

The Place of Specialized Pharmaceutical Services in Hospital Pharmacy Practice

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ABSTRACT

Professions exist to serve society. The mission of our profession must therefore, address the needs of society and individual patients. In this regard, the pharmacy profession has a responsibility to identify new opportunities for pharmacy practice in a changing health sector context, to assess and to test them, and to demonstrate the ability to implement them successfully. In addition, in the traditional relationship between the doctor as prescriber and the pharmacist as dispenser, the prescriber was accountable for the results of pharmacotherapy. This situation has changed in rapidly evolving health systems worldwide. The practice of pharmaceutical care now assumes the pharmacist to be responsible for patients under their care, and society will not only accept that assumption but hold the profession for it. These have informed the choice of the subject under review.

INTRODUCTION

The separation of pharmacy from medicine first took place in the early charity institutions engaged in caring for the sick and the injured. History records the fact that pharmacies were important segments of hospital activities as far as the 4th century. In this era, hospitals were part of monasteries. However, it was after the plague in the 14th century, that pharmacy separated from medicine and hospitals of that era and were reported to have had well equipped pharmaceutical service centres. The first hospital pharmacist in America is believed to have been Jonathan Roberts, a pharmacist of the Pennsylvania Hospital in Philadelphia in 1752 (Piecoro and Chudzik, 1972). Back here in Nigeria, formal pharmacy education started in early 1900's. It was in 1902 that the first

pharmacist has his name entered into the register of Pharmacists (Brown and Ogun, 1998). From then until the 1960's pharmacy curricula were dominated by compounding and dispensing. As a result of multiplicity of drugs and complexity in clinical uses, subjects like pharmacology, toxicology and pharmaceutical microbiology were incorporated into pharmacy curricula. Clinical pharmacy involving patient drug monitoring later came into focus for better patient drug management. In 1989, the National universities commission (NUC) approved minimum standards of five year training curriculum for pharmacy. Consequently, in order to meet with challenges of development in pharmacy, faculties of pharmacy in Nigeria sporadically introduced some form of clinical pharmacy orientation in their curricula. In 1990, the NUC gave directive

for the introduction of uniform clinical pharmacy training in pharmacy schools and clinical pharmacy became a component of the basic undergraduate (B. Pharm) training. In 1992, selected Deans of Pharmacy schools and the then registrar of the then Pharmacists Board of Nigeria were sponsored to a trip overseas to understudy clinical pharmacy practice in two pharmacy schools in the UK (University of London and University of Strathclyde schools of pharmacy) and two pharmacy schools in the USA (Howard University and Philadelphia schools of pharmacy).

Contemporary Hospital Pharmacy Practice

The provision of pharmaceutical services in hospitals has emerged as one of the most dynamic and challenging areas within the profession of pharmacy. Hospital pharmacy practice traditionally involves supplying of medications for in-patients and out-patients use, the preparing of sterile medications, bulk compounding pre-packaging, drug formulation, research and serving as focal point in the dissemination of information relating to drug therapy to the entire hospital staff. In addition to these traditional roles, the pharmacist is now beginning to utilize his professional judgment and expertise not only within his department, but also in previously unexplored areas such as the nursing station, the medical laboratory and at the patient's bedside. As experts in medicines, pharmacists are, perhaps, the most accessible and trusted source of advice and treatment in any well organized Hospital setting. Today, their contribution to health care is developing in new ways to support patients

in their use of medicines and as a part of clinical decision-making across the range of specifications. These emerging new roles as a vital member of the healthcare team not only allow the pharmacist to utilize his knowledge of drugs to the highest degree, but also make clear the importance of sound pharmacy service to the total care of the patient.

