PHARMACISTS MAKE BRIDGE BETWEEN PHARMACOTHERAPY AND HEALTHCARE SYSTEM

Sunil Maheshwari, Nilesh Modi, Mukesh Patel, Paresh Patel, Suhash Patel, Vijay Patel, Kalpesh Sathwara, Hiren Shah, Pavan Shah, *Prof. Dr. Dhrubo Jyoti Sen and Prof. Dr. Pankaj Prajapati

Department of Pharmacy Practice, Shri Sarvajanik Pharmacy College, Gujarat Technological University, Arvind Baug, Mehsana-384001, Gujarat, India.

*Corresponding Author: Prof. Dr. Dhrubo Jyoti Sen
Department of Pharmacy Practice, Shri Sarvajanik Pharmacy College, Gujarat Technological University, Arvind Baug, Mehsana-384001, Gujarat, India.

ABSTRACT
To provide an overview of the current context and scope of pharmacy practice, the range of professional services offered by pharmacists and the supporting role of pharmacy technicians. A synopsis of the current state of pharmacy practice as it relates to the spectrum of professional roles and responsibilities, the diversity of patient populations served, the complexities of patient services provided and various aspects of emerging pharmacy practice is provided. The current work focuses on patient care services provided by pharmacists; it does not address all possible activities of pharmacists, such as administration and general management. This is a descriptive analysis. It does not take a position regarding future changes but is intended to serve as a foundation for understanding the relationship and alignment between the profession's various mandatory and voluntary credentials and the scope of practice continuum. The key educational and credentialing standards for pharmacists and pharmacy technicians are summarized and referenced.

KEYWORDS: Credentialing, licensure (pharmacists), pharmacy technicians, practice standards.

INTRODUCTION
Pharmacy is the art, practice, or profession of preparing, preserving, compounding, and dispensing medical drugs and a place where medicines are compounded or dispensed. Pharmacotherapy is therapy using pharmaceutical drugs, as distinguished from therapy using surgery (surgical therapy), radiation (radiation therapy), movement (physical therapy), or other modes. Among physicians, sometimes the term medical therapy refers specifically to pharmacotherapy as opposed to surgical or other therapy; for example, in oncology, medical oncology is thus distinguished from surgical oncology. Pharmacists are experts in pharmacotherapy and are responsible for ensuring the safe, appropriate and economical use of pharmaceutical drugs. The skills required to function as a pharmacist require knowledge, training and experience in biomedical, pharmaceutical and clinical sciences. Pharmacology is the science that aims to continually improve pharmacotherapy. The pharmaceutical industry and academia use basic science, applied science and translational science to create new pharmaceutical drugs. As pharmacotherapy specialists, pharmacists have responsibility for direct patient care, often functioning as a member of a multidisciplinary team and acting as the primary source of drug-related information for other healthcare professionals. A pharmacotherapy specialist is an individual who is specialized in administering and prescribing medication and requires extensive academic knowledge in pharmacotherapy. While pharmacists provide valuable information about medications for patients and healthcare professionals, they are not typically considered covered pharmacotherapy providers by insurance companies.[1]
With the development of specific and potent synthetic drugs, the emphasis of the pharmacist’s responsibility has moved substantially towards the utilization of scientific knowledge in the proper use of modern medicines and the protection of the public against dangers that are inherent in their use. Pharmacists are employed in regulatory control and drug management, community pharmacy, hospital pharmacy, the pharmaceutical industry, academic activities, training of other health workers and research. In all these fields, their aim is to ensure optimum drug therapy, both by contributing to the preparation, supply and control of medicines and associated products and by providing information and advice to those who prescribe or use pharmaceutical products.

**Regulatory control and drug management**

**Health and drug policy:** Each ministry of health has a section dealing with pharmaceutical affairs. In view of the importance of drugs in government health services and of the related expertise within the pharmaceutical section, it is important that the pharmaceutical affairs section should have equal prominence with other sections of the ministry. Pharmacists in administration participate in formulating health and drug policies, particularly those on the selection, procurement and distribution of drugs. They serve as sources of information for health care professionals and the public, and participate in the preparation of pharmacopoeias and other official documents. They cooperate with educators and the professional body of pharmacists in establishing and modifying the curricula of schools of pharmacy and continuing education programmes. In some countries, pharmacists have roles in environmental health control and in control of the quality of food and of cosmetics and medical devices.

Pharmacists do not perform these functions in all countries. A prerequisite to their widespread adoption is the involvement of pharmacists with the appropriate expertise in the determination and implementation of national health policy, which provides the context for policies related to drugs and pharmacy. In view of the special knowledge and expertise of pharmacists, they should be given the responsibility at a senior level for the determination and implementation of policy on drugs and pharmacy manpower and for the drafting and administration of legislation. Pharmacists in such senior positions should preferably have postgraduate training and a qualification in public health.

In some countries, potent medicines and related products may be supplied or dispensed by non-pharmacists and without the supervision or control of pharmacists. For the safety of the public, such transactions should be performed or supervised by pharmacists, to ensure the supply of correct medicines of acceptable quality. In some countries the management of drug procurement and supply, and drug control, registration and enforcement, do not meet satisfactory standards. To achieve acceptable standards, pharmacists with suitable postgraduate training should be appointed to senior positions, and standards should be assured by comprehensive pharmaceutical legislation and its effective enforcement.
Management: Government-employed pharmacists are responsible for drug management, which includes the selection of essential drugs, the determination of drug requirements, the procurement and distribution of drugs and their rational use, as well as the design and use of information systems. Also, they collect and collate data required by their national government agencies and by international bodies, such as the International Narcotics Control Board.

Administration: In some countries, tenders for the import and supply of drugs are awarded to non-pharmaceutical businesses. The management of such businesses is not capable of applying professional standards and is influenced solely by commercial considerations. Procedures for inviting, accepting and awarding tenders for the supply of pharmaceuticals should be separate from those for non-professional commercial tenders, and should be managed by pharmacists. [2]

Educational policy: Pharmacists cooperate with educators in establishing and implementing policies with regard to undergraduate and continuing education, in-service training and other aspects of manpower development. Regulatory and enforcement agencies: Pharmacists are employed by regulatory agencies concerned with the approval, registration and quality control of drugs, cosmetics and medical devices and with enforcement agencies, including customs departments, that control the distribution of drugs through licit and illicit channels, and as inspectors of the manufacture, importation, distribution and sale of drugs.

Professional registration authorities: Pharmacists are prominently engaged in agencies, such as boards of pharmacy that establish criteria for the registration of pharmacists or licensing requirements, register pharmacies and pharmacists and monitor the way pharmacies are operated and the professional conduct of pharmacists.

International agencies and professional bodies: Pharmacists employed in these bodies perform a variety of technical and administrative functions in professional bodies and in drug- and health-related agencies, e.g., the World Health Organization, the International Narcotics Control Board, the United Nations Division of Narcotic Drugs, the United Nations Commission on Narcotic Drugs, the United Nations Fund for Drug Abuse Control, Interpol, national pharmacopoeial committees, and pharmaceutical societies.

Community pharmacy: Community pharmacists are the health professionals most accessible to the public. They supply medicines in accordance with a prescription or, when legally permitted, sell them without a prescription. In addition to ensuring an accurate supply of appropriate products, their professional activities also cover counseling of patients at the time of dispensing of prescription and non-prescription drugs, drug information to health professionals, patients and the general public and participation in health-promotion programmes. They maintain links with other health professionals in primary health care. Today, an increasingly wide range of new and analogous products are used in medicine, including high-technology biological products and radio-pharmaceuticals. There is also the heterogeneous group of medical devices, which includes some products analogous to medicines, some of which demand special knowledge with regard to their uses and risks (e.g., dressings, wound management products, etc.). Pharmacists have progressively undertaken the additional task of ensuring the quality of the products they supply. The main activities of community pharmacists are described below.

Figure-3: Community Pharmacy.

Processing of prescriptions: The pharmacist verifies the legality, safety and appropriateness of the prescription order, checks the patient medication record before dispensing the prescription (when such records are kept in the pharmacy), ensures that the quantities of medication are dispensed accurately and decides whether...
the medication should be handed to the patient, with appropriate counseling, by a pharmacist. In many countries, the community pharmacist is in a unique position to be fully aware of the patient’s past and current drug history and consequently, can provide essential advice to the prescriber.

**Care of patients or clinical pharmacy:** The pharmacist seeks to collect and integrate information about the patient’s drug history, clarifies the patient’s understanding of the intended dosage regimen and method of administration and advises the patient of drug-related precautions and in some countries monitors and evaluates the therapeutic response.

**Monitoring of drug utilization:** The pharmacist can participate in arrangements for monitoring the utilization of drugs, such as practice research projects and schemes to analyze prescriptions for the monitoring of adverse drug reactions.

**Extemporaneous preparation and small-scale manufacture of medicines:** Pharmacists everywhere continue to prepare medicines in the pharmacy. This enables them to adapt the formulation of a medicine to the needs of an individual patient. New developments in drugs and delivery systems may well extend the need for individually adapted medicines and thus increase the pharmacist’s need to continue with pharmacy formulation. In some countries, developed and developing, pharmacists engage in the small-scale manufacture of medicines, which must accord with good manufacturing and distribution practice guidelines.[3]

**Traditional and alternative medicines:** In some countries, pharmacists supply traditional medicines and dispense homoeopathic prescriptions. Responding to symptoms of minor ailments. The pharmacist receives requests from members of the public for advice on a variety of symptoms and when indicated, refers the inquiries to a medical practitioner. If the symptoms relate to a self-limiting minor ailment, the pharmacist can supply a non-prescription medicine, with advice to consult a medical practitioner if the symptoms persist for more than a few days. Alternatively, the pharmacist may give advice without supplying medicine.

**Informing health care professionals and the public:** The pharmacist can compile and maintain information on all medicines, and particularly on newly introduced medicines, provide this information as necessary to other health care professionals and to patients, and use it in promoting the rational use of drugs, by providing advice and explanations to physicians and to members of the public.

**Health promotion:** The pharmacist can take part in health promotion campaigns, locally and nationally, on a wide range of health-related topics, and particularly on drug-related topics (e.g., rational use of drugs, alcohol abuse, tobacco use, discouragement of drug use during pregnancy, organic solvent abuse, poison prevention) or topics concerned with other health problems (diarrhoeal diseases, tuberculosis, leprosy, HIV-infection/AIDS) and family planning. They may also take part in the education of local community groups in health promotion, and in campaigns on disease prevention, such as the Expanded Programme on Immunization, and malaria and blindness programmes.

**Domiciliary services:** In a number of countries, the pharmacist provides an advisory as well as a supply service to residential homes for the elderly, and other long-term patients. In some countries, policies are being developed under which pharmacists will visit certain categories of house-bound patients to provide the counseling service that the patients would have received had they been able to visit the pharmacy.

**Agricultural and veterinary practice:** Pharmacists supply animal medicines and medicated animal feeds.

**Hospital pharmacy:** Hospitals and other institutions and facilities, such as outpatient clinics, drug-dependency treatment facilities, poison control centres, drug information centres, and long-term care facilities, may be operated by the government or privately. While many of the pharmacist’s activities in such facilities may be similar to those performed by community pharmacists, they differ in a number of ways. Additionally, the hospital or institutional pharmacist:

- has more opportunity to interact closely with the prescriber and, therefore, to promote the rational prescribing and use of drugs;
- in larger hospital and institutional pharmacies, is usually one of several pharmacists, and thus has a greater opportunity to interact with others, to specialize and to gain greater expertise;
- having access to medical records, is in a position to influence the selection of drugs and dosage regimens, to monitor patient compliance and therapeutic response to drugs, and to recognize and report adverse drug reactions;
- can more easily than the community pharmacist assess and monitor patterns of drug usage and thus recommend changes where necessary;
• serves as a member of policy-making committees, including those concerned with drug selection, the use of antibiotics, and hospital infections (Drug and Therapeutics Committee) and thereby influences the preparation and composition of an essential-drug list or formulary;
• is in a better position to educate other health professionals about the rational use of drugs;
• more easily participates in studies to determine the beneficial or adverse effects of drugs, and is involved in the analysis of drugs in body fluids;
• can control hospital manufacture and procurement of drugs to ensure the supply of high-quality products;
• takes part in the planning and implementation of clinical trials.\[4\]

**Industrial pharmacy (the pharmaceutical industry):**
Statutory provisions in some countries may require that certain positions be held by pharmacists. The main activities of industrial pharmacists are described below.

**Research and development:** Pharmacists contribute to research and their expertise in formulation development is of particular relevance to the biological availability of active ingredients.

**Manufacture and quality assurance:** The pharmacist’s broad knowledge of the pharmaceutical sciences ensures an integrated approach to quality assurance (including good manufacturing practice) through the validation of the various stages of production and the testing of products before release.

**Drug information:** The pharmacist has the knowledge and expertise to provide detailed information on medicines to members of the health professions and the public. Also, pharmacists provide an information service within the company.
**Patent applications and drug registration:** The pharmacist is ideally qualified to understand and collate the diverse information required for patent and authorization submissions.

**Clinical trials and post-marketing surveillance:** The pharmacist has the knowledge of drugs and health care provision required to facilitate collaboration between companies, health professionals and governments in relation to clinical trials and surveillance.

**Sales and marketing:** The pharmacist, whose professional ethics demand a concern for the interest of patients, can make a contribution to proper marketing practices related to health care and to the provision of appropriate information to health professionals and the public.

**Management:** The inclusion of pharmacists in all levels of management promotes an ethical approach within management policies.

**Academic activities:** Academic pharmacists engage in education, pharmaceutical practice, and research in schools of pharmacy. These three aspects of academic activity are interrelated, and at the same time connected with manpower planning and management. Undergraduate, postgraduate and continuing education require the educators to have expertise in the various pharmaceutical sciences, but, in view of the professional and vocational goals of pharmacy education and the necessary interaction of education and research with service, the academic staff must also include a substantial component of pharmacists with appropriate postgraduate education. 

**Training other health care workers:** Training provided by pharmacists may include efforts to optimize drug therapy, by promoting the rational use and storage of drugs and methods of reducing drug abuse, and is directed to medical and other prescribers or suppliers of drugs, including community health workers who handle drugs. Pharmacists with training responsibilities should receive some training in the planning and management of training programmes in relation to the educational and health goals being served.

**CONCLUSION**

The evolutions in health care and pharmacy practice are presenting many new opportunities for pharmacists to perform functions and provide services not considered as traditional roles. The profession of pharmacy is working to achieve a pervasive model and standard of care determined only by the needs of patients and populations. The Council on Credentialing in Pharmacy hopes that the material presented herein, including the framework for credentialing in pharmacy practice, will allow audiences to gain a better understanding of where pharmacy is today and what future pharmacy practice will look like. The scope of pharmacy practice includes more traditional roles such as compounding and dispensing medications and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy and providing drug information.

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