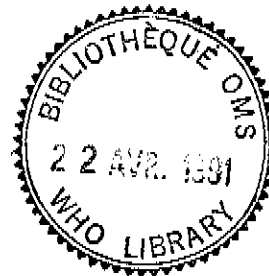


Drugs in hospitals

Report on the Fourteenth
European Symposium on
Clinical Pharmacological
Evaluation in Drug Control

Provisional Edition



WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE
COPENHAGEN

FOURTEENTH EUROPEAN SYMPOSIUM ON CLINICAL
PHARMACOLOGICAL EVALUATION IN DRUG CONTROL

DRUGS IN HOSPITALS

Schlangenbad

29 October - 1 November 1985

PROVISIONAL EDITION

With a translation in German of the
conclusions and recommendations



Emblem der Gemeinde Schlangenbad im 19. Jahrhundert

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INTRODUCTION

The Fourteenth European Symposium on Clinical Pharmacological Evaluation in Drug Control was held in Schlangenbad, Federal Republic of Germany from 29 October to 1 November 1985; it was devoted to "Drugs in Hospitals". The meeting was attended by 21 participants from 21 countries, 11 temporary advisers, 4 observers and 3 representatives from other organizations.

Dr M.N.G. Dukes, Regional Officer for Pharmaceuticals and Drug Utilization at the WHO Regional Office for Europe, pointed to the increasing influence of what have widely become known as the "Schlangenbad Symposia". Although much of this influence over the years is to be traced in developments in clinical pharmacology, therapeutics and regulatory practice, the last few years have shown a rapid development of various important initiatives which were originally triggered by recommendations of these meetings. The 1980 Symposium on Drugs and the Elderly led for example directly to the development of WHO's international handbook on the same subject, which has recently been published. The 1981 Symposium on Drugs and Children led to specialized meetings producing more concrete recommendations on Psychotropic Drugs and Children (1984) and on Drugs in Infancy (1985); a handbook on Drugs and Children is virtually complete. The 1983 Schlangenbad meeting on Drug Information, which among other things examined the role played by independent drug bulletins, led to a special consultation on this subject between experts in the field, sponsored by the Government of Spain in 1985, which in turn engendered worldwide collaboration between them. Finally, various of the recommendations of the 1984 Symposium on Drugs in Pregnancy and Delivery have already been put into effect; some of them will be reflected in an encyclopaedic book on drugs in lactation, due to appear in 1986. Much other follow-up is under way.

Professor M. Steinbach, Ministerial Director of the Department of Health, Federal Ministry for Youth, Family Affairs and Health, welcomed the participants to the meeting; he outlined some of the many aspects of health policy which currently present problems to the solution of which meetings such as this, and other forms of international consultation, can help to provide a key.

Dr H. Echterhagen, Director of the Schlangenbad Spa, welcomed the participants for the fifth time to the Kurhotel.

Professor W. Dölle, Medical Clinic, Eberhardt-Karls-Universität, Tübingen, was elected Chairman of the meeting. Dr Sigurdur B. Thorsteinsson, Iceland, and Professor Bozidar Vrhovac, Yugoslavia, were elected Vice-Chairmen. The Report was compiled by the WHO Secretariat and edited with the assistance of the Chairman.

GENERAL ASPECTS

A. The current picture and broad problems

A substantial proportion of the total drug use in the community is accounted for by prescribing in hospitals. Although exact data are often not available, it is clear that the current pattern of hospital drug use leaves much room for improvement. A series of widespread problems can be clearly identified. They include:

- (a) Overtreatment (e.g. unnecessary use of hypnotics, digitalis or prophylactic antibiotics or use of multiple drugs when they are not needed). Overtreatment represents a risk to the individual patient, economic waste, and in some cases (development of antibiotic resistance) a risk to the community. A particular problem in hospitals is that of routine medication of patients who do not need it, e.g. many infusions in surgical wards, and the habitual administration of laxatives and hypnotics to all in-patients, which can actually lead to dependence.
- (b) Use of drugs the efficacy of which is not firmly established, such as some cerebral vasodilators, or drugs which rapidly lose their efficacy.
- (c) Avoidable adverse reactions. Published figures on adverse reactions in hospitals only represent the tip of an iceberg; many adverse effects go unrecognized or are mistaken for symptoms of the primary disorder. The problem is most severe in the large group of older hospital patients. With appropriate care and observation the incidence of severe adverse effects can be greatly reduced.
- (d) Suboptimal use of drugs. Many physicians still do not realize the great interindividual variability of drug absorption, distribution and elimination. Serious over- or underdosage can result. Some drugs can only be properly adapted to the patient's needs by serum level measurements or other forms of monitoring. The need arises especially for some drugs with a narrow therapeutic range.

Problems such as these are not unique to the hospital environment, but in that environment, particularly because of the severity of many hospital conditions, they can be especially serious or frequent; fortunately the hospital environment also provides certain means by which these problems can be alleviated.

B. Drug utilization in hospitals

Because of the methodological shortcomings of many published studies of hospital drug use, the data available are often misleading or at best unsuitable for making direct comparisons. Proper study of hospital prescribing patterns is important for optimizing not only practice in the hospitals, but also use in the periphery which is sometimes influenced by practice in a regional hospital.

(a) Methods of study

An analysis of drug utilization in hospitals can be carried out at various levels (e.g. supplies delivered by wholesalers, records of the hospital pharmacy or of drugs issued to the wards, patient records, etc.). Using the standard methods developed and tested during the last fifteen years by the WHO/EURO Drug Utilization Research Group (e.g. the "Defined Daily Dose" = DDD as a unit of measurement) comparable data can be obtained from different hospitals and countries, and these comparisons can in turn throw light on similarities and differences in prescribing patterns and hence on matters requiring correction or at least reconsideration. Studies should obviously cover a broad range of preparations including not only drugs in the narrow sense but also biologicals, vaccines and parenteral fluids.

(b) Sample findings

Swedish financial analyses figures show that, in that country at least, some 16% of all drug costs relate to drugs supplied via hospitals; US figures set the proportion at 22%. For individual drug groups the proportion may be much higher, e.g. more than 50% of all antimicrobial drugs used in the US are supplied through hospitals, whereas cardiovascular and antirheumatic drugs are more preponderantly used in out-patients and only prescribed to a small extent in the hospital. With marked differences such as these, overall figures for the entire range of prescriptions obviously mean very little.

A useful measure for the quality of prescribing in a particular field is the number of defined daily doses prescribed in a particular hospital per 100 patient days. If the relevance and quality of therapy are to be assessed, such data should optimally be set alongside carefully verified diagnostic records and data on the outcome of therapy. Figures of this type on antibiotics, for example, can be used alongside patient records and morbidity data to determine whether antibiotics are being used to excess and what the repercussions are of attempts made to influence this pattern, for example by means of a hospital formulary.

Although prescribing in a hospital does, as pointed out above, have an influence on extramural prescribing in its region, the extent of this influence seems to be very variable and it merits study.

C. Hospital drug treatment: the hospital patient's rights and duties

The patient admitted to hospital commonly finds himself in a situation in which he is the object rather than the subject of the hospital's activities; throughout history the hospital patient has often been accorded a relatively passive role and has until recently accepted it, despite the fact that an active patient is often the best guardian of his own interests. The helplessness of the hospital patient is easily accentuated by his immobilization and isolation.

Lack of coordination of the services provided is one common complaint, and failure to adapt standard routines (which are convenient to the hospital and medical service) to the patient's individual needs is another. Problems which the patient may experience specifically in connection with drug therapy can include:

- (a) inaccessibility of information on the treatment which is proposed and the reasons for it;
- (b) imposition or continuation of treatment without consultation;
- (c) drug-induced injury, sometimes raising a need for compensation;
- (d) inaccessibility of the patients' records to himself or herself;
- (e) failure to regard therapeutic data as confidential.

Situations such as this illustrate the need to define the patient's rights and duties in a positive manner, so that he can contribute actively and freely to his own treatment and recovery. The definition need not necessarily be in legal form provided it is accepted and honoured in practice.

Some approaches to these problems are to be found in the recommendations at the end of this Report.

D. Drug compliance

The term "drug compliance" has been criticized as suggesting a passive obedience to the physician's instructions which may or may not be well-founded. At its best, compliance represents the following by the patient of a therapeutic regimen which has been agreed upon freely with his physician after due explanation has been given to him.

As understood in this sense, compliance with prescriptions in hospitals is sometimes remarkably poor, despite the possibility of supervision; it may apparently be as poor as that in ambulant patients. Multiple prescribing is a common cause of poor compliance. Unrecorded continuance of self-medication can also be regarded as a form of non-compliance. In the psychiatric patient, compliance represents a particularly severe problem.

The most desirable means of improving compliance is to ensure that the patient fully understands the reason for the treatment prescribed and the risks which it may involve, that he has agreed to it and is fully motivated to follow it. There are however conditions under which steps have to be taken to supervise the patient to ensure compliance in his best interests; in the case of a child, for example, compliance can obviously be improved if the patient routinely takes the medicine in the presence of the nurse and the intake is recorded. Where necessary, injections or suppositories can be used.

