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Short Communication

Clinical Pharmacology: Training, Roles and Prospects in Academics and Clinical Settings

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SUMMARY
Clinical Pharmacology is defined as the scientific discipline that involves all aspects of the relationship between drugs and humans or the application of pharmacological principles in humans. Clinical Pharmacologists (CPts) face the problem of recognition due to lack of appreciation of what the specialty is about. This article aims at educating the health sciences community on the relevance of Clinical Pharmacology in health institutions.
Basic Scientists usually challenge CPts of acting more like clinicians both in their approach to Pharmacology and in the focus of their research activities.
In many countries, Clinical Pharmacology is recognized as a sub-specialty within Internal Medicine training program. Clinical Pharmacologists are often physicians who have undertaken several years of postgraduate training in many aspects of the specialty that include health care, teaching, and research. When employed in the hospitals, they perform clinical duties by providing direct patient care, running specialist clinics like Hypertension Clinic, Geriatric Clinic, Infectious Disease and Intensive Care Units clinic. There is a need to encourage the training and employment of more CPts at secondary health care level.

INTRODUCTION

Clinical Pharmacologists (CPts) are used to being asked the question, "what is Clinical Pharmacology about or what exactly are the duties of CPts?". These questions occasionally come from the most unlikely sources, like other medical colleagues or indeed fellow physicians. The CPts often face the problem of recognition due to lack of appreciation of what the specialty is about [1]. Some medical colleagues do not appreciate that Clinical Pharmacology is a definite specialty with its own unique approach to research into drug use.[1] This lack of recognition makes CPts appear to many as familiar strangers within the health sector.

Clinical Pharmacology is defined as the scientific discipline that involves all aspects of the relationship between drugs and humans or the application of pharmacological principles in humans.[2,3] The area of interest covered by the specialty is broad and varied, including; Therapeutics, Clinical Pharmacokinetics, Clinical Trials, Pharmacovigilance, Therapeutic Drug Monitoring, Rational Drug Use, Drug Utilization research and Pharmaco-epidemiology.

Clinical Paharmalogiost have been challenged of acting more like clinicians both in their approach to pharmacology and in the focus of their research activities, this impression is true till date.[4] This impression often causes rivalry and mistrust between Basic and Clinical Pharmacologists in many parts of developing countries. CPts bring their knowledge of clinical medicine and the science of Pharmacology together by bridging the gap between clinical medicine and laboratory science.[2]

The main focus of this communication is to discuss the training, prospects and roles of CPts in academics and in clinical settings.

History of Clinical Pharmacology

The history of the specialty dates back to longer than when the term Clinical Pharmacology was first used. The name of the person who first used the term is debatable; however that honour has been ascribed to Harry Gold, who was a Professor of Pharmacology at Cornell University.[2] He carried out seminal work on the human pharmacology of digitalis glycosides in the late 1930s and early 1940s. The discipline of Pharmacology was preceded only by the other three cornerstones of Medical Science: Anatomy, Pathology and Physiology.[5] It was from Physiology that Pharmacology emerged in the 18th century.[4, 5] At the early stage of the emergence of Pharmacology as a branch of science almost all Pharmacologists were medically trained; formal medical subspecialty training was rarely done then, and it was easy to move between the clinic and the

laboratory.[4]

Who is a Clinical Pharmacologist?

The definition or the description of a CPt varies across different parts of the world. They often are physicians who have undertaken several years of postgraduate training in many aspects of Clincial Pharmacology in areas involving health care, teaching, and research.[2] In some countries especially the U.S.A., CPts can also be Pharmacists, Pharmacologists, Nurses and Scientists whose focus is in developing and understanding different aspects of drug therapies in man.[7] The main focus for the work of a CPt in the hospital settings is the improvement of patient care, directly or indirectly, through development of better medicines and promotion of safer and more effective use of drugs. The role of the non-medics in Clinical Pharmacology is usually non-patient centered, as they focus on other aspects of the specialty such as research, teaching and other non-clinical aspects.

