Socio-Economic Health System Research at the MEDIS Institute of the GSF 1979 - 1986

Munich 1986

Federal Republic of Germany

Gesellschaft für
Strahlen- und
Umweltforschung
München

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München

medis Institut für Medizinische
Informatik und Systemforschung

WHO-Collaborating Centre
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Preliminary Remarks

Socio-Economic Health System Research: Health system research describes and analyses general connections between the state of health, the health care system and society. Economic health system research uses as its tools: theories, hypotheses and procedures from such a wide variety of disciplines in the field of social sciences as political science, psychology, sociology, the science of administration and economics. The expression "socio-economics" is taken from international usage; it implies that, apart from financial aspects - "How much does a service or the illness cost? Who pays? Can savings be made?" -, other aspects relevant to social sciences should be taken into account; those are, e.g.: "Who defines health? Can health be measured? To what extent is the state of health of the population dependent on individual behaviour or on natural and social living conditions? To what extent can it be and is it influenced by the health system? How has the health system developed, in what respect is it capable or in need of further development, what form is its development likely to take? What system of health supply is particularly economical?" In Anglo- Saxon countries, the term "health services research" has become customary; we use the term "health system research" in order to emphasize a wider frame of reference (which is, in our view, marked by health, the health care system and society as orientation points of equal importance) and to bring out the system-analytical approach to these fields of research [see bibliography in Section 10: 7903; 7914; 8401; 8402; 8426].

Context of Research: Systematic research into the interconnections between society, the health care system and health first of all needs a set of procedures which help to describe precisely and validly the subject area (data and indicators) so that in this way one can analyse and assess the effectiveness and efficiency of structures and processes in the health care system (evaluation). If, in addition to this, their importance is to be determined, we need research into (risk) structures that basically precede the health care system (economy and health). Finally, it is also necessary to compare procedures and results on an international level in order to avoid premature generalisations (health system comparison). Admittedly, because of limited funds, only a few questions out of this wide spectrum of subjects can be dealt with; nevertheless, in our work we try to remain aware of the overall connections.

Fields of Research: So far, the most important fields have been the following:

- Routine Data of the Health System: What information can be gained from the routine data obtained in the process of health care, e.g. the diagnoses entered on the patients' health insurance certificates? Can such information be used for planning and evaluating measures in health care policies?

- Health Status Indicators: How can the state of health of the population be measured? What reliable and valid criteria are there for judging the success or effectiveness of measures in the health sector?
- Evaluation: How can measures, technologies, institutions and structures in the health sector be evaluated, e.g. with regard to whether they are economical or not? What are the effects and consequences of regulation policies in the health sector, e.g. for cost containment and equity?
- Health and the Economy: Are economic recessions a risk factor for health? What effects does unemployment have on physical and mental health? What methods are best suited to examining the connections between society, the economy and health?
- Health Planning and Economics: How can management processes in the health sector be improved? How are the structure and function of the health system to be assessed in economic terms? Is cost containment a meaningful and achievable goal? What special conditions of financing must be borne in mind?
- Comparison of Health Systems: What information systems or measures concerned with health supply are used in other countries? Is it possible to transfer these experiences to the Federal Republic of Germany? Which technologies can be transferred?

Research Policy: These questions also correspond to the priorities set in the Federal Government's programme of "research and development in the service of health", and in particular to three of its eight action programmes: improving the means of directing the health care system, the effectiveness and efficiency of health institutions, and the organisation and performance of the statutory insurance system. While the focal point there is on individual projects which can be brought to a conclusion in a short period of time and which are of immediate political relevance, it is the main task of major research institutions to take up longer-term and more general questions, which clip together those focal points of research that enjoy political priority. This was the case with the "socio-economics" working group, both in the selection of subjects and in the examination of the quality of routine data and the evaluation of health policies, and it will also guide research on indicator systems and long-term trends. Answering questions of the kind described needs the expertise of various disciplines of the social sciences and the advice or collaboration of medical informatics; easier than, e.g., at universities can this be realised at major research establishments like the GSF, which are designed for a multi-discipline approach and are technically well equipped. There, too, it seems more likely for research to achieve results that are independent of special interests than might be the case with the research institutes run by the self-governing bodies ("Selbstverwaltung") of the health sector; finally, the availability of full financing makes it also possible to undertake research projects which are not confined to serve the interests of the day.

Research Rules: Working groups in major research establishments deal with subjects - so-called research and development programmes - which are first brought up by the head of the institute, his colleagues or advisers, then appraised by advisory circles, and eventually approved by a scientific-technical council and a supervisory board. The subjects are oriented towards public

and scientific requirements. Since its establishment in 1979, the "socio-economics" working group has taken up the following research and development programmes:

- evaluation of studies in the field of health system research (1979-1980)
- methods for assessing the system ecology for the health sector (1979-1980)
- methods for operationalising the aims of major projects in preventive medicine and health system research (1979-1980)
- methods for operationalising evaluation criteria (1981-1984)
- methods for the secondary analysis of data acquired on a statutory basis or by organisations under public law (1981- 1984)
- indicator systems in the health system (since 1985)
- procedures for establishing long-term development trends in health systems (since 1985).

Despite the different accents that have been set, there are essentially two subjects forming the core of our research: data, indicators and indicator systems on the one hand, evaluation procedures on the other. Reduced to its basics, this means measuring developments and effectiveness in the health sector. While tackling these two subject areas of the research and development programmes of the working group, it was also possible to conduct some externally financed projects, namely:

- Determining the severity of chronic diseases, i.e. diabetes mellitus and high blood pressure. The commission was placed by the Association of German Pension Insurance Carriers.
- Effects and effectiveness of the Bavarian Contract. The study was commissioned by the Bavarian Ministry of Labour and Social Affairs; other partners cooperating were the Association of Sick-Fund Affiliated Physicians of Bavaria (KVB) as well as the Bavarian Associations of the RVO-Kassen (representing more than two thirds of all statutory sick-funds).
- Health planning and health economics. Various smaller projects were supported by the World Health Organization and by the Federal Ministry for Youth, Family and Health.

Thanks to such projects funded by outside sources, it was possible for a time to expand the regular staff of six scientists and four technical assistants considerably, and to extend certain items in the budget appropriately.

Research Results: Research by the "socio-economics" working group is understood not only as basic but also as applied research. For this reason, apart from publications of or in books and journals, documents are also produced which first of all tend to have the character of an expertise, or which exercise an advisory function, e.g. for bodies of the self-governing institutions of the health sector, for Land and federal ministries, the Council of Europe, and the World Health Organization. This is intended to ensure that there is a permanent contact with reality, without which health system research would neither be possible nor meaningful [7905; 8001; 8218; 8427; 8512]. In almost all cases, such papers were also precursors of 'purely' scientific publications.

1. Routine Data in the Health Sector

1.1 Survey

In the Federal Republic of Germany, office-based physicians settle their diagnostic and therapeutic services with the sick-funds on a quarterly basis; they do this according to fee schedules that contain approx. 2,300 different services. These and similar accounting data and process data are collected and registered by various bodies of the self-governing institutions of the health sector. A major focal point in the MEDIS research programme was to examine the quality of these data from the point of view of measurement theories, research strategies and health policies, in order to establish the conditions for making the significant potential of information contained in those routine data available for appropriate and refined consideration in health system research, and also for directing the health services system.

1.2 Problem

At the end of the 70s, when health system research began in the Federal Republic, one of the most important and particularly controversial subjects were the degree and value of information that could be gained from routine data; involved here are data which are obtained in the process of health care provision, for example those which appear as a record of services on health insurance certificates (i.e. a document that the patient hands to the doctor, who in turn then forwards it to the sick-fund via the physicians' association). A remuneration system dependent on fee-for-services produces thousands of millions of data about physicians, patients, services and even diagnoses. High hopes were placed in the usability of such data as aids to decision-making, and the least that was hoped for was that it would be possible to use them for describing the structure and process of health care better. A series of research projects along these lines were begun in the late 70s by the research institutes of the self-governing organisations of the health sector, some of which received support from the Federal Government. Among these was a project - the "Bavarian Project" by the Zentralinstitut für die Kassenärztliche Versorgung -, which had been dealt with by the present director of the "socioeconomics" working group (as the project leader) and by the present head of the MEDIS (as one contractor of the project), and was then in part taken over by the newly created MEDIS Institute [7901; 7907; 7913]. The investigations concentrated first of all on the question of how much information could be gained from diagnoses on health insurance certificates for assessing the efficiency and economy of ambulatory medical care. This topic was gradually expanded to cover the quality of routine data in general, such as those concerning mortality, finances and services, and also to deal with the quality of information systems. In this context, the term 'quality' does not only include criteria such as reliability and validity of those data; it also relates to their usability for planning and evaluation purposes in applied health system research.

1.3 Methods

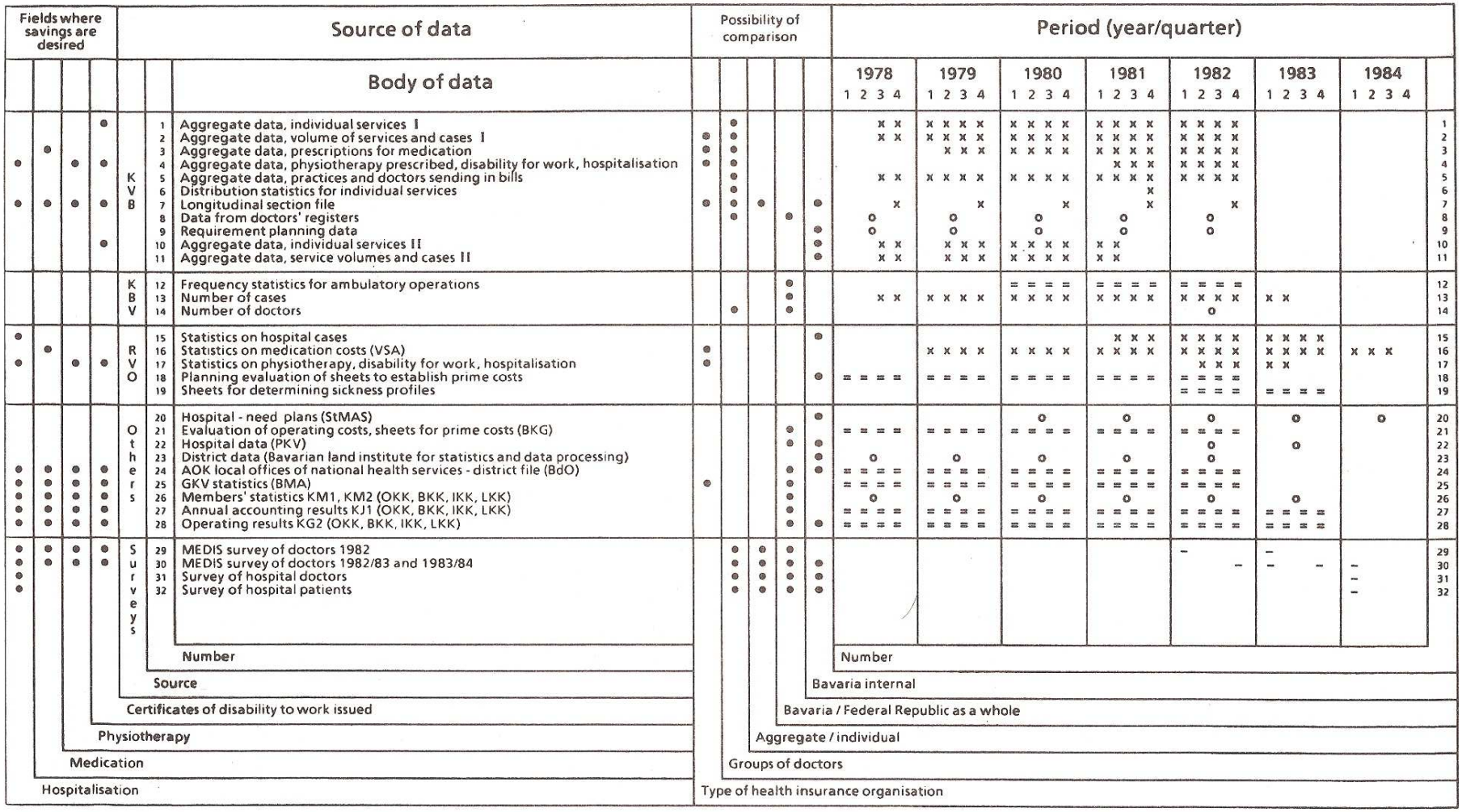
The subject mentioned was dealt with by a variety of methods; using and developing different methods parallel to one another and then comparing them is a characteristic of socio-economic research and goes beyond any one particular programme.

Exploration of Hypotheses: Before the MEDIS activities began in full, the most important experts in the field of medical informatics and documentation had been asked about their assumptions, hypotheses and experiences concerning the amount, quality and codability of information available from routine data - and, in particular, from those on diagnoses [8004]. In 1979, a symposium was held on the subject of "Problems of the Secondary Analysis of Data of the Statutory Health Insurance", in which 35 experts from all West German routine data projects of any importance participated [8103].

File Processing and Structure: The routine data available at the Kassenärztliche Vereinigung Bayerns (Association of Sick- Fund Affiliated Physicians of Bavaria) - data on doctors, services data, prescriptions etc. - were fed into an ADABAS data base, which had been designed especially for that purpose [9931]. This made it possible to represent the service and prescription data over observation periods of up to 18 quarters for 58 different groups of physicians (defined by particular professional and practice characteristics). The files produced from this contained - in an aggregated form, but stratifiable according to different aspects - detailed information on, for example, the frequencies and point volumes of physicians' services, the number and cost of prescriptions issued, the cost of services in physical therapy as prescribed by doctors, the number of cases and days for which certificates of disability for work were issued, and the number of hospitalisations on doctors' instructions. In addition, a longitudinal section file covering the years 1978 to 1982 was set up with data concerning selected characteristics of physicians, their practices and activities. All these data were examined for plausibility by cross-comparison with one another, and in part by using other routine data available (e.g. data from medical registers) or the results of extensive surveys among doctors. Even while strictly observing the requirements of data protection, it was possible in this way to check the results of aggregate data analyses for ecological misinterpretations. Figure 1 shows these sources of routine data in connection with other files, used for the evaluation of a specific health policy measure taken in Bavaria in 1979.

Health Insurance Certificates: A random sample of 10,436 accounting vouchers for 8,873 patients of office-based physicians in three Bavarian regions (period: the second quarter of 1976) was processed; for that it was necessary to solve complicated problems of data transformation, such as the formatting of unformatted diagnosis entries. Quality checks were partly based on plausibility suppositions and comparisons between data sources; in the main, they concerned the diagnoses and services of those doctors, but also some characteristics of patients and of the structure of the service system [9941].

