

Clinical pharmacologist wanted — where?

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Many people could define with ease the job of a cardiologist, a paediatrician or an obstetrician. However, only a few would have any clear idea of how a clinical pharmacologist might fill a day. Indeed, within the medical profession, and often within the scientific community, there has been a sneaking suspicion that clinical pharmacologists are themselves unsure of their remit. This article describes the possible role for clinical pharmacologists and different areas where they can make significant contributions to medical services.

Objectives of Clinical Pharmacology.

Clinical pharmacology is a relatively young branch of medical science that emerged more than three decades ago as a "quantitative science of therapeutics"¹ with the aim to study all aspects of drug action in man. Today there is an increasing and bewildering number of new drug products reaching the market each year with information exponentially growing on different drug therapies. Inappropriate usage of drugs is widespread^{2,3} as well as costly⁴ due to the significant proportion of drug therapy related adverse events, that might range from ineffective drug therapy to serious adverse drug reactions which may require further medical interventions. At the same time there is an increasing demand from the WHO, from governments and from the public for rational, safe and cost effective medical care, while maintaining good quality of care rendered. Consequently, this calls for medical personnel who can make informed decisions based on exact scientific facts on drug therapies. To achieve this aim clinical pharmacologists can make a significant impact at all levels of health care such as:

- clinical practice;
- provision of drug based clinical services;

- policy making;
- research;
- medical and consumer-oriented education.

Specialisation of Clinical Practice.

Despite the significant and increasing levels of drug related mortality and morbidity, many clinical pharmacologists are engaged in a disease based practice such as a hypertension or an asthma clinic. Drug based clinical services are however, possible and desirable since focus on optimal drugs use is one of the major aims of clinical pharmacology. Drug based clinical service should be present at primary health care level, since it is here that over 80% of drugs are used and often misused.

Drug Based Clinical Service.

At the level of immediate patient care, this service should provide:

- information on optimal drug utilisation in individual cases,
- identification and management of adverse drug reactions and drug overdose.

Having a clinical pharmacologist (medically trained) or a clinical pharmacist (pharmacy trained) available at all levels

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of clinical practice would support and encourage rational and cost effective prescribing. Within hospitals this may take the form of joint ward rounds or at primary care level clinical pharmacologist/ pharmacist working together with primary health care providers.

Drug Based Service to Policy Makers.

At national/ local level this service might provide help with:

- policy making on resource allocation;
- drug utilisation reviews can monitor prescribing patterns, drug expenditure, adverse drug reactions as well as designing interventions to improve these;
- producing formularies for use at national level and in the hospital and primary health care setting.

Once again this must be undertaken together with all stakeholders with the clinical pharmacologist providing special expertise on drug use and refereeing rather than policing. Clinical pharmacologists should be involved at all levels, in determining relative safety and efficacy of drugs as well as assessing cost effectiveness of different therapies. This information when passed on to prescribing doctors as part of the clinical service may lead to more rational pharmacotherapy. In addition to improving the quality of prescribing, implementation of such policies can (and has) led to considerable financial savings for health authorities; the reduction in drug expenditure soon exceeds the costs of establishing and running of such advisory service.

Research.

Clinical pharmacological research may range from endogenous pharmacology studies at molecular level to clinical investigations of drugs in healthy subjects or patients. Once more, research in clinical pharmacology has tended to focus on certain therapeutic areas such as hypertension and asthma. This may be due to current trends in many countries for clinical pharmacologists to have disease based rather than drug based clinical commitments. Research areas such as diabetes, antibiotics and cancer chemotherapy, which have been largely ignored by clinical pharmacologists, may gain higher priority if the emphasis is placed on drug oriented research questions. In the pharmaceutical industry clinical pharmacologists should be more involved in drug research than they are at present. The establishment of clinical research centres⁵, within hospitals that are linked to industry may expedite the developments of drugs and might allow useful invasive investigation of drug action at an early stage of development.

Applied research.