The Backbone Of Modern Hospital Pharmacy Practice

The current trend in Hospital pharmacy practice is dominated by patient oriented rather than product oriented pharmaceutical services. Clinical pharmacy is a new stress area in Hospital pharmacy practice in Nigeria. What is clinical pharmacy? The term clinical pharmacy was coined to describe the work of pharmacists whose primary job is to interact with the health care team, interview and assess patients, make specific therapeutic recommendations, monitor patients' responses to drug therapy and provide medicines information. Clinical pharmacists work primarily in hospitals and acute care settings and provide patient rather than product oriented services. Practice of clinical pharmacy requires an expert knowledge of therapeutics, a good understanding of disease processes and knowledge of pharmaceutical products. In addition, it requires strong communication skills, with solid knowledge of medical terminology, drug monitoring skills, provision of medicine information, therapeutic planning skills and the ability to assess and interpret physical and laboratory findings (Society of Critical Care Medicine and the American college of Clinical Pharmacy; 2000).

The world is said to be a global village. The impacts of globalization are now being felt in all facets of life and in all professions. While trying to keep pace with global development in pharmacy practice, the historical and developmental stages in our society should be our guiding principles in the adaptation of new changes and challenges in pharmacy practice. It is now an axiom that over-emphasis on patient oriented pharmacy practice in places like the USA has led to depreciation in the other vital segments of the pharmacy profession. The consequence of this is that graduates of Chemistry, Biochemistry, and Microbiology are now assuming the roles of formulation scientist, roles which are exclusive to the pharmacy profession. In Nigeria, only very few pharmaceutical manufacturing companies have their quality control personnel as pharmacist. This area has been taken over by graduates of Chemistry, Biochemistry and Microbiology. One of the laws of survival is law of self preservation. In our opinion, while we lay emphasis on clinical pharmacy and patient oriented pharmaceutical care and services, the core ingredients of the profession of pharmacy should not be abandoned. In this regard, we strongly recommend the adaptation of our new Pharm. D curriculum to the realities of our professional practice and experience.

Emergence Of Specialized Pharmaceutical Services In Hospital Pharmacy Practice

In the last seventeen years, clinical pharmacy became increasingly specialized and a developed specialty for better patient care in Hospital and institutional setting.

The need for specialized pharmacy practice in a Hospital setting arose as a result of: accelerating trend towards specialization in the health professions, the unmanageable scope of knowledge necessary to discuss clinical pharmacy in general terms that apply to all clinical services and patient populations, and the unique nature of certain patients, and disease conditions. (Pecoro and Chudzik, 1972) In addition, in collaboration with other members of the patient care team, pharmacists share the responsibility for patient care outcomes, not just by providing basic dispensing functions and drug information services, but by solving patient and drug related problems and by making decisions regarding drug prescribing, monitoring and drug regimen adjustment. Specialized pharmaceutical services now operate in many Hospitals in the USA and specialization is now attained through Residence programmes.

It is generally referred to as specialized pharmacy Residencies. A specialized pharmacy residency is designed to build those competences developed by a residency pharmacy practice. All accredited residencies in the USA are full time commitments that require at least one year to complete. Some specialized residencies may be offered in combination with other programmes, such as a fellowship, which may require additional years to complete. Specialized pharmacy sections in Hospitals serve as an avenue by which pharmacy professionals from diverse practice environments may obtain and utilize support, guidance and professional development. It serves pharmacists with interests in providing pharmaceutical care or any of its components

beyond traditional institutional and community drug distribution. To qualify for residence a first degree in pharmacy is required in the USA and in some states such as New Mexico; the applicant must possess a Pharm. D degree from accredited college of pharmacy or school of pharmacy and must be eligible for licensure as a pharmacist in the state of New Mexico (A document of American society of Health-system Pharmacists.).

American society of Hospital pharmacy (ASHP) recognizes specialized residencies in an ever expanding number of areas such as:

Cardiology

This involves six months of clinical services in the cardiovascular intensive care unit and telemetry units, with the remaining six months devoted to research and clinical service electives of the resident's choice. The resident is normally integrated into comprehensive clinical pharmacy services and is involved in teaching and research activities.

Clinical Pharmacokinetics

This residency provides exponential training in the application of clinical pharmacokinetics skills to develop and monitor a patient's pharmacotherapy. The resident gains experience in managing therapy for a broad range of patient population with varying medical conditions, including patients with infections disease and those with cardiac, neurological and psychiatric conditions. A pharmacokinetics residency provides extensive involvement in computer-assisted data interpretation, drug analysis methodology, teaching, and research.