It should be noted that compliance is sometimes very poor even in clinical trials and can render them invalid.

E. Drug trials in hospitals

Any large hospital has a clear obligation to the national and international community to provide facilities for clinical trials in view of the role which they play in advancing therapeutics. Trials also have educational value for the physicians, nurses and other staff engaged in them.

There is however only a place for clinical trials which are medically necessary, which have an adequate scientific design, and which are ethically acceptable. There can be no justification for so-called "marketing trials" which are often open, uncontrolled and poorly designed and serve merely to draw attention to a particular manufacturer's product; they can represent an unnecessary burden upon the hospital staff's time and the hospital's resources even if the direct expenses are borne by a sponsor. Guarantees that trials meet these standards need to be provided either by national regulations (e.g. requiring the approval in advance of all clinical trials) or by a hospital on its own initiative where no national regulations exist. Obtaining freely given informed consent from trial subjects requires particular care in the hospital environment; patients, students, ancillary or junior staff may hardly feel themselves free to refuse participation in a trial which has been prepared by a senior member of the academic or hospital staff.

The standards to be adopted to ensure that a trial is medically and scientifically acceptable can be assessed in the light of various international consensus documents, such as the World Medical Association's Helsinki and Tokyo declarations, the CIOMS/WHO Draft Guidelines on Biomedical Research Involving Human Subjects (1984) and the WHO/EURO Guidelines for the Clinical Investigation of various classes of therapeutic agents.

Institutional Review Boards ("Ethical Committees") attached to hospitals and having both professional and lay members can do much to ensure the scientific and ethical standards of drug trials.

The results, favourable or unfavourable, of all clinical trials should be publicly available, irrespective of the source of funding. What this in practice means is that a hospital which accepts external funding for a trial should not agree to regard the results as confidential to the sponsor; the results should at least be available to the Health Authorities and to members of the hospital staff on request.

F. Drug information in hospitals

Some of the problems existing with respect to the flow of drug information in hospitals were delineated at the 12th Symposium in this series ("Drug Information", 1983). They relate to the actual availability of reliable books, journals and other data sources within the hospital, its immediate accessibility to all who need it, the problem of forming an objective view on conflicting or promotional data, and the availability of information on drugs and drug therapy to the patient. There is also the need to ensure that information generated in the hospital (e.g. on suspected adverse reactions) is recorded and appropriately used. These matters are dealt with in the appropriate sections of this report.

STRUCTURAL ASPECTS

G. The situation of clinical pharmacology

All the Symposia in this series since 1972 have identified serious consequences which attach to the inadequate and haphazard development of Clinical Pharmacology in most countries of the Region. The influence of Clinical Pharmacology will be most direct in those hospitals and regional centres where a clinical pharmacological unit already exists, but the teaching of medical students and physicians in Clinical Pharmacological thinking will have a much broader influence. In the hospital without in-hospital or regional Clinical Pharmacological services there are much more likely to be serious problems as regards the quality of prescribing, teaching and research in the drug field. For some of the tasks ideally entrusted to the Clinical Pharmacologist partial solutions may be found in other ways (e.g. a broadly based hospital pharmacy may make a contribution) but an adequate solution can only lie in a full development of clinical pharmacological science.

H. Hospital drug and formulary committees (see Annex 2)

Hospital Drug Committees (or Formulary Committees) have been widely established both in academic and non-academic centres in many countries of the European Region.

The main objective of a hospital drug committee is to ensure the more rational and safer use of drugs and to limit costs. These objectives, as well as other beneficial effects, are achieved both directly and indirectly, e.g.:

- (a) by drawing up a list of recommended drugs and the principles which should underlie their selection in the individual case (i.e. a Hospital Formulary), a direct influence is exercised on prescribing. However, the underlying debate as to the choice of preparations and therapeutic regimens has a considerable educational value for the hospital staff;
- (b) economies are obtained directly by avoiding products which are unnecessarily expensive, but also indirectly by promoting more critical and rational prescribing, as well as promoting price-consciousness;
- (c) indirectly, patient care is improved because physicians are better able to select and prescribe the most appropriate drugs;
- (d) indirectly, too, the pharmaceutical industry may be encouraged to ensure the completeness and reliability of the data which it presents.

It is clearly not easy to determine all the benefits which a Drug Committee confers on a hospital, though the hospital authorities concerned generally find themselves very satisfied with the results. The influence of these Committees seems to be most marked where their work is based on wide consultation and where their recommendations are presented emphatically, e.g. not simply in a regularly updated Formulary but also in newsletters and seminars. The most exactly measurable effects will relate to the economies produced by replacing a particularly expensive drug with a cheaper equivalent, the withdrawal of ineffective drugs from the list or the elimination of measurable risks when a notoriously risky drug is replaced.

Hospital Formularies have been criticized as impairing the physician's freedom and delaying the introduction of new therapies. A physician should however be in a position to prescribe drugs outside the formulary if he can advance good reasons for doing so. One good reason will be the need to continue an existing course of treatment, prescribed elsewhere, when the patient in question is admitted to the hospital.

Where the need arises in the hospital environment to import a drug which is not ordinarily registered in the country, the Hospital Drug Committee can play a useful role in motivating or supporting the relevant application to the National Drug Control Agency.

At the risk of introducing over-complexity, there may also be justification for a two-tier system in which certain drugs on a hospital list will be prescribed only under particular conditions, e.g. where a specialist has signed for their use.

I. Problems of drug supply in hospitals

With the rapid development of comprehensive hospital pharmacy services in the larger centres, a clear picture has emerged of the role which the hospital pharmacy can play in ensuring optimal drug supply within the hospital.

New methods which have proven effective and cost-efficient in traditional pharmacy fields include the introduction of unit packaging, and computer-based systems for stock control, distribution management, prescription monitoring, labelling and patient drug records. Some hospital pharmacies have also developed production facilities (e.g. for parenteral fluids, see Section K), where this is cost-effective for meeting certain routine needs or where a recurrent need for special products or batches exists.

In the field of distribution it is necessary that careful provision be made as regards the responsibility of drugs sent to the ward. Commonly the pharmacist will accept responsibility for a preparation until it enters the ward store and its receipt is acknowledged. After that, with the drugs normally under the supervision of the ward nursing staff, other rules need to be developed to ensure that stocks are appropriate but not excessive, that when drugs arrive on the ward they are properly stored and secured, and that their use in the ward is subject to proper rules and is recorded.

J. Hospital pharmacy and its legal basis

Although pharmacy decrees have existed for many centuries, hospital pharmacy has in most countries only during the last few decades become a specialized branch of the pharmaceutical profession, requiring appropriate legislation. The traditional hospital pharmacy, insofar as the hospital had a pharmacy at all, limited its role to the purchasing, storage and dispensing of medicines and their distribution within the hospital. The complexity of hospital pharmacy has since then increased; some of its existing or potential scope is outlined in the Conclusions to this Report. Various of the developments which require (and in some countries already obtain) consideration include:

- the influence of "Good Manufacturing Practice" (GMP) standards as introduced into much of the pharmaceutical industry; this clearly creates the need for those hospital pharmacies which have production units to attain comparable standards of production and quality control and to undergo an analogous form of official inspection;
- increasingly stringent views in general on drug quality and stability, necessitating an administrative system which will ensure that drugs are properly stored, up to the moment of use;
- current knowledge of incompatibilities and interactions, requiring immediate recognition of situations in which these could occur;
- the need to make proper provision for the disposal of drug wastes and laboratory chemicals (see W.H.O./EURO Reports and Studies, 97 (1985): "Management of waste from hospitals").

Legislation in this field should provide for appropriate specialized training of the hospital pharmacist and specify in detail the facilities to be provided in the pharmacy and the procedures to be followed to ensure basic pharmacy services in the hospital; legislation will also have to determine the procedures and standards which will be applicable if the above and certain other ancillary activities are to be undertaken, e.g. the supply of drugs to other hospitals.

K. The preparation and use of infusions in the hospital

As pointed out elsewhere in this report, infusion fluids represent one of the major forms of product administration in all hospitals, and in some they have attained an excessive importance, infusions being administered routinely even in situations where they are not required. The costs of some of the products, e.g. albumen, represent a major item on the hospital budget. These negative aspects naturally have to be set against the evident and less conspicuous benefits e.g. the fact that some drugs can apparently be more simply and safely administered into an infusion tube than by injection. The costs should also be compared with those of enteral nutrition. For such reasons there is need to attain a wide consensus on the indications for the use and selection of such products. Many Hospital Drug and Formulary Committees have already performed useful work in delineating these matters.

Whether a hospital pharmacy should itself engage in the routine production of large volume parenteral fluids still depends to some extent on local circumstances. Those hospital pharmacies which do have the special facilities required to conduct such work safely and according to GMP standards can often also use them for the preparation of "custom" infusions, i.e. infusions prepared to meet individual patient needs.