Figure 1: Sources of data for a Bavarian health report. The sources mentioned were used for evaluating a specific health policy implemented in Bavaria



Analysis of Regional Data: Quality checks were carried out on regionalised mortality and supply data; with some of these data, the data processing was not only based on data tapes, but also on written material [8304]. A particularly problematic feature is the fact that the regionalisation concepts of different producers do not coincide. Even so, regionalised data did permit an intensive quality examination on the basis of plausibility criteria.

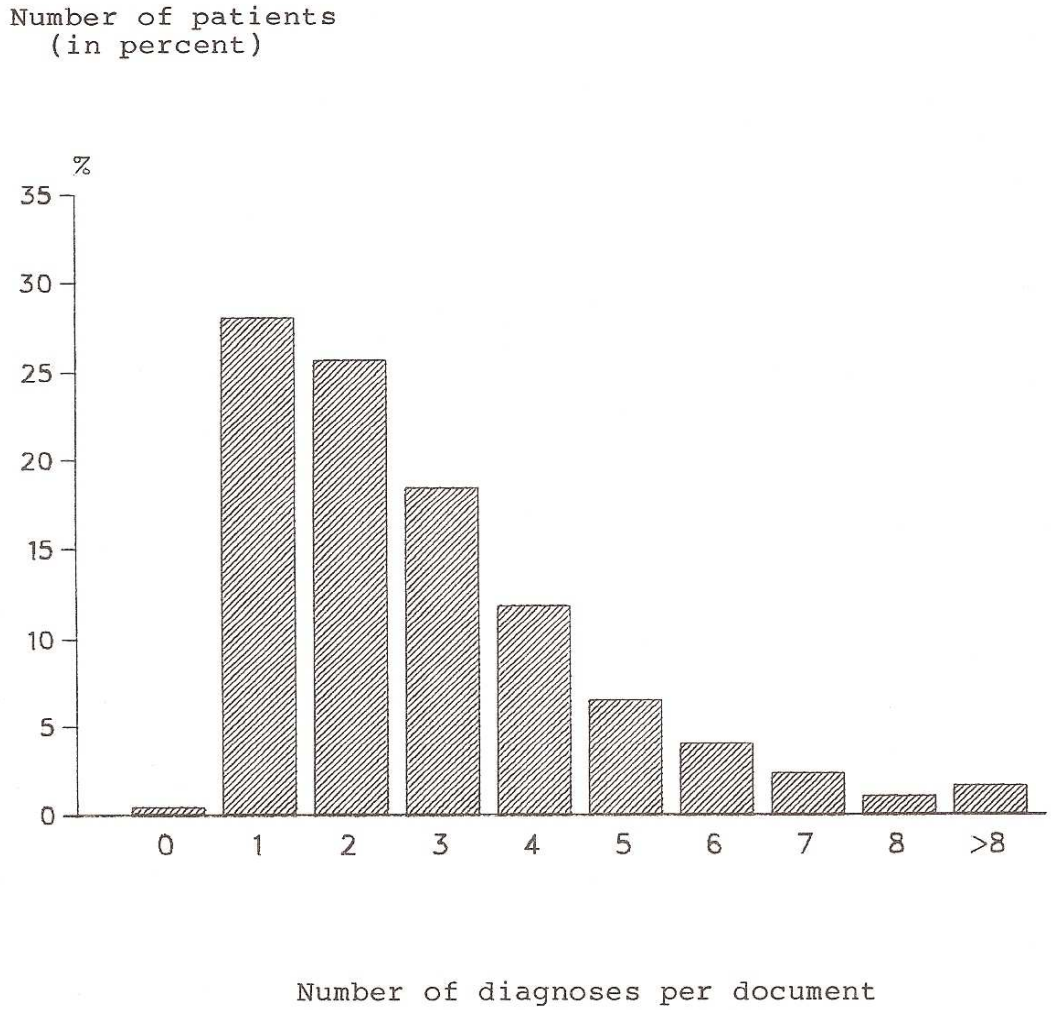
File Transparency: From the many relevant files available to the RVO sick-funds and the physicians' association, and from the relevant official bodies of data, it was possible to check routine data against specific criteria and, in some cases, in comparison to data obtained from primary sources, with regard to their micro- as well as macro-quality. A compilation of such files is shown in Figure 1 [9931].

1.4 Results

Note: Several of these investigations were begun with the primary aim of checking the quality of routine data, and then led to questions and results concerning the contents. With many other operations, the reverse was the case: These operations produced a large number of results as to methods as well as contents, only a few examples of which can be given in the following.

Quality of Diagnostic Details: There are many problems that make it difficult to interpret the diagnoses on the vouchers: the lack of standardisation leads to ambiguities, unclear aggregations, unlimited spectra of diagnoses, different wording, etc.; what is more, it allows the interference by particular interests, for an entry of a diagnosis can also be seen as an attempt to legitimate specific services, to prevent the appearance of iatrogenic damage or to protect the patient from negative labelling - after all, the "diagnosis" is essentially an abbreviated form of communication between the doctor, the physicians' association and the sick-funds. Because of little differentiation between diagnoses, particularly after codification, there is no clear knowledge about the status of the diagnosis and its degree of certainty, the localisation, intensity, variability, chronicity and course of the illness, etc. [8112]. Contrary to negative expectations as to the informational value of diagnostic entries on health insurance certificates [8004], however, the diagnosis structure produces a clear and plausible differentiation between sex, age groups and supply situation [9941]. Multi-morbidity analyses led to plausible results, though these were in some cases statistically unstable when there was a high diagnostic differentiation (Figure 2 shows the degree of multi-morbidity). When services were assigned to diagnoses, it was not possible to produce results that could be interpreted in a meaningful way. It was discovered that, in comparison to five-figure codings, three- figure ICD codings level out population-specific differences; this is true for some, though not all, diagnoses. According to the results available, the coarse structure of diagnoses on health insurance certificates coincides in many cases well with distributions derived from other information (morbidity distributions specific to age and sex); however, these diagnoses hardly provide an adequate basis for examining the quality of medical services [8504].

Figure 2: Distribution (in percent) of patients receiving ambulatory treatment from sick-fund affiliated physicians (n=8,873) according to the number of diagnostic entries on health insurance certificates and other accounting vouchers in the second quarter of 1976



Quality of Care Data: The structure of patients' care is shown quite clearly and plausibly on health insurance certificates [9941]; all the same, these sets of data are only of limited value for analytically oriented studies into the care structure - for example when the deficits of medical supply for certain groups of the population are to be found out [8102]. A comparison between the sex composition of hypertension groups in various random samples - routine data, microcensus, MEDIS health status indicators and Munich Blood-Pressure Study - produced considerable differences; while the first three sources of data arrived at fairly similar results, the results of the last-mentioned study clearly deviated from those. This is indicative for major differences between epidemiological studies, which focus on requirements, and socio-economic studies, which are demand-oriented.

Quality of Details of Services: The differentiated catalogue of medical services permits very specific analyses of individual services, but does not provide a relevant survey of the care process in a social medicine perspective: lack of clarity and exactness, lack of balance in aggregations, frequent changes, unclear documentation practices, modification of entries of services, and the like, make this difficult. Many services which are important from a social medicine point of view - e.g. 36 of KESSNER's 43 diagnostic criteria for hypertension diagnostics - cannot be displayed on the basis of the figures in the fee schedule [8112]. Nevertheless, certain evaluations, e.g. concerning the seasonal nature of medical services or individual items in the fee schedule (as in the field of laboratory services), do permit reliable and valid statements as to specific aspects of the care process [8432; 9932].

Quality of Cost Data: An attempt was made to use the entries of diagnoses and services on the accounting vouchers for analysing the expenditure of the statutory health insurance system for ambulatory medical services in relation to diagnoses; this, however, was only possible for some 20 % of the total costs, since in ambulatory practice multi-morbidity is widespread (for 70 % of the total of 8,873 patients, two or more diagnoses were entered in the course of the quarter examined); even on the level of the 17 ICD chapters, the proportion of the expenditure that could be allocated to particular groups of diagnoses only increased to slightly more than a quarter of the total expenditure. Only in rare cases did diagnoses occur singly in a sufficiently high frequency for statistical analyses; in these cases, a wide dispersion of the costs was the rule [8406; 9941]. While the statistics on the expenditure by the statutory health insurance organisations can be regarded as relatively reliable, they nevertheless do not offer an adequate basis of information for evaluating cost-curbing measures even within the monetary target dimension. Thus, for example, the effects of such measures in the form of higher direct financial burdens on the patients can quantitatively be traced only in parts; assessing the extent to which the financial burden on the statutory health insurance system would be eased by shifting more medical services from the in-patient to the ambulatory care sector is, by means of such data, at best possible only for a short time, above all because the prices of hospital services are based, to a great extent, on a lump-sum system [8502].

Quality of Mortality Data: The validity of individual details in the Federal Republic's mortality statistics concerning the cause of death was examined by a different working group at MEDIS; we found that there were noticeable distortions resulting from the changes in the proportions of foreigners in the residential population in the course of time, which makes an unadjusted interpretation of mortality data highly problematic. In order to be able to work meaningfully with the available mortality data, there needs to be an extensive process of adjustment before the data are analysed [8304].

Quality of Information Systems: An examination of the quality of routine information systems in the national health service of Peru produced the following results inter alia [8424]: at the heart of the provision of care, there are a variety of information carriers in the form of notes, receipts, file cards, note books and forms that have to be filled in, with a total of some 100 different forms for health centres. It can certainly not be claimed that all of them are still valid:

many are redundant, and a large number is unsatisfactory in important respects. The statistics department of the Ministry of Health processes 4 % of the completed forms, most of these only after 2 to 4 years have passed after their completion [8424]. The supply of routine data in highly developed societies is not much less bizarre. If the (potential) demand for routine data by an evaluation of a health policy measure is taken into consideration, it turns out that, roughly estimated, only some 2 % of the hypotheses on the effectiveness of that policy can be supported by official statistics, 24 % by routine data from office-based physicians, a further 10 % by routine data of the sick-funds [8314]. This lack of topical representativeness of routine data can only be balanced out by means of primary surveys, e.g. by questioning doctors, patients and experts, and by new documentation. In some developing countries, systems for collecting sets of routine data exist that are much more suitable for evaluation and planning purposes (cf. for example the nutrition indicator system in Indonesia [8006; 8316]); a further point is that it is easier in such cases to formulate recommendations which are capable of being implemented in order to improve the existing information systems; in the case of Peru, a part of our recommendations are at present in the process of implementation [8110; 8209; 8317].

1.5 Prospects

Innovations: So far, there is hardly any other research group in West Germany which has been able to conduct a quality examination of such a variety of data sources in the health system; in order to assess the quality of diagnostic details on health insurance certificates, it was possible to set up and use a body of data which is unique of its kind. The fact that, on the basis of these experiences, recommendations have been formulated for reorganising routine data information systems also appears to be an innovation.

Usefulness: Increased scepticism concerning existing data is certainly one benefit of routine data analyses. This kind of pre-investment will also be useful for research projects that emphasize contents rather than methods. Analyses of the shortcomings of routine data are an essential basis for the setting up of systems of indicators, which is the task faced by the working group in the current research and development programme.

Conclusion: An analysis of the micro- and macro-quality of routine data in the health system is an important piece of background work for applied medical informatics and health system research.

2. Health Status Indicators

2.1 Survey

Definition: Health status indicators provide information or, at least, data about conditions which can be established (or more generally: observed) in individuals or populations; they also permit some conclusions to be drawn as to the status of health of the concerned. Examples are: mortality figures, prevalence and incidence of selected diagnoses, the number of days on which patients have been certified as unfit for work, days on which patients are confined to bed.

Types: Some health status indicators show the length of lives, while others are related to health during life. Among the former are, for example, infant mortality, and life expectancy or mortality figures for specific age groups. Among the indicators of health or the quality of life we usually include: indicators of the prevalence or severity of individual diseases (morbidity indicators); indicators showing the effects of diseases on activities of everyday life and r“les (indicators of functional limitations as a result of illness); indicators of diminished physical, mental or social well-being as a result of sickness.

Research Subjects: In its basic research and in applied studies, the "socio-economics" working group has used or developed for itself health status indicators from the fields mentioned: the mortality indicators were dealt with essentially within the framework of the studies on "economic instability and health", whereas the diagnoses entered on health insurance certificates (as morbidity indicators) were covered in the framework of the quality test on routine data. The following comments concentrate on the work with morbidity indicators ("determining the severity of chronic diseases") and on developing and using various scales and indices for limitations on functionability and well-being.

2.2 Problem

Fields of Research: In health system research just as in the public discussion on the effectiveness of the structures and the successes of institutions within the health system, great attention is devoted to the question of the effects that, for example, technical developments in medicine, the increase in the supply of medical services, large-scale health programmes or political interventions have on the health situation of patients or of population groups. In this connection, we are concerned above all with comprehensive assessments of health, and not primarily with establishing and measuring individual health impairments. If an answer is to be found to this and similar questions, this presupposes that the "health" of the patients or other persons can be measured in a valid, reliable and sensitive manner, so that it is possible to

determine the effects on health of medical measures and programmes, or of the consequences of socio-economic changes in living conditions.

State of Research: Among the variety of procedures for measuring health which have been published so far, no single method has yet been singled out as being in a position to solve all the methodical and factual problems connected with conceiving, determining and measuring health, and moreover solving them in a way that can reach a consensus among all the groups of people and social groups concerned and affected. A particular consequence of this situation is the fact that concepts such as "health" or "quality", "efficiency" or "success" of medical care can at present hardly be defined in a generally accepted way. At present, even perhaps in principle, it does not seem very useful to operationalise health simply by means of one single dimension of measurement, one single indicator or index model, since there is normally a difference between a patient's and a doctor's idea of health, and that of health managers and of health politicians. For this reason, it would always be desirable to develop, test and use a variety of procedures for measuring health, depending on the exact formulation of the problem [7902; 8008; 8201].

Focal Points of Research: In view of this state of research concerning health status indicators, the "socio-economics" working group has in the past five years adopted the method of developing a number of ways of operationalising health, which differ from one another in factual and methodical respects, but which also complement each other. Particular attention was devoted to the question of how the concepts, developed in the course of basic research, would prove themselves in application-oriented studies such as those concerning the state of health of unemployed persons or of hypertensives.

2.3 Methods

In order to determine and measure health and its basic components, various methods tested in social sciences were used and further developed, in particular psychometrics.

