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Fundamentals of General Medical Practice

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by

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ABSTRACT. In many countries there is a recognized specialist education for general practice, corresponding to those offered for organ specialities. Why, then, is general practice not recognized everywhere as a full speciality?

It has been suggested that general practice is characterized by an easily available, continuous, personal, binding and comprehensive care. However, there are also other aspects which characterize this discipline.

***Firstly* it is based on an overall view of health and disease, in which physical, mental, and social factors must be taken into account simultaneously.**

***Secondly* the epidemiological world, as seen by the primary physician, is different from those of all traditional specialities. This gives rise to considerable consequences in diagnostic and therapeutic work, as reflected in the predictive values of tests and for symptoms in general practice, when contrasted with specialist practice.**

***Thirdly*, the approach to problem solving is also very different. In general practice, it is characterized by thinking in terms of possibility or probability, whereas in specialist practice the reductionistic method is used.**

***A fourth factor* can also be pin-pointed. Although the primary physician is responsible for the greater part of diagnosis and treatment of illness in the population, he also co-ordinates the patient's contact with the second and third line services in the hospital and in specialized medicine. Therefore, general practice is an independent medical discipline, which demands its own specialist education.**

KEY-WORDS: Medical philosophy. The probabilistic paradigm. The structure of the health care system. General practice.

INTRODUCTION

In many countries general practice is a speciality on a par with organ specialities. This is true for Finland, Sweden, Canada, Great Britain, Germany and the USA. In 1983, at last, general practice has finally been accepted as a speciality in Norway.

How can general practice be defined?

What are the characteristics of general practice? It has been stressed that it is a service, exhibiting the special qualities of easy availability and continuity and which is personal, binding and comprehensive (1). The first characteristic is a question of geography. The next three are of a mainly qualitative and ideological nature and are significant factors underlying the day-to-day work. The last point, "comprehensive", is of decisive importance, but the question is, what is included in this concept?

A general practitioner having been practising for years has experienced just how important availability and continuity are, not to mention the personal and binding aspects. Also one receives great insight, when one can follow a family through many generations and be accepted as "one of the family".

However, an adequate basis for defining this discipline is not given by considering only these special characteristics. What, then, can be taken as the basis from which to define general practice as a discipline in its own right?

Four factors can be stressed:

1. The concept or definition of what "health" is.
2. The prevalence of disease.
3. Approaches to problem solving/diagnosis.
4. The structure of the Health Service.

THE CONCEPT OF HEALTH

A holistic (2, 3) approach with an "extended concept of disease" (4) is contrasted to the biomedical or reductionistic approach, so frequently underlying what we read and hear. The holistic concept has also been called "The New Biology".

Of course the movement away from the reductionistic and special towards a more general and overall view of people, society and processes is not peculiar to medicine but has occurred across disciplines such as physics, psychology, sociology or history. The movement is away from simplification into separate elements, towards seeing a situation in all its complexity. The sum of many forces is involved in the shaping of a person's situation, or of history or of societies.

New learning has brought us back to old ways of thinking –, and within medicine this has created the basis for new expansion and new knowledge. In the last 100 years, we have been nearly crippled by an almost superstitious faith in techniques and by the belief that to find the cause was of maximum import-

ance. We have been dominated by ways of thinking with Greek roots, namely dualism and positivism.

Ever since the days of Koch and Pasteur, medicine has been dominated by the biomedical way of thinking. The task of the health service has been to find "the breakdown in the machine": the cause behind the inadequate functioning of an organ or organ-system. In the last ten years, however, there has once again been an increasing awareness that the socio-psychological situation plays a role in the development of a disease and that illness can cause social problems. Recent years have brought us yet another step forward: only when we have a holistic view of both the development of disease and of the single individual, are we able to prevent health problems and meet the implicated challenges.

What then is disease?

It can be defined as a failure in a person's adaptive mechanisms owing to inner and outer stimuli or stresses. The homeostatis – balance – of the individual is upset. We live in a field of dynamic force affected by inner and outer influences, where forces and counter-actions are continuously operating. Health problems can result from these tensions.