L. The position of the nurse

The nurse can have a considerable influence upon the patient and his attitude to and use of drugs. Where medications are prescribed by the physician, the nurse can play an important role in ensuring that the patient fully understands the purpose of the treatment and the way that the drug should be used, and she can provide advice and reassurance where it is needed. The nurse can teach a patient to self administer those drugs for

which some skill is needed, e.g. injections; she can do much to ensure intelligent compliance. Where medicaments are kept in the ward for use at the discretion of nursing staff, the latter can ensure that they are used critically and selectively. In questions of self-medication, too, the nurse may more sometimes be better placed than the physician to obtain information from the patient, and may be able to provide him with advice on whether he should or should not continue to self-medicate during hospital treatment.

In order to develop this role there is a need for adapted teaching for nurses on the properties and risks of drugs and on interactions. Small books such as those already produced by W.H.O. on "Drugs and the Elderly" may be of great value as handbooks for nurses or for teaching purposes.

In all these matters the nursing staff must collaborate closely with the medical staff, both individually and through formalized structures (e.g. as members of Drug and Formulary Committees).

Personal consultation can be of great importance in matters where the nurse feels strongly about some aspect of therapy and feels bound to act as the patient's advocate. Under very exceptional circumstances a nurse should have the right to refuse to participate in regimens which are counter to her principles, but clearly she must inform the physician of her feelings.

M. Relationship of hospital drug therapy to general practice

The greater part of a patient's time is spent outside hospital under the care of a general practitioner, who provides continuing care.

The general practitioner will probably have long-term knowledge of the patient, often in the context of his family, work or social environment.

Most patients spend little time in hospitals as in-patients or casualties. If they suffer from a chronic or recurring illness, then they may be out-patients or ambulant patients for a long period, but then they will usually also be treated by their general practitioners at the same time. With the increasing trend to "community care" of the elderly and of those with psychiatric problems or a mental handicap, more patients than ever will be spending much of their time outside hospital.

The service provided by general practitioners is nearer to the patient and to the community than is hospital care; it is therefore in some conditions likely to be better, as well as being much less costly.

To ensure that primary and hospital care function properly together, with a proper apportionment of tasks between them and task-sharing where necessary, the relationship between the two has to be clearly defined. This entails among other things deciding who has responsibility for a particular patient at which stage of treatment, and establishing consultative procedures so that a patient receives continuous and consistent care. A more general result of proper collaboration between general practitioners and hospitals will be mutual education; each party stands to learn a great deal from the other as to the best way to care for patients and to treat them, whether with drugs or by other means.

C O N C L U S I O N S A N D R E C O M M E N D A T I O N S

1. THE NEED FOR AN INTEGRATED DRUG POLICY IN THE HOSPITAL

The current problems in the field of hospital drug therapy outlined in Section A of this Report can only be remedied if an integrated drug policy is developed and carried through in every hospital. The term "drugs" in this sense should be understood broadly, including for example vaccines, parenteral fluids and biologicals. The central aim will be to secure optimal drug therapy without incurring unnecessary expense.

This will involve selecting the basic range of drugs to be used, purchasing these critically with a view both to quality and economy, designing optimal treatment routines, providing training, guidance, information and assistance in day-to-day therapy, and in monitoring the pattern of drug use over the course of time. Such a policy must relate to all sectors and levels, and the patient's interests must be central at all times. The policy must be appropriate to the needs of the hospital concerned but it should also be adaptable and indeed be adapted to changing situations.

2. ESTABLISHMENT OF DRUG AND FORMULARY COMMITTEES

- 2.1. The development of an integrated drug policy should be entrusted in any large hospital or group of hospitals to a broadly constituted Hospital Drug and Formulary Committee. The benefits which such a Committee confers on the hospital are discussed in Section H of this report.
- 2.2. This Committee should include representatives of the medical (including clinical pharmacological), pharmaceutical and nursing staff, the administrative director, general practitioners, and where possible representatives of patients' interests.
- 2.3. Figures illustrating the various possible functions of a Hospital Drug and Formulary Committee will be found in Annex 2 to this Report. The Committee can be regarded as the central instrument in the development and maintenance of drug policies in the hospital. Such a Committee should be accessible to argument and persuasion and open in the presentation of its recommendations.

3. ROLE OF THE PATIENT IN HOSPITAL DRUG THERAPY

Proper mechanisms - legal or otherwise - must be established to ensure the hospital patient's rights. With respect to medication, these may be said to comprise ten basic principles, to all of which there are certain exceptions, e.g. in emergency situations. There are corollaries to most of these rights in the form of duties, e.g. a duty to comply with agreed therapy.

- 3.1. No drug should be administered without a written and signed prescription.
- 3.2. Only appropriately trained staff should issue and administer drugs, and they should do so in conformity with national legislation.

- 3.3. Written orders for drugs should regularly be reviewed by the appropriate health professional. Records, indicating medication, change in dosage and side effects should be regularly kept and available for the patient to examine.
- 3.4. Written standards should be developed to specify the circumstances under which medication is permitted without consultation (e.g. in some emergencies) and who may decide upon and administer it.
- 3.5. In principle, a patient should not undergo any drug treatment to which he has not given his informed consent.

Patients or their guardians should be fully informed in a suitable and clear manner, oral or written, of the potential "material benefits and hazards" of drugs recommended for treatment.

- 3.6. Every patient in hospital should have access to reference books for laymen giving information about drugs and their properties.
- 3.7. In general, patients should be permitted to continue self-medication while taking prescribed drug therapy, provided the one form of treatment does not interfere with the other. Such self-medication should always be reported and recorded.
- 3.8. Patients should be allowed to choose among possible alternatives in medically appropriate therapy, and in general patients should be allowed to refuse medication.
- 3.9. Every patient should have the right to a "patient's representative" within the hospital who can assist him in asserting and defending his rights and can when necessary act as his spokesman.
- 3.10. A patient who suffers severe unanticipated drug injury as a result of negligence or other fault at some point in a hospital system should have a means of obtaining rapid, adequate and appropriate compensation. This will entail a hospital's taking out appropriate insurance for acts performed by its staff or under its authority; it will also entail establishing a proper mechanism for examining cases and setting compensation. Separate provision should be available for compensation where injury is suffered in the absence of fault.

4. NEED FOR STUDIES OF DRUG UTILIZATION AND PRESCRIBING QUALITY

- 4.1. All hospitals should have clear current data available on their drug utilization, employing standardized methodology as developed by the WHO/EURO Drug Utilization Research Group.
- 4.2. Such studies should concentrate particularly on drugs which are of major cost importance (particularly the antibiotics, some large volume parenteral fluids, blood and the blood products) and/or particularly toxic (e.g. cytostatics, cardiac glycosides).
- 4.3. The interpretation of studies of drug utilization can only be made where data on morbidity and the quality of prescribing are also obtained, and for this a broad interdisciplinary input is needed.

- 4.4. The organization of such studies is a task which can well be undertaken primarily by a hospital pharmacist, co-ordinating with a Hospital Drug Committee.

5. RELATIONSHIP WITH GENERAL PRACTITIONERS

Patients entering hospital are as a rule already receiving treatment from a physician and should not receive quite a different regimen in hospital without his being consulted. Conversely, the patient leaving hospital will often need follow-up treatment and here too there is a need for coordination rather than for a mere set of instructions passed by the hospital to the general practitioner or external specialist.

For such reasons:

- 5.1. It is vital that there be good collaboration between the general practitioner and the hospital, both generally and with respect to the individual case.
- 5.2. There must be agreement between the general practitioner and the hospital as to:
 - 5.2.1 who has responsibility for the patient at all stages of treatment;
 - 5.2.2 joint treatment policies;
 - 5.2.3 the quantity of medication to be supplied to the patient on discharge from hospital;
 - 5.2.4 the information given to patients and their families;
 - 5.2.5. means to preserve complete confidentiality with respect to the patient's problems.
- 5.3. Particularly since hospital prescribing does affect prescribing in general practice, common policies should be evaluated. This could well be the responsibility of Drug and Formulary Committees, which should include representatives of general practice as pointed out in Conclusion 2 above.

6. ROLE OF CLINICAL PHARMACOLOGY

Many of the therapeutic and toxicological problems which arise in hospitals reflect the continuing failure to develop clinical pharmacology and provide clinical pharmacological teaching and services. All hospitals need their own clinical pharmacological units, having close contact with day-to-day therapeutic work and active in the Hospital Drug and Formulary Committee. Such units can make a particular contribution to:

- 6.1. the quality of day-to-day prescribing by providing specific pharmaco-therapeutic advice;

- 6.2. the work of hospital drug and formulary committees;
- 6.3. the development of guidelines for adaptation of dosage in patients with impaired organic function;
- 6.4. the provision of drug monitoring service;
- 6.5. the documentation and analysis of unwanted drug reactions;
- 6.6. the selection and design of the clinical drug studies to be performed in a hospital and the interpretation of the results;
- 6.7. the design and interpretation of drug utilization studies;
- 6.8. post-graduate teaching of pharmacotherapy to the medical and nursing staff.