Operationalising Health: On the basis of analyses of the available literature, surveys and preliminary theoretical considerations, a conceptual structuring of various aspects of health was arrived at; in addition, the methodological characteristics of indicators and index models were examined in the light of the requirements of various fields of application in health system research, such as the measurement of quality or of effectiveness, and therapy control [8309; 8310]. In this context, a distinction should be made between a few essential levels:

- Doctors define health in a scientific, empirical manner ("objective" health)
- Patients define health in a personal, feeling-based, empirical manner ("subjective" health)

- Patients, doctors or observers interpret behaviour patterns or individual modes of behaviour as indications of health
- Demographic facts are interpreted and classified according to health aspects.

There may be agreements or also divergencies between these levels. Such divergencies must not be interpreted as, for example, "ignorance" on the part of the patients; their subjective perceptions also have socio-economic consequences in terms of search behaviour, (double) utilisation of services, money spending, market participation and so on. Subjective health is composed of physical and social, not only emotional components of health. The same applies to "objective" health. Subjective and objective health are realities sui generis; both can be measured using the methods of social sciences in a manner which is "objective" in the sense that it can be reconstructed and approached in an intersubjective manner.

Scaling Personal Assessments of One's Own State of Health: For the "feeling" components of subjective health, multiple-item scales were developed, in particular for physical and emotional general complaints and for emotional balance. For reasons of research economy the technique of self-administered questionnaires was chosen, i.e. questions had to be answered in writing by the interviewees, without guidance. A representative survey of the Munich residential population (n=1,384) in 1981 served to determine the psychometric characteristics of the scales (distribution forms, reliability, construction validity) and to analyse the dimensional structure of subjective health [8202; 8203; 8505]. In addition to the scales mentioned, two behaviour indicators for health were used for this purpose: functional restrictions as a result of illness, and social integration. Later, some of these scales were applied in studies with persons insured by the German Pension Insurance Carriers, with unemployed persons, and with patients undergoing gynaecological treatment; in each case, it was possible to compare the results with standard values from the population as a whole.

Scaling Behavioural Indicators: With 300 patients of officebased primary care doctors, 798 hospital patients (after their discharge) and 168 gynaecological patients, the same questions were used to obtain information on the following points: to what extent were the patients bed-ridden, in need of care and assistance, were they restricted in eating, sleeping, personal hygiene and in carrying out professional or household activities. In addition, there were two personal assessments of the suffering caused by illnesses, namely the intensity of the complaints or pains, and the degree of distress caused by the illness [8589; 8570; 9907]. This information about the effects of the illnesses on every-day life (disability, distress) can be summed up into simple, patient-oriented success indices for medical treatment. The procedure constitutes an extension of the "Problem Status Index" by A. MUSHLIN and F. APPLE.

Scaling Behavioural Patterns: Health also manifests itself in people's action and behavioural patterns. Individual behavioural elements (e.g. selected functional restrictions) can be detected and interpreted; so can even entire behavioural patterns, which is something that has hardly been investigated before. In a pilot study of two groups of nine chronic psychotic patients, one group in ambulatory care and the other hospitalised, the patients' time budgets were registered. A detailed acquisition of behavioural elements (e.g. having breakfast, reading, shopping) in

daily schedules, and also a registration of behaviour in the form of activity lists (activities in the last four weeks before the survey) provided the basic material for drawing up individual behaviour inventories for the patients. An evaluation of the behavioural units using target criteria relevant to the therapy (degree of independence, sociability) is intended to make it possible to calculate various indices for the success of the therapy with the patients [8571]; it is also to be used as a basis for cost estimates.

Scaling the Severity of Illnesses on the Basis of Expert Knowledge: By means of algorithmic links between physiological and clinical parameters, standardised degrees of severity for primary hypertension and diabetes mellitus were worked out. The methods used here consisted of several steps: (1) on the basis of expert judgements, a "knowledge base" for grading the severity was defined. (2) Attributes of the physiological and clinical parameters were linked by logical operators, so that an individual finding leads to a defined degree of severity by means of a fixed algorithm. (3) In field tests, groups of rehabilitation patients were used to determine the physiological and clinical parameters, and to calculate the degree of severity for each interviewee. (4) By using a step-by-step reduction procedure (BOOLEAN operations, logistical regression), a reduced set of characteristics was selected from the original set, the new set producing a maximum rate of accuracy in comparison to the original severity classification. (5) From this set of characteristics, it was then possible to derive decision tables for allocating severities, which can be used both manually and also computer-aided [8430; 8513].

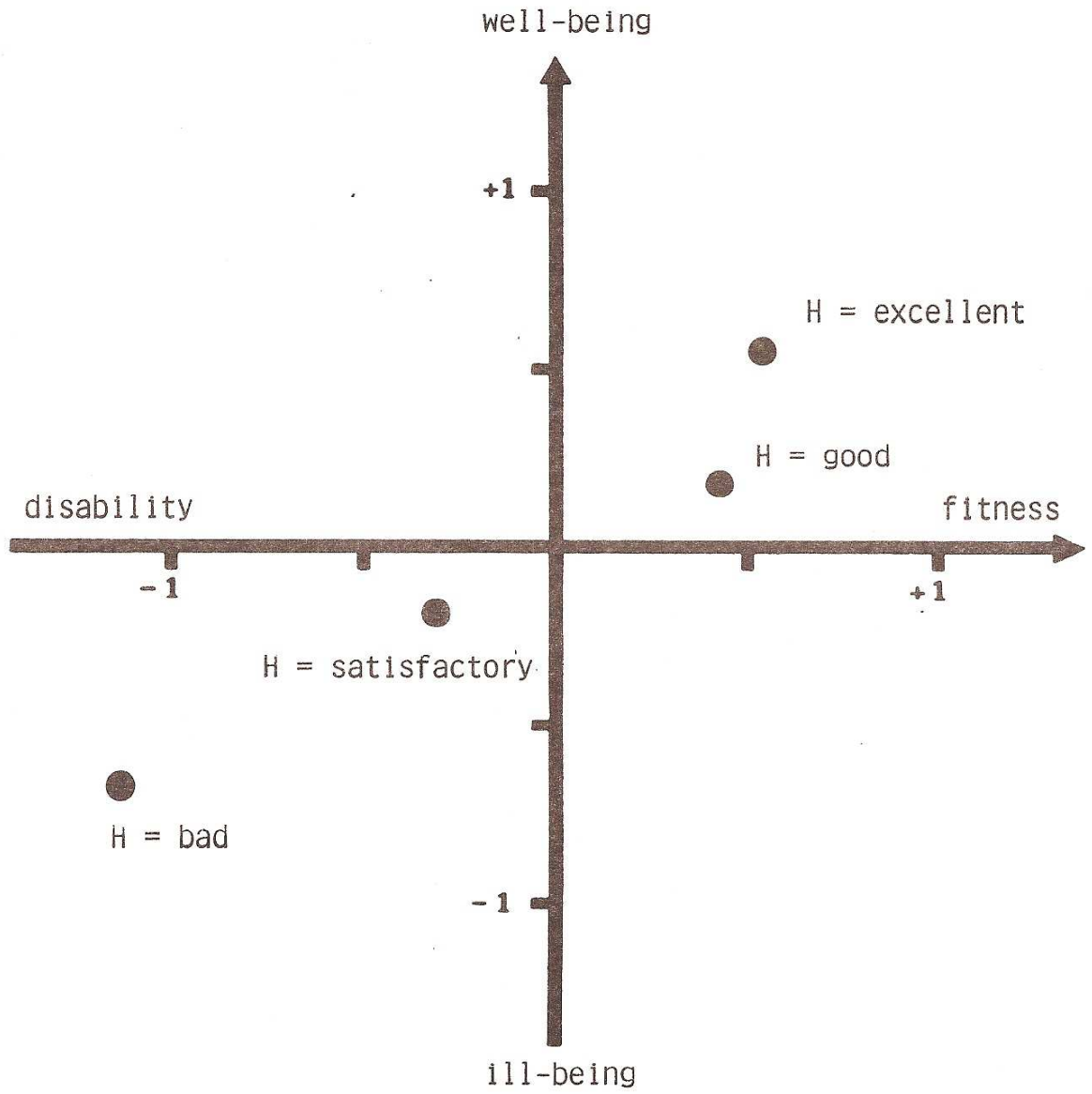
2.4 Results

The studies described above, with their various methodological approaches, produced results which were in some cases conclusive, in others only provisional.

Subjective Health in Urban Population: The comprehensive results concerning the frequency of complaints, functional impairments, etc. in a residential population cannot be described here in detail; if further information is required, we refer the reader to the original publications [8202]. By way of an example, we merely point out that only 19 % of the adults questioned did not suffer (to a "moderate" or "considerable" extent) from any of the 24 complaints contained in a list, whereas as many as half the interviewees reported between one and seven complaints, and 30 % even reported more than that.

Dimensions of Subjective Health: A cluster analysis of the 62 items concerning functional restrictions, complaints, mental balance and social integration led in the first step to nine inter-correlated clusters of items, the most pronounced of which can be interpreted as "a subjective feeling of unrest", "physical handicaps", and "weakness and tiredness". By means of a two-factor solution, it was possible to obtain a satisfactory interpretation of a main-component analysis of the clusters under statistical and content aspects. The second-dimension factors were called "well-being - ill-being" and "fitness - disability" [8505].

Figure 3: Dimensions of subjective health: means of the factors "well-being - ill-being" and "fitness - disability" for groups of persons with excellent, good, satisfactory and bad states of health (global self-assessments)



Explanation: H stands for state of health

Figure 3 shows the location of groups of persons (means of the factors) in the factor space, when these people report their global state of health to be "bad", "satisfactory", "good" or "excellent". It is interesting to note that the two factors discriminate in a different manner between the various levels of he global state of health. The categories "bad", "satisfactory" and "good" state of health are separated from one another by differences in the means of the two

factors. An "excellent" state of health is obviously distinguished from a "good" one by higher values for "well-being", and less by an increase in physical fitness.

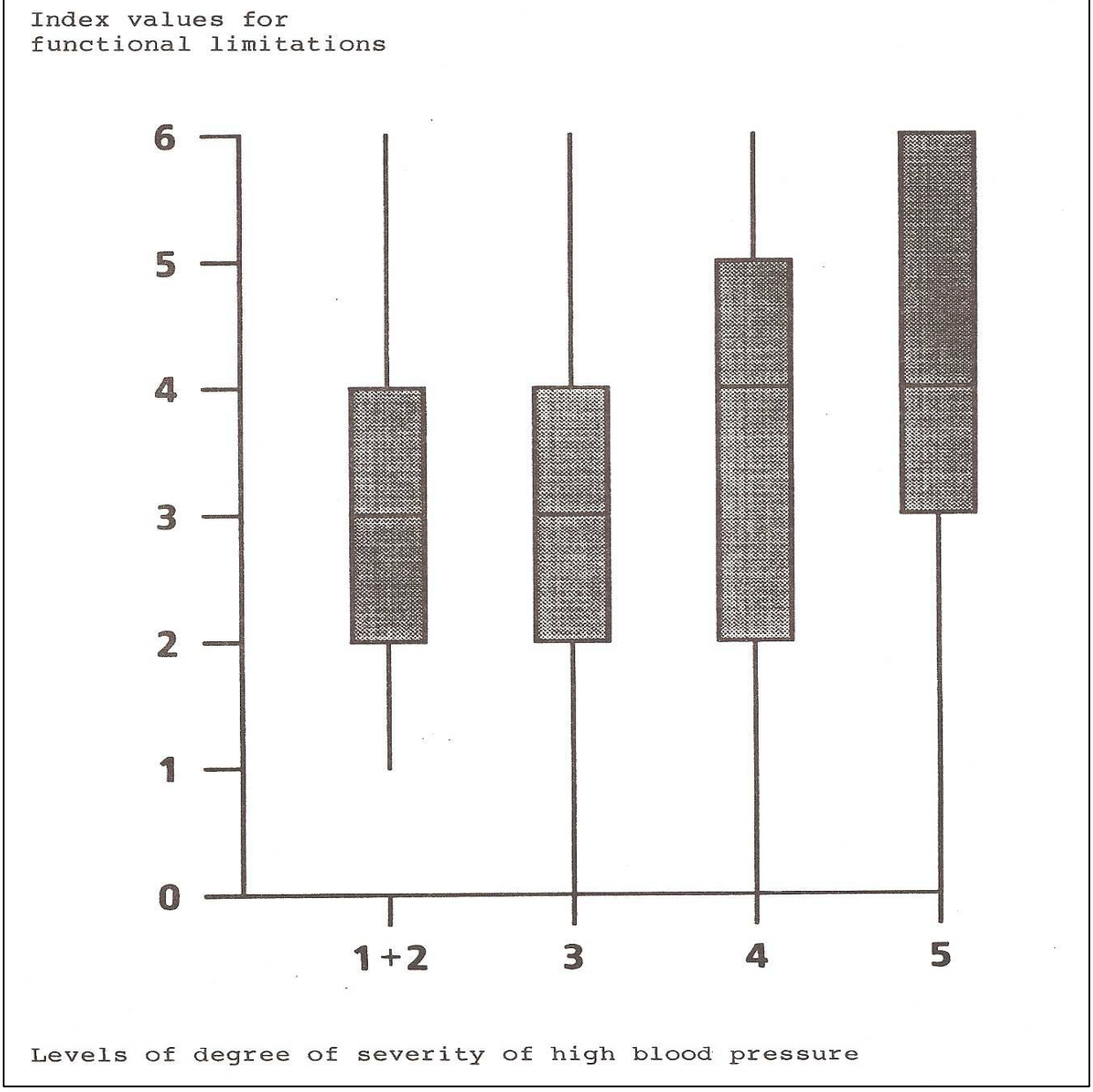
Factors Influencing Subjective Health: In a number of individual studies, factors influencing individual components of subjective health were examined. For reasons of survey economy or theoretical considerations, however, only sub-sets from the total pool of items for "subjective health" were used in each case.

- Effects of unemployment on complaints and emotional balance were studied in cooperation with the Institute for Labour Market and Occupational Research of the Federal Institute of Labour. The results of this study will be reported in Chapter 4.4 [8302; 8428].
- The effects of multi-morbidity among sick persons conceal the effects of specific individual illnesses: in the case of hypertensives treated in rehabilitation centres (provided by pension insurance carriers), there is a statistically significant, non-linear connection between the degree of severity of the high blood pressure as defined by specialists, and functional limitations. The correlations of the latter with multi-morbidity are, however, more pronounced than those with the above-mentioned degree of severity of high blood pressure, as is shown by Figure 4 [9913].
- If a comparison is made between the complaints of patients in a gynaecological hospital department before and after surgery, it was shown, as was to be expected, that at the time of hospitalisation, the number of complaints related specifically to gynaecology (e.g. abdominal pain), but also of subjective distress and tension conditions was higher than the one reported by the Munich female population. After the gynaecological operations, the complaints diminished, and mental distress dropped below that of the random population sample, which might be regarded as an indicator of the "success" of the treatment [8570].

Taken as a whole, the procedures used in a variety of studies involving (written) self-assessment of the state of health have proven to be practicable, accepted, reliable and valid instruments; this makes it possible to determine, on this basis, the effects of illness and of difficult socio-economic situations on the functional fitness and on physical and emotional well- being or, alternatively, on health and the quality of life.

The Severity of Problems Caused by Illness: The first (as yet unpublished) results, obtained when using an index for the severity of illness-induced problems in the case of ambulatory and hospital treatment, are mainly of a methodological nature. The basic material for forming the indices consists of information concerning whether a patient is bed-ridden, in need of care and assistance, restricted in providing for himself, restricted in professional and household activities, suffering from complaints/pain, and distressed because of the illness. The intercorrelations of these six index components are relatively high (gamma-coefficients between .57 and .87). Those six individual indicators were merged into a cumulative indicator, with high index values standing for high degrees of severity of the illness-induced problems.

Figure 4: Distributions of functional limitations (patients' statements) according to medically defined degrees of severity of high blood pressure. The index distributions of the functional limitations for the degrees of severity of high blood pressure are represented as box plots. The upper limitations of the boxes represent the 75th., the lower ones represent the 25th. percentile, the horizontal divisions in the middle represent the medians. The upper lines run up to the 95th., the lower lines down to the 5th. percentile.



Some of the connections found empirically are theoretically plausible, which confirms the validity of the construction of the index:

- the severity of the problem caused by the illness increases constantly with the age of the patients;

- the severity of the problem decreases, the longer the time that has passed between its acquisition and the patient's discharge from hospital;
- patients undergoing ambulatory treatment after a stay in hospital tend to report a greater problem severity;
- the index for the problem severity correlates to a great extent with a global assessment of the improvement in the state of health as a result of medical treatment.

By means of more detailed analyses, it is intended to determine attributes of the index specific to morbidity, and its correlations with the patients' satisfaction.

Degrees of Severity of Primary Hypertension and Diabetes Mellitus: Primary hypertension and diabetes mellitus are of great importance for the services of Pensions Insurance Carriers, both directly as grounds for prescribing rehabilitation measures and for granting pensions because of occupational disabilities or loss of earning capacity, and also indirectly as a risk factor for other illnesses. In a topical study, a procedure was elaborated for scaling the degree of severity of the two illnesses and their organic complications, which was intended to satisfy the aspect of practicability in assessing rehabilitation. This scaling of the degrees of severity is intended to be usable as a standardised medical measuring instrument for identifying the effects of rehabilitation measures. In addition to the assessment of effectiveness, the scaling of the degrees of severity can be important as an aid to choosing those to undergo rehabilitation and to sending them selectively to particular places for treatment which are in each case suitable for them personally. Furthermore, the questionnaire forms developed for the division into degrees of severity could be used in order to produce a uniform system of diagnosis for doctors issuing expert reports.

The division of primary hypertension into five degrees of severity was based on classifications of the blood-pressure values and the complications concerned with the heart, the cerebral blood vessels, the ocular fundus and the kidneys. In the course of statistical analyses, it was possible to reduce to 16 the figure of 40 medical characteristics originally used for deciding the degree of severity, and when this was done, there were not more than 4 % more incorrect classifications in comparison to the initial classification. These characteristics were compiled into a decision table which can be used both manually and computer-aided. The complete severity classification scheme for primary hypertension is reproduced in the original German version in Figure 5 since a translation into English could introduce some kind of semantic inaccuracy into the definition of the stages. [8430; 8431; 9912].

The division of diabetes mellitus into degrees of severity was made with the same aims as in the case of hypertension. Because of the adaptation of the metabolism and the late complications that occurred, a division was made into six levels of severity. In the course of statistical analyses, it was possible to reduce to 24 the figure of 40 medical characteristics which were the basis of the division into degrees of severity, and when this was done, it did not lead to more than 1.3 % more incorrect classifications in comparison to the initial classification. The 24 characteristics were likewise compiled into a decision table [8513; 9904].

Figure 5: Decision table for dividing primary hypertension into degrees of severity with a reduced set of characteristics. The findings for a particular patient can be marked in column A. Each finding is assigned to a level of severity (x). The highest individual degree of severity determines the level of the degree of severity of hypertension for the patient.

SYMPTOMATIK		A*	SCHWEREGRAD				
			I	II	III	IV	V
Diastolischer Blutdruck 2. Messung	unter 95 mm Hg		X				
	95 - 99 mm Hg			X			
	100 - 109 mm Hg				X		
	110 - 119 mm Hg					X	
	über 119 mm Hg						X
Systolischer ** Blutdruck 2. Messung	unter 160 mm Hg		X				
	160 - 179 mm Hg				X		
	180 - 199 mm Hg					X	
	über 199 mm Hg						X
Klinik ***	Herzschmerzen bei körperlicher Belastung				X		
	Herzschmerzen in Ruhe					X	
	kardial bedingte Beinödeme						X
	2 Aortenton stärker als 2. Pulmonalton				X		
	systolisches Geräusch über der Mitralklappe					X	
	Dyspnoe bei Belastung					X	
	Dyspnoe in Ruhe						X
	Paresen vorübergehend					X	
	Paresen länger bestehend oder bestehen noch						X
EKG ***	Linkstyp			X			
	Zeichen einer Koronarinsuffizienz o. n. A.				X		
	Zeichen einer schweren Koronarinsuffizienz					X	
Röntgen Thorax ***	Herz links verbreitert				X		
	Gesamtherz verbreitert					X	
	Aorta elongiert					X	
	Herz dilatiert						X

* Column "A" field for user to mark
** Systolic blood pressure only relevant when patient aged less than 30
*** The characteristics "Klinik", "EKG" and "Röntgen Thorax", only to be used with primary hypertension, not with secondary

2.5 Prospects

Innovations: In the studies on health status indicators, particular attention was paid to the fact that thematically different indicators should be tested on different perception levels (feeling, behaviour, knowledge) and for different (physical, mental, social) health components, e.g. morbidity standards oriented towards clinical parameters and - by way of contrast - measurements of the state of health oriented towards self-assessments by patients. In part, it was possible to study the different variables of indicators in their mutual interrelations. We are not aware of any research programmes in the Federal Republic which have a similar broad base and use so many different parameters - ranging from mortality data, via doctors' diagnoses, clinical and subjective degrees of severity of the illnesses, to the effects of bad health on the quality and way of life.

Usefulness: With some of these studies on health status indicators, the usefulness - in the sense of practical applicability - is clear from the very nature of the project: the division into degrees of severity for primary hypertension and diabetes mellitus is already being used in practice by the Association of German Pension Insurance Carriers, the list of complaints and the index for establishing the severity of illnesses have been used in quality control measures at the Gynaecological Hospital of Munich Technical University. In the sense of research strategies, the studies' usefulness consists in preparing research activities for some areas of the "indicator-based health reporting", which is part of the Federal Government's programme of "research and development in the service of health". The most important use, however, consists in the fact that there is continuous constructive thinking about indicators or measurements of the "success", the "effectiveness" and the effects, side-effects and consequences of structures and processes in the health care system; from this point of view, the search for valid health status indicators is an indispensable permanent task of health system research, even if those who manage, produce or supply health services believe they can dispense with it under the slogan of "preserving quality".

Conclusion: Developing and applying health status indicators is a permanent subject of health system research, provided the latter is geared to performing basic research, too.

3. Evaluation

3.1. Survey

By evaluation we mean determining, measuring and assessing the effects of actions and structures. Evaluation methods for examining the intended and unintended effects and side-effects of health policies need extensive development and testing procedures.

As an example of evaluation which proceeds

- with various criteria
- on various levels
- with the aid of various data sources, and
- at different points in time,

a study was conducted between 1980 and 1986 on what is known as the Bavarian Contract. The main aim of this Contract, concluded between the Bavarian RVO health insurance organisations and sick-fund affiliated physicians, was to expand the role of the ambulatory health care services at the expense of hospital treatment, and thus to contribute in the long term to cutting back sick-funds' expenditure; its main instrument was a special form of remuneration for the services of office-based physicians. The tasks of the scientific study accompanying the Bavarian Contract were:

- documenting the public disputes over the Bavarian Contract and comparable health policy measures;
- evaluating the effectiveness and efficiency of the Contract as an instrument for improving health care;
- consulting the parties to the Contract with regard to modifications to the set of agreements (e.g. to prevent undesirable side-effects), or to alternative policies.

The procedures employed had been developed and tested on the basis of experiences in other fields of evaluation - large- scale technologies, dams, energy projects, and hospital projects. At present, they are being further developed for tasks concerned with estimating the consequences of expert systems in medicine (within the framework of a study for a commission of the German Federal Parliament).

3.2 Problem

The effectiveness and efficiency of the health care services in their present structure, as well as of policy measures to alter it, have been subject to intensive public discussions, above all since the cost-containing laws in the late 70s. Only a few relevant evaluations have been carried out so far, and they were done only in the form of cost-effectiveness analyses of such things as out-patients' departments for epileptics, or such drugs as anti-depressants, but not for health policies. For a long time, evaluation procedures were developed and tested particularly intensively in and for developing countries, through the World Bank, for example; in addition, they were used in such a wide variety of scientific disciplines as paedagogics, criminology, psychology, sociology, and economics. As a result, aspects were taken into consideration which meant a considerable expansion of traditional cost-effective- ness analyses in the sense of micro-economic evaluation, so that they included

- an exploration of presumed effects and side-effects as a basis for determining effectiveness parameters,
- using a variety of methods from different social sciences, and

- involving the carriers of the measures and programmes more intensively in the evaluation.

The unintended effects and side-effects of projects, programmes and policies are thus just as much a subject of the evaluation as the questions of whether the aims laid down have been achieved, and whether the criteria that are generally applied (e.g. technical quality, or effects on employment) have been satisfied. When evaluation is understood in such a wide sense, adapting or developing procedural methods so that they are appropriate to the health system still requires considerable methodological research and development work; in particular, it also needs interesting applications - an experiment such as the Bavarian Contract, which was simultaneously aiming at a intensification of ambulatory care and at cost containment, was thus a "lucky coincidence" for our evaluation research.

3.3 Methods

The methods employed range from qualitative techniques of empirical social research, via the use of econometric and psychometric models, to analytical fantasy. The following aspects are especially important [8314; 8429; 8502].

Exploration of Hypotheses: In order to determine (possible) effects and side-effects, press analyses, literature research, hearings with interest groups, discussions with experts, guideline interviews, written questionnaires, and secondary analyses of available data stocks were carried out [8210-8217]. If possible, other procedures, such as Delphi methods or expert dialogues, which tend to a more qualitative approach, can be used. A parallel application of such methods is necessary in order to be able to start with the evaluation from a more or less content-representative spectrum of the expected effects, side-effects and consequences; this, we believe, is a prerequisite for the scientific quality of an evaluation. What seems particularly important in this respect is that the subject of research should not be confined to aspects as fixed a priori by research paradigms specific to the field in question, or to the goals as formulated by the individuals immediately involved with their vested interests; rather, there should be research in the sense of a multi-criterion evaluation of explored and selected, i.e. "representative", aspects of the effectiveness system. Using the evaluation of the abovementioned health policy as an example, Figure 6 shows the corresponding research process.

Multi-Method Evaluation: For testing the hypotheses determined in this way, there needs to be a parallel application of a variety of methods from different scientific paradigms; one single method is not sufficient for this purpose.

Multi-Level Evaluation: In order to avoid the danger of ecological fallacies as far as possible, and nevertheless to profit from the availability of already existing aggregate data, research needs to operate on the levels both of aggregate and of individual data; thus, for example, we use

- routine data from sick-funds' and physicians' associations, and also the results of surveys covering doctors and patients,
- aggregate data on all Bavarian physicians, but also longitudinal data on the process of services and prescriptions of individual doctors [9931].

Cross-validation of these various data sources can, in addition, contribute to a more precise knowledge of data quality [8412].

Multi-Source Evaluation: The fact that the information available comes from sources where interests are involved makes it necessary to consider the same circumstances from different angles, e.g. from the sick-funds' financial data, from the service data of physicians' associations, or from the point of view of patients, hospital doctors and office-based physicians. This is especially important in the health care sector, because there exist strict limits to the general availability of data - and thus to the possibility of acquiring detailed knowledge of the data quality in each case -, which result from the fact that important information is often the exclusive property of individual institutions within the semi-autonomous health care administration.

