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The Excellence of Pharmacy Practice

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ABSTRACT

Over the past 50 years, the role of pharmacists has evolved along with the health care needs of our population. In addition to dispensing medications and ensuring patient safety, today's pharmacists are taking a larger role as medical counselors, educators and advocates. They are integral part of the health care team, and are among the most trusted and accessible health care professionals. This accessibility allows them to perform more patient care activities, including counseling, medication management, and preventive care screenings. Beyond the care provided to individual patients, pharmacists have expanded their reach to influence the public health of communities. A pharmacist is uniquely positioned to provide disease state management through appropriate medication therapy management that has been demonstrated to improve patient outcomes and decrease overall health care costs. This role is more important than ever as the environment is demanding new practice and payment models that are required to further optimize care and outcomes while addressing the unsustainable increases in health care costs.

Keywords:
Drug Interaction (DI); Health Management Organizations (HMO); Over the Counter (OTC) Drugs; Sexually Transmitted Infections (STI); Patient Compliance

Abbreviations:
American Association of Colleges of Pharmacy (AACP); American Association of Pharmaceutical Scientists (AAPS); American College of Clinical Pharmacy (ACCP), Accreditation Council for Pharmacy Education (ACPE); American Pharmacists Association (APhA); Academy of Pharmacy Practice and Management (APPM); Academy of Pharmaceutical Research and Science (APRS); Academy of Students of Pharmacy (ASP); American Society of Health-System Pharmacists (ASHP); American Society of Consultant Pharmacists (ASCP); Direct and Indirect Remuneration (DIR) Health Related Quality of Life (HRQL); National Community Pharmacists Association (NCPA); National Association of Retail Druggists (NARD); Royal Pharmaceutical Society (RPS); Medication-Related Problems (MRPs); Clinical Pharmacist Practitioner (CPP); Health Maintenance Organizations (HMOs); Interprofessional collaboration (IPC); Emergency Operations Plan (EOP); Joint Commission of Pharmacy Practitioners (JCPP); Pharmacists' Patient Care Process (PPCP); Accreditation Council for Pharmacy Education (ACPE)

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1. Introduction

Pharmacy is the art and science of preparing and dispensing medications and the provision of drug-related information to the public. It involves the interpretation of prescription orders; the compounding, labeling, and dispensing of drugs and devices; drug product selection and drug utilization reviews; patient monitoring and intervention; and the provision of cognitive services related to use of medications and devices. The current philosophy or approach to professional practice in pharmacy is designated as pharmaceutical care. This concept holds that the important role of the pharmacist is “the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life.” In 2015 the RPS proposed further integration of pharmacists into general practices outlining the various benefits that pharmacists could provide. Australia, New Zealand and Canada have shown positive GP responses towards the integration of pharmacists into general practices. GPs recognized that having a practice-based pharmacist decreased their workload and allowed them to focus on their diagnostic and prescribing roles, while pharmacists provided expert medication advice and patient counselling. The profession of Pharmacy is classically practiced in the three main areas of Pharmacy Practice: community, clinical, and hospital. It is now generally accepted that the clinic for a pharmacy practitioner is not confined to the hospital wards. Every place (even a community pharmacy) where medication is used for the prevention, diagnosis, and treatment of any clinical condition, that is considered to be the interface of pharmacist and patient, should be recognized as the pharmacist's clinic.

2. APhA Practice for Pharmaceutical Care

- Preparation of medications by reviewing and interpreting physician orders; detecting therapeutic incompatibilities.
- Dispensing of medications by compounding, packaging, and labeling pharmaceuticals.
- Controlling medications by monitoring drug therapies; advising interventions.
- Completes pharmacy operational requirements by organizing and directing technicians' work flow; verifying their preparation and labeling of pharmaceuticals; verifying order entries, charges, and inspections.

Providing pharmacological information by answering questions and requests of health care professionals; counseling patients on drug therapies.

Developing hospital staff's pharmacological knowledge by participating in clinical programs; training pharmacy staff, students, interns, externs, residents, and health care professionals.

Complying with state and federal drug laws as regulated by the state board of pharmacy, the drug enforcement administration, and the food and drug administration by monitoring nursing unit inspections; maintaining records for controlled substances; removing outdated and damaged drugs from the pharmacy inventory; supervising the work results of support personnel; maintaining current registration; studying existing and new legislation; anticipating legislation; advising management on needed actions.

Protecting patients and technicians by adhering to infection-control protocols.

Maintaining safe and clean working environment by complying with procedures, rules, and regulations.

Maintaining pharmacological knowledge by attending educational workshops; reviewing professional publications; establishing personal networks; participating in professional societies.

Contribution towards team effort by accomplishing related results as needed [1].