Critical Care

A critical care pharmacy practice residency offers training in caring for the special pharmacy needs of critical patients of all ages. Much time is spent in the intensive care units, and experience is gained in areas such as hemodynamic monitoring, shock, burns, infections diseases, analgesia, and drug over dose management. Treatment of critical pathology associated with pulmonary, cardiac, renal, neurological and hepatic organ systems is stressed. A residency in critical care may also provide teaching and research.

Drug Information

This residency provides training in the skills necessary for managing complex drug information services. Residents learn how to effectively use medical information and databases, appropriate method for monitoring, accuracy in patient drug use and safety, and pharmaco-economic principles. Residents acquire scientific writing skills, an understanding of drug policy development, and clinical and marketing research experience. The drug information resident is active in handling and responding to drug information requests, educating patients, health care professionals and students about drug therapy and drug delivery systems, assisting in the development of drug policies, and managing the formulary.

Emergency Medicine

It is designed to develop a clinical practitioner with skills in emergency medicine, critical care and toxicology. Experience is gained by rotation in level 1 trauma centre, toxicology unit, burn intensive care, neurotrauma, cardiology, and

the psychiatric crisis centre. Residents usually complete a research project and participate in nursing and pharmacy students' education.

Geriatrics

A residency in geriatric pharmacy practice emphasizes the management of pharmacotherapy in elderly patient with acute and chronic health conditions. Training involves providing for the special needs of elderly patients through a knowledge of geriatric disease states, ageing, organ function and related drug response alterations, and pharmacokinetics and pharmacodynamic predictions. Other issues such as health maintenance, compliance, patient education, and social issues are also emphasized. Residents are usually involved in clinical research activities and professional education

Pediatrics

Residents gain experience caring for pediatric patients with acute and chronic conditions in such areas as infectious disease, cardiology, pulmonology and rheumatology. Training involves knowledge of pediatric conditions, developmental organ function and related dose-response alterations, and pharmacokinetics and pharmacodynamic predictions. Attaining competence in pediatric service involves psychological adjustment; technical competence; development of judgment in practice situations and the ability to create and maintain service objectives.

This training is best provided through some sort of specialization and residency in pediatric pharmacy.

Infectious Disease and Internal Medicine

Residency training here involves exposure and experience in microbial virulence factors, host defense mechanisms, and epidemiology of infectious diseases, including microbiology research and management.

A residency in internal medicine pharmacy practice in the other hand is designed to develop broad, acute and ambulatory experience in such areas as critical care, cardiology, endocrinology, infectious disease, pulmonary and renal care, and oncology. This type of residency requires a strong foundation of pharmacy practice skills, and emphasizes consultation, clinical and didactic teaching, and quality assurance of care.

Nuclear Pharmacy

The diverse and unique practice of nuclear pharmacy encompasses product formulation, the radio-pharmaceutical distribution system and the clinical, developmental and support services offered to nuclear medicine and radiology. Current approaches to nuclear pharmacy management, radiation protection and technology, and quality assurance activities are emphasized. Sound knowledge of radioactive decay, biological half-life and dosage calculations is essential in this area of specialty.

Oncology

In an oncology pharmacy practice residency, the resident will plan appropriate therapy, oversee anti-cancer drug preparation, and expertly manage the therapy and associated adverse effects in patients receiving anti-cancer and supportive care therapies. The resident is

exposed to the management of cancer related problems such as pain, nutrition disorders, nausea and vomiting and infectious diseases. Although the focus of the residency is primarily on clinical practice and patient care, opportunities for teaching and clinical research-including new and investigational drug research are emphasized.

Nutrition Support

Residents participate in managing the nutrition support service through assessing and diagnosing nutritional status, and designing and monitoring nutritional and electrolyte treatment plans. Experience is gained as residents are required to work with a broad spectrum of patients, including trauma and surgical patients, patients having endocrine abnormