Drug Utilization – Theory and Practice
The Present Situation in the Federal Republic of Germany*

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The continuously increasing number of drugs, together with the growing habit of a drug-minded society to ask for and swallow medicines, has also had the undesired consequence that the available drugs are not always used in the best possible way. It is the inappropriate and inadequate prescribing of drugs by physicians and the overconsumption of freely available drugs by patients without consulting a doctor, which cause concern to health authorities, professional organizations, and health insurance companies. The reasons for this concern are different: Whereas drug regulatory agencies and the medical profession are afraid of adverse reactions, development of resistance, or toxic effects, health services are worried by the economic consequences and the rise in cost caused by a drug prescribing that has disproportionally increased in comparison with the national income. Proper use of drugs, however, also includes avoiding underprescription, mainly in the form of giving insufficient dosages for too short a period or of not taking full advantage of the available therapeutic potential.

Rational drug prescribing means obtaining the best possible effect with the least number of drugs in the shortest period and at reasonable cost. It is easy to stipulate such requirements, but practice demonstrates that they are difficult to accomplish. Despite numerous efforts to improve drug use, we are still far from a satisfactory solution, in some countries more than in others. One of the main reasons for this situation is the fact that in many countries no reliable source of information exists about the use of drugs, their prescription by various groups of doctors, self-medication, and what is eventually taken by the patient. In countries with a National Health Service or a comparable institution, where the prescriptions of the doctors are controlled by public health insurance companies or professional organizations, data are available, but in most cases they are not evaluated and assessed in a way that would provide the knowledge necessary to improve drug use. Only by careful analysis of prescriptions can insight be gained into how practising physicians utilize the available drugs. Of equal interest, but even more difficult would it be to get information about the prescribing habits of doctors in hospitals.

Differences in Prescribing Patterns

Qualitative and quantitative variations in drug prescribing, i.e. the differences in type and amount of drugs used in neighbouring countries or even in different parts of the same country, indicate the multifarious influences on therapy (Report 1976). However, they may also mean that large groups of patients are more properly treated in one country than in another. The reasons for the differences in prescribing habits of doctors are known in part only and can to a major degree merely be supposed, since large-scale epidemiological studies on drug utilization are scarce. Even less is known about the more important problem: how the utilization of drugs is related to the therapeutic results or – simply – where patients suffering from the same disease are more

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Drug utilization can be investigated at various levels, depending on the existing facilities and the purpose of the study. Commercial organizations provide information, on the basis of data received from representative samples of doctors and pharmacists, about the gross sales figures, about the number of prescriptions, the number and specialization of the physicians, and of other related data. However, this information is not generally available and may be difficult to obtain. Sales figures are only a suitable basis for drug utilization if the prices of drugs are comparable with one another, i.e. in general within a given group of drugs, such as oral antidiabetics, beta-blockers, or cardiac glycosides. For a quantitative comparison of prescriptions, the calculation of "defined daily doses per 1000 inhabitants per time unit (day, month, year)" has been recommended as a unit that provides direct information about the proportion of the population that has received a specified drug at a particular time (Lunde 1976). However, the data necessary for such a calculation are hardly accessible to independent reviewing, at least in countries where no national health service is in function, and, in addition, the results obtained in this way give only approximate information.

To make possible a comparison on an international level, a uniform, clearly defined drug classification system is necessary, which allows the identification of various anatomical or therapeutic categories. However, not only does treatment vary from country to country, but preferences for certain diagnoses also exist, especially with respect to functional disturbances which may be attached to one or the other anatomical class. In addition, economic comparisons have to consider the price structure of the national drug market. For example, in 1979, expenses for drugs prescribed by practising physicians in the U.K. were only about 41% of those in the Federal Republic of Germany (3,210 million DM vs 7,836 million DM).

There are various features that are considered characteristic of the prescribing patterns in Germany. One of the best known is the preference for fixed-ratio combinations, which continue to be quite popular in this country. An example to be quoted here are the antihypertensive drugs, still dominated by combinations of reserpine and diuretics, to which a third drug is often added that does not always contribute to the overall effect. The total number of prescriptions for reserpine-containing combinations was about 16 million in 1979, which by far exceeded that of the beta-blockers with about 6 million (Fig. 1). However, also for the beta-blockers, the fixed-ratio combinations with a diuretic came up strongly and had more than 1.5 million prescriptions in 1979. For single antihypertensives, including clonidine and methyl-dopa, only about 2.5 million prescriptions were issued (Fig. 2).

In contrast to the situation in Germany, the reserpine combinations are only of minor significance in the United Kingdom, where they are considered obsolete. Combinations of diuretics and beta-blockers are just appearing, but have so far only a very limited share of the antihypertensive market. On the other hand, single drugs, except the beta-blockers, have about twice the sales volume in the United Kingdom as that in Germany, i.e. 95 million DM vs 47 million DM. The difference between the two countries is even more drastic for the individual drugs. In the United Kingdom, α-methyldopa is still