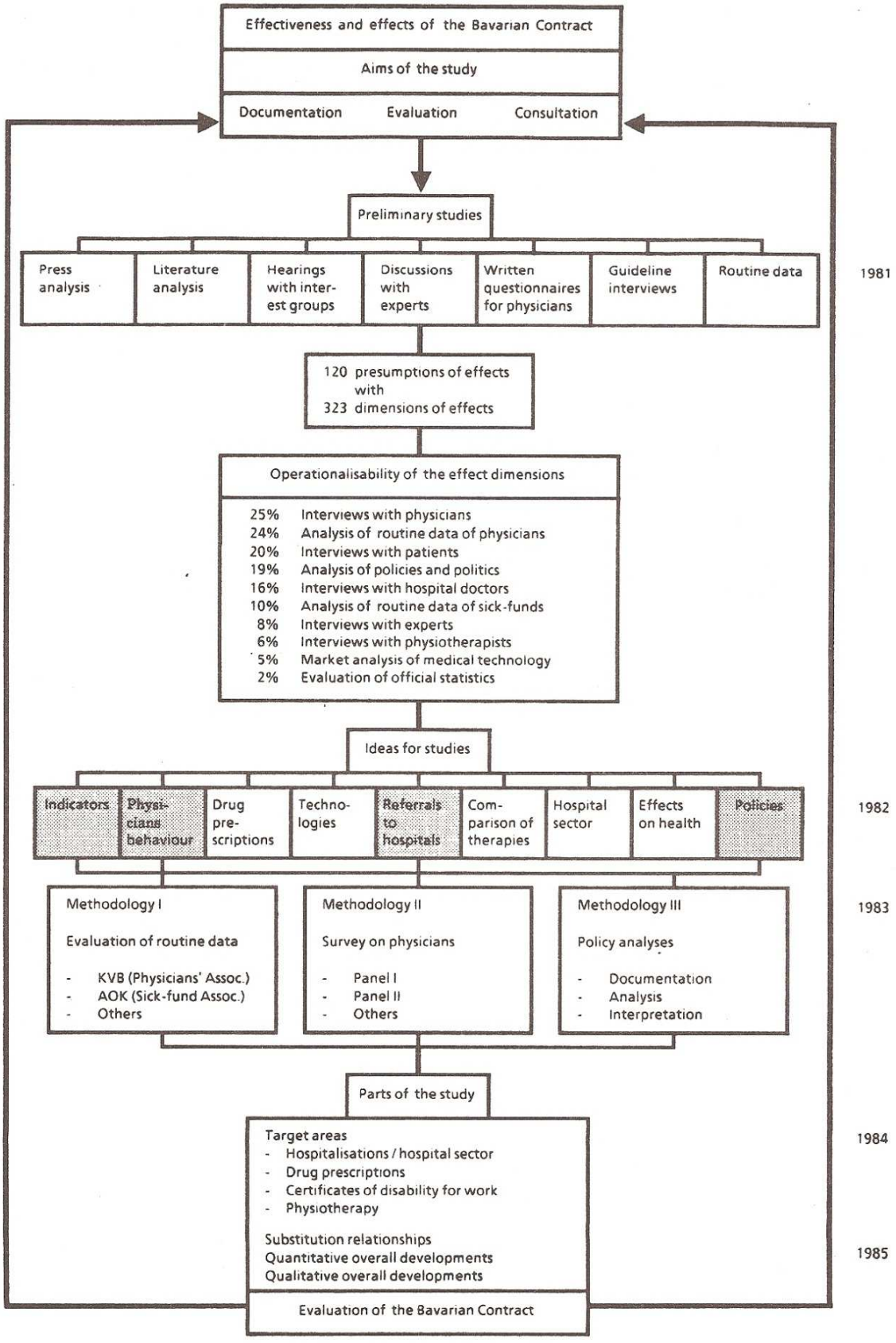
Multi-Control Evaluation: Normally, a comparison of the values of effectiveness parameters in a survey population or an experimental group and a (comparable) control group is taken as a basis for solving the problem of assignability that is basic to any evaluation. With more complex measures such as comprehensive health policies, additional use must be made of a series of different control possibilities:

- control variables; these are usually secured by a multi- criterion evaluation,
- control areas, i.e. areas not affected by the measure or policy,
- control times, i.e. developments over a period of time before a measure has been taken,
- control estimates in the sense of validity estimates of (presumed) results by various social groups; this procedure is also known as "shadow control" [9923].

Such controls will produce evidence, but no proof; in the paradigm of social sciences, there are no causalities that cannot be refuted.

Multi-Stage Evaluation: In pursuing indirect effects, different investigation methods should be put into a series so that connections between different features can be established; this is necessary above all when it is a question of determining the effects on health of economic and industrial measures - e.g. dams or other large-scale technological projects [8423; 9921]. The most important tool used for this purpose was the product path analysis [8208].

Figure 6: Course of research for the evaluation of a health policy measure



Multi-Analysis Evaluation: For evaluations, it appears to be especially important to use a variety of procedures for data analysis side by side; if it were decided prematurely to do without descriptive representation in favour of multi-variate procedures, this would mean the loss of knowledge which could be gained through new presumptions and hypotheses formulated by the people involved (the concerned or the participating) as a reaction to comprehensible descriptive representations; the use of different multi-variety procedures is necessary because most procedures are very sensitive as towards their underlying assumptions and restrictions.

Multi-Indicator Evaluation: For the same or a similar state of affairs, such as disability for work, health services research frequently offers or requires widely varying indicators: illness, number of days of disability for work, number of cases of disability for work, sickness benefit, etc. As the relative validities of such indicators are often not known precisely, it is important that there should be a comparison of indicators.

Interim Résumé: These methodological experiences or principles, which took shape again and again in our studies, make it difficult to arrive at an unambiguous, self-contained evaluation; our evaluations are thus unavoidably open systems with a variety of facets.

Instruments: In the main, our evaluations are based on routine data, interviews, and policy analyses.

- Routine data analyses were performed, for example, on files of data on the frequencies and groups of medical services, on the costs of medication and other prescriptions, using individual data from Bavarian office-based physicians. These individual data were compiled into aggregate data for 58 groups of doctors, which were defined according to their specific professional or practice characteristics. In order to test for quality and plausibility, files of longitudinal data on individual processes were set up. In addition, use was made of a large number of routine data lists from the physicians' associations, sick-funds and other organisations in the health care system. Developing, preparing, processing and evaluating such a variety of data and files in such large quantities required considerable funds [9931].
- Interviews were made with Bavarian physicians, first as pilot studies in 1981-82 (n=205) and 1982 (n= 202), then as panel surveys in 1982-83 (n=3,285) and 1983-84 (n=3,187); they were extended to 1,490 (or 1,404, respectively) office-based physicians in the rest of the Federal Republic [9914]. In addition, hospital doctors (n=400) and hospital patients (n=781) were interviewed.
- Policy analyses were carried out with the help, or in the form, of expert discussions, analyses of official documents, press and scientific publications, and contextual descriptions focusing on the institutions involved in a historical as well as interest-related perspective. [9939].

A survey of the most important bodies of data and data sources for evaluating the Bavarian Contract is shown in Figure 1.

3.4 Results

The following results appear to be particularly worth passing on; details and further results are contained in the bibliography.

Variety of Aims: Regardless of what evaluation object is concerned, a typical phenomenon is the tremendous variety of presumptions, expectations and fears concerning the goals, effects, consequences and effectiveness ascribed to a project or a measure [8210-17; 9919]. As a result, unidimensional evaluations are highly problematic.

Project Effects: Normally, the effects and side-effects of measures which extend to very varied social fields, differ greatly and are of an indirect nature [8210; 8417-21; 9923]. Large-scale projects in the economy and industry often have considerable indirect effects on the social situation and the state of health of populations [8423; 8510].

Cost-Effective Service and Prescription Behaviour: By means of oral interviews carried out throughout the Federal Republic with office-based general practitioners and internal specialists (n=205), it was examined whether, in their opinion, there really was room for manoeuvre between their own services and their prescriptions, which is implicitly assumed in various cost-containment strategies. The result was that the doctors interviewed saw great substitution possibilities between alternative forms of treatment: in each case, about one third of them considered reductions in the amount of drug prescriptions and in the number of hospitalisations to be feasible; half of them felt that if they were to send fewer patients to hospital, they would have to make a greater use of medication, and a somewhat smaller group would, under such circumstances, have to transfer more patients to colleagues for further ambulatory treatment [8407].

Effects of the Bavarian Contract: The investigations concerning the Bavarian Contract [9928-9940] have shown inter alia that during the first three and a half years in which it was in effect, some rather intriguing developments occurred:

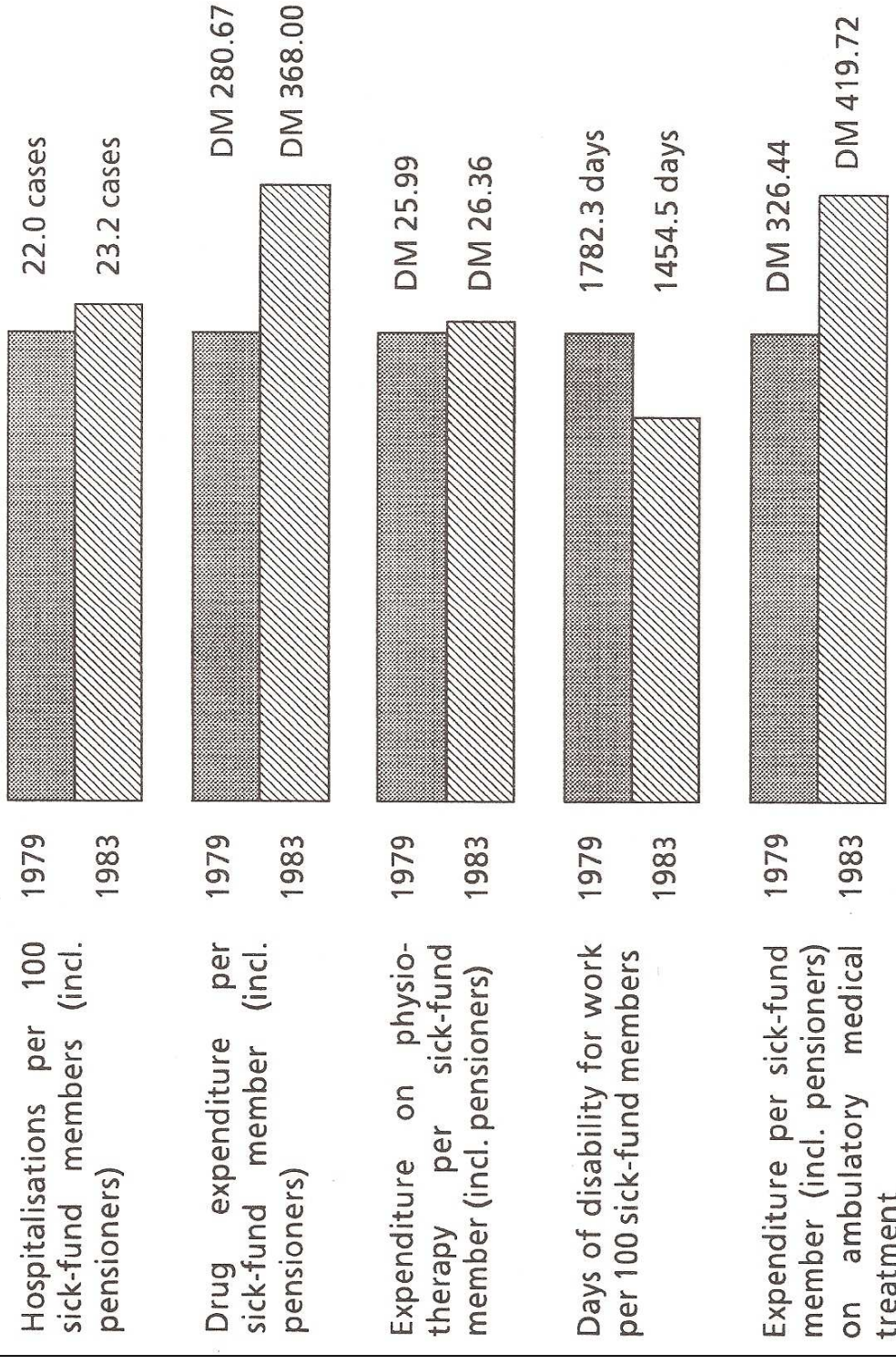
- While the total number of cases remained virtually constant and the number of cases per doctor declined, there was a general intensification of the physicians' services (increase in the average value per case) and a particular increase in ambulatory diagnostics (e.g. laboratory services) and in the number of home visits [9932].
- Hospital cases among RVO-patients in Bavaria stagnated or declined only for a short period (1979-80), though for technical reasons these data do not allow to draw far-reaching conclusions on the number of physician-induced hospitalisations [9933].
- The amount of medication prescribed by physicians did not lead to a curbing of the growth in drug expenditure of the Bavarian RVO sick-funds [9934].

- The remarkable decline in the growth rate of expenditure for physiotherapeutical services prescribed by physicians was probably not only caused by the Bavarian Contract, but also by new, nation-wide regulations (guidelines on drugs and adjuvants, prescription fees) [9935].
- There was a drastic decline in the amount of disability certificates issued by physicians related both to the number of cases as well as days in, or for, which patients were certified as sick and sickness benefits were paid; this, however, was probably due, above all, not to the specific recommendations of the Contract, but rather to general economic recession [9936].
- The development in the hospital sector under the influence of the Bavarian Contract was investigated by means of trend and correlation analyses, and by comparing data sources (statistics by hospitals, the sick-funds, and official statistics). For the development in services, financing and expenditure, it was established - with global aggregation levels and indicators - that the trends here are determined to a considerable extent by the range and the specialisation of the services offered by the hospitals, but hardly by health policy measures directed at the demand side [9938].

Some results are shown in Figure 7. It becomes clear that, overall, health care in Bavaria between 1979 and 1982 only in part developed in the way intended (and also expected) by the partners to the Bavarian Contract; it was not possible to find evidence of the substitution movements taking place between the services and prescriptions of physicians - at least not unambiguously and in any major quantities [8408; 8410; 8411; 9937]. As a result, the hoped-for reduction in the growth rates of the sick-funds' expenditure items, which were covered by the contract, did not occur; the majority of Bavarian RVO sick- funds did not succeed in achieving their aim of keeping premium rates stable. Even so, the Bavarian Contract has not remained without effect in the field of health policies: it confirmed the rightful claim of the organisations of sick-funds and affiliated physicians to self-governance; it played a certain role as a precursor for areas outside Bavaria as far as contract policies are concerned; and it made a major contribution to the debate over structural policies concerning the status, functions, and mutual relationships between the outpatient and in-patient sectors of the health care system [9930; 9939].

Unconventional Treatment for Cancer: In a pilot study on the extent to which unconventional methods are used in the fight against cancer, patients in eight different health care institutions were interviewed in order to establish in advance what the people concerned looked upon as "conventional" and "unconventional" methods of treatment; more than three quarters of the interviewees were then identified as users of unconventional procedures. On the basis of this survey, it was also possible to show that most of these patients look upon unconventional methods of treatment as a complement, and not as an alternative to "traditional" medical procedures, and that their use of those forms of therapy is not necessarily due to a dissatisfaction with conventional methods [8506; 8507].

Figure 7: Indicators for the development of the services rendered and prescriptions issued by office-based physicians in Bavaria between 1979 and 1983 (AOK-insurance only)



Large-Scale Technologies: When we took stock of economic assessments of large-scale medical technologies in the Federal Republic, we found that the present practice as far as public investment planning and decision-making in this field is concerned is far removed from a systematic and well-planned application of the instruments of economic evaluation. However, it must be admitted that the use of these instruments is at present realisable only for information-oriented - and not for decision-oriented - efficiency analyses. Weak points in those evaluation approaches are above all the problems of selecting the decision alternatives and of taking implications for the system adequately into account. Special problems in evaluating large-scale technologies occur in connection with their cumulative (instead of substitute) use, and with the high speed of technological progress [8312; 9906].

3.5 Prospects

Innovation: The main innovative aspect is the multi-criterion evaluation, which proceeds from a broad exploration of hypotheses, in combination with an evaluation that works on several levels, with a number of sources, control procedures, methods of analysis, and explicit comparisons of indicators, and at different stages of connections between effects. What is unique is the broad range of the data and files used (in the study on the Bavarian Contract) and also the possibility of validity tests by comparing data sources. A further new aspect was the availability and processing, in accordance with the requirements of data protection, of a large number of process data from the statutory health insurance organisations, and likewise the cooperation between a major research establishment and the Association of Sick-Fund Affilated Physicians, several sick-funds and the state administration. New is also the attempt to develop further and to apply evaluation methods to a test case, namely a major and complex political experiment in the health sector, instead of taking as an example special technologies, procedures and resource applications, which are comparatively easy to survey. Apart from the research benefit that is to be expected from this, there is, however, also an increased research risk, which can only be taken in the organisational environment of a major research institution.