Exhibit 1. Scholarly Abbreviation of **PHARMACIST** [2]

P	**P**atience
H	**H**onesty
A	**A**lertness
R	**R**esearch
M	**M**otivator
A	**A**dministrator
C	**C**ourageous
I	**I**ntelligent
S	**S**tudious
T	**T**hinker

3. Scope of Pharmacists

A Pharmacist with the above skills and attitudes should make himself an indispensable partner in health care system of a nation. Pharmacy a complete profession: Pharmacists reflect on every sector of society in the form of

Artists – designing a drug dosage form.

Lawyer – having fair knowledge of laws and legislation about the drug.

Engineer - having sound technical knowledge.

Entrepreneur - with sound knowledge of management, accounting, marketing, Counseling.

Health professional - having fair knowledge regarding health [2].

Learning "Objectives for the pharmacists" roles in health promotion and disease prevention are listed below.

- Define, compare and contrast the terms health, health promotion and disease prevention.
- Explain the significance of health promotion and disease prevention efforts.
- List and distinguish examples of promotion and prevention activities.
- Describe the need for pharmacist and pharmacy student involvement in health promotion and disease prevention.
- Identify opportunities and challenges for pharmacists to provide health promotion and disease prevention services [3].

3.1 Academic Pharmacist3.1: In academic pharmacist focus on teaching, research and training of the upcoming pharmacist. Academic institute are major source of pharmacist, who add professional into health care system. By arranging seminar, project, or system academics, pharmacist plays valuable role in health care system. Academicians identify, educate and train student pharmacists to be change agents for the profession so they can influence and create more team-based care opportunities for pharmacy practice. Academic institutions have changed their curricula to meet the future needs of team-based care for the profession [4].

3.2 Industrial Pharmacists

Research and development: Pharmacist 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 profession and the public. Also, pharmacists provide an information service within the company.

Parent Application and Drug Registration: The pharmacist is ideally qualified to understand and collate the diverse Information required for potent and authorization submissions.

Clinical Trials and Post–marketing Surveillance: The pharmacist has the knowledge of drug 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 contribute 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 pharmacist in all levels of management promotes an ethical approach within management policies.

Primary Care Pharmacist/Prescribing Advisors: These are people work for NHS organizations that are in charge of a range of local. Health services - such as doctor's surgeries and community pharmacies. Their job is to ensure the best use of medicines and resources across the area. In Some places practice pharmacist or primary care pharmacist also run medication review Clinics and have lots of patient contact.

Community Pharmacists: Pharmacist work at the frontline of healthcare in cities, towns and villages across nation. They work from their own pharmacies or out of local healthcare center and

doctors' surgeries. Some community pharmacist owns their own business and enjoy the challenges of financial management and responsibility for staff, stock and premises that this brings. Other work for large high street pharmacy chain and have the opportunity to move around within an established company structure.

Pharmacist with Special Interest: Pharmacists with special interests are involved with developing their skill and expertise in specialist areas such as cancer or diabetes. Almost half of all pharmacists (42%) offered additional clinical and educational Services to community residents including blood pressure checks, screening for Cholesterol and osteoporosis, glucose screening and diabetes counseling, tobacco Cessation programs, immunizations

Hospital Pharmacist: Hospital pharmacists are a vital part of the healthcare term. Working in either the PHC or private hospitals, being a hospital pharmacist means your part of a team where the focus is firmly on patients (WHO website).

Some pharmacists specialize as consultant (or as pharmacists with specialist interests) in many areas as Hematology (blood), Nephrology (kidneys), Respiratory medicine, Cardiology (heart), Urology (urinary), Diabetes, Gastroenterology (stomach and intestine), Infection diseases, pediatrics (children) and care of the elderly [5-10].

4. The Healthcare Pharmacists

The World health organization (WHO) report on "The role of the Pharmacist in the health care system" states that the competence of the Pharmacist is already proven and control.

A. In health promotion and social responsibilities

B. In the direction and administrative of pharmaceutical services

C. In drug regulation and control

D. In the formulation and quality control of pharmaceutical products

E. In the inspection and assessment of drug manufacturing facilities

F. In the assurance of product quality through the distribution chain

G. In drug procurement agencies and

H. In National and institutional formulary & therapeutics committees [11].

4.1 In Health Promotion and Social Responsibilities

Health promotion is any combination of interventions (i.e., health education and related organizational, economic, and/or political interventions) designed to facilitate behavioral or environmental changes that will improve or protect public he- alth. Health promotion strategies focus on community-based interventions and partnerships to maintain wellness and to help modify individual behaviors, such as unhealthy lifestyles. In other words, health promotion involves community interventions that help a person increase control over and improve his or her own health. Disease prevention is defined as activities that are aimed to prevent and control disease, stop the disease processes, or reduce the consequences of disease. Disease prevention activities focus on individuals and communities with identifiable risk factors that can be targeted for effective intervention. Thus, in contrast to health promotion, disease prevention efforts emanate more from health providers than from individuals. A Pharmacist has an important role to play in health promotion and primary, secondary and tertiary prevention, especially in relation to the management of chronic diseases [12]. Discussed below in details:

Sexually Transmitted Diseases-AIDS: Huge resource of community Pharmacist can educate people in the prevention and information of HIV/ AIDS. Although many classes of antiretroviral are available like protease inhibitors, nucleoside reverse transcriptase inhibitors and non-nucleoside reverse transcriptase inhibitors, patients need close monitoring and strict dietary regimen. Pharmacy is a key player in all the NICE publications related to sexual health. They include:

- Contraception quality standard
- Contraceptive services for under 25s
- Long acting reversible contraception
- One to one intervention to prevent STIs and Under 18 conceptions [13, 14]

Pneumococcal disease and influenza: The ro-

le of a Pharmacist in immunizing adults against pneumococcal disease and influenza is discussed. Pneumonia is the leading cause of death due to infection worldwide in children aged < 5 years and is responsible for approximately 16% of the 5.6 million deaths in this population [15]. Pharmacists can promote immunization by assuming the roles of educator, facilitator, and immunizer. Despite lack of specific mention of it in accreditation standards, health-system personnel have a duty to vaccinate adults, just as they do pediatric patients. Pharmacists should review immunization records with patients periodically and at the time of immunization. As with other drug products, formulary decisions and the distribution, storage, and handling of vaccines are important Pharmacist responsibilities.

Chronic disease management: A Pharmacist's role in the control of the chronic disease can range from the support of proven community programs such as screening and disease management clinics for diabetes etc.

Nutrition Counseling: Pharmacists have unique constellation of competencies, including clinical knowledge and skills which place them in an ideal position to contribute to the delivery of nutrition support therapy to patients. Indeed, the professional roles of pharmacists have been evolving from the traditional compounding and dispensing of medications to the modern delivery of direct patient care within multidisciplinary health care teams. Pharmaceutical care (PC) is a practice philosophy, in which the pharmacist responsibly provides medication therapy to patients to achieve definite outcomes that improve their quality of life. There is cumulative evidence to support the positive impact of PC on patient care and health care costs [16].

Oral Health: A Pharmacist has numerous opportunities on a daily basis to positively affect his trend. The American dental association has published pamphlets for dentists and Pharmacists that cover oral structures and diseases prevention to caries, OTC and prescription dental drugs and how these two professions can collaborate

Environmental Health: About this a Pharmacists should adapt his methods of health educations. A Pharmacist role in environmental health is related primarily to being alert to the conditions prevailing in the community and of working with others to adequately control any of the attendant hazards

Epidemiology: Epidemiology is the study of the distribution and determination of health-related events in specific population and the application of this field in the control of these events. Epidemiology relates to the interaction of hosts and their environment with attention to those particular agents in the environment that are causal factors of disease. The alert Pharmacist who can apply the basic principal of Epidemiology in their community will become a significant member of the health team.

Health Measurement: A Pharmacist in the health professional in the most frequent contact with the general public and this function as a community health education makes the Pharmacist role unique. By staying abreast of local health statistics Pharmacist can function as a valuable resource person to researcher's conduction epidemiological studies in the community.

Health Education: Pharmacists are required more than ever to contribute in the area of health promotion (HP), and it is one of the six components that contribute to the health improvement of individuals accessing pharmacy services as stated in the Joint FIP/WHO guideline on good pharmacy practice. The importance of the role of pharmacists in patient counseling is recognized and because of increased accessibility, they are in a key position to provide HP services. Several studies have shown the benefits of pharmacists' involvement in a wide range of important public-health issues including smoking cessation, diabetes, hypertension and contraception [17].

Alcohols, Drug Abuse and Smoking Cessation: The diseases of alcoholism and drug abuse also come under the preview of the community Pharmacist. The Pharmacist has a key role to help individuals who become dependent upon alcohol. Counseling sessions can be made by the community Pharmacist to stop smoking.

Vaccinations: Administering vaccines to patients and health care workers is enabling some health-system Pharmacists to assume a prominent role in public health. Pharmacists have noticed that immunization needs were not being met and, through their advocacy, increased the numbers of patients and employees of health systems who have been vaccinated.

Family planning: Drug shops and pharmacies have long been recognized as the first point of contact for health care in developing countries, including family planning (FP) services. Drug shop operators and pharmacists should not be viewed as mere merchants of short-acting contraceptive methods, as this ignores their capacity for increasing uptake of FP services and methods in a systematic and collaborative way with the public sector, social marketing groups and product distributors. According to the service delivery guidelines of the Ministry of Health and Family Welfare, Government of India, all providers dispensing emergency contraception should be appropriately informed about emergency contraception and should also counsel their clients on regular contraceptive usage [18, 19].

