The Role of Clinical Pharmacology in the Implementation of the Rational Use of Medicines

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During 2010 IUPHAR (International Union of Basic and Clinical Pharmacology) published its position paper entitled "Clinical Pharmacology in Research, Teaching and Health Care" (1). It emphasized that research in clinical pharmacology is often a multidisciplinary effort involving collaboration with other academic disciplines such as biochemistry, genetics, statistics, epidemiology and other pharmaceutical sciences. In clinical services aimed to improve the use of drugs in patients the clinical pharmacologist has to stand on his/her own feet relying on a fully fledged medical training and an agreed definition of a clinical pharmacologist as shown in Table 1.

Table 1. Definition of Clinical Pharmacologist

The term "clinical pharmacologist" is used in the professional sense to refer to those physicians who are specialists in clinical pharmacology. They have usually undertaken several years of postgraduate training focusing on important aspects of clinical pharmacology including clinical trials theory, drug evaluations, pharmacoepidemiology, pharmacoeconomics, pharmacogenetics, pharmacovigilance and clinical drug toxicology. Such clinical pharmacologists have as their primary goal that of improving patient care, directly or indirectly, by promoting the safer and more effective use of drugs.

This new IUPHAR document has listed a number of key clinical pharmacological services, most of which are related to the concept of the rational use of drugs (Table 2).
These services are not listed in any particular order, as their importance and feasibility will vary between countries.

Many of the functions are related to the unique experience of clinical pharmacologists to evaluate the effects and adverse reactions of drugs and to apply recent pharmacological knowledge to assure optimal drug dosages and to avoid drug interactions.

Table 2.Examples of key services in clinical pharmacology facilitating a rational use of medicines.

1. Participation in Drug and Therapeutics Committees (DTCs) that are supposed to issue drug recommendations based on proper drug evaluation and the WHO Essential Drug Concept (2).
2. Critical drug evaluation of new and old drugs.
3. Pharmacoepidemiological services.
4. Drug information services (3).
5. Services in pharmacovigilance, responsibility for Adverse Drug Reaction (ADR) reporting.
6. Key role in continuing pharmacological education.
7. Therapeutic drug monitoring (TDM) and pharmacogenetic services to facilitate individualization of drug treatment
8. Measurement of drug concentrations to prevent or diagnose drug abuse and drug intoxications
9. Direct patient services aimed to evaluate drug problems such as therapeutic failures, ADRs, drug interactions and inappropriate polypharmacy.
10. Electronic Pharmacological services such as evidence based data bases for rational drug prescribing.

Participation in Drug and Therapeutics Committees (DTCs) should be prioritized. European committees have functions that are closely related to the working methods used by the expert groups selecting Essential Drugs within WHO (Table 3).

The aims of EACPT and IUPHAR can be summarized as a number of efforts that ultimately should lead to a rational use of medicines (Table 4).

Table 3. Functions of drug and therapeutics committees *(DTCs)*

1. Produce a regional list of recommended drugs (drug formulary)
2. Implement the drug formulary and other recommendations among prescribers
3. Increase the knowledge about rational drug use by information and education of all prescribers
4. Organise producer-independent drug information and education
5. Work for cost-awareness of treatment
    - By continuous follow-up and analysis of drug use and drug costs locally
    - By informing prescribers about prescription patterns and cost development
6. Continuously inform the health care personnel about important changes in the drug field.
7. Support the health care administration with expert knowledge on drugs and drug therapy (for example in drug purchasing).
8. Evaluate health economical aspects of drug therapy
9. Provide a policy for important drug related issues such as
    - Drug information and drug education
    - Pharmacoepidemiology
    - Pharmacoeconomy
    - Drug handling
10. Actively collaborate with other regional drug committees

Table 4. The aims of EACPT and the Division of Clinical Pharmacology (IUPHAR) are to:

a) stimulate research in clinical pharmacology world-wide

b) promote high ethical standards in clinical drug research

c) promote scientific meetings, workshops and courses in clinical pharmacology and therapeutics in different parts of the world

d) improve and harmonise the teaching of the rational use of drugs at both undergraduate and postgraduate levels, particularly in developing countries

e) promote problem- and patient-oriented drug information for physicians and other health professionals

f) promote the utilisation of clinical pharmacological services in health care delivery, particularly in developing countries

g) utilise skills of clinical pharmacology and therapeutics in counteracting misuse of prescription drugs and other chemical substances, and evaluating patients experiencing adverse drug reactions

h) promote high ethical standards in drug prescribing and drug utilisation

i) enable individual countries to benefit from the international diversification of clinical pharmacology and therapeutics

j) encourage collaboration with other agencies interested in the rational use of drugs, particularly WHO.

References:

1. Birkett D, Brosen K, Cascorbi I, Gustafsson L, Maxwell S, Rägo L, Rawlins M, Reidenberg M, Sjöqvist F, Smith T, Thuerman P, Walubo A. Clinical Pharmacology in Research, Teaching and Health Care. Considerations by IUPHAR, the International Union of Basic and Clinical Pharmacology. Editors Michael Orme and Folke Sjöqvist. *Basic &Clinical Pharmacology&Toxicology* 2010; (107):531-559.
2. Sjöqvist F, Bergman U, Dahl ML, Gustafsson L, Hensjö LO. Drug and therapeutics committees: a Swedish experience. *WHO Drug Information* 2002; (16):207-13.
3. Alván G, Öhman B, Sjöqvist F. Problem-oriented drug information: a clinical pharmacological service. *Lancet* 1983; 2,1410-2.