An overall view of this sort is replacing the reductionistic biomedical approach. This "flaw in the machinery" method has brought us successes and will continue to be important and central as a technique in our daily work. But these days, a holistic view of health and disease has become a necessity.

Fig. 1 shows some of the forces involved in this dynamic interaction (6). We know something about

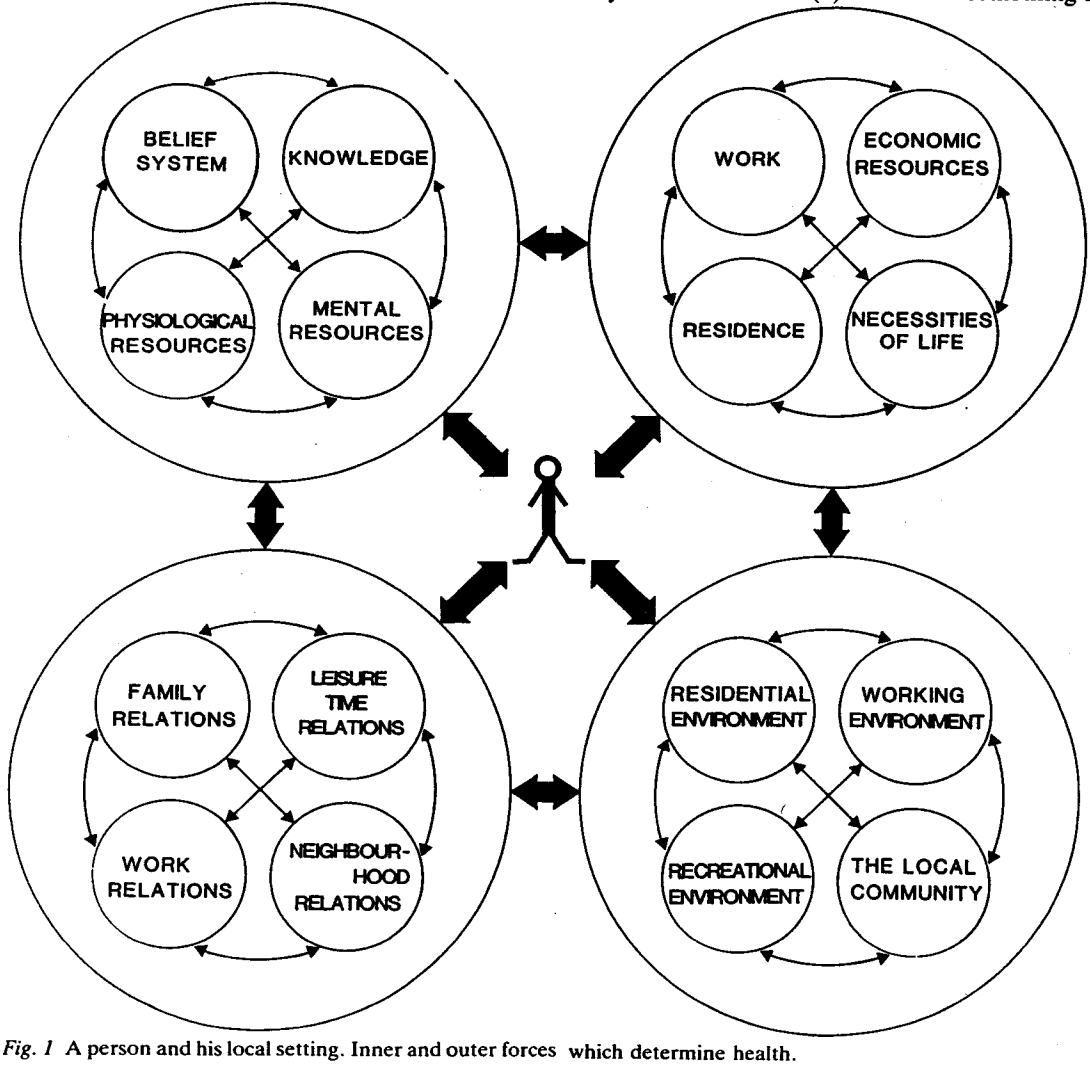

Fig. 1 A person and his local setting. Inner and outer forces which determine health.

the individual's physiological resources: for example the immunological system which gives the organism the ability to tolerate and adjust to various influences. We know a little about the processes of wear and tear and aging. But there are also other resources such as the level of eduction, the individual's outlook on life and his personality, which we know can play a decisive role. For example a person can decide to live or die.