Usefulness: Evaluations are an important means for increasing our knowledge about structural and functional connections in the health system; thus, they are in line with one of the long-term tasks of the MEDIS Institute. At the same time, they are intended as a basis for aids to decision making; the usefulness of the documentation, evaluation, and consultation as provided by MEDIS was emphasised frequently by the project partners in the course of the Bavarian Contract study. Intensive search for procedures for assessing technologies - a practical example of the evaluation - turns out to be useful even if it is not directly intended as a decision-making tool, but only as a basis for discussing (possible) decisions in terms of their (possible) consequences.

Conclusion: Evaluation research is a central theme of applied health system research; the development of methods necessary for this purpose can be considered a part of basic research.

4. Economy and Health

4.1 Survey

Our work on the relationships between society, economy and health has so far concentrated on research into the effects of economic instability, and in particular of unemployment, on health. This subject - which is to be seen in connection with primary prevention and social aetiology - was approached from four sides:

- Regular surveys of the present state of research were secured and communicated by publishing a newsletter on "Economic Instability and Health". Also, meta-analytical essays were produced, reviewing research in this field.
- With our own micro-analytical investigations, we examined the hypothesis of a connection between unemployment and physical as well as mental health among unemployed persons by means of interviews and by using health status indicators that had been developed by the working group.
- Other investigations used the possibilities of macro-statistical indicator models to explain, and to offer prognoses on, the development of mortality caused by unemployment, by means of regression and time series analyses.
- Finally, the limitations, possibilities and tasks of this field of research were discussed at various conferences.

In investigating the connections between society and health, the influences of food, food price policies, income distribution and development strategies on the social situation and health of populations were also dealt with [7911; 7912; 7915; 8104; 8206].

4.2 Problem

Beyond that, the relationship between society and health is relatively unexplored. Nevertheless, in the wake of the worldwide recession, economic crises are regarded as risk factors for health - just as economic development has otherwise always been considered beneficial to health: many research findings from developing countries provide very clear support for this thesis. Can it be transferred to developed European societies, in the same way as the first thesis? What risk structures exist in the wider social and economic environment of populations? Does unemployment "cause" illness? In the late 70s, such questions were heavily influenced by the econometric analyses of Harvey Brenner, who used multiple regression calculations with time

series for mortality and economic activity in the United States of America to show that long-term economic growth is beneficial, and that recessions - and in particular high levels of unemployment - are harmful, to health. Brenner arrived at similar results for the United Kingdom and other countries when analysing the economic data and mortality data relating to specific causes of death. What conclusions can be drawn?

- If it is probable, though not yet proven, that economic instability and unemployment are risk factors for health, which might perhaps have a more powerful influence than many a virus, then basic research is challenged to investigate "causal" relationships between the economy and health.
- The hypothesis of a connection between the economy and health also challenges applied research to evaluate the effects and side-effects on health of economic and social policies.
- Furthermore, the presumption of a reciprocal connection between the economy and health expands the field of health policies. It leads to a reassessment of the goals of health policies, which go far beyond the bounds of the health system as such [8315].

This means that research into the interrelationships between society, the economy and health can be regarded as a central subject of health economics [8301].

4.3 Methods

This field of research is worked on by experts from a wide variety of specialist disciplines: e.g. epidemiology, sociology, psychology, economics, statistics, history, psychiatry, medicine, and physiology. Each of these disciplines has its own traditional canon of research. For this reason, there can be no uniform research concept.

Exploration of Hypotheses: At various conferences organised by the WHO and MEDIS, or with MEDIS, hypotheses concerning the content and methodology of research were developed and discussed together with experts from the disciplines mentioned, and the attempt was made to integrate them into new research projects [8305]. An annual newsletter which has been published by MEDIS since 1981 as a Clearing House for the WHO in this field of studies exercises a similar function. Finally, metaanalytical review essays for the purpose to explore hypotheses and to compare methods were produced [8315; 8422; 8427; 9924].

Individual Studies: In a written poll by the Institute for Labour Market and Occupational Research in the Federal Labour Office, some of the health status indicators developed at MEDIS were used with a representative cohort of (n=1,297) unemployed persons and a control group of (n=930) employed persons; the results were compared with those of a second survey after some 18 months. The questions were mainly directed at complaints and mental balance, using appropriate scales tested on total populations [8302].

Figure 8: Comparative advantages and disadvantages of micro versus marcro approaches to investigating the relationships between the economy and health

	Macro studies	Micro studies
1. Time - chance to:		
Study long-time perspectives	more	less
Identify past trends	more	less
Identify future trends	little	little
Disaggregate time horizons	less	more
2. Space - chance to:		
Get international data	more	less
Produce spatially comparable data	less	more
Disaggregate spatially	less	more
3. Content - chance to:		
Study large populations	more	less
Distinguish social groups	less	more
Include rare events	more	less
Study long-term effects	more	less
Study indirect effects	more	less
Operationalize own constructs	less	more
Include subjective self-assessments	less	more
Use available control variables	more	less
Include new variables	less	more
4. Data - chance to:		
Use time-series data	more	less
Use cross-regional data	more	less
Analyze a complete data set	more	less
Use periodical data	more	less
Continue data production	more	less
Get data early	much	much
5. Method - chance to:		
Solve problem of self-selection	more	less
Solve problem of inverse causation	more	less
Solve black-box problem	less	more
Exclude intervening variables	less	more
Exclude Hawthorne/Heisenberg effects	more	less
Include specific control groups	less	more
Include specific control variables	less	more
Use tested data collection tools	less	more
Control data quality	less	more
Be betrayed by ecological fallacy	more	less
6. Results - chance to:		
Generalize results	more	less
Have predictive power	more	less
Infer (quasi-)causality	less	more
Obtain face validity	less	more
Test hypotheses	less	more

Aggregate Studies: Investigations with regression analyses were carried out, using time series on the development of mortality, unemployment and other economic indicators for West Germany between 1950 and 1980. Mortality figures, specified for age and sex groups, were analysed for selected causes of death and for overall mortality [8304; 8501].

Comparison of Methods: Apart from a few minor differentiations, the main argument concerning the correct approach to research consists in the confrontation between present-day sociological or econometric approaches on the one hand, epidemiological or psychometric ones on the other. If a variety of criteria are used for comparing the advantages and disadvantages of micro- and macro-studies (see Figure 8), then there is almost a stalemate, provided one admits that neither approach is able to arrive at "causal" results, but only - and that is typical of social sciences - at evidence. If one considers not individual questions but the entire field of study, then it seems sensible only to work with multi-method approaches, although this will mean that studies do not always arrive at compatible results [8427; 8512].

4.4 Results

Apart from the findings in comparisons of methods, which is an important secondary motive for carrying out the studies mentioned, the following are the most important results (see also Figure 9).

Individual Results: Unemployed men below the age of 45 suffer more frequently from considerable psychological impairments (58 %) than employed persons of the same age (36 %). This does not apply to women; instead, it is possible that unemployment tends to relieve them of the burden imposed by their dual roles. After the first few months of unemployment, psychological disturbances occur more frequently than physical complaints, which increase only at a later stage [8302].

Aggregate Results: It was not possible to establish for the Federal Republic of Germany such clear statistical evidence of the influence of unemployment on mortality as was demonstrated for the United States of America. Not even the connection between suicide frequency and unemployment, which has been confirmed empirically in many cases, can be demonstrated for West Germany. There is, however, a connection between the unemployment rate and infant mortality, which is statistically secured, though fragile in view of changes within the observation period [8304; 8501].

More General Results: Meta-analytical research has revealed that there is now an adequate empirical basis for sketching the various links between unemployment, work and health as follows [9924]:

Figure 9: Unemployment and health

Psychometric approach

Distribution in percentages of psychological impairments among younger unemployed and employed persons

Psychological disturbances (Scale values)	Persons less than 45 years of age			
	Men		Women	
	Un-employed N=742	Employed N=282	Un-employed N=519	Employed N=236
None/Slight	41,8%	64,5%	49,1%	53,4%
Major	58,2%	35,5%	50,9%	46,6%
Total	100,0%	100,0%	100,0%	100,0%
χ^2	42,41		1,18	
p	$<0,01$		$>0,05$	

Econometric approach

Regression relationship between mortality figures and unemployment rate

Mortality figures for:	USA, 1940-73/74	FRG, 1950/52-79/80
Total population, all causes of death	⊕	-
Infant mortality, all causes of death		⊕
Suicide	⊕	-
⊕ P $<0,05$ - P $>0,05$		

- Work can lead to illness: Impairments which lead to unemployment normally result from harm done to one's health at former places of work, or they are caused by generally hazardous working conditions. Among these, we can also include job insecurity: fear of unemployment increases susceptibility to illness, and this not only among persons who could be anyway assessed as psychologically unstable.
- Illness can lead to unemployment: Not infrequently, unemployment is partly caused by impairments that existed beforehand, and which moreover are also responsible for the duration of unemployment or, quite generally, reduce the chances of (re-) integration into the labour market.
- Unemployment can lead to illness: Unemployment seems not only to make existing physical illnesses worse, but also to favour the genesis of new illnesses. This mainly applies to problem groups, such as the elderly unemployed, but also to babies and children of unemployed persons. The connection between unemployment and mental health has been proven, in particular as far as depression and alcoholism are concerned.
- Unemployment can lead to health: Relief with positive effects on health has occasionally been observed in persons on short-time work, and in the case of short-term and even long-term unemployment, provided alternative social roles are available and activities can be practised which are regarded as meaningful (e.g. part-time work in the agricultural sector, illicit work). Unemployment can also be experienced as something positive - provided a minimum of social security is guaranteed.

The links between unemployment, work and health are considerably moderated by the particular social and personal characteristics of the persons concerned.

4.5 Prospects

Innovations: The main innovative aspects are the parallel use of various methods within the same research group, and the application of the Institute's own health status indicators first used in a population study in unemployment research. Another innovative aspect is that the essential hypothesis in social aetiology of a connection between health and society was tackled directly, and was not only dealt with in relation to a few detailed problems of only limited scope. Finally, it is important that the further, manifold relationships between work, unemployment and health - and not just the direct links - were taken up and analysed quantitatively.

Usefulness: In 1979, the European regional office of the World Health Organization, in collaboration with MEDIS, instituted this focal point of research for Europe. National governmental organisations only gradually expressed an interest. The Council of Europe is at present making relatively extensive use of the corresponding research results - in terms of contents and methodology - contributed from the MEDIS Institute [9927]. So far, political consequences have only been discussed there, but they have not yet been drawn either here or there. Perhaps it is nevertheless useful if science draws attention to the social and health

implications of a current economic problem, which could and should be a point of departure for primary prevention.

Conclusion: A subject of health economy that is often neglected in favour of financial aspects is the exploration of the relationships between the economy and health, and as such it is a crystallisation point for socio-economic health system research.

5. Further Topics of Research

5.1 Survey

In addition to the main topics named and subject to need or demand, some further aspects of health system research have been treated; they can be classified under the terms: health economics, health planning and health system comparisons.

5.2 Health Economics

Survey and Problem: By health economics we understand not only the application of financial economics to the health system, but also deliberations, and the gradual development of theories, on the product "health" as well as the production functions of health care and of economic structure. Hence, in addition to portrayals of health-economic aspects and problems, we include endeavours to deal with effectiveness and its measurement [8005; 8426].

Methods and Results: The works published were papers, presenting critical views on the development and control of health care expenditure in the Federal Republic of Germany [8416; 9915], on the hospital-financing system [8306], and on initial steps towards cost containment in the health care system [8415; 8509]. They were supplemented by theoretically orientated reflections on the problems of defining and measuring efficiency and effectiveness [8111; 8307; 8308].

Prospects: The usefulness of such research lies primarily in reflections on more general questions beyond concrete project work. The innovation potential of such research does not lend itself to predictions.

5.3 Health Planning

Survey and Problem: Planning procedures to curb expenditure and improve quality in the health care system have been successfully tested and implemented in different countries, e.g. the United States of America. In West Germany only very first approaches to this problem exist so far. The possibilities and limits of health planning are therefore being subjected to critical analyses. Many other questions, some of which have already been detailed (e.g. health measurement and evaluation), come under the heading of this task. Health planning is understood to be the iterative attempt to solve problems in the health system systematically.

Methods and Results: First and foremost are the attempts to systematise the main elements of health planning - goal analysis, the information situation, the development of measures and strategies, feasibility studies, implementation research, and evaluation - and to test their applicability to Central European, pluralistic health systems. In particular the workshops held in cooperation with the WHO-EURO and the Academy for Public Health on "Evaluation and Management in the Health System" serve this purpose; the lectures and dissertations developed and discussed there [8567-69; 8573-76; 8580; 8590-92] are to be prepared for drafting a handbook on health planning after first practical experience has been gathered. Health planning also comprises the analysis of future aspects and the formulation of scenarios of alternative future developments, e.g. under conditions brought about by changes in the age composition of the population [8303; 8405].

Prospects: The utility of attempts to rationalise decision making processes in the health system is evident; in particular innovative are the interdisciplinary systematisations of the main elements of iterative planning or problem-solving processes and their backing up by other studies of the working group.

5.4 Comparisons between Health Systems

Comparing different health care systems serves to protect against research parochialism, unnecessary doubling of research and development in other sectors, premature generalisations of national features, and fatalism towards solving certain problems, by subjecting the home health system to comparisons on at least three levels:

- regional comparison: (parts of) systems of health care and the cause of diseases in other countries, even - to have an extreme point of reference - in countries of the Third World;
- temporal comparison: possible, even utopian designs of health care systems as part of futurology; quasi-time comparisons to be achieved by regional comparisons;
- sectoral comparison: other areas of social production or services (e.g. infrastructure, energy), particularly methods of analysing (the health implications) of these areas.

Nearly all research questions considered by the working group, as already presented in detail, are investigated on the basis of (health-)system comparisons. Further topics are prepared occasionally: problems of health system research and health policy related to developing countries (e.g. conceptualising a West German strategy for foreign aid in the field of health, and the control of its implementation [8219]), the comparison of various care patterns adopted in the treatment of chronic psychotics in different European countries [8571; 9920], reports on aspects or special features of the West German health system (as compared with other countries) [7914; 8413]. In this connection a study should be mentioned which, by means of factor and cluster analyses, quantitatively structured the spectrum of health experts' attitudes and opinions concerning health policy [8105; 8205; 8409]. Comparisons between health systems are especially useful since they (can) reveal innovations from other health systems and so give rise to new hypotheses; they also help to prevent premature generalisations.

