an improved ambulance service, the rural population will still be reluctant to travel to the central hospital, and so the development of peripheral hospitals may prove to be a better alternative. The purpose of the demonstration programme designed by the group was therefore to establish whether a strengthened ambulance service would be used by the rural populations and to assess whether reductions in mortality rates from major causes of accident and trauma, especially animal bites, were achieved. The study would also examine the effects of the service on other types of mortality, specifically maternal, perinatal and acute myocardial infarction. Information on the utilisation of the ambulance services and the satisfaction of the population with the new services would also be required. The demonstration project was to be carried out in one region, a similar region would be selected for comparison purposes in which no change would be made to the existing ambulance service. Baseline information would be gathered for both regions before the strengthening of the ambulance service was carried out in the study region and follow-up would be carried out over a period over five years. The report presented at the plenary session identified the details of the information to be collected and the sources to be used and discussed the various problems that might arise in data collection and in interpretation of the study findings.

Group 2 planned a study to monitor the effects of introducing a system of surveillance units at regional level to provide more rapid and accurate information on epidemic disease in a developing country where a priority health problem is the control of communicable diseases. The objectives in introducing the surveillance system were to improve control and provide a better basis for primary and secondary prevention through the identification of areas requiring action, and also to demonstrate the value of good reporting systems. The evaluation study was to examine the rate and quality of notification at regional and central level, the promptness of notification, feedback of information to regional and local levels and the effectiveness of the surveillance system in stimulating action regarding epidemic control. Corresponding to each of the issues to be examined, the group presented the measures to be used and identified areas where the results would have policy implications.

Group 3 took as its topic the evaluation of alternative forms of organisation of a malaria eradication programme in a region of a developing country. The study was to examine the effects of the introduction of regionalisation, i.e. a change in the level of control of the programme from national to regional level. The specific change to be evaluated was the integration of malaria control into the PHC system based on the use of health houses and health centres with the provision of a permanent source of treatment, compared to the existing situation in which eradication is carried out by nationally organised teams visiting each area monthly. A pilot study was planned which would introduce the change in a single district in the region, with another district being used as a comparison, following evaluation of the pilot results, further study would only be required if the results were not conclusive; the group hypothesised that it was very likely that strong results would be obtained from the pilot study and this would give sufficient evidence for the introduction of the change on a region-wide basis. The report of the group detailed the variables that would be measured in the pilot study and the further study that would be carried out if necessary, and discussed how these would be analysed.

Module 6. In the limited time available the groups dealt well with the technical issues raised by the exercises. The emphasis in the discussions was put on questions which examined the relevance and use of forecasting methods and in particular drew on the participants knowledge of the situation and priority problems in their own countries. In their reports to the plenary sessions and in their discussions the participants demonstrated an increased understanding of the place of forecasts in health planning and an awareness of the factors that must be taken into account when choosing a forecasting method. Clear appreciation of the likely problems encountered in forecasting studies was also shown and the groups had a chance to explore these in discussion with particular reference to the situation in their own countries. Problems with the availability of data were mentioned by many participants as a factor affecting the forecasting studies that could be carried out.

The exercise in which each subgroup performed a simulated Delphi-type forecasting study proved particularly useful in demonstrating in a very real way the features and problems of adopting this sort of approach to forecasting. In two out of the three groups convergence of individual forecasts occurred from round to round, while in the third little change took place between the different rounds. The data used for this exercise was taken from a real forecasting study performed some time ago and in the plenary session the groups had a chance to compare their forecasts to those produced by the actual forecasting study (which adopted an approach based on expert appraisal of extrapolative projections - with some Delphi-like features) and to the actual values of the data series.

Questions which asked the group to identify and discuss priority subjects for forecasting studies in their own countries revealed the wide variety of subjects for which forecasts are required as a basis for health planning in both developed and developing countries. The constraints that data availability and accuracy place on the choice of appropriate forecasting methods was thoroughly explored and it was observed that these factors frequently combined to make a combination of statistical methods and use of expert opinion and judgement the most useful approach.