Another area of forces is that of a person's relationships with family, colleagues, friends and neighbours. The family, for example, is in a process of dissolution. We see a movement away from the extended family as the basic living unit to the nuclear family, to paperless marriages. The number of divorces steadily increases. The result is that more and more children will lack the security given by a home with both mother and father. Leisure time relations reflect the constantly increasing misuse of alcohol and drugs, a steady lowering of the age of sexual debut and an increase in the number of partners.

A third area of influence includes housing, work, economy and also nutrition: the wrong diet or insufficiently nourishing food are commonplace.

A fourth area covers environment: home-, leisure- and working environment and the immediate local community. Whilst fig. 1 depicts what we call "micro-environment", Fig. 2 portrays a "macro-environment". Influences such as culture, religion, political systems and ecology, in its widest sense, affect us. What is allowed or not allowed? Is our living milieu characterized by anxiety, which is the result of forces outside the immediate environment, as seen in so many countries in all parts of the world?

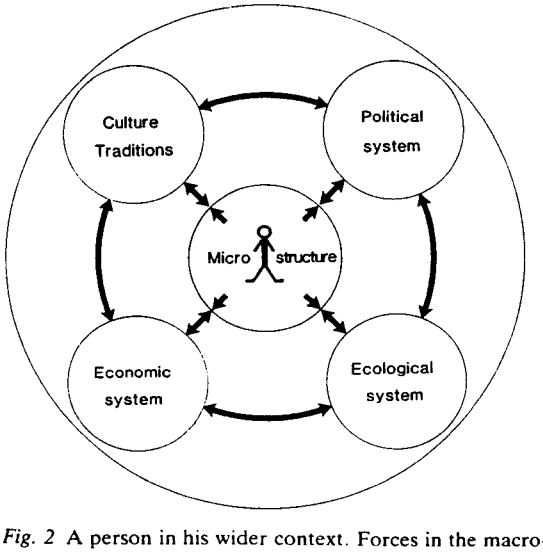

Fig. 2 A person in his wider context. Forces in the macro-milieu which determine health.

The chain of causes is indeed complicated and the interplay of these same forces – either as interaction or resistance, is just as complex. In these dynamic models all arrows flow in both directions, reflecting reality.

Take for example "the blue nail" syndrome. Even a blue nail is caused by the interplay of several factors, but the result is that it hurts. Perhaps the person feels bodily ill and nauseated. Consciousness is narrowed. The person is aware of only the nail. He cannot bear sounds, and he becomes aggressive towards others and cannot cope with his job.

Or take the secretary in the office with an aching neck. Massage does not help much, if the working-position at the typewriter is incorrect and if she does not manage to find a solution to the problem concerning the alcoholic with whom she is living.

The "breakdown in the machine" is the blue nail and the aching neck. Only an overall view can give us the necessary insight.

Development of diseases

A view of homoeostatis or of a person in balance as sketched, entails also a view of the development of disease such as shown in fig. 3 (modified from Leavell & Clarc (7)).

The development of a disease can be divided into four phases:

Phase I shows the individual in his or her environment. It covers the sum of factors that can shape an individual: genetics, family, work, nutrition, climate, pollution and the person's whole constitutional type and attitude to life.

Phase II represents the pre-disease stage where specific or non-specific factors pave the way for the development of disease. Usually there is a definite stimulus, such as a bacteria or chemical agent, which sets the disease process in motion. However, as a rule, the disease arises out of a combination of causes.

Phase III, shows the dormant stage or the sub-symptomatic phase in the development of disease before the clinical horizon is passed as, for example, during the incubation period of an infectious disease or an early carcinoma.

Phase IV depicts the stage of the illness which can result in either death or recovery.