Cholesterol Risk Management: Pharmacist care improves the management of outpatients with major modifiable CVD risk factors. Pharmacists can help fill the gap as primary care providers and can contribute to the control of CVD risk factors by their knowledge of medications, their easy accessibility for patients, and their collaborative practice with physicians. More specifically, pharmacists have the opportunity to provide medication instructions to patients at each prescription, to improve safe medication use, and to assist physicians in chronic care [20].

Women Welfare-Pregnancy and Infant Care: Pharmacists, as the most accessible healthcare professionals, can work to empower women in their role as informal caregiver s, to communicate to women the necessity to be educated and to support their health literacy. Furthermore, pharmacists can help women to take control of their reproductive health. They can help women to develop a reproductive life plan. A reproductive life plan consists of personal goals or intentions about having or not having children. During and after pregnancy, pharmacists can provide women with essential education on contraindicated medicines, recommended prenatal vitamins and infant feeding options, such as breastfeeding and formula feeding [21].

Individualization of Drug Therapy: Today the latest concept in medicine is towards individualization of drug therapy. Where judicious patient care is needed individualization of drug therapy becomes a need, and a Pharmacist can play a vital role in this. A Pharmacist can set up a separate consultation room and provide counseling to the patient. He can store the details of patient history, allergies and other details necessary for therapy so that the concept of individualization of drug therapy could be implemented.

Radio pharmacy: This is a specialized area of pharmacy, where radioactive materials are produced as drugs for the diagnostics of certain diseases like Thyroid problem by Iodine isotope. Here a Pharmacist has a significant role to play.

Consultancy service: It's another area in where a Pharmacist can play a role directly in public health. For independent career & business consultancy in pharmacy profession is challenging & demanding & has got a good scope of successful career build up.

Rational Use of Drugs: The way drugs are procured, stored, distributed, and dispensed and the information given by the pharmacist/dispensers dictates the quality of their use, thus in terms influencing the rational use of medicines. Different models of practice are (1) the drug information practice model, (2) the self-care practice model, (3) the clinical pharmacy practice model, (4) the pharmaceutical care practice model, and (5) the distributive practice model. These models are practiced across the continents alone or in combination based on the understanding of the local pharmaceutical needs, expertise of pharmacist, and their recognition of role [22].

Disease prevention: Distinctions between the types of disease prevention measures are sometimes unclear. Three levels of prevention exist.

Here pharmacists play a great role.

a) Primary: - Primary prevention is helping people maintain their health or improve the quality of their lives through a healthy lifestyle. An example of primary prevention is the control of infection through immunization.

b) Secondary: - Secondary prevention in the early diagnosis and treatment of an already existing disease the use of penicillin in the treatment of a streptococcal infection prevent the onset of rheumatic fever. Thus, a pharmacist can perform a vital service by advising patients, who present a febrile illness characterized by a sore throat to see a physician.

c) Tertiary prevention: - Tertiary prevention largely consists of rehabilitation. Most chromic disease cannot be cured but their progress can be retarded with maximum benefit to the patient. Much can be done for instance with rheumatoid arthritis to make patients more comfortable and more productive in their daily lives [23, 24].

Strategic practice-related efforts that could possibly enable pharmacists to provide health promotion and disease prevention services would include:

- Knowledge of the clinical and demographic characteristics of the community
- Targeted activities based on assessment of diseases associated with the service population in
- the community
- Development of a written plan for informational and preventive efforts
- Identification of stakeholders and collaborative community partners, such as health departments
- Community and advocacy groups, homeless shelters, institutions, and payers
- Marketing, documenting, and billing of professional services associated with health promotion and disease prevention in order to provide sustainable pharmacy-based interventions; and
- Utilization of educational materials, e.g., handouts, brochures [25].

4.2 In the Direction & Administrative of Pharmaceutical Services

In this branch there are opportunities to a Pharmacist of all education levels. The largest numbers of Pharmacists are involved in marketing & administration. There are marketing people (Pharmacists) educate physicians & community Pharmacists, hospital pharmacists etc. about manufactures product. This can be a rewarding career for a Pharmacist with right personality & motivation.

In Compounding and Dispensing: pharmacists~

- Accept and check prescription details
- Script validity
- Safety and appropriateness
- Review patient's dispensing history
- Patient-specific factors
- Select product
- Dispensing check
- Label and assemble dispensed products
- Supply prescription to patient/carer: recheck
- Counsel patient/carer on safe and appropriate use

Table 1. Differences Between Dispensing and Providing Pharmaceutical Care [26]

Dispensing	Pharmaceutical Care
Objective is to bring product to the customer	Service business
Decisions focus on the business.	Objective is to bring the pharmacist to the patient.
Inventory generates revenue.	Decisions focus on the patient.
Available service supports the product.	Patient care generates revenue.
Schedule for repeat prescription determined by customer supply of drug product.	Available product supports the service.
Business is passively sought through the generation of prescriptions.	Schedule for follow-up determined by risk and benefit of drug therapies and needs of the patient.
Product business	Business is actively sought through the recruitment of patients.

In Hospital Management: A Pharmacist has a great role to play in hospital administration. The

responsibilities of a hospital Pharmacist are to develop a high quality comprehensive pharmaceutical service, properly coordinate & meet the needs of the numerous diagnostics & therapeutic departments, the nursing service, the medical staff, medical equipment of hospital & the hospital as a whole in the interest of community improving patient care. Clinical pharmacists 'role in patient safety stated below:

- Hospital pharmacists should take responsibility for the management and disposal of waste related to the medicine use process, and advise on disposal of human waste from patients receiving medicines.
- Hospital pharmacists should take responsibility for all aspects of selection, implementation and maintenance of technologies that support the medicine use process, including distribution devices, administration devices, and other equipment.
- Hospital pharmacists should ensure appropriate assessment, development, implementation and maintenance of clinical decision support systems and informatics that guide therapeutic decision making and improve the medicine use process.
- Hospital pharmacists should support the development of policies regarding the use or medicines brought into the hospital by patients, including the evaluation of appropriateness of complementary and alternative medicines.
- Doses of chemotherapy and other institutionally-identified high-risk medicines should be independently checked against the original prescription by at least two health care professionals, 1 of whom should be a pharmacist, prior to administration.
- Hospital pharmacists should ensure the development of quality assurance strategies for medicines administration to detect errors and identify priorities for improvement
- an easily accessible reporting system for adverse drug reactions should be established and maintained.
- an easily accessible reporting system for medication errors, including near misses, should be established and maintained.

Medicines use practices should be self-assessed and compared with benchmarks and best practices to improve safety, clinical effectiveness, and cost-effectiveness.

Systematic approaches (trigger tools) should be used to provide quantitative data on adverse drug events and optimal medicines use. These data should be regularly reviewed to improve the quality and safety of medicines practices [27-30].

In Health Maintenance Organizations (HMOs): HMOs are open or private associations that give and oversees extensive wellbeing administrations to people enlisted. Here a Pharmacist can play a role in the administration of this kind of or- ganization or give direction. Community pharmacies are very frequently the first contact with the health care system, often before a General Practitioner. There is a high frequency of contacts with low barriers to access to health care: no appointments, no long waiting time, convenient op- ening hours, and they are located within the co- mmunity. Regular contacts offer access to a wi- de range of people, namely, healthy persons, th- ose showing symptoms, patients undergoing tre- atment, relatives and other care givers; people from all social strata. It would be necessary to pursue relevant policies to enhance the utilization of the untapped potentials of community ph- armacists, especially as primary health care is the central focus of health care delivery. Pharmacists can:

- Perform patient assessment (subjective and objective data including physical assessment)
- Have prescriptive authority (initiate, adjust, or discontinue treatment) to manage disease throu- gh medication use and deliver collaborative drug therapy or medication management
- Order, interpret and monitor laboratory tests
- Formulate clinical assessments and develop th- erapeutic plans
- Provide care coordination and other health

services for wellness and prevention of disease

- Develop partnerships with patients for ongoing (follow-up) care [31-33]

Extended Role of Community Pharmacists

Community pharmacists have the potential to not only contribute to improving patients' outcomes through safe and effective use of drugs, but also to reduce the cost of healthcare by resolving drug related problems and promoting public health issues. At the same time, the nature of pharmacy practice and community pharmacy is also changing. Along with others, they community pharmacists have following responsibilities:

Delivery services to household patients	Health screening
Services for groups with special needs	Patient referrals to general practitioners and other health professionals
Services for residential homes	Development of local formularies
Out of hours services	Provision of professional advice
Domiciliary visits	Advice on palliative care
Distribution of welfare food	Supply of disability aids
Disposal of unwanted medicines	Reporting adverse drug reactions
Sale of prepayment certificates	Provision of quiet area for confidential
Hospital discharge and admission procedures	Conversations
Needle and syringe exchange schemes	Supply of complementary medicines [34,35]
Health promotion activities	

Pharmacists in ICU

Because of the complexity of drug therapy and the critical nature of patients in intensive care units (ICUs), the attendance of a clinical pharmacist in this setting is an important issue. Studies have reported that the interventions of clinical pharmacists have resulted in a rational drug therapy and improved patient care and treatment costs [36].

Long-term Care: Residents in long-term care are often elderly people with several comorbid conditions, who may be very susceptible to inappropriate prescribing. Although complex medication regimens are often required for these individuals, pharmacists can play a vital role in improving the overall quality of drug therapy. The pharmacist's medication review saves doctors' time; this is particularly the case for patients who are not reviewed opportunistically. Overall, the evidence for the benefit of pharmacists in long-term care settings is quite mixed. Pharmacists can improve clinical outcomes by reducing potentially inappropriate prescribing and MRPs; however, the majority of successful interventions in the literature were multidisciplinary in nature. Economic evaluations of pharmacist interventions in this setting are limited, but most studies have shown no significant difference in humanistic and economic outcomes [37]. (See **Chapter 20. Pharmacists in Long-Term Care**)

Ambulatory Care Clinics: Ambulatory care pharmacy practice is defined as the provision of integrated, accessible healthcare services by pharmacists who are accountable for addressing medication needs, developing sustained partnerships with patients, and practicing in the context of family and community. Pharmacist services have varying effects on patient outcomes compared with usual care. CPPs deployed at the medical center's ambulatory care clinics have had a positive impact on clinical and cost outcomes, improving patient care through interventions, contributing to readmission reduction efforts, generating indirect revenue through cost avoidance, and generating new revenue through billing for patient visits [38-40].

Drug Information Services: Health care providers do not actually use these guidelines. Approximately 10% to 40% of patients do not receive care based on updated scientific evidence and more than 20% of interventions performed are not required or are potentially harmful to patients. Drug information service is a dedicated and specialized service provided by pharmacists to enhance knowledge of medicines use, promote rational prescribing among prescribers, and reduce medication errors. One of the most important aspects of drug information is to be unbiased in its contents. Thus, the unbiased nature of information is of paramount importance to enhance patient outcomes and reduce adverse

drug reactions (ADRs) [41, 42].

4.3 In Drug Regulation & Control: A Pharmacist in government drug regulatory affair department plays his role by regulating the quality of medications, price of the medications, applying the ethics & law about medications & industries.

4.4 In the Formulation & Quality Control of Pharmaceutical Products: The formulation of any medication is only depended on Pharmacist. It is one of the important roles of a Pharmacist. The physical, chemical & biological quality of a pharmaceutical product intended for administration to patients in the home must be of the highest quality attainable. This quality must be built in to the product in each step of the aseptic compounding process, that is, in the starting components, the design & operation of the compounding facilities, the control of the environment & the qualifications of operators all contribute to the final quality of the product, either in a positive or negative manner. Therefore, the control of quality is a continuous process throughout the compounding of the product. Testing of the finished product can only confirm the quality built in to the product during its preparation. Here only a Pharmacist can play his role.

4.5 In the Inspection & Assessment of Drug Manufacturing Facilities: Another important duty of a Pharmacist (by joining the government testing laboratory & medicine regulatory service) is inspect the pharmaceutical industries, their environment, quality of medications, facilities & assesses the medications.

4.6 In the Assurance of Product Quality Through the Distribution Chain: Distribution of medication is two types—

a. *From industry to market*: After produced, before sending to the market ensuring the quality of pharmaceutical products is must, because it is directly related with life. Here only a Pharmacist plays a significant role.

b. *From hospital to the patient (through prescription)*: The medication distribution system in hospitals is very complex & involves in several health care professionals. The usual flow is physician prescribes, Pharmacist dispenses & nurses administer medication. Here the Pharmacist who dispenses, has the right to change the medicine which is prescribed by the physician to ensure the quality of that medicine.

4.7 In Drug Procurement Agencies: The work of drug procurement agencies is to supply the medication & find out the possible customer in home & abroad. Here a Pharmacist plays a great role.

4.8 In National & Intuitional Formulary & Therapeutics Committees: During recent years, with the development of the clinical pharmacy movement, a number of clinical Pharmacists on the staff of some departments have developed expertise in specific therapeutic specially areas. Therefore, it was a logical development under the pharmacy & therapeutics committee. The formulary system has attempted to outline the scientific data on a medication, including its toxicities, untoward side effects, safety profile & beneficial effects- has been a controversial method of appraising medication therapy. All these are provided by a formulary committee of a nation & this formulary committee is constructed by the Pharmacists [43, 44].

1. 5. Pharmacist's Role Plays in Public Health

Pharmacist contributions to public health that are not widely reported. This may be partially due to some of these services not being framed within public health categories, so the population impact of their services goes unnoticed. Nearly 93% of U.S. residents live within five miles of a pharmacy, making the community pharmacy one of the most accessible healthcare institutions. The pharmacist is in a unique position to make essential public health contributions. However, there is limited evidence that patient perspectives on the role of pharmacists has changed. The role of the pharmacist as part of the interdisciplinary team is even more critical in rural locations as many of them are healthcare worker shortage areas, and the pharmacist may be one of the few healthcare professionals in the community [45]. NHS England (NHSE) is facing a growing GP workforce crisis, with continuing problems around GP recruitment, retention, and

retirement rates. Approximately 30% of GP partners have reported not being able to fill a GP vacancy in their practice for at least 12 months (2017-18 survey). Recent studies support clinical pharmacists in General Practice, including their perceived competencies, scope of practice, practice environments, levels of integration, and support needs [46].