6. WHO-Collaboration

In April 1984 the MEDIS Institute was appointed by the World Health Organization to be its Collaborating Centre for Health Planning and Health Economics. This rare distinction reflects a plethora of earlier mutual fruitful advisory and research contacts and is evidence of the intention of both partners to continue and extend these relations.

6.1 Focus of Activities

The research, advisory, and training activities of the WHO collaborating centre for health planning and health economics basically cover the following areas of research, which correspond to the research and development programme of the GSF and simultaneously act as a scientific support for the WHO strategy:

Health Planning: Advanced training courses held by health experts and executive personnel from German-speaking Central Europe serve as the basis for the elaboration of recommendations for initial steps in health planning. The first International Workshop on "Evaluation and Management in National Health Systems" in the German language took place at Lustheim near Munich in June 1985, followed by a second in Grevenbroich near Düsseldorf. The courses were organised by MEDIS in collaboration with the Academy for Public Health (Düsseldorf) and the WHO (Copenhagen and Geneva). The workshops discussed the most significant elements of problem-solving and management processes in the health care system, taking as an example the intensification of primary health care; this was done against the conceptual background of the "Managerial Process for National Health Development (MPNHD)" as conceived by the WHO, and of "Strategic Management", a model developed by

business science. A question of particular importance was whether the general strategy recommendations proposed by the WHO can also be applied to Central European countries or how they can be adapted to local conditions. Evaluation, i.e. determining achievement of objectives and (side-)effects, was especially underlined as one of the possible points of departure and arrival for management processes. Further main points were: identification of goals, establishment of priorities, formulation of strategy, planning, financing, implementation.
The 22 participants in the first workshop came from Austria, Denmark, the Federal Republic of Germany, the German Democratic Republic, Hungary, the Netherlands, Switzerland, the U.S.A and Yugoslavia. Owing to strong response, a second workshop was held, attended by 16 participants from 5 Central European countries. Further courses of this kind are planned.

Cost-Effectiveness Studies: The forms of treatment for chronic patients - particularly the mentally-ill - currently show considerable differences within Europe and within individual countries. Varying are, above all, the shares in-patient, partial in-patient, and out-patient modes of care have in psychiatric care. There is to date virtually no information revealing which costs and effects (monetary and non-monetary) are linked to the various treatment strategies. MEDIS is responsible for coordinating an international comparative study on this subject. The majority of the 18 participating working groups from 14 countries which have been concerned with cost-effectiveness studies on psychotic patients met at a conference held at the MEDIS Institute in December 1985 to discuss their interim survey reports, which are to be published soon. In cooperation with the hospital of Haar near Munich, MEDIS is carrying out its own survey which focusses on time-budget surveys directed at schizophrenic in- and out-patients (and their nursing personnel). Apart from answering the question as to which indicator systems are most suitable, it is also necessary to ascertain whether out-patient treatment is, on the whole, not in fact more expensive for patient, family and society than in-patient treatment, provided one takes the considerable non-institutional costs (e.g. care by non-professionals, expenses of the local community or the state) into account - a question extending beyond the target group of psychotics.

Economic Performance Indicators: At an initial planning meeting in December 1984, organised in cooperation with the European Regional Office of the WHO, a Europe-wide poll on the topic of information systems about the efficiency of national health systems was prepared. The purpose of this survey is to collect information on the economic indicators applied by selected European countries in the evaluation of health care processes, viewed from the aspects of resource consumption, efficiency of the production of services, and distribution of costs and benefits. Such indicators (systems) are to be described and analysed as examples for three different levels or elements of the national health systems: for (1) the health care provision in a certain area (e.g. a federal state or planning region), (2) a population-orientated health programme (e.g. mother-child programme), (3) specific care institutions (e.g. hospitals or group practices). Respective material was gathered by several participating countries during the year 1985 and first examined at a working session which took place in the MEDIS Institute in December 1985. In 1986 more countries and working groups will be involved. A

comprehensive report on innovative economic indicator systems in the national health systems of European countries will probably be drawn up in 1987.

Training in Health Economics: The goal of the activities in the field "Training and further training in health economics" is the promotion of a practice-related health economics in the fields of science and politics. Parallel to surveys in other European countries and the United States, a survey on the themes and didactic methods dealt with at meetings on health economics was carried out in 1984 at West German universities and non-university institutions. In June 1986, a multinational conference took place to cater for an exchange of experiences on contents and methods in the conveying of health economics, as well as for an exchange of views or people working in the health care system.

Other Areas of Cooperation: Further subjects of cooperation between WHO and MEDIS were and continue to be other aspects of health planning, manpower planning, research priorities, and generally socio-economic health system research.

6.2 Advisory Activities

The following outline illustrates the commitment of colleagues of the working group as advisors to the WHO.

1978 Detlef Schwefel (NGO Representative): International Conference on Primary Health Care. Alma Ata, 5-17 September 1978

1979 Detlef Schwefel (Temporary Adviser and Working Group Rapporteur): Working Group on the Design of Training in Health Planning and Management. Berlin (West), 3-6July 1979

1979 Elisabeth Redler (Temporary Adviser): Workshop on Health Economics Research. The Hague, 24-27 September 1979

1979 Detlef Schwefel (Temporary Adviser and Working Group Rapporteur): Research Study Group Meeting on Nutrition in Primary Health Care. New Delhi, 3-8October 1979

1979 Detlef Schwefel (Temporary Adviser and Rapporteur): Planning Group on Economic Aspects of Health Care. Copenhagen, 4-29 November 1979

1980 Detlef Schwefel (Short-Term Consultant): Nutrition Monitoring, Evaluation, Planning and Surveillance in Indonesia. New Delhi, Jakarta, etc., 27 December 1979- 24 March 1980

1980 Jürgen John (Temporary Adviser) & Detlef Schwefel (Temporary Adviser and Co-Rapporteur): Planning Meeting for Study on the Influence of Economic Development on Health. Copenhagen, 11-13 November 1980

1980 Jürgen John & Detlef Schwefel (Temporary Advisers and Local Managers): Workshop on the Cost-Effectiveness of Recommending Standard Patterns of Long-Term Care. Munich-Neuherberg, 1-4 December 1980

1981 Walter Satzinger (Temporary Adviser): Workshop on the Control of Health Care Cost in Social Security Systems. Vienna, 25-28 May 1981

1981 Elisabeth Redler (Temporary Adviser): Planning Meeting for Study on Physicians' Use of Technology. The Hague, 23-30 June 1981

1981 Jürgen John & Detlef Schwefel & Wilhelm van Eimeren (General Management and Participants): Second Planning Meeting for Study on the Influence of Economic Development on Health. Munich-Neuherberg, 9-11 September 1981

1982 Detlef Schwefel (Temporary Adviser): Health for All Target Setting Group on Equity. London, 16-17 June 1982

1982 Detlef Schwefel (Temporary Adviser): Workshop on Health Manpower Planning. Lisbon, 12-15 August 1982

1982 Detlef Schwefel (Temporary Adviser): Workshop on Health Manpower Planning. Lisbon, 15-20 November 1982

1982 Jürgen John (Temporary Adviser): Consultation on Poverty and Health. Aberdeen, 23-26 November 1982

1982 Jürgen John (Temporary Adviser): Third Planning Meeting for Study on the Influence of Economic Development on Health. Leeds, 13-15 December 1982

1983 Detlef Schwefel (Temporary Adviser): Seminar on Unemployment and Health. Barcelona, 25 April 1983

1983 Jürgen John (Temporary Adviser and Rapporteur): Seminar on Unemployment and Health. Helsinki, 28-29 April 1983

1983 Detlef Schwefel (Temporary Adviser and Rapporteur): Planning Meeting on the Cost-Effectiveness of Managing Chronic Psychotics. Mannheim, 2-4 May 1983

1983 Karlheinz Zwerenz (Associate under WHO Fellowship): WHO International Workshop on Managerial Process for National Health Development. Leeds/Edinburgh, 10-27 July 1983

1983 Detlef Schwefel (Temporary Adviser): Second Meeting of the Study Group on the Development of Health Economics Training. Funchal, Madeira, 17-20 October 1983

1983 Detlef Schwefel (Temporary Adviser): Advisory Committee on the Health Economics Programme. Funchal, Madeira, 20-22 October 1983

1983 Detlef Schwefel (Temporary Adviser): Preparation of the National Workshop on Health Manpower Planning. Lisbon, 24-25 October 1983

1983 Detlef Schwefel (Temporary Adviser): Advisory Committee on the Programme of Social Equity and Health. Barcelona, 26-28 October 1983

1983 Detlef Schwefel (Temporary Adviser): National Workshop on Health Manpower Planning. Lisbon, 12-16 December 1983

1984 Nomination of the MEDIS Institute of the GSF as WHO-Collaborating Centre for Health Planning and Health Economics. Munich-Neuherberg, 11 April 1984

1984 Reiner Leidl (Participant): WHO-Workshop on Hospital Financing Systems. Kiel, 14-16 May 1984

1984 Jürgen John & Peter Potthoff (Temporary Advisers) & Detlef Schwefel (General Management and Chairman): MEDIS-WHO-Meeting on Underlying Processes of Becoming Socially Vulnerable. Munich and Neuherberg, 20-21 July 1984

1984 Detlef Schwefel (Temporary Adviser): European Conference on Planning and Management for Health. The Hague, 27-31 August 1984

1984 Detlef Schwefel (Temporary Adviser): WHO-North Western Regional Health Authority Workshop on Inter-Sector Planning. Disley, Cheshire, 2-5 September 1984

1984 Detlef Schwefel (Temporary Adviser): Planning Meeting for the Study on Economic Evaluation of Strategies against Tobacco, Alcohol and Drug Abuse. Disley, Cheshire, 6-8 September 1984

1984 Reiner Leidl (Participant) & Detlef Schwefel (Temporary Adviser): Budgetary Incentives for the Appropriate Use of Medical Technology. Cologne, 8-10 October 1984

1984 Detlef Schwefel (Temporary Adviser): Third National Workshop on Health Manpower Planning, Lisbon, 26-30 November 1984

1984 Jürgen John & Peter Potthoff (Observer) & Detlef Schwefel (Temporary Adviser): Planning Meeting on Economic Performance Indicator Systems. Munich-Neuherberg, 17-19 December 1984

1984 Jürgen John & Reiner Leidl & Karlheinz Zwerenz (Observers) & Detlef Schwefel (Temporary Adviser): Planning Meeting on Health Economics Training. Munich-Neuherberg, 19-20 December 1984

1985 Reiner Leidl & Detlef Schwefel (Temporary Adviser): Third Meeting of the Study Group on the Development of Health Economics Training, 25-28 June 1985

1985 Detlef Schwefel (Temporary Adviser): National Workshop on Planning and Organization of Comprehensive Mental Health Services. Madrid, 23-31 October 1985

1985 Reiner Leidl (Temporary Adviser): Working Group on Planning Methods for the Hospital Sector. Kiel, 25-29 November 1985

1985 Peter Potthoff (Temporary Adviser) Reiner Leidl (Rapporteur) Detlef Schwefel (Chairman): Study on the Cost- Effectiveness of Managing Chronic Psychotic Patients. Munich-Neuherberg, 16-18 December 1985

1985 Jürgen John & Detlef Schwefel (Temporary Adviser): Survey of Economic Information on Health System Performance. Munich-Neuherberg, 19-20 December 1985

7. Future Themes

Owing to the inevitably high pre-investments in health system research, future subjects of research must as a rule arise from previous work. After both the quality of routine data from the health care system and the development and application of new health status indicators had long been at the core of our research, the new main subject which evolved logically is the investigation, development and application of more complex indicator systems. Provided that such indicator systems contain process data or time series, they may allow attempts at estimating long-term trends in health care systems; this is even more likely to be the case when processes can be theoretically well-founded or when future developments can be sketched in scenarios. Indicator systems and long-term trends are therefore the two current and future main subjects of research in the "socio-economics" working group.

7.1 Indicator Systems

Rather complex indicator systems for health and health care services have so far been organised for and used in secondary analysis; moreover, they have been conceived, developed, and tested in socio-medical fields of application for areas where routine data are generally unavailable. Such secondary and primary indicator systems have been employed, for instance, in the evaluation of a specific health policy and are now being applied to evaluate the various forms of care in the treatment of chronic patients. The analysis, evaluation and planning of health care systems need complex indicator systems which fulfil not only the requirements of measurement theory but also social, economic, and political quality criteria: the ability to control the process of data production to assure their quality; the availability of indicators - even as proxy-measures - beyond certain interests and property-rights with data; the efficiency of data acquisition.

By means of a European survey on economic performance- indicators, these criteria pertinent to the macro-quality of indicators (systems) are to be elaborated and determined more precisely, and then serve as a blue-print for the construction of specific indicator systems. One field of application could be the plan to institute regional or national health reporting in the Federal Republic of Germany, which would pay due respect to the structures and interests of government, of the self-governing bodies in the health care system, as well as of science and

research; the erection of indicator systems beyond such criteria of macro-quality would not conform to the demands of the market. On the other hand, "ideal" indicator systems are also to be conceived in almost "germ-free" laboratory conditions and tested as models in selected regions. Such product- oriented studies will accompany demand-oriented ones, that is studies to evaluate certain procedures or technologies.

This task for the future can be summed up as the research and development programme adopted by the GSF: development and/or testing of index models and indicators (systems) for the analysis, evaluation and planning of health (partial) systems in various system ecologies; development of criteria to assess the quality of such indicators and indices; analysis of demand for, and the application of, indicators and their assessment criteria in the context of (applied) health care (socio-) economics and health care planning.

7.2 Long-Term Trends

According to our research and development programme, the tasks of our work on long-term trends in health and health care systems can be defined as follows: examination of the applicability and usefulness of approaches, models and procedures employed to estimate or even identify long-term trends, subject to the particular conditions of the health care system and its data (availability); testing of selected procedures for estimating and calculating trends by means of cross-section and longitudinal data files (individual indicators, process data, and time series).

Corresponding to the multi-method orientated concept of health system research, this plan will be tackled on two levels: first, (potentially) available longitudinal data on developments in health and the health system and on socially intervening factors will be created and (by means of descriptive and multi-variate statistical procedures) analysed; the same will be done with temporally interpretable cross-section files from various regions and countries, time-series analyses, trend explorations, model designs and simulations will have to be applied. Secondly, as such procedures are often unable to capture the essence of developmental processes (which obviously do not obey to solely mechanistic or stochastic regularities, but are also influenced by irregular, lateral, innovative, and "unpredictable" factors), alternative future developments must be simulated, supplemented by the developing and testing of "soft" procedures such as scenario techniques, Delphi methods, dialogues between experts, and the rules of analytical imagination. Both approaches will have to complement each other to investigate the long-term trends in health, health care, and the main social and economic factors influencing them. In this field of research not only the methodological procedures will be important, but also the results in substance.

