Therapeutic consultation: a necessary adjunct to independent drug information

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- 1 A therapeutic consultation service was implemented in 1984 to complement other methods of information and education on drug therapy for prescribers.
- 2 Up to 1991, 1,620 enquiries were received, 65% from our hospital and an increasing proportion from primary care (10%), other hospitals (6%), family planning centres (4%), and other sources (14%).
- 3 More than two-thirds (67%) were consultative enquiries, as opposed to demands for factual information, which needed knowledge of medical aspects of the case and clinical expertise.
- 4 85% of enquiries were answered with a written report including relevant references and as conclusive as possible recommendations.
- 5 More discussion of therapeutic consultation is needed, and aspects for discussion are suggested.

Keywords therapeutic consultation drug information

Introduction

The wide variety of medicines available to prescribing doctors makes rational choice for a particular patient very difficult. The majority of physicians now practising in our area were never taught the basic principles of clinical pharmacology, and they cannot use medicinal therapy to full advantage. Drugs that are largely ineffective are still used widely (Díaz de Torres & Benedi, 1988; Laporte *et al.*, 1983; Prieto & Sánchez, 1990) and doses or combinations are often irrational. Useful older drugs are passed over in favour of newer agents that are no more, or are even less, effective and that may be more toxic or expensive (Laporte *et al.*, 1983; Laporte & Capellà, 1987). This situation is not exclusive to our country (Avorn & Soumerai, 1983; Laporte & Vidal, 1988).

When a new drug is introduced into practice almost all the information on it comes from the manufacturer. Few doctors have the time and experience to study clinical trials or other reports. Consequently, it is increasingly difficult for physicians to keep abreast of important developments in therapeutics. This situation is common to most Western European countries. There are of course a variety of sources of unbiased and reliable information, but usually they are not at hand for the physician. When these sources are accessible (e.g. in university hospitals) it is still common to see patients with various conditions who need different drugs, or patients from certain subgroups (e.g. pregnant women,

children, the elderly) for whom standard treatment may not be optimal. Patients who do not respond as expected to a given treatment and patients who present unexpected adverse effects may also cause therapeutic difficulty.

The WHO Working Group on Clinical Pharmacology in Europe stated that the major goal of clinical pharmacology will be to provide service and research facilities to both hospitals and the primary health sector (WHO Working Group on Clinical Pharmacology in Europe, 1988). Information and education on drug prescribing, and therapeutic consultation, should be prominent activities of a clinical pharmacology service (Alvan, 1985; Alvan *et al.*, 1983; Davies *et al.*, 1977; Spector *et al.*, 1979; Wang & Hieb, 1977; Wardell, 1975). We describe the development of a computerized therapeutic consultation service, and the experience of the first seven years. We advance ideas for a wider exchange of information in this field.

Methods

Our Clinical Pharmacology Unit is located in a University hospital serving a population of 2,000,000 inhabitants, which is divided into three sections: Obstetrics, Gynaecology, and Paediatrics (467 beds),

Trauma and Rehabilitation (316 beds), and the General Hospital (794 beds) which includes all medical and surgical subspecialties. The Unit has responsibility for undergraduate and postgraduate teaching in basic and clinical pharmacology and drug epidemiology, and postgraduate training of clinical pharmacologists. Since 1979 we have prepared a pocket guide for general practice which is published every 4 years and distributed free to all physicians and pharmacists in our area (30,000 copies). We also publish various bulletins; on therapeutics and drug information for general practitioners (12,000 copies, monthly); on the spontaneous reporting system of adverse drug reactions and on drug safety issues (22,000 copies, quarterly); and for hospital physicians (2,000 copies, quarterly). To complement these publications a therapeutic consultation section was set up in our hospital in 1984. This receives requests from our hospital, from other hospitals, and from general practice.

The activities of the therapeutic consultation section started when our Clinical Pharmacology Service was founded, which was soon after publication of a key report on therapeutic consultation (Alvan *et al.*, 1983). The service was designed to solve complex clinical questions that cannot be answered by consulting desk references (Alvan, 1985; Alvan *et al.*, 1983; Davies *et al.*, 1977). Initially one senior clinical pharmacologist helped by a part-time secretary was in charge of the service. Now the number of clinical pharmacologists has increased to 3, all part-time, with 1–3 trainees in clinical pharmacology.

Queries are received by telephone, during clinical rounds, or rarely by letter. For each enquiry a standard form is filled in including the number; date; name, position, and address of the enquirer; the problem posed; drugs involved; text of the answer; advice given; bibliographic sources used; references; the name of the person responsible for the answer, and a number of keywords (see below). Primary or secondary bibliographic sources are used as needed (Rodríguez *et al.*, 1989). All enquiries are answered in a short time. In urgent cases prompt answers are given by telephone followed by a written report. In some cases the advice given expresses some therapeutic uncertainty but a clear recommendation is always made. In a proportion of cases where a clinical opinion is required, e.g. suspicion of adverse drug reactions, selection of the therapeutic strategy, poor response, the patient is followed up and the outcome recorded. Thereafter all reports are included in a database from which information can be easily retrieved by the same logic as MEDLINE (Rodríguez *et al.*, 1989). When an enquiry is made the database is consulted seeking a similar previous enquiry, which may be used wholly or in part to prepare the response.