6. Building Relationships

Partnerships within pharmacy and public health arenas may provide a platform for evidence-based decision making through processes that focus on common problems and build a foundation for decisions.

6.1 Collaboration: IPC is an integral part of the practice of Medicine and Family Medicine. The WHO defines IPC as "multiple health workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality of care". To provide effective, patient-centered care, family physicians must collaborate with other health and social care providers. There are many benefits of collaboration such as enhancing the use of scarce resources as many organizations have limited capital, reduction in the duplication of cost and effort by decreasing fragmentation of health services, improving quality by integrating health outcomes for patients, improving communication by considering diverse perspectives on public health issues and increasing trust and understanding among individuals and organizations [47-49].

6.2 Emergency Preparedness and Response: During the events of natural disasters, industrial accidents or bioterrorist attacks, healthcare facilities are often over- whelmed by the influx of patients. This can lead to inaccuracy or errors in prescribing the proper therapy for a patient because of limited staff with little time to treat. This is when pharmacists play a critical role in individualizing medication therapy regimens to select treatment, increase medication effectiveness, and minimize adverse drug events. Pharmacy leaders should (1) review government and community disaster responses and understand the movement of drug supply for each response, (2) create a pharmacy disaster plan, (3) list the essential medications and determine their inventory levels, and (4) establish a staff training program to enhance understanding and implementation of the EOP. If successfully developed and executed, a hospital pharmacy department's E-OP has a high rating of success in meeting patient-centered needs in the unforeseen event of a disaster [50].

6.3 Patient Advocacy: Both hospital and community pharmacists have a significant role to play in advocacy of pharmacy as a profession. Governments and pharmacy governing bodies are continuing to work to increase the scope of practice of pharmacists, leaving us with an incredible opportunity to grow. Pharmacists also need to be taking responsibility for advocating through the interactions we have with patients, other health care professionals and the public. In order for pharmacists to meet the needs of the medically indigent, further efforts are needed to show that the patient's opinion is valued. Many methods can be used to advocate for patients such as participation in community collaborations, partnerships, consumers' rights groups, advocacy groups and nonprofit organizations which bring communities together for action in educating the public and supporting policy changes in public health [51].

6.4 Patient Centered Approach (Improving Health Outcomes): The mission of pharmacists is to help people achieve optimal health outcomes. Similarly, the mission of public health specialists is to promote physical and mental health and prevent disease, injury, and disability. There is overlap in the two mission statements with respect to achieving optimal health outcomes. The JCPP created a profession-wide patient-centered care model known as the PPCP in 2014. The PPCP recommends that pharmacists use a patient-centered approach, in collaboration with other health care providers to optimize patient care. To accomplish this, pharmacists should use evidence-based medicine to collect necessary subjective and objective information,

assess the collected information, develop an individualized patient-centered plan, implement the plan, monitor and evaluate the effectiveness of the plan – modifying as needed [52].

6.5 Minimizing Adverse Drug Events: It has been suggested that closer collaboration between doctors and pharmacists in primary care prevent ADR. Nowadays, pharmacists also ensure the rational and cost-effective use of medicines, promote healthy living, and improve clinical outcomes by actively engaging in direct patient care and collaborating with many healthcare disciplines. With this expanding scope of practice, pharmacists are being recognized as key components in providing individualized patient care as part of interprofessional healthcare teams [37].

6.7 Education and Research: The ACPE and Center for the Advancement of Pharmacy Education have encouraged collaboration between healthcare professions and pharmacy by building the skills and confidence of students to optimize patient care and services. They also encourage that pharmacy programs “strive to meet community needs” and evaluate faculty members for their service contributions to the community. Given that emphasis on service, teaching, and research are hallmark evaluation metrics of all institutional programs, conformance is necessary to develop pedagogical models that are adoptable. In the public health arena, these goals of pharmacy practice benefit society by creating desirable patient outcomes, minimizing overuse, underuse and misuse of medications, and achieving medication related public health goals [53].

6.8 Pharmacist on the Home Care Team: Medication-related problems are common among home care clients who take many medications and have complex medical histories and health problems. Helping clients manage medications can be a challenge for all home care clinicians. By partnering with a college of pharmacy at a large university in the community, the agency successfully included a pharmacist as a member of their home care team. Medication-related problems are often classified four types: Indication, Effectiveness, Safety and compliance [54,55].