8. Cooperation

The following cooperation with external partners deserves special mentioning:

- Academy for Public Health, Düsseldorf: evaluation and management in national health systems (1984 and later)
- Association of German Pension Insurance Carriers (VDR), Frankfurt: determination of the severity of chronic diseases (1981-1985)
- Central Institute for Medical Services in the Federal Republic of Germany, Cologne: diagnoses in out-patient care (1980-1985)
- Centre for International Migration, Frankfurt: programme evaluation (1983-1985)
- Council of Europe, Strasbourg: unemployment and health, (1984 and later)
- Department of Sociology, University of North Carolina at Chapel Hill, USA: international study on health policy (1980-1983)
- Division of Operations Research and Behavioural Sciences, The John Hopkins University, Baltimore/Maryland, USA: economic development and mortality (1980-1982)
- Federal Ministry for Economic Cooperation (BMZ)
  - ø project evaluation, project planning (1980-1981)
- Federal Ministry of Research and Technology (BMFT), Federal Ministry of Labour (BMA): symposium on the problems of secondary analysis of statutory health insurance routine data (1979)
- Federal Ministry of Research and Technology (BMFT), Federal Ministry of Labour (BMA), Federal Ministry for Youth, Family and Health (BMJFG)
  - ø intervention research (1979)
  - ø health reporting and long-term trends (1984 and later)
  - ø strategy of Foreign Aid for health (1980-1981)
  - ø project evaluations (1982)
- Free University Berlin
  - ø evaluation procedures (1980 and later)
  - ø health system research (1983 and later)
- Friedrich-Thieding-Foundation of the Hartmann-Bund, Bonn: programme evaluation (1983-1985)
- German Federal Parliament, Enquiry Commission: technology assessment of expert systems in medicine (1986)
- German Foundation for International Development (DSE), Berlin: evaluation procedures (1982 and later)
- German Society for Technical Cooperation (GTZ), Eschborn: health information systems (1981-1984)
- Institute for Labour Market and Occupational Research of the Federal Labour Office, Nuremberg: health impairments of the unemployed (1981-1984)
- Intergovernmental Bureau of Informatics, Rome, Italy: information systems in developing countries (1981)

- International Institute for Scientific Cooperation e.V., Schloß Reisensburg: health index (1979-1982)
- Organisation of American States (OEA) with the Economic Commission for Latin America (CEPAL): evaluation procedures (1983)
- Peruvian Ministry of Health: information systems (1981- 1984)
- Planning and Survey Departments of the Health Ministries of Spain, Portugal, Catalonia, and the Basque Provinces: manpower planning, health system planning (1984 and later)
- Research Unit for Medical Social Research, Berlin: social stratification of utilization of health services (1979- 1980)
- The Brookings Institution, Washington, USA: methods of health system comparison (1980-1981)
- Technical University Munich: quality assessments of gynaecological operations (1984 and later)
- University of the German Federal Armed Forces, Munich: health economics (1984 and later)
- World Federation (WFDFI) and Association of Latin American Institutions of Development Financing Institutions (ALIDE): project evaluations procedures (1982-1983)
- WHO-EURO, Copenhagen
  - ø economy and health (1979 and later)
  - ø health economics (1979 and later)
  - ø cost-effectiveness analyses (1980, 1983 and later)
  - ø equality of opportunity (1982)
  - ø cost containment in the public health system (1981 and later)
  - ø poverty (1982-1983)
  - ø manpower planning (1982 and later)
  - ø primary prevention (1984)
  - ø indicator systems (1984 and later)
  - ø health planning (1984 and later)
  - ø technology assessment (1984 and later)
  - ø mental health (1985 and later)
- WHO-SEARO, New Delhi
  - ø nutrition monitoring, evaluation, planning, surveillance in Indonesia (1979-1980)
  - ø nutrition research (1980-1981)

The following institutions have been participating in the study on the effects and effectiveness of the Bavarian Contract (1980- 1986):

- Free State of Bavaria, represented by the State Ministry for Labour and Social Order (StMAS)
- Association of Sick-Fund Affiliated Physicians of Bavaria (KVB)
- Association of Company Health Insurances in Bavaria (LdBiB)
- Association of Craft-Guild Health Insurances in Bavaria (LdJKK)

- Association of General Local Health Insurance Offices (AOK-LV)
- Agricultural Health Insurance Fund for Upper Bavaria

9. Conferences

For the purpose of preparing, monitoring, or publishing the research activities of the working group, or of supporting decision-making processes in Federal Ministries or in the World Health Organization, a series of conferences, meetings and workshops was prepared and subsequently held; many of them led to publications.

(1) Methods of Intervention Research in the Field of Cardiovascular Diseases, 22.-23.1.1979, Munich. A plan for intervention research was drawn up for the the Federal Government's programme to promote health research. 15 representatives from 3 countries took part in the conference. The minutes constituted the basis and a component of a plan for intervention research in the Federal Republic of Germany.

(2) Intervention Research, 17.-19.4.1979, Feldafing near Munich. By order of a number of Federal Ministries a plan for intervention research in the field of cardiovascular diseases was discussed with potential contractors of the project and subsequently modified. 38 representatives from the Federal Republic of Germany and 2 from abroad took part. The plan that was eventually arrived at constituted a basis for the promotion of research in this field.

(3) Problems of Secondary Analysis of Statutory Health Insurance Routine Data, 12.-14.12.1979, Munich. The prevalent hypotheses and the controversial experience as had been collected in various research projects which dealt with the validity and reliability of the routine data of the West German statutory health insurance scheme, were to be presented and discussed. 34 participants from all the main routine data projects took part. The most important papers were published in a GSF report and constituted the basis for further research.

(4) Cost-Effectiveness of Recommending Standardised Patterns in Long-Term Care, 1.-4.12.1980, Munich. In this workshop, locally coordinated by MEDIS on behalf of the WHO-EURO, questions of cost-effectiveness analysis related to the standards of treatment were discussed on an international and inter-institutional basis. 48 representatives from 17 countries took part. A "Country Statement" was drawn up by the German representatives. Later research was based on several experiences and approaches discussed during this conference.

(5) Influence of Economic Instability on Health, 9.-11.9.1981, Munich-Neuherberg. At this conference, held with the technical support of the WHO, the international level of research on the subject Economic Instability, Unemployment and Health was presented and discussed. The principal econometric, epidemiological, sociological and psychological approaches to this topic were represented by 30 participants from 10 countries. The proceedings have been published.

(6) Discussion Circles on the Bavarian Contract, 13.-14.7. and 28.9.1981, Munich-Neuherberg. The exploratory phase of this project required a hearing of the institutions and organisations participating in or affected by the Bavarian Contract. Thus representatives of the most important factions in politics, administration and professional associations received the opportunity to submit their comments and to discuss them with the initiators of the Contract. As a result, the hearings were a considerable source of assumptions guiding the evaluation of the Bavarian Contract.

(7) Managerial Process for National Health Development, 11.-12.5.83 and 12.-13.4.1984, Munich-Neuherberg. To prepare a series of training activities on health system planning which were geared to the concerns of Central European health systems, to be held under the joint cooperation of the WHO, the MEDIS Institute and the Academy for Public Health (Düsseldorf), the plan and the programme for a cycle of seminars on "Evaluation and Management in the Health System" were drawn up with the participation of the representatives of the institutions concerned. The corresponding workshops commenced in 1985.

(8) Indicator Systems / Long-Term Trends in Health and Health Care, 19.7.1984, Munich. In support of the Federal Government's promotion programme for health system research, two special meetings on health reporting and long-term trends were planned, prepared and organised parallel to the Third International Conference on System Science in Health Care. The papers of the speakers invited will be published; they are intended to serve as stimuli for the official research promotion programme.

(9) Underlying Processes of Becoming Socially Vulnerable, 20.-21.7.1984, Munich and Munich-Neuherberg. With the cooperation of the WHO, this conference was to carry out further investigations into the relationship between economic instability and health, more specifically from the sociological and psychological, rather than the economic viewpoint. 14 talks were discussed by 25 representatives from 10 countries. A collection of selected, revised contributions will be published in 1986.

(10) Systems of Economic Performance Indicators, 19.-20.12.1984, Munich-Neuherberg. On behalf of and with the cooperation of the World Health Organization, an initial planning conference was held in order to prepare a European study on innovative indicator systems for reporting on the economic aspects of health care; and a series of questions to be directed at the test participants was worked out.

(11) Training in Health Economics, 19.-20.12.1984, Munich- Neuherberg. An initial planning meeting of the WHO and MEDIS defined the general conditions for a German-language international conference on instruction and further training in health economics; it also prepared the implementation of this conference to be held in 1986.

(12) Evaluation and Management in the Health System, 10.-14.6.1985, Lustheim near Munich. In its capacity as WHO collaborating centre, MEDIS with the participation of the WHO (Copenhagen and Geneva) and the Academy for Public Health (Düsseldorf) conducted an initial German-language "Central European" workshop on health care planning. 22 representatives from 10 countries took part. The experience gained in the course of this workshop led to alterations in the design of the workshop and to several insights concerning the possibilities of implementing health care planning within pluralistic health systems.

(13) Evaluation and Management in the Health System, 17.-22.11.1985, Grevenbroich near Düsseldorf. This second MPNHD workshop was also a successful venture. 16 representatives from 5 countries took part. The workshop was proof of the demand for a constant offer of health care planning courses. It also provided ideas for the planned drafting of a handbook on health care planning.

(14) Cost-Effectiveness of Managing Chronic Psychotic Patients, 16.-18.12.1985, Munich-Neuherberg. On behalf of the WHO, MEDIS will be responsible for coordinating an international survey on the aspects of cost-effectiveness of different forms of treatment for chronic psychotics. 15 working groups from 12 countries presented their research reports, an anthology of which is to be published at the end of 1986.

(15) Survey on Economic Performance Indicators, 19.-20.12.1985, Munich-Neuherberg. Within the framework of a survey on indicator systems for the economic performance of health care institutions or systems in selected European countries, experience on the possibilities and limits of such indicator systems were presented and discussed. 12 participants from 8 different countries attended. This survey is to be extended to further research groups in various European countries. The target in view is the gradual emergence of an anthology of examples of innovative indicator systems.

10. Publications and Lectures

10.1 Publications

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GSF-MD 350

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GSF-MD 351

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LIST OF NON-MEDIS AUTHORS

---

1) W. KÖPCKE, Institut für Medizinische Informationsverarbeitung, Statistik und Biomathematik, Universität München
2) J. BOESE, Universität Heidelberg/Fachhochschule Heilbronn

3) A. SCHULLER, Institut für Soziale Medizin, Freie Universität Berlin
4) E. JAHN, Forschungsstelle für medizinische Sozialforschung, Berlin
5) C. WILPERT, Forschungsstelle für medizinische Sozialforschung, Berlin
6) J. HASFORD, Institut für Soziale Medizin, Freie Universität Berlin
7) E. WEINGARTEN, Institut für Soziale Medizin, Freie Universität Berlin
8) F.-W. SCHWARTZ, Zentralinstitut für die kassenärztliche Versorgung in der Bundesrepublik Deutschland, Köln
9) H.K. SELBMANN, Institut für Medizinische Informationsverarbeitung, Statistik und Biomathematik, Universität München
10) W. LOOCK, Martin-Luther-Krankenhaus, Berlin
11) G. MARTIUS, Martin-Luther-Krankenhaus, Berlin
12) S. SCHEWE, Institut für Medizinische Informationsverarbeitung, Statistik und diomathematik, Universität München
13) H.A. LANDSBERGER, University of North Carolina at Chapel Hill, North Carolina, USA
14) G. ESPINOZA, Informations-und Statistikabteilung des peruanischen Gesundheitsministeriums, Lima, Peru
15) M.H. BRENNER, Division of Operations Research, Department of Health Services Administration, The Johns Hopkins University, Baltimore, USA
16) C. BRINKMANN, Institut für Arbeitsmarkt-und Berufsforschung der Bundesanstalt für Arbeit, Nürnberg
17) H. ZÖLLNER, World Health Organization (WHO), Regional Office for Europe, Kopenhagen, Dänemark
18) R. THURMAYR, Institut für Medizinische Statistik und Epidemiologie der Technischen Universität München
19) R. DIEHL, Verband Deutscher Rentenversicherungsträger, Frankfurt
20) E. HAUPT, Saale Klinik, Bad Kissingen
21) K. KREBS, Bundesministerium für Forschung und Technologie, Bonn
22) P. MERGUET, Lahntal Klinik, Nassau
23) J. DEL LLANO, Department of Community Medicine, Usher Institute, Edinburgh, Großbritannien
24) M. BARTLEY, Unemployment and Health Study Group, Nuffield Centre for Health Services Studies, Leeds, Großbritannien
25) B. SENAULT, Observatoire Régional de la Santé, Pont a Mousson, Frankreich
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LIST OF NON-MEDIS CONTRIBUTORS

1) W. KÖPCKE, Institut für Medizinische Informationsverarbeitung, Statistik und Biomathematik, Universität München
2) S. SCHEWE, Institut für Medizinische Informationsverarbeitung, Statistik und Biomathematik, Universität München
3) R. THURMAYR, Institut für Medizinische Statistik und Epidemiologie der Technischen Universität München
4) K. KREBS, Bundesministerium für Forschung und Technologie, Bonn
5) W. BENDER, Bezirkskrankenhaus Haar bei München
6) R. von HUGO, Frauenklinik der Technischen Universität München
7) R. HENSCHKER, Frauenklinik der Technischen Universität München

11. Staff (as of 1st July 1986)

Schwefel Detlef	Priv.-Doz. Dr. rer. pol., Dipl.-Soziologe Director of Department
John Jürgen	Dr. rer. pol. Dipl.-Volkswirt
Klein Thomas	Dipl.-Sozialwirt
Leidl Reiner	Dipl.-Volkswirt
Potthoff Peter	Dr. phil. Dipl.-Psychologe
Satzinger Walter	M.A. (Politikwissenschaft) Deputy director of the department in 1986
Hörnig Frauke	Assistant medical documentation
Kullmann Melitta	Translator, technical assistant
Loy Heidi	Secretary
Olberz Marlies	Administrative/technical assistant
Vogel Bernd	Programmer
Widmann Gottfried	Programmer
Rehermann Peter	Dipl.-Soziologe (temporary)
Santo Darwin	Student
Schermbacher Angelika	Student
Späth Klaus	Student
Weber Ursula	Student