Phases I and II, the "pre-disease stages" with their general factors and specific agents, are prerequisites

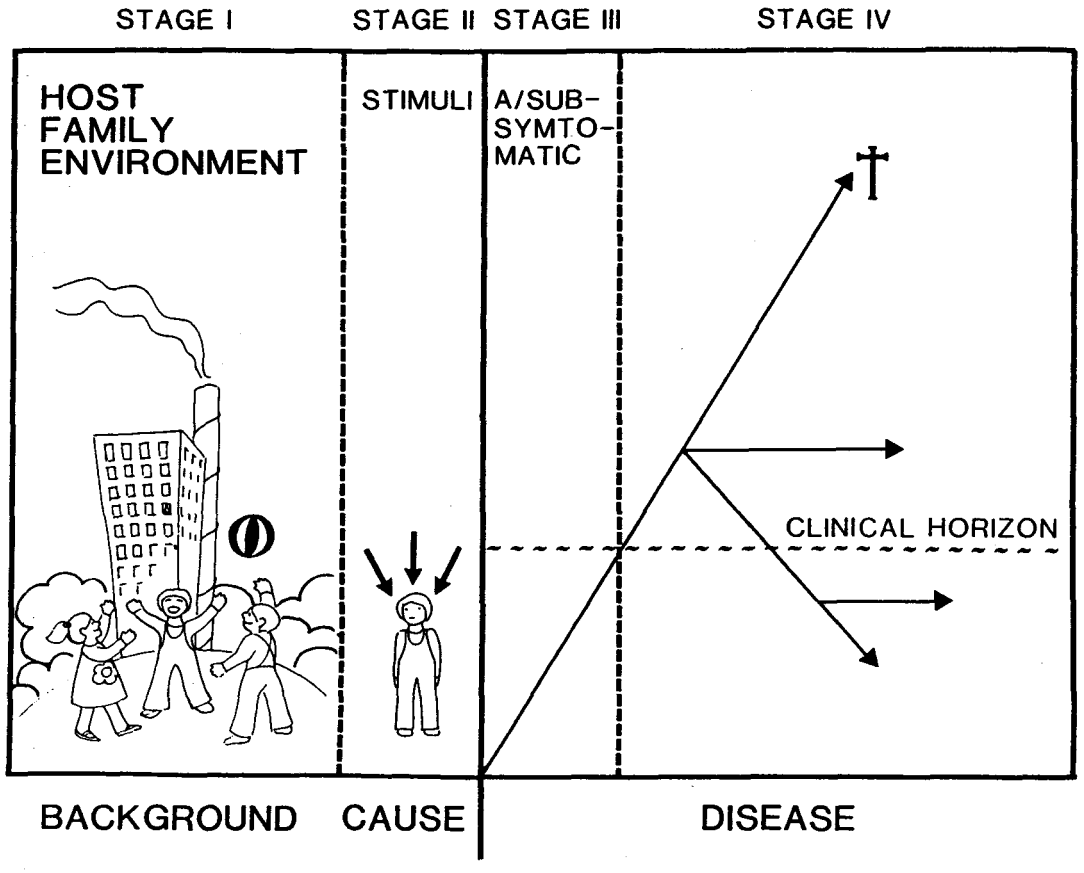

Fig. 3 The four stages of disease. (7).

for the eruption of the disease. The "broken-down machine" model is only relevant when seen in perspective as a link in the understanding of the whole.

THE PREVALENCE OF DISEASE

I cannot resist quoting the aphorism "Birches grow in Denmark, but also in the highlands of Norway. However, the map, the scenery and how one experiences these trees are quite differerent". This also describes the differing worlds of the primary physician and the specialist with regard to the totally different types of health and disease problems, which they are confronted with. Take prevalence, for example. A disease frequently encountered by the primary physician could be rarely seen by specialists in a hospital and vice versa (8). Also, the form in which the disease occurs, can differ: the general practitioner is confronted with the early less-defined symptoms, as opposed to the more developed symptom-picture presented to the specialist. Furthermore in general practice, there is a need for multifactorial diagnosis, which takes physical, mental, and social aspects into consideration. Contrast this with the domain of the specialist, who deals with the single disease (9, 10) and the fact that no symptom exclusively "belongs to a certain speciality" (11).