7. ROLE OF THE HOSPITAL PHARMACY

The traditional role of the hospital pharmacy in purchasing drugs, administering stocks, dispensing and distributing drugs within the hospital is developing further and must expand substantially if the pharmaceutical profession is to make an optimal contribution to the proper and economical use of drugs in hospitals. Modern techniques and administrative methods (see Section I of this Report) are needed to this end.

7.1. The hospital pharmacist should *inter alia* be active:

7.1.1. in ensuring the quality of the drugs used in the hospital;

7.1.2. in securing optimal prices for drugs used in hospitals, if necessary by joint or bulk purchasing, in countries where this is possible;

7.1.3. by functioning as an information and documentation centre on drug matters, i.e. maintaining a current library and literature information system relating to drugs, their effects, their proper use and their complications.

7.2. In addition to these central tasks, a number of others have sometimes been taken up successfully by hospital pharmacists:

7.2.1. Drug utilization studies have in some centres been successfully developed by hospital pharmacists, and while this is an activity to which any of the health professions can contribute, the fact that a pharmacy administration already possesses much of the statistical material needed for such studies makes it a very logical province of work for the hospital pharmacist, working wherever possible closely with a Clinical Pharmacologist (see Conclusion 6).

- 7.2.2. In some hospitals the hospital pharmacist has entered the broader field of "clinical pharmacy", which may incorporate not only the above services but also the provision of laboratory facilities for pharmacokinetic work. Provided the latter are available, as they should be for serum level monitoring in any large hospital, there is no a priori reason why these latter services should be provided by the clinical pharmacists rather than the clinical pharmacologist; there in either case a need for close collaboration between the two.
- 7.2.3. The production of certain drugs or analogous items has sometimes been successfully undertaken, depending upon local conditions.
- 7.2.4. In some countries and centres the hospital pharmacist has begun to play a role in influencing the way in which drugs are used in hospital. He may do this by his work in the Hospital Drug and Formulary Committee, but discussing with physicians their requests for drugs not in the formulary. or even by participating in ward visits. It is however important to realize that when the pharmacist begins to exercise an important influence upon the prescribing of physicians for the individual patient he may well find himself morally or legally responsible for any injury resulting from errors in the information or advice which he has provided.

8. ROLE OF THE MEDICAL AND NURSING PROFESSIONS

Every effort should be made by the medical professional staff to improve and update the knowledge and insight of hospital physicians with respect to drug treatment.

However it is also clear that many errors and shortcomings relating to the use of drugs in hospital reflect not merely a lack of knowledge but also a failure of disciplines to consult or collaborate with one another, either routinely or in individual cases. Various essential forms of interdisciplinary collaboration noted elsewhere in these conclusions include that between medicine and pharmacy (and specifically between clinical pharmacology and hospital pharmacy), that between medicine and nursing (see below), that between hospital medicine and external physicians including those in general practice (see Conclusion 5) and the broad collaboration which should underline the structure of a Hospital Drug and Formulary Committee (see Conclusion 2).

The medical staff and consultants of a hospital must clearly be closely involved in all the matters discussed here and there must be effective contact between them, e.g. so that a patient being treated by two or more specialists does not suffer as a result of incompatibility between their prescribing practices.

Nurses should be allocated a greater degree of responsibility than they often enjoy in ensuring the proper use of drugs in hospital; this would involve supplementary training and closer co-ordination with physicians on the therapeutic regimens to be followed by individual patients. The nurse can also play an important role in detecting the patient's subjective and objective response to treatment.

9. ROLE OF GOVERNMENTS AND DRUG REGULATORY AGENCIES

- 9.1. In setting national drug policies, governments have often looked too one-sidedly at the level of prescribing and the expenses incurred in general practice, and have devoted to little attention to purchasing and prescribing practices in hospital. A government should establish general guidelines within which hospitals can establish their own policies, adapted to their special needs. It would for example be desirable for governments to promote the establishment of Hospital Drug and Formulary Committees, indicating what their aims and mode of operation should be.
- 9.2. Specific steps which need to be taken by the legislature include the establishment of a proper legal basis for the practice of clinical pharmacology and of hospital pharmacy and for the conduct of clinical trials.
- 9.3. Drug regulatory agencies should consider adapting their licensing policies where necessary so as to allow for the facilitated registration of certain drugs which are suitable only for use in hospitals and which will not be supplied to others; such a distinction will be feasible provided hospitals have adequate policies of their own to ensure the proper and safe use of such drugs. Such an differential approach will bring regulation closer to practical reality.

10. ROLE OF THE WORLD HEALTH ORGANIZATION

There are a range of topics on which international consensus or international studies would be valuable in promoting an improvement in the use of drugs in hospitals. They include:

- 10.1. Attempts to determine and ensure the appropriate level of utilization of certain groups of drugs and analogous products, the use of which has increased rapidly and which currently account for a high proportion of hospital expenditure. These groups include antibiotics, blood and blood products, cancer chemotherapeutic agents, infusion fluids and large volume parenterals. Data on the level of use should be interpreted in the light of therapeutic goals. Future symposia should be planned to deal with the criteria for the selection of products in such groups. In the special case of infusion fluids, there is also a need for the study of materials management, quality assurance, expiration dates, methods of administration and health hazards. The WHO Drug Utilization Research Group should promote and co-ordinate comparative studies of hospital drug utilization as set out under Conclusion 4, and the critical interpretation of the prescribing trends which emerge from them.
- 10.2. The performance of comparisons of the content of Hospital Formularies, so that it becomes clearer on which drugs and therapeutic issues a broad or universal consensus exists. This would aid the development of those which already exist. In this connection WHO should also develop methods for assessing the impact of formularies. Current WHO projects to provide aid in developing model formularies should be continued and expanded.

- 10.3. The continuing efforts of the World Health Organization to accelerate the development of Clinical Pharmacology deserve every encouragement from Governments.
- 10.4. There is a need for international guidelines for the reporting of serious suspected adverse reactions, including those observed in hospitals.
- 10.5. Finally, the symposium notes with approval the progressive development of teaching materials and handbooks by the World Health Organization, partly as a follow-up to the recommendations of previous symposia in this series.

SCHLUSSFOLGERUNGEN UND EMPFEHLUNGEN

1. DIE NOTWENDIGKEIT DER INTEGRATION DES ARZNEIMITTELWESENS IM KRANKENHAUS

Die augenblicklichen Probleme der Arzneimitteltherapie im Krankenhaus (s. Abschnitt A dieses Berichts) können nur gelöst werden, wenn eine Integrierung des Arzneimittelwesens entwickelt und in jedem Krankenhaus durchgeführt wird. Arzneimittel sind im weitesten Sinne auch zum Beispiel Vakzinen, parenteral verabfolgte Lösungen und biologische Präparate. Das grundlegende Ziel ist, eine optimale Arzneimitteltherapie sicherzustellen, ohne unnötige Ausgaben zu verursachen.

Dazu gehören:

- die Auswahl eines Grundstockes an Arzneimitteln, welche mit kritischem Blick auf die Qualität des Arzneimittels und seinen Preis eingekauft werden;
- die Aufstellung optimaler Behandlungsrichtlinien, Ausbildungsmöglichkeiten, Leitlinien und Hilfe für die tägliche Therapie;
- die Beobachtung des Arzneimittelverbrauchs im Verlauf der Zeit.

Dieses Verfahren schliesst alle Bereiche und Ebenen ein, wobei das Wohl des Patienten immer im Mittelpunkt stehen muss. Es muss den Notwendigkeiten des jeweiligen Krankenhauses entsprechen, aber auch anpassungsfähig sein und dann auch veränderten Situationen angepasst werden.

2. EINRICHTUNG VON ARZNEIMITTELKOMMISSIONEN

- 2.1 Die Entwicklung eines integrierten Arzneimittelwesens sollte in jedem grösseren Krankenhaus oder Klinikum einer breit zusammengesetzten Arzneimittelkommission übertragen werden. Welcher Nutzen für das Krankenhaus von einer solchen Kommission zu erwarten ist, wird im Abschnitt H dieses Berichts erörtert.
- 2.2 Vertreter der Ärzteschaft (einschliesslich klinischer Pharmakologen), Pharmazeuten und Krankenpflegepersonal sowie der Verwaltungsdirektor und die Allgemeinpraktiker sollten in der Arzneimittelkommission vertreten sein, wenn möglich auch ein Vertreter der Patienten.
- 2.3 In Anhang 2 sind Zahlen über die verschiedenen möglichen Funktionen einer Krankenhaus-Arzneimittelkommission zu finden. Die Kommission kann als zentrales Instrument bei der Entwicklung und Aufrechterhaltung für alle das Arzneimittelwesen betreffenden Fragen angesehen werden. Eine solche Kommission sollte Argumenten zugänglich und bereit sein, sich überzeugen zu lassen und ihre Empfehlungen offen darzulegen.