The database is built in Fortran language and includes three dictionaries: (1) a dictionary of keywords selected from the US National Library of Medicine Medical Subject Headings (MESH) and names of microorganisms which are included in the database at the same time as enquiries are handled; (2) a dictionary of generic names, trade names, and therapeutic groups, organized according to the Anatomical and Therapeutic Classification (ATC) of drugs and pharmaceutical

Table 1 Topics of enquiries

Topic	Enquiries*	
	n	(%)
Adverse reaction	486	(30)
Choice of drugs or therapeutic strategy	446	(28)
Factual or evaluated documentation	257	(16)
Drugs in pregnancy	255	(16)
Marketed drugs	74	(5)
Pharmacokinetics	61	(4)
Bibliography	59	(4)
Interactions	51	(3)
Pharmacy	30	(2)
Methods	23	(1)
Intoxications	19	(1)
Drugs and breast feeding	18	(1)

*The numbers and percentages sum up more than 1,620 and 100% respectively, because for some enquiries more than one topic is recorded.

specialties; and (3) a dictionary of topics of enquiries, as shown in Table 1.

Results

Between May 1984 and October 1991, 1,620 enquiries were received. Figure 1 shows the time trend of therapeutic consultation activity. At present a mean of 30 enquiries are dealt with every month. The majority (1,060; 65%) come from our hospital or from other hospitals (97; 6%), but an increasing proportion come from primary health care (160; 9.9%), family planning centres (68; 4.2%), private practice (31; 1.9%), or other sources (204; 12.6%).

The topics of enquiry are shown in Table 1. Overall 68% of them referred to specific clinical problems, while 32% referred to factual information on drugs.

Table 2 shows the number of enquiries according to the ATC clarification of the drugs involved. Antibiotics and drugs acting on the central nervous system were the leading groups, followed by cardiovascular drugs.

Table 3 shows data on the three main topics of consultation for the 15 most commonly featured groups of drugs. A high proportion of enquiries on drug selection referred to infectious diseases and the use of anti-ulcer drugs. Consultations about suspected adverse

Figure 1 Secular trend in the number of enquiries received (1984: only 6 months of operation).

Table 2 Groups of drugs involved in therapeutic consultation

Group of the ATC classification		Enquiries* n (%)	
J	General anti-infectives, systemic	441	(27)
N (except N02)	Central nervous system (except analgesics)	428	(26)
C	Cardiovascular system	310	(19)
A	Alimentary tract and metabolism	241	(15)
N02	Analgesics	129	(8)
G	Genito urinary system and sex hormones	114	(7)
M	Musculo-skeletal system	112	(7)
R	Respiratory system	99	(6)
B	Blood and blood forming organs	93	(6)
H	Systemic hormonal preparation, excluding sex hormones	78	(5)
	Others	189	(12)

*The numbers and percentages sum up more than 1,620 and 100% respectively, because for certain enquiries more than one topic is recorded.

Table 3 Topics of consultation for each of 15 pharmacological subgroups giving rise to most enquiries

Subgroup (number of consultations)		ADR* (%)	CDT* (%)	PREG* (%)
All		30	27	16
J01	General anti-infectives, systemic (267)	25	42	13
N05	Psycholeptics (181)	25	20	30
C01	Cardiac therapy (141)	36	20	9
N02	Analgesics (12)	33	27	17
N06	Psychoanaleptics (93)	20	24	23
M01	Anti-inflammatory/anti-rheumatic products (73)	43	22	17
A02	Antacids, antiflatulents, and anti-peptic ulcerants (70)	35	35	11
G03	Sex hormones and stimulants of the genital system (64)	21	22	32
N03	Antiepileptics (64)	38	18	20
R03	Anti-asthmatics (51)	27	7	25
P01	Antiparasitic products (48)	12	54	23
B01	Anticoagulants (42)	40	12	5
C02	Hypotensives (42)	45	13	9
C03	Diuretics (41)	46	26	6
J04	Tuberculostatics, excluding streptomycin (41)	31	27	23

*ADR = adverse drug reaction; CDT = choice of drugs and therapeutic strategy; PREG = use of drugs during pregnancy.

drug reactions referred mainly to cardiovascular drugs and non-steroidal anti-inflammatory agents. Oral contraceptives, hypnotics and sedatives were over-represented among enquiries related to drug use in pregnancy.