Except these a Pharmacist has important role to play as Chain Drug Store Pharmacist, Grocery Chain Pharmacist, Hospice Pharmacist, Hospital Staff Pharmacist, Managed Care Pharmacist, Military Pharmacist, Nuclear Pharmacist, Oncology Pharmacist, Operating Room Pharmacist, Pediatric Pharmacist, Pharmacist in Non-traditional Settings, Pharmacy Benefits Manager, Poison Control Pharmacist, Primary Care Pharmacist, Psychiatric Pharmacist, Veterinary Pharmacist [56].

7 Future Roles

Revolutionary progress in basic biomedical sciences, including human genomics, stem-cell biology, immunology, biomedical engineering, and bioinformatics, has provided an unprecedented supply of information for improving human health. The rapidly emerging fields of population genetics and pharmacogenomics highlight the significance of molecular techniques in the clinical diagnostic laboratory and the potential for application in patient-directed pharmacotherapy. Medication-prescribing decisions will increasingly rely on the results of genotyping of drug-metabolizing enzymes. New technology and practices will allow health system pharmacists to reduce treatment failures and prevent adverse drug reactions through the proper application of pharmacogenetic principles. Advances in informatics will permit aggregation and application of population- and patient-specific clinical data in ways that will encourage development of population-specific, evidence-based disease management programs. As medication-use experts, health system pharmacists will need to apply these new tools not simply to improve patient-specific pharmacotherapy but to advance public health. Similarly, innovations in medication delivery technology will allow more complex therapies to be administered outside institutional settings. Patients, caregivers, and health professionals will require education about the safe use of such technologies, as will the legislators and other officials responsible for regulating their use [57-63].

8. Pharmacy Professional Organizations

Pharmacy organizations and associations offer many benefits to, and can fulfill many needs for, both pharmacists and technicians. These groups can offer networking, continuing education opportunities, free publications, and leadership opportunities. Although some pharmacy organizations are specific to just pharmacists, there are many organizations available for both pharmacists and pharmacy technicians to join, some of which provide specialty information for specific pharmacy fields. The **Table1** lists some pharmacy organizations and their specialties.

Table 1. Pharmacist Organizations [6]

Name	Description
APhA	National professional organization of pharmacists representing pharmacy practitioners, and pharmaceutical scientists and students. Membership in one of the three academies of the APhA are APPM, APRS, ASP—offers members specialized benefits and the opportunity to influence their practice areas.
ASHP	Professional association of pharmacists who practice in organized health care settings. It endeavors to create an environment in which pharmacists can focus the full potential of their knowledge and expertise on patient care to provide high-quality pharmaceutical services that foster the efficacy, safety, and cost-effectiveness of drug use.
ASCP	Promotes the development and advancement of pharmaceutical care activities directed at patients in long-term care institutions.
NCPA	Membership in NCPA, formerly known NARD, dedicated to the continuing growth and prosperity of the independent community pharmacy in the United States.
AAPS	The members are eligible for membership in one of several disciplinary sections: Analysis and Pharmaceutical Quality; Biotechnology; Clinical Sciences; Economic, Marketing, and Management Sciences; Medicinal and Natural Products Chemistry; Pharmaceutical Technology; Pharmaceutics and Drug Delivery; Pharmacokinetics, Pharmacodynamics, and Drug Metabolism; and Regulatory Affairs.

Conclusion

As the health care system changes, the line between the roles of pharmacist and physician can become blurred. What differentiates a pharmacy role from a medical role? A simple answer is that what the state licensing laws allow each profession to perform provides that differentiation. Ho- wever, over my 50 years in practice, legislative changes in practice acts have tended to blur the differentiation. When you recommend a treatment for the problem, you are acting as an in- dependent practitioner. As the FDA and some states move toward a class of drugs that pharmacists can prescribe/recommend, the line between physician and pharmacist blurs yet again" --Fred M. Eckel, Editor-in-Chief, Pharmacy Times. From the above consideration, it is clear that the Pharmacists have definite beneficial roles regarding health matters. A Pharmacist is the legally qualified and professionally competent person to handle drugs and allied supplies required for the patients within and outside the hospital. It is a matter of regret that the government of our country is taking very little effort to employ highly skilled pharmacy personnel in different sectors of the health services. But in the developed countries, Pharmacists are in unique position in this regard. So, the governmental health policy should be modified by incorporation Pharmacist in different s. The huge divides that exist in patient education and income levels can be alleviated by design and use of cost-effective educational materials and the visual media. The development and empowerment of the pharmacist can occur only if appropriate steps are taken to ensure that pharmacy licenses are awarded only to qualified pharmacy graduates and adequate educational training is imparted so that pharmacists remain and are rewarded for being the best sources of information related to medication use. Successful policies in this regard and implementation of appropriate regulation will ensure the development of a safer and more effective pharmaceutical public health system, which can in turn, directly translate to improved health of all citizen sectors to improve and ensure the health service for the well-being of people of our country.

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