The workshop also provided an opportunity for some of the Spanish participants to work on national level data and to produce projections using a general purpose forecasting package that was available on the microcomputer and demonstrated to the working groups.

Module 7. Ten exercises were provided for this module, owing to limitations on the time available only seven of these were actually covered in the workshop. Each of the working groups carried out different exercises and experiences were shared in plenary sessions. The participants displayed a good understanding of the approaches adopted in economic appraisal studies and subjected the material which formed the basis for the exercises to a thorough critical examination, identifying clearly the potential problems with using the results of many studies in a policy making or planning context.

The final exercise on incentives, despite the limited time available, produced useful discussions which focussed around the effects that different hospital financing systems may have on activity in the hospitals, on the other health care services, on quality of care provided and on the achievement of equity.

5. VISIT TO PRIMARY HEALTH CARE CENTRE "CUITAT BADIA", BARCELONA

A useful element in the workshop's programme was provided by the visit to the Primary Health Care Centre of "Cuitat Badia" in Barcelona, which took place on the morning of 23 September 1986. The Director of the Centre, Dr Bolivar, gave a short presentation of the history of the centre and its characteristics and then participants and faculty toured the facilities it provides.

As Dr Bolivar explained, "Cuitat Badia", which was opened in October 1982, is a rather innovative PHC centre in comparison to other PHC centres. In particular, it provides services to the whole population in the area, a dormitory suburb of Barcelona, and places a considerable emphasis on interdisciplinary and team working and on the participation of the community in the operation of the Centre by means of a "counselling commission" who participate in the management committee of the Centre. Fields in which the Centre is active include the implementation of risk factor reduction programmes in areas such as hypertension, diabetes, obesity, bronchitis and emphysema, etc, and the provision of health promotion and education programmes.

There was also an opportunity to discuss briefly some of the health services research being carried out by the centre to evaluate its effects on the population served in comparison to other PHC centres. Studies being carried out included examination of the utilisation of centre services and the use of hospital facilities (emergency room and outpatient visits) with the aim of identifying cost savings resulting from use of Centre services. Programme evaluation is also being carried out for programmes operated by the Centre (e.g. vaccination, rehabilitation, drug abuse). Finally, a survey of clients satisfaction reported higher satisfaction with the Centre's services than the services provided before the opening of the Centre.

The visit was a particularly valuable opportunity to appreciate the functioning of health services research as a useful tool in the planning and monitoring of primary health care delivery, and as such was complementary to the content of the remainder of the workshop.

6. EVALUATION

Evaluation of the workshop was regarded as particularly important to assess the degree of success in the organisation and functioning of the programme and in the achievement of the learning objectives for the participants. The comments and suggestions received will assist in the further development of the learning material contained in the modules, and should provide helpful guidance for the organisers of future workshops. Three major sources of evaluation were available: comments made during the workshop to faculty members, an evaluation questionnaire completed by the participants and the discussion in the plenary session on evaluation held at the end of the workshop.

Overall, the vast majority of participants reported a very high level of satisfaction with the workshop and considered that their participation had been useful to them. The questionnaire was structured to enable participants to report separately on their satisfaction with the content of each of the modules and to assess their improvement in knowledge and skills for each of subjects dealt with. Responses to the questions about the six modules covered during the course showed some variation in extent to which they were found to be useful, however in only a few cases did participants report that modules had not been very useful or that their knowledge and skills in the area had not improved. As might be expected, given the wide variety in background and level of experience of the participants, the modules that were found most useful varied from participant to participant. The organisation of an excellent social programme by the Spanish hosts received specific mention from a number of participants.

A few participants reported some dissatisfaction with the level of discussion that was achieved in plenary sessions, however it was recognised as being most important to spend sufficient time in the working group discussions. A small number of participants considered that the workshop material could have been covered in one or two days less time overall, but others considered that more time was required for some of the exercises and for plenary discussions for the workshop as a whole.