Training

In many countries, the specialty is recognized as a sub-specialty within Internal Medicine.[2] Training in Clinical Pharmacology is commonly acquired through a Fellowship program. Trainees will usually train in General Medicine, Emergency Medicine, Paediatrics or in other area of Clinical Medicine before going on to acquire specialist training in Clinical Pharmacology.[3,6] At the completion of the Fellowship training program, trainees should be competent to provide at consultant level, unsupervised comprehensive services in different aspects of the specialty. The Fellowship training program takes place within the context of the Physician's everyday clinical practice leading to acquisition of hands-on experience in research and Clinical Medicine as well as exposure to workings of regulatory agencies and practices with the pharmaceutical industry through attachments. Non-physicians interested in the specialty undergo academic postgraduate training in Clinical Pharmacology at Masters and Doctoral level. The level of competence acquired through this path equips such graduates to function as Non-physician CPts within the industry, government agencies and academics where they take part in research, teaching and field work. Some medically-qualified persons can also take this route to acquire competence in the specialty.

Roles

Clinical Pharmacologists can work in settings such as academia, industry, hospitals and government agencies.

The role of CPts is well defined within the academic settings. In academic departments, they are employed to teach and conduct clinical research. Research is a vital part of the training and everyday work in the specialty. The focus of CPts' research in academic environment is determined by the level of skills and training of the individual.[1] They usually develop methods and strategies that improve the quality of drug use in individual patients and in patient populations. Clinical pharmacological research is often translational in the sense that the discipline aims to translate new scientific data on drugs into rational patient care.[2] The CPts also play important role in the design, conduct and execution of clinical trials in academia.

A Clinical Pharmacologist employed in the hospitals perform clinical duties by providing direct patient care, they run specialist clinics like: Hypertension Clinic, Geriatric Clinic, Intensive Care Units and Infectious Disease Clinic.[8] They assist in the implementation and evaluation of efficacy and safety of combination therapies in the treatment of major infectious diseases such as HIV/AIDS, tuberculosis and malaria. The CPts offer services in the evaluation of drug problems; such as therapeutic failure, and toxicological services. They play lead roles in membership of Drug and Therapeutic Committees.[8,9] This Committees serve to promote rational use of medication by bringing together all the stake holders in prescribing and dispensing of drugs. The Committee produces guidelines for drug use based on available best evidence and promotes production of Essential Drug List for the hospital. Moreover, they should also provide pharmacovigilance services by tracking, collating, analyzing and reporting adverse drug reactions while providing feedbacks to the prescribers. Therapeutic drug monitoring (TDM) and pharmacogenetic services especially for organ transplant patients on immuno-suppresive therapy, patients on anticonvulsants and cardiac glycosides are also offered. Measurement of drug concentrations and toxicological services are provided for the diagnosis and prevention of drug abuse.

Prospects

The major challenge to CPts as a sub-specialty of medicine is its perceived vague roles in clinical care settings within the health system.[10] In Nigeria, CPts are rarely offered employment at the specialist and general hospitals level, inspite of the fact that they are trained primarily as physicians. During training, a CPt acquires competence in general medicine and in other areas of sub-specialties of Internal Medicine like: infectious disease, cardiology, nephrology, neurology or any other area of interest to the trainees. In the UK also, there had been reports of under-employment of CP especially at the district general hospitals level within the NHS system.[11] These situations occur because of lack of appreciation of the training and role of Clinical Pharmacology in health care settings. Employing a CPt in hospital settings is like having 'two for the price of one', because of the additional services they offer outside of patient care.

CONCLUSION

The modern day CP is versatile and plays different roles within the pharmaceutical industry, governmental agencies, academic and health care sector. There is a need to encourage the employment of more CPts as physicians in hospitals especially at secondary health care level. The advantage of this is that in addition to patient care, CPts can offer many other ancillary services that help in promoting safe and rational use of drugs. The role of CPts is clearer in academia as most of them are employed in this sector to teach and conduct research. Colleagues in academics especially basic scientists need to appreciate that CPts as clinicians have their own different and unique role and focus both in research and general approach to Pharmacology.

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