3. DIE ROLLE DES PATIENTEN BEI DER ARZNEIMITTEL-THERAPIE IM KRANKENHAUS.

Angemessene Massnahmen - rechtlicher oder anderer Art - müssen ergriffen werden, um die Rechte des Patienten zu sichern. Im Hinblick auf die Arzneimitteltherapie umfassen diese zehn Grundprinzipien. Von allen gibt es jedoch gewisse Ausnahmen, z.B. in Notfallsituationen. Die meisten Rechte sind mit entsprechenden Pflichten verbunden, z.B. die Verpflichtung zur Durchführung einer einmal vereinbarten Therapie.

- 3.1 Kein Medikament soll ohne schriftliche und unterzeichnete Verordnung verabreicht werden.
- 3.2 Nur ausgebildetes Personal darf Medikamente verabreichen, und zwar nur in Übereinstimmung mit den örtlichen gesetzlichen Vorschriften.
- 3.3 Die schriftlichen Verordnungen für Arzneimittel sollen regelmässig von einer Fachkraft überprüft werden. Die schriftliche Dokumentation über die Arzneimittel, ihre jeweilige Dosierung und unerwünschte Arzneimittelwirkungen soll regelmässig nachgeführt werden und auch dem Patienten zur Einsicht verfügbar sein.
- 3.4 Es sollen schriftlich niedergelegte Regeln entwickelt werden, um die besonderen Umstände zu definieren, unter denen eine Arzneimitteltherapie ohne Konsultation des Patienten erlaubt ist (zum Beispiel in manchen Notfallsituationen). Weiterhin muss festgelegt sein, wer die Entscheidungen trifft und die Therapie ausführt.
- 3.5 Grundsätzlich darf kein Patient einer Arzneimittelbehandlung unterworfen werden, zu der er - nach ausreichender vorheriger Aufklärung - nicht seine Zustimmung gegeben hat. Patienten oder ihre gesetzlichen Vertreter sollten über den möglichen Nutzen und das Risiko der zur Behandlung empfohlenen Arzneimittel vollständig informiert werden.
- 3.6 Jeder Patient sollte im Krankenhaus Zugang zu Nachschlagewerken für Laien über Arzneimittel und ihre Eigenschaften haben.
- 3.7 Patienten sollten im allgemeinen die Möglichkeit haben, während der Behandlung im Krankenhaus eine Selbstmedikation weiterzuführen, vorausgesetzt, dass die verschiedenen Therapien sich nicht gegenseitig nachteilig beeinflussen. Jede Selbstmedikation muss gemeldet und dokumentiert werden.
- 3.8 Patienten sollten die Möglichkeit haben, zwischen verschiedenen möglichen, medizinisch angemessenen Therapieverfahren zu wählen. Im allgemeinen sollen Patienten die Möglichkeit haben, eine Arzneimitteltherapie zu verweigern.
- 3.9 Jeder Patient sollte das Recht auf einen "Patientenvertreter" innerhalb des Krankenhauses haben, der ihm bei der Wahrnehmung und Verteidigung seiner Rechte hilft und wenn notwendig als sein Sprecher auftreten kann.
- 3.10 Ein Patient, der eine unvorhersehbare, schwere Schädigung durch Arzneimittel als Folge einer Nachlässigkeit oder eines anderen Fehlers irgendwo im Krankenhaussystem erleidet, sollte die Möglichkeit haben,

schnell und angemessen entschädigt zu werden. Das setzt voraus, dass die Krankenhäuser eine entsprechende Versicherung für alle Handlungen, die durch ihr Personal oder in ihrer Verantwortung ausgeführt werden, abschliessen. Dazu gehören auch angemessene Massnahmen zur Überprüfung von Schadenfällen und Regelungen von Entschädigungsansprüchen.

Für Schäden, die ohne irgend jemandes Verschulden entstehen, sollte ebenfalls eine Entschädigungsmöglichkeit gegeben sein.

4. DIE NOTWENDIGKEIT VON UNTERSUCHUNGEN ÜBER DEN ARZNEIMITTELVERBRAUCH UND DIE QUALITÄT DER VERORDNUNGEN

- 4.1. Alle Krankenhäuser sollten laufend mittels einer standardisierten Methodik erhobene, aussagefähige Daten über den Arzneimittelverbrauch verfügbar haben. Dafür sind die von der WGO/EURO-Forschungsgruppe über Arzneimittelverwendung ausgearbeiteten Methoden geeignet.
- 4.2. Solche Untersuchungen sollten sich besonders auf solche Arzneimittel erstrecken, die grosse Kosten verursachen (besonders Antibiotika, einige in grossen Mengen verabfolgte parenterale Lösungen und Blut sowie Blutprodukte) oder/und besonders toxisch sind (z.B. Zytostatika, Herzglykoside usw.).
- 4.3. Eine Interpretation von Untersuchungen über den Arzneimittelverbrauch ist nur möglich, wenn auch Daten über die Morbidität und die Verordnungsqualität erhoben werden; dafür ist ein breitangelegter interdisziplinärer Einsatz erforderlich.
- 4.4. Die Organisation solcher Untersuchungen ist eine Aufgabe, die durchaus zunächst durch den Krankenhausapotheker in Koordination mit der Arzneimittelkommission ausgeführt werden kann.

5. BEZIEHUNGEN ZWISCHEN KRANKENHAUS UND HAUSARZT

Patienten, die in einem Krankenhaus aufgenommen werden, haben häufig bereits eine Behandlung durch einen Arzt erhalten und sollten ohne Konsultation mit dem Hausarzt nicht auf eine völlig andere Medikation gesetzt werden. Umgekehrt bedarf der Patient nach der Krankenhauserlassung oft einer Fortsetzung der Behandlung, und auch hier besteht ein Bedürfnis nach einer Koordination anstelle einer nur schriftlichen Anweisung an den Allgemeinarzt durch das Krankenhaus.

Aus diesen Gründen

- 5.1. ist es äusserst wichtig, dass Krankenhaus und Hausarzt gut zusammenarbeiten, sowohl generell als auch im Hinblick auf den einzelnen Patienten.
- 5.2. Zwischen dem Krankenhaus und dem Hausarzt muss vereinbart werden:
 - 5.2.1. wer in jeder Behandlungsphase für den Patienten verantwortlich ist,

- 5.2.2. eine gemeinsame, abgestimmte Behandlungsstrategie,
 - 5.2.3. welches Quantum Arzneimittel dem Patienten bei seiner Entlassung aus dem Krankenhaus mitgegeben werden soll,
 - 5.2.4. welche Informationen dem Patienten und seinen Angehörigen erteilt werden sollen,
 - 5.2.5. auf welchem Wege strikte Vertraulichkeit bezüglich der Probleme des Patienten gewahrt werden kann.
- 5.3. Besonders weil Verordnungen durch das Krankenhaus die Medikation in der Allgemeinpraxis beeinflussen, sollten gemeinsame Behandlungsstrategien geprüft und bewertet werden. Diese Aufgabe könnte einer gemeinsamen Arzneimittelkommission übertragen werden, der auch Vertreter der Allgemeinärzte angehören sollten.

6. DIE ROLLE DER KLINISCHEN PHARMAKOLOGIE

Viele der therapeutischen und toxikologischen Probleme, die im Krankenhaus auftreten, spiegeln das anhaltende Unvermögen wider, die klinische Pharmakologie zu entwickeln und damit den Unterricht in klinischer Pharmakologie und die Leistung klinisch-pharmakologischer Dienste zu ermöglichen. Alle Krankenhäuser bedürfen ihrer eigenen klinisch-pharmakologischen Einheit, die engen Kontakt mit der täglichen therapeutischen Arbeit haben muss. Solche Einheiten können besondere Beiträge leisten für:

- 6.1. die Qualität der täglich ausgestellten Verordnungen, indem sie im Einzelfall konkrete Ratschläge für die Arzneimittelbehandlung erteilen,
- 6.2. die Arbeit der Arzneimittelkommission im Krankenhaus,
- 6.3. die Entwicklung von Richtlinien für die Dosisanpassung bei Kranken mit gestörter Organfunktion,
- 6.4. die Messung von Blutspiegeln (drug monitoring),
- 6.5. die Dokumentation und Analyse unerwünschter Arzneimittelwirkungen,
- 6.6. die Auswahl und die Anlage der im Krankenhaus durchzuführenden klinischen Arzneimittelstudien und die Interpretation der Untersuchungsergebnisse,
- 6.7. die Anlage und Interpretation von Arzneimittelverbrauchstudien,
- 6.8. die Fortbildung in Pharmakotherapie für Ärzte und Pflegefachkräfte.

7. DIE ROLLE DER KRANKENHAUSAPOTHEKE

Die traditionelle Rolle der Krankenhausapotheker beim Einkauf, bei der Vorratshaltung, der Verteilung und Abgabe von Arzneimitteln im Krankenhaus entwickelt sich weiter und muss beträchtlich erweitert werden, wenn der Berufsstand der Pharmazeuten einen optimalen Beitrag zum richtigen und ökonomischen Gebrauch von Arzneimitteln im Krankenhaus leisten soll.