How will this affect the method of investigation, which is involved in defining a health problem adequately enough for it to be resolved? This problem can be illustrated by looking at the great changes which occur when tests, predictive values, or the probability for the presence of a certain disease when given a certain symptom, are calculated for general practice and then for a specialist department.

PREDICTIVE VALUES

The probability of finding the correct test result

Table I records the frequency of some gastroente-

Table I. Percentage of patients with dyspepsia dispersed on diagnoses respectively in general practice and in an internal medical hospital department.

Diagnosis	Percentage of patients with dyspepsia	
	In Internal medical hospital department	In General practice
Gastritis	10	90.0
Ulcer	80	9.5
Carcinoma	10	0.5
Total	100	100.0

rological diseases firstly in general practice and secondly in a department of internal medicine.

For example, a laboratory test which has a sensitivity (i.e. ability to separate out those who have a disease from those who have not) of 90 % and a specificity (i.e. ability to separate out those who do not have the disease from those who have the disease) of 80 %, is used to detect carcinoma of the stomach. In general practice this test will give a predictive value of 2.2 %, as opposed to 33 % in a specialist department. This example describes a test that is useful in the hospital department, but of little value in general practice (12). The opposite can be the case for other tests. Predictive values for tests, medical examinations and anamnestic questions are now in focus in medical research and debate.

The probability that a defined disease is present

Another situation, which can be mentioned is: given a certain symptom, what is the probability that a given disease is present? As physicians we begin forming hypotheses early in the diagnostic process. If a patient is suffering from lack of energy a general practitioner will first ask "Is it an infection or depression?" He does not wait for a large quantity of data to be collected before he begins (12). A specialist, however, will have a quite different ranking order for his hypotheses. These early hypotheses are only two to five in number.

"Can we do anything therapeutically?" is a question, which alongside probability, determines our method of investigation. Bayes' theorem (12, 14) is a useful instrument in estimating the probability of the presence of a given disease. First, however, a difficult evaluation must be made: How much weight should a patient's symptom be given? Here, the general practitioner will often have the advantage of already knowing the patient and his or her family.

Calculations as in table II (12. 14) show the great differences found in probability figures for certain diseases, given a practice or a specialist department. The ordering of hypotheses are quite different and are completely dependent upon the epidemiological world in which a particular physician lives. "The International Classification of Diseases" covers a total of 7,000 diagnoses, so there are many possibilities to choose from. But it is a mistake to extrapolate from figures for a special sample of the population, for example that of a policlinic or of a department of medicine and apply it to the whole of medicine.

So what does this mean? We automatically set up a ranking list of this sort in our diagnostic work. It is necessary, otherwise we would drown in meaningless investigations. However, it must be emphasized that the general practitioner will have to change the order of hypotheses in special cases as when, for example, an unusual combination of symptoms appears.

THE METHOD OF APPROACH TOWARDS PROBLEM-SOLVING

Above we have shown how differences in prevalence

Table II. Fatigue as a symptom and the probability of the presence of a given disease, in general practice and that of a haematological outpatient department assessed on the basis of Bayes' theorem. (8, 12).

Symptom/ Disease	Prevalence per 100 patients/year		Probability of a certain disease, given the symptom fatigue (in per cent)		
	General practice	Haematological outpatient department	Fatigue in a certain disease	General practice	Haematological outpatient department
Fatigue	15	10	100	–	–
Depression	7	0,5	80	37	4
Leukemia	0,01	3	80	0,05	24

Table III. Criteria which characterise two different paradigms (15)