Beside involvement in basic research at the bench and in clinical trials of new drugs, clinical pharmacologists can provide critical information to health providers through various forms of pharmacoepidemiology and pharmacoeconomic research. As it described above as part of drug based clinical service, results of such research can supply information on safety, comparative efficacy and cost effectiveness of various drug therapies. This type of applied research is particularly important in developing countries like Zimbabwe, where optimal utilisation of resources is essential because funds available for health care are limited.

Education.

The distinction between clinical pharmacology knowledge and therapeutics lies within their focus; while therapeutics is disease based, encompassing the optimal treatment for a specific disease, clinical pharmacology deals with drug based facts necessary to make optimal therapeutic plans in any area of prescribing. Thus clinical pharmacology knowledge can assist therapeutic decision making and be a "servant to therapeutics". In order to achieve the clinical objective of better use of drugs, clinical pharmacologists must first educate. To teach undergraduates alone is not enough: doctors, patients and the public at large need to be aware of drug related issues.

Undergraduates: Most pharmacologists believe that they are in the best position to teach the fundamentals of drug action, whilst many organ based clinicians believe that they could best teach the therapeutics in their field. Once again the clinical pharmacologist is the bridge. Best principles of drug action are of relevance to medical students only if they relate to the treatment or prevention of disease. Therapeutics is clearly relevant to medical students, but its teaching within disease based lectures is often patchy and may contain insufficient pharmacological detail to allow appropriate use of new as well as old drugs. The clinical pharmacologist should be in a position to integrate the teaching of drug therapy throughout the curriculum. Emphasis should be placed on teaching how to prescribe drugs rationally, safely, and effectively, utilising the information sources available to clinicians. This would include the teaching of critical analysis of claims made about new drugs, for example to enable students and doctors to distinguish between real and surrogate end points in clinical trials.

Clinical teaching by the bedside and continuing education: In addition, clinical pharmacologists/pharmacists practising beside the bedside⁶ can generate excitement about therapeutic-analytic thinking⁶ and evidence based medicine amongst both under and post graduate students. Recent educational reports emphasise that to face the future challenges of increasingly complex problems of therapeutics, doctors should have skills for a lifelong learning process which enable them to integrate new knowledge into therapeutic decisions in their daily practice. Skills acquired during clinical pharmacology courses, such as critical evaluation of scientific literature, will help this learning process. Post graduate education in clinical pharmacology delivering unbiased scientific knowledge to practising prescribers should be high on the list of priorities of departments of clinical pharmacology and local and central health authorities.

The public: 'All professions are conspiracies against the laity' (*George Bernard Shaw*). However, it can be argued that clinical pharmacology has an obligation to break the mould. As doctors, clinical pharmacologists have a duty to communicate with patients or volunteers in drugs trials who must be fully informed of risks and benefits of any drug prescribed, and who must consent freely to prescription. As scientists, clinical pharmacologists also have a wider duty to communicate science to the public using media wherever possible, thereby ensuring accurate and responsible coverage of medical and scientific issues.

The Future.

The outlook for clinical pharmacology looks brighter than may have been predicted six to seven years ago, when the question 'who needs clinical pharmacology?' was posed; clearly the discipline is needed.¹ No individual clinical pharmacologist can be expert in all areas of clinical pharmacology, but each should have a working knowledge of all aspects and special expertise in certain areas. Clinical drug services, research and teaching are however, interdependent and will wither if not kept together; each department of clinical pharmacology should span the discipline and should aim to ensure rational, effective and safe prescribing of drugs within its geographical area.

A department of clinical pharmacology should be able to provide a drug based clinical service which covers individual drug related problems as well as drug policy; a research unit which might range from investigation of clinical problems to the investigation of basic mechanisms in human tissues and a teaching service which educates undergraduates, post graduates and the public.

The discipline of clinical pharmacology has begun to map out its future. Within Southern Africa there is an urgent need to provide better drug oriented clinical services and adequate post graduate education. Units of clinical pharmacology which truly encompass the whole breadth of the subject will improve training, attract more medical graduates to the field and develop the discipline to meet the needs of the community. The leaders in the field must now decide how to meet the challenges ahead.

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