7.1 Der Krankenhausapotheker sollte unter anderen tätig werden:

- 7.1.1. bei der Qualitätssicherung der im Krankenhaus verwendeten Arzneimittel,
- 7.1.2. bei der Erzielung optimaler Preise für die im Krankenhaus verwendeten Arzneimittel, wenn nötig durch gemeinsamen oder Grossmengeneinkauf in Ländern, wo das möglich ist,
- 7.1.3. durch seine Funktion als Informations- und Dokumentationszentrum in Arzneimittelfragen, zum Beispiel durch Unterhaltung einer regelmässig aktualisierten Bibliothek und eines Literaturinformationssystems über Arzneimittel, ihre Wirkungen, ihren richtigen Gebrauch und ihre Komplikationen.

7.2 In gewissen Zentren und Ländern hat der Krankenhausapotheker also bisweilen erfolgreich weitere Aufgaben übernommen.

- 7.2.1. Arzneimittelverbrauchsstudien werden in gewissen Zentren erfolgreich durch Krankenhausapotheker entwickelt, obwohl jeder der Gesundheitsberufe zu dieser Tätigkeit beitragen kann. In dessen lässt die Tatsache, dass eine Krankenhausapotheke bereits über sehr viel statistisches Material für solche Studien verfügt, dieses Arbeitsgebiet logischerweise als Aufgabe für den Krankenhausapotheker erscheinen, der wenn immer möglich mit einem klinischen Pharmakologen zusammenarbeiten sollte (s. Schlussfolgerung 6).
- 7.2.2. In einigen Krankenhäusern hat der Krankenhausapotheker das weitere Feld der sog. "klinischen Pharmazie" betreten, wozu nicht nur die oben erwähnten Dienstbereiche gehören, sondern auch die Bereitstellung von Laboratorien für pharmakokinetische Untersuchungen. Vorausgesetzt, dass solche verfügbar sind, wie das für die Überwachung der Serumspiegel in jedem grossen Krankenhaus die Regel sein sollte, gibt es an sich keinen vernünftigen Grund, warum die genannten Labordienste durch den klinischen Pharmazeuten und nicht durch den klinischen Pharmakologen erbracht werden sollten; in jedem Fall ist eine enge Zusammenarbeit zwischen beiden nötig.
- 7.2.3. Die Produktion bestimmter Arzneimittel oder ähnlicher Stoffe wurde bisweilen erfolgreich in Angriff genommen, je nach den örtlichen Gegebenheiten.
- 7.2.4. In manchen Ländern und Zentren hat der Apotheker hinsichtlich der Anwendung von Arzneimitteln im Krankenhaus Einfluss gewonnen. Dieser Einfluss wird wirksam durch die Mitarbeit in der Arzneimittelkommission, bei der Diskussion mit Ärzten über die Anforderung von Arzneimitteln, die nicht in der Arzneimittel-liste enthalten sind, oder sogar durch Teilnahme an Ärztevisiten. Wenn der Apotheker aber einen bedeutsamen Einfluss auf die Verordnungen des Arztes nimmt, ist es wichtig, sich klarzumachen, dass er durchaus selber moralisch oder rechtlich für jeden Schaden verantwortlich gemacht werden kann, der durch fehlerhafte Information oder Beratung seinerseits entstanden ist.

8. DIE ROLLE DER ÄRZTE UND PFLEGEFACHKRÄFTE

Die Ärzteschaft sollte jede Anstrengung unternehmen, um die Kenntnisse von Krankenhausärzten über Arzneimitteltherapie zu verbessern und immer auf dem neuesten Stand zu halten.

Viele Fehler und Mängel bei der Arzneimittelverwendung in Krankenhäusern sind jedoch nicht nur Ausdruck von Wissenslücken, sondern auch der fehlenden Konsultation und Zusammenarbeit der einzelnen Fachbereiche untereinander, sei es routinemässig oder im Einzelfall. Zu den verschiedenen unbedingt nötigen Formen der interdisziplinären Zusammenarbeit (die an anderer Stelle in diesen Schlussfolgerungen aufgeführt sind) zählen die Zusammenarbeit zwischen Ärzten und Pharmazeuten (speziell zwischen klinischen Pharmakologen und Krankenhausapothekern), zwischen Ärzten und Pflegefachkräften (s. unten), zwischen Krankenhausärzten und Allgemeinpraktikern (s. Schlussfolgerung 5) und die umfassende Zusammenarbeit, die sich aus der Zusammensetzung einer Arzneimittelkommission ergibt (s. Schlussfolgerung 2).

Es versteht sich, dass sowohl die festangestellten Krankenhausärzte als auch die Belegärzte eng in alle hier erörterten Angelegenheiten einbezogen werden und auch untereinander enge Kontakte aufrechterhalten müssen, damit vermieden wird, dass ein von zwei oder mehr Spezialisten behandelter Patient durch inkompatible Verordnungspraktiken Nachteile erleidet.

Den Pflegefachkräften sollte mehr Verantwortung und Selbständigkeit in der richtigen Verwendung von Arzneimitteln im Krankenhaus gegeben werden, als sie normalerweise haben; das würde bedeuten, dass eine zusätzliche Ausbildung und eine engere Koordinierung mit den Ärzten über das vom einzelnen Patienten einzuhaltende Arzneimittelregime erforderlich sind. Eine wichtige Rolle kommt den Pflegefachkräften auch in der Beobachtung des subjektiven und objektiven Ansprechens des Patienten auf die Arzneimitteltherapie zu.

9. DIE ROLLE DER REGIERUNGEN UND ARZNEIMITTELBEHÖRDEN

- 9.1. Im Rahmen ihrer nationalen Arzneimittelpolitik haben die Regierungen oft zu einseitig auf den Umfang der Verordnungen und die damit verbundenen Kosten in der Allgemeinpraxis geblickt und zuwenig Aufmerksamkeit auf den Einkauf von Arzneimitteln und die Verordnungsgewohnheiten im Krankenhaus gelegt. Eine Regierung sollte allgemeine Richtlinien aufstellen, innerhalb deren die Krankenhäuser entsprechend ihren besonderen Bedürfnissen Spielraum für eigene Entscheidungen haben. Es wäre z.B. wünschenswert, dass die Regierungen die Einrichtung von Arzneimittelkommissionen im Krankenhaus fördern und ihre Ziele und Arbeitsweisen definieren.
- 9.2. Besondere Schritte sind seitens des Gesetzgebers erforderlich, einschliesslich der Schaffung einer zweckdienlichen gesetzlichen Grundlage für die klinisch-pharmakologische Praxis und die Tätigkeit des Krankenhausapothekers sowie für die Durchführung von klinischen Studien.
- 9.3. Die Arzneimittelbehörden sollten erwägen, ihre Zulassungsentscheidungen wo nötig so anzupassen, dass eine vereinfachte Registrierung bestimmter Arzneimittel möglich ist, die nur für die Anwendung in Krankenhäusern geeignet sind und sonst an niemanden abgegeben werden; eine solche Unterscheidung sollte möglich sein, vorausgesetzt, dass die Krankenhäuser angemessene Möglichkeiten haben, die richtige und sichere Anwendung solcher Arzneimittel zu gewährleisten. Eine solche differenzierte Lösung würde die Arzneimittelzulassung praxis- und realitätsnäher gestalten.

10. DIE ROLLE DER WGO

Es gibt eine ganze Reihe von Themen, über die internationale Übereinstimmung erzielt oder internationale Studien durchgeführt werden könnten. Dies wäre wertvoll, um eine Verbesserung der Anwendung von Arzneimitteln in Krankenhäusern herbeizuführen. Dazu gehören:

- 10.1. Das Bedürfnis nach gegenwärtigen und zukünftigen Vergleichen über den Umfang und die Art der Anwendung bestimmter Gruppen von Arzneimitteln und ähnlichen Stoffen, deren Verwendung sich rasch ausbreitet und die heute einen grossen Teil der Ausgaben der Krankenhäuser ausmachen; dazu zählen Antibiotika, Blut und Blutprodukte, chemische Krebsbehandlungsmittel, Infusionsflüssigkeiten und in grossen Mengen gebrauchte Darmpräparate. Daten über die Verbrauchsmengen sollten im Lichte der Behandlungsziele interpretiert werden. Es sollten künftige Symposien geplant werden, die sich mit den Selektionskriterien für Produkte in diesen Gruppen befassen. Im Sonderfall der Infusionsflüssigkeiten sind auch Studien über Materialbewirtschaftung, Qualitätssicherung, Verfalldaten, Verabreichungsmethoden und damit verbundene Gesundheitsgefährdungen erforderlich. Die WGO-Forschungsgruppe über Arzneimittelverwendung sollte vergleichende Studien über die Arzneimittelverwendung im Krankenhaus, wie in der Schlussfolgerung 4 erwähnt, fördern und koordinieren und die daraus hervorgehenden Trends des Ordnungsverhaltens kritisch interpretieren.
- 10.2. Der Vergleich von Arzneimittellisten und anderen Formularen aus Krankenhäusern, so dass besser ersichtlich wird, bezüglich welcher Arzneimittel und therapeutischen Verfahren eine breite oder allgemeine Übereinstimmung besteht. Damit würde auch eine Weiterentwicklung bereits bestehender Listen erleichtert. In diesem Zusammenhang sollte die WGO auch Methoden entwickeln, mit denen die Auswirkung von Arzneimittellisten festgestellt werden kann. Die laufenden WGO-Programme zur Unterstützung der Entwicklung von Modell-Arzneimittellisten sollten fortgesetzt und erweitert werden.
- 10.3. Die andauernden Anstrengungen der WGO, die Entwicklung der klinischen Pharmakologie zu beschleunigen, verdienen die volle Unterstützung durch die Regierungen der Mitgliedstaaten.
- 10.4. Es besteht das Bedürfnis nach internationalen Leitlinien für die Berichterstattung über schwere unerwünschte Nebenwirkungen, die vermutlich auf Arzneimittel zurückzuführen sind, einschliesslich im Krankenhaus beobachteter Nebenwirkungen.
- 10.5. Schliesslich weist das Symposium auf die fortschreitende Entwicklung von Lehrmaterialien und Handbüchern durch die WGO hin, die zum Teil im Zuge der Verwirklichung von Empfehlungen früherer Symposien dieser Reihe ausgearbeitet wurden.