A written response to 1,374 enquiries (85%), was sent. The report had been prepared on the same day as the enquiry in 750 cases (48%). Figure 2 shows the delay from the day of enquiry to the day that the answer was written.

Discussion

The therapeutic consultation service is an individualized problem-oriented service of information and education on therapeutics. It may be a valuable complement to other strategies of drug information such as formularies, therapeutic bulletins, transparency sheets, etc. The tremendous amount of new information on pharmacology, pharmacokinetics, comparative efficacy, adverse drug reactions, and drug costs

which has been produced in the recent decades is indigestible for clinicians (Haynes *et al.*, 1986). Physicians are not fully trained to evaluate the methods used in studies of plasma drug concentrations, clinical trials, spontaneous reporting systems for drug surveillance and other epidemiological techniques, and yet this enormous amount of data has to be transferred from the literature to the bedside. The clinical pharmacologist can aid this process. Our experience shows

Figure 2 Time elapsed from enquiry until completion of the written answer for 1,374 consultations.

Table 4 Some aspects of therapeutic consultation which deserve comparative evaluation*Sources of information*

- What 'essential' sources of information are needed to set up a therapeutic consultation service?
- What weight should be given to evidence provided by different approaches (randomised clinical trials, observational studies, case series, case reports, pharmacokinetic studies in highly selected groups, etc.)?
- What proportion of enquiries are on subjects not covered by the usual sources of information?
- To what extent can population-based studies in certain settings be extrapolated to other situations?
- What are the most useful sources of information in countries where the criteria for drug registration and regulation are suboptimal?

Subjects of enquiry

- What proportion of enquiries is on recently marketed drugs?
- Which are the patient groups and/or fields of therapy in which clinical research is lacking?
- In which areas of therapy do gaps exist between scientific knowledge and clinical practice?

On reports

- How urgent are responses to different kinds of enquiries?
- When is a written response necessary?
- How long should reports be?
- How deep and detailed should the bibliographic search be?
- How conclusive should the answer be?
- What clinical information is needed in specific situations which are common in therapeutic consultation?
- In which circumstances should the patient be visited personally?
- What is the impact of the consultation on the clinical attitude of the enquirer?
- Which cases should be followed up?

Educational value of therapeutic consultation

- For the enquirers
- For trainees in clinical pharmacology
- For patients

Storage and retrieval of information

- Criteria for choosing keywords
- How often should recurrent subjects of consultation be reviewed in the scientific literature?
- Is there a need for national or supranational computerized networks of therapeutic consultation?

Interaction with other activities of the Clinical Pharmacology Service

- What is the value of therapeutic consultation for detecting 'new' adverse drug reactions?
- What relationship should a therapeutic consultation service have with the pharmacovigilance system?
- How useful is therapeutic consultation for selecting the topics of drug information bulletins and drug formularies?
- Can therapeutic consultation reveal a need for clinical trials, or other pharmacodynamic and pharmacokinetic studies?

Cost of therapeutic consultation

- Is therapeutic consultation cost-effective?

that a full training in clinical pharmacology is needed for consultation. More than two thirds of the cases on which we were consulted needed knowledge of the medical aspects of the patient and clinical expertise.

Therapeutic consultation is useful to detect clinical problems which have not been fully investigated, as well as misconceptions which may be prevalent among prescribers. Although the prescribers who enquire cannot be considered representative of all prescribers, they may bring to light these problems and misconceptions, and their enquiries to help keep the staff of the Clinical Pharmacology Service in touch with medical reality (Wardell, 1975).

An important proportion of the consultations made have significant teaching value for specific aspects of drug therapy, and general methodological issues in clinical evaluation of patients. For these reasons we think that therapeutic consultation is an indispensable part of clinical pharmacology.

Enquiries on cardiovascular drugs and NSAIDs focused more frequently on drug safety issues; those on antibiotics referred more to selection of the appropriate agent; and those on hypnotics, sedatives and oral contraceptives were commonly on drug use in pregnancy.

These are examples of areas of therapeutic uncertainty where more information, education, and clinical and epidemiological research are needed (Kasilo *et al.*, 1988).

The publication and exchange of information on the objectives, methods, results, and impact of therapeutic consultation are badly needed. Computerized databases of answers to enquiries should facilitate analysis of this activity, and comparison of the goals, methods, reasons for consultation and impact in different countries or regions. This can be performed using relatively simple computer technology. Publications of experience in the field of therapeutic consultation in centres of clinical pharmacology are scarce, and often do not provide detailed information on the results. Possibly this is because therapeutic consultation has developed as a service activity with different aims in different centres. However even if the organization and staffing of services differ, a common approach could be applied to specific aspects such as those suggested in Table 4. In this respect computerized storage of information may be very useful for analysis of the activity itself, and for improving quantitative and qualitative aspects of therapeutic consultation.

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