It was suggested that in future workshops, working groups should be constituted in such a way as to reflect the multidisciplinary composition of the workshop as a whole, as it was considered that the variety of disciplines and levels of experience represented in the participants enriched the workshop greatly.

It was also suggested that some of the modules should include some exercises to be done individually by participants, to be compared to "model" answers prepared by the faculty. A suggestion was made that it might be useful to have an exercise associated with the first module on the research process. It was suggested that, where possible, work rooms and living accommodation should be situated close together in future workshops to maximise the opportunities for extending the group work and minimise time lost in travelling between the two places.

7. CONCLUSIONS

The workshop achieved its major aims in providing a suitable learning environment for participants to increase their knowledge and awareness of the methods of health services research, its potentials and its limitations and to increase understanding of how the results of health services research can be used in the health planning process at all levels of planning from local to international. The emphasis on group work, with the majority of time being spent in small groups was confirmed as being particularly helpful in achieving the aims of the workshop, and as the participants commented in their evaluations (reported in more detail above), was one of the most important factors contributing to satisfaction with the workshop.

The interdisciplinary mix of the participants and the wide range of experience with the methods and application of health services research was particularly useful in stimulating discussion in the group work. Participants were drawn from both developed and developing countries and during the group work this produced valuable opportunities to focus on problems and priorities of developing countries. The results of the group exercises provided confirmation of the flexible and adaptive nature of the health service research approach in that frameworks could readily be adapted for use in a wide variety of situations in both developing and developed countries. In order to get the most benefit from the group work, it was felt that the composition of the sub-groups should also reflect as far as possible the range of disciplines represented in the workshop and some care is therefore necessary in drawing up these groups.

Generally speaking, the framework of the two week workshop provided adequate time for dealing with the material presented in the modules that were covered in the workshop (1, 2, 4, 5, 6, 7). It was felt by some that insufficient time was available for some of the exercises and that more time would have been helpful for discussions in plenary, it was suggested that the adoption of a more structured approach to plenary sessions might have helped to achieve more in the limited time available for such discussion. It was noted that it would have been difficult to deal adequately with the remaining module (number 3) as well. It was considered that in future workshops, a period of 2 1/2 days would be most appropriate for modules with group exercises, and should provide sufficient time for both group work and plenary sessions. The fact that the participants received learning materials well in advance of the workshop was helpful in giving time for advance reading and preparation. This enabled the workshop to concentrate on the exercises and group work rather than on reviewing the contents of the material; the practice of sending out the material well in advance should continue in the future.

The hotel at which participants were resident was situated at some distance from the school where the workshop was held, this was felt to be a disadvantage by some as it restricted the time available for the scheduled sessions. It was suggested that, where possible, work rooms and living accommodation should be situated close together in future workshops to maximise the opportunities for extending the group work and minimise travelling time.

Future developments

Following the completion of this workshop, the faculty will produce a final package of material which will then be available to be drawn on for use in future workshops. This final product will consist of two parts, firstly revised versions of the learning material in the modules and secondly a teachers manual, covering the content of the modules and in particular the exercises. This material could then be used selectively by countries planning their own workshops which could be more specifically tailored to their own particular needs. Such workshops might wish to focus on only some of the modules and/or to incorporate new modules covering different areas. In particular, the revised versions of the modules will be structured in such a way as to separate, where possible, general principles and frameworks from specific applications or case studies so that organisers of future workshops may vary the case studies selected for inclusion in order to supply the most appropriate material for the particular purposes and local circumstances of each workshop.

One of the aims of the workshop was to stimulate the organisation of future workshops on health services research, in particular countries or groups of countries. During the workshop many participants expressed an interest in organising such workshops, these included Greece, Bulgaria, Iran, the Netherlands, a workshop for the German speaking countries and an Iberian workshop. In addition, a French-speaking workshop is to be held in 1987/88 which will focus on anthropological approaches to health services research.

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Annex 1

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