SELECTION OF DRUGS AND MEDICAL CONTROLS ON PRESCRIBING

by

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Introduction

The title of this presentation reflects some of the essentials of hospital drug policies and seems to imply a kind of controversy. However, the two named activities, drug selection and controls on prescribing, are for both conceptual and practical reasons inseparable and integrated. The Scandinavian countries have for almost two decades worked to establish integrated drug policies in hospitals, but such initiatives still seem to be more or less ignored in some European areas.

Any drug policy in a hospital must be conducted in consideration of both the surrounding community and the local conditions. Likewise any analysis of such policies should take these facts into account. Recommended drug lists may, therefore, vary considerably between hospitals, even within the same country. Multiplicity, variability and adaptation to different experiences will accordingly be the proper basis of drug policies, rather than unification, standardization and centralization. On the other hand, too liberal an approach may lead to a state of drug anarchy. The central factor in efforts to keep drug policy in the hospital in a balance between strict purism and disorganized liberalism is the formulary, or better the drug committee. The alternative may well be a confused or even frustrated hospital staff, which can have a detrimental effect on the drug treatment given to the individual patient.

An overview of the various tasks, responsibilities, activities and problems of the hospital drug committee is given in figures 1 and 2.

Aims and composition of hospital drug committees (Figures 1 and 2)

Both for the selection of drugs and for the professional control on prescribing the hospital drug committee is an indispensable instrument, at least in the model mostly applied in the Scandinavian countries and in the Anglo-Saxon world. In Sweden such committees have been in operation for decades, providing an example which was in due course followed by the other Nordic countries. Thus in Denmark our experience in this field dates back 8 to 10 years. Ninety per cent of Danish hospital patients are now covered by about seventy hospital drug committees, covering a population of 5 million.

The declared aims of the various committees are not always phrased in the same way, but usually they include:

- coordination and rationalization of drug treatment as well as improving the quality of drug treatment in general;

- establishment of drug lists recommended for local use;
- measures to control or even regulate drug prescribing in hospitals;
- distribution of information on drugs to hospital staff;
- assistance to individual staff members both in the clinical departments and the hospital administration in solving drug related problems;
- keeping the hospital's drug bill as low as reasonably possible e.g. by setting up drug budgets and controlling their observance;
- other drug related tasks; these may include the registration of adverse reactions, planning of clinical drug trials, and the creation of a positive influence on manufacturers and on general practice.

A drug committee usually consists of 2-3 heads of clinical departments, a clinical pharmacologist (if one is employed) one or two staff residents, the hospital pharmacist, a nurse, a practicing doctor from the catchment area and possibly a hospital administrator.

In order to understand the way in which Danish hospital drug committees operate it is necessary to recall that Danish physicians have the right to prescribe freely; this also applies to the permanent medical staff in hospitals. This means that only recommendations can be given as a means of improving drug utilization in hospitals. The number of drugs on the Danish market is limited to some three thousand preparations and the registration procedure adopted by the drug regulatory agency is relatively strict. The number of preparations to choose from for a hospital drug committee is therefore not as large as it would be in many other countries. The usual number of drugs recommended by various committees amounts to between 300 and 600, depending on the number of clinical specialities represented and the function of the hospital (University, regional, local etc.).

Selection of drugs

Although the actual procedures for selecting drugs applied by various hospital drug committees may vary to some extent, great similarities do exist. The procedure followed by our Committee at the University Hospital in Copenhagen can be described as follows.

The full committee devises the general approach, while the basic evaluation work is done by subcommittees, one for each therapeutic area. These subcommittees usually have 5 to 8 members, some of these being experts in that particular field, while others represent non-specialist users, all appointed from the hospital medical staff. A nurse often participates as do pharmacists from the hospital pharmacy. The subcommittee's work is based on scientific evidence for evaluation of the safety/efficacy balance, but practical and clinical considerations relevant to local use are applied. The subcommittee suggests primarily the compound to be recommended, while the drug committee will choose the most appropriate preparation and synonym, taking the pattern of local use, experience and trials into account. The price is, of course, also an important determinant. Other conditions to be considered are local production of drugs in the hospital pharmacy and problems concerning drug supply and quality control.

The committee may ask other interested parties for comments and thereafter the list is finally authorized. In the entire selection procedure, it is of extreme importance to find the balance between a sceptic conservatism inspired by the many pseudo-improvements in the modern drug world, and the necessary alertness to recognize novel drugs that represent a true innovation, practical progress or a cut in expenditure.

The lists compiled from each therapeutic area are subsequently published in a booklet presenting all the drugs recommended for use at the hospital. Some preparations are recommended only for use in special departments and for general use. In several sections of the booklet brief motivations and information on such use are included, although it is not the intention to establish an exhaustive therapeutic guideline. The booklet is reedited once a year, is in pocket format and the cover changes colour with every new edition. It is distributed to all doctors at the hospital and is also kept in the medicine cupboard of each ward.

Professional control on prescribing

To set up a recommended list of drugs is, as already stated, only a part of the work needed to fulfill the goals of the hospital drug committee. Controlling compliance with this regulatory measure is equally important and necessary. As the drug lists only recommend and do not dictate, it is necessary and highly advantageous to combine any measure of control with thorough information.

To control prescription in a hospital is both a qualitative and a quantitative question, and the measures to be implied can be divided into professional control (i.e. medical and pharmaceutical), and economic control. Although these two parts are difficult to separate in practice, I shall confine myself almost entirely to the former.

To establish a basis for a meaningful drug control system, information on current consumption must be readily at hand. A well functioning data system is therefore indispensable in order to know which drugs are used when and where. In essence, all prescriptions are data processed before they are delivered, which provides a unique possibility to utilize the statistics. For all recommended drugs there are preprinted prescription forms, and the data system is of course also connected with the inventory control of the hospital pharmacy. By using such a system it is easy on the one hand to issue (for example monthly) to each department specified surveys of drug use and on the other hand one can very quickly detect any alteration in the use of a particular drug or in a particular ward, whether it relates to a recommended or a non-recommended drug. It should, however, be emphasized that professional and alert supervision is absolutely necessary to benefit from this data system. The medical and pharmaceutical secretaries of the committee must therefore be trained in this work.

The follow-up using the data system makes it possible to implement measures for controlling (or rather influencing) drug utilization in the hospital. It is important, however, that such measures are perceived by the prescriber as professionally correct and clinically justified and not just as red tape. The following measures are proposed:

- monthly surveys of drugs as described previously;
- a procedure is established for prescribing a non-recommended drug which is more difficult or elaborate than for recommended preparations, and good arguments must be produced for its use;
- in case of a demonstrated increased use of a certain drug or a certain therapeutic regimen, the drug committee may ask for the reason for this trend;
- if disagreements arise, a small ad hoc group of experts may be appointed to look into the problems and report to the committee;
- as an extreme the hospital administration may charge the prescriber himself with the excess expense caused by the prescription, although such measures have never been brought into action.

Usually drastic measures are avoided and during the last decade few major problems of that kind have come up. Most questions have been settled with a minimum of resentment. The force of the drug committee lies in its mere existence and real policing is not a part of its job. The possible interference by the committee should rather be understood as a debate between equals.

The control task and provision of information are in the first line taken care of by the medical and the pharmaceutical secretaries attached to the drug committee, but all major problems are of course discussed in (and further managed by) the committee itself.

The system described is naturally combined with economical controls, which I shall not go into. I shall only emphasize that the drug committee works out a yearly budget for each department in collaboration with the heads of department and of the hospital administration. These budgets are continuously controlled and may be adjusted by the committee.

Our experience with these control systems are relatively good. In particular, the velvet-glove approach to medical control, exerted by discussions, messages, meetings and information based on actual data for drug use, has proved quite acceptable for the majority of the medical staff members.