Criteria	The mechanistic paradigm	The probabilsitic paradigm
1. Ætiology	*Predetermined.* Cause and chance are mutually exclusive.	*Probabilistic.* Cause and chance are complementary.
	Interpretation: monocausal	Interpretation: multicausal
	Example: pneumococcpneumonia	Example: essential hypertension
2. Scientific method	The experiment is decisive. The observer can control all variables in the experiment which will give the final result.	Heisenberg's relations of uncertainty. The observer is part of the experiment. Results must be interpreted. The observer is more responsible than the results of the tests for the conclusion.
	Example: The X-ray shows a tibia fracture, and that is only what matters.	Example: The administration of the insulin dose at home in diabetes type 1 may be very different from that in the hospital.
3. Relationship between objectivity and subjectivity	Absolute dualism. Only objective knowledge is scientifically valid. Subjective knowledge may form the basis for ethical decisions.	A continuum. Elements of subjectivity and objectivity are simultaneously present and unavoidable both in science and ethics.
	Example: The assessment of the comatose patient who is treated as an exclusively physiological object.	Example: Obstruction of colon in an old man with carcinoma who refuses treatment.

of symptom or disease in general practice and in the specialist department give rise to important consequences which affect the working-techniques. This can mean that the order of hypotheses on the ranking list can be "turned upside down".

All good clinical diagnoses are, in reality, probabilistic. That is, they build on possibilities or probabilities. However, earlier this century, the technological developments within medicine and the movement away from a holistic view within medicine, as described in the introduction, have resulted in the domination of a reductive, mechanical paradigm, the aim of which is to find the one break-down in the machine, thus solving all problems. The probabilistic paradigm is contrasted with this. In table III characteristics for the mechanical and the probabilistic paradigms are shown (15).

The probabilistic paradigm, although characteristic for general practice, is not its "property". What has been written above explains the step-by-step diagnostic method of the general practitioner and the use of time, of observation and trial treatment as legitimate and optimal diagnostic aids. But this does not permit that more rare diseases, where effective and specific treatment can be stated, are "forgotten" or that investigations which should have been carried out are overlooked. This would result in serious consequences for the patient.

THE STRUCTURE OF THE HEALTH SERVICE

Finally, the frequency of referrals to specialist and admissions to hospitals of patients has changed very little during the past years. This is seen (Fig. 4) by comparing recent investigations with an investigation from 1952–1955 (17). Also the epidemiological patterns in the population has changed little (18). Of course, something has happened. There has been an

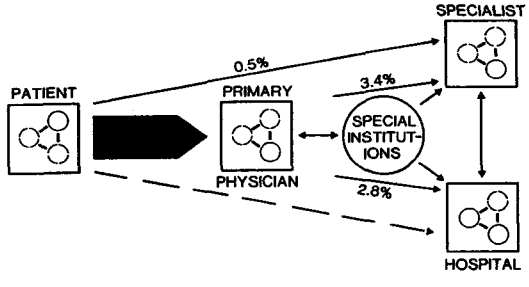

Fig. 4 Patient and physician. Distribution of diagnostic and therapeutic work 1952–1955 in the health service in Norway during a single year.

increase in the numbe of elderly persons, giving a rise in the prevalence of certain diseases, but a correction for age reduces this aberration. An increase in encounters with physicians in connection with certain diseases can be explained by the development of pharmaceutical drugs and of certain new techniques of investigation, as for example cytological tests. After a period when the number of general practitioners was relatively low and many specialists therefore functioned as primary physicians, we are now back again to the traditional health service model. The generalist acts as the primary physician and co-ordinator within the health service, and the specialist as the consultant, who takes care of the special cases. Things are slowly falling into place. The primary physician must be a generalist, and he must be properly educated. The quality of the health service is totally dependent on the optimal functioning of its first and co-ordinating link.

In this article some characteristics of general practice have been described: its overall view of health and disease, the probabilistic approach, but most important of all, the differing epidemiological worlds of the general practitioner and the specialist and the effect this has on the daily work with regard to the formation of hypotheses and methods of working.

The discussion concerning to what extent general practice is a speciality or not, should belong to the past. Likewise it should be undisputable that general medical practice must play an important role in the basic education of all doctors, and be the main element in the education of specialists in general medical practice. One can learn how to use maps and compasses in an auditorium, but not how to walk in the Norwegian mountains. General medical practice is not the sum of organ specialities. It is a medical discipline in its own right (19).

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