Special problems

Among the host of problems which the performance of an expedient hospital drug policy generates are a few to which I would like to point because of their more principal nature.

The first one concerns partly the relation to the pharmaceutical industry. When a clinical trial is initiated at the hospital, the new drug is often supplied free of charge during the trial and possibly for a certain period thereafter. However, when the drug is approved for marketing the use of the drug in question often continues in the department, frequently without its having been evaluated by the drug committee. Although this may be a part of the strategy of the pharmaceutical company involved, it is only acceptable if the drug is subsequently included in the recommended list. If not (and if the drug is expensive and/or used extensively) it may quickly become an economic burden outside the control of the drug committee. The new drug has

so to say sneaked in through the back door, and we have several examples of this traffic. When it concerns a real innovation it is in order, but often it may only be an expensive analogue. The way to tackle this problem is to require a notification of all new drug trials to the drug committee, which means that hospital policies should also embrace local drug trials. This may be unfamiliar or even unacceptable for many staff members, but the problem is for sure a real one.

The second problem involves the acceptability of the drug lists compiled by the committee. In other words, what are the results of this achievement and how can we measure them. The ultimate goal of drug recommendations is to facilitate improved therapy for the individual patient in terms of efficacy, tolerability and time, and for society to reduce expenditures, estimated as an overall figure. To measure such figures is, however, not realistic. A practicable way is to look at the drug use in terms of money, which is easy enough, and to measure the degree of compliance with drug lists. The latter should be done in a dual way by determining both the total percentage of prescriptions for non-recommended drugs in each department and by recording of the non-recommended drugs actually used. The total use of non-authorized prescriptions may be low while at the same time the number of non-recommended drugs is high in relation to the number on the list. As a rule-of-thumb a 70-80 per cent adherence to the drug list should be regarded as acceptable and not trigger off too many reactions from the committee unless special problems arise. If the adherence is generally higher the committee should speculate whether the lists are too extensive and liberal. On the other hand, if the adherence percentage is low the lists may be too restrictive, reflecting an unrealistically strict and even professionally incorrect drug policy.

Thirdly one must consider the possibilities of outside pressures on the drug committee. The medical profession is often, and for good reasons, concerned with, or even afraid of, constraints on the clinical work, impeding the doctor in doing what he thinks is in the best interest of his patient. Likewise, members of a hospital drug committee could feel that politicians, the pharmaceutical industry, administrators, the health authorities and others from the outside may impose certain restrictions of a political or economical nature upon them. This may be felt as comprising undue interference with their work at the local level. From ten years of experience, I feel that this kind of influence has been limited. The fear of unification, conservatism and bureaucracy predicted especially by the industry has been counterbalanced by the direct and indirect influence on the hospital staff members by the same industry. This is both legal and - if applied by scientific means - also acceptable. The drug committees have learned the rules of the game. Much more serious is the general tendency to reduce hospital drug budgets. The drug committees have one of their greatest challenges in establishing drug policies which can counterbalance the effects of such cut backs.

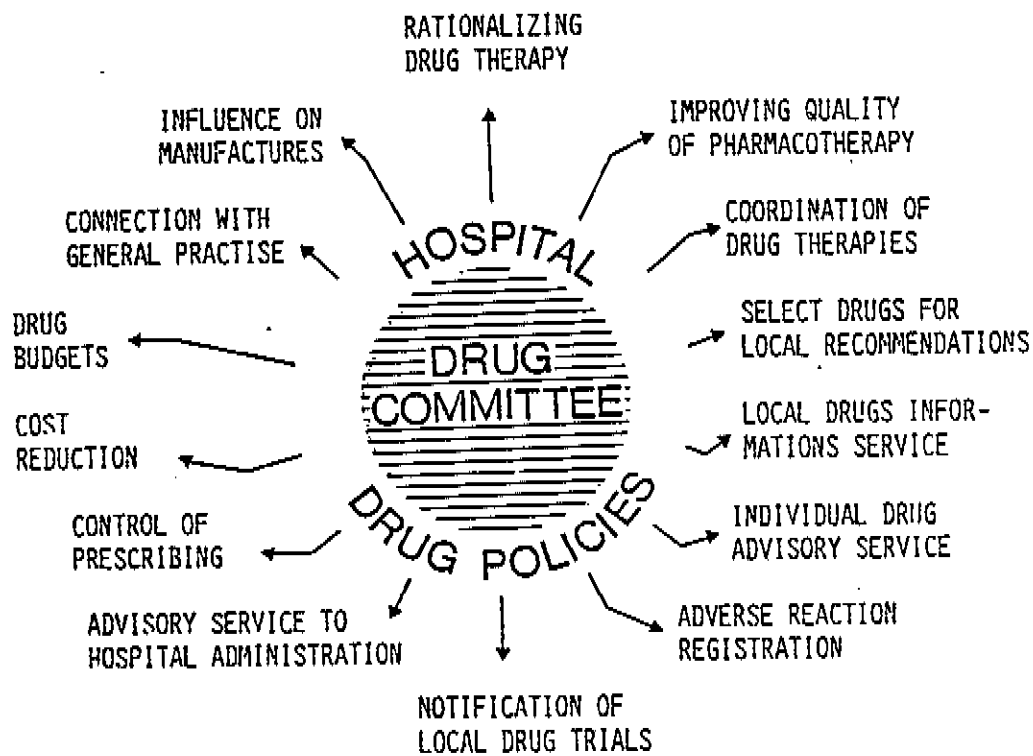
Hospital drug policies should always aim to balance artistically between the respect of the four Ps:

- the PATIENT, who needs us, and always should be the key figure;
- the PROFESSIONAL, who is doing the job;
- the POLITICIAN, who at the end is paying the bill and represents the society, and lastly
- the PRODUCER who is inventing and manufacturing the drugs we are working with as therapeutic instruments.

An integrated hospital drug policy will then be within reach.

FIGURE 1

SELECTION OF DRUGS AND
MEDICAL CONTROLS ON PRESCRIBING

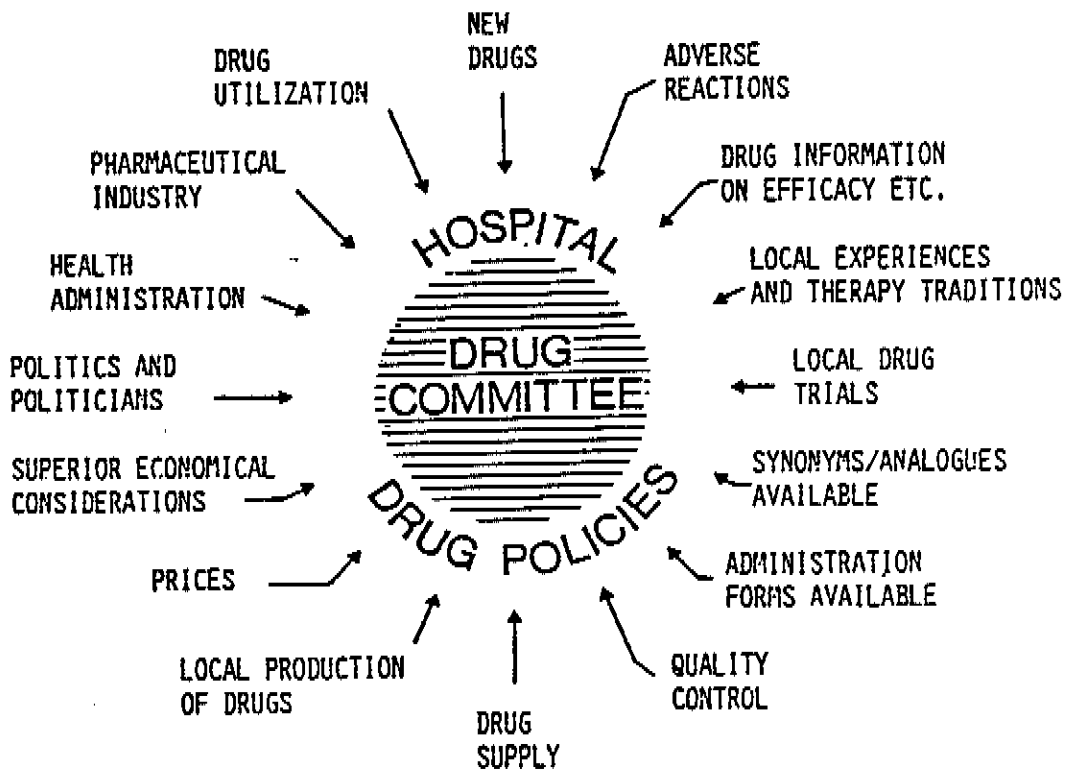


AIMS AND TASKS
OF HOSPITAL DRUG POLICIES

(The "efferent" model)

FIGURE 2

SELECTION OF DRUGS AND
MEDICAL CONTROLS ON PRESCRIBING



THE INFLUENCE
ON HOSPITAL DRUG POLICIES

(The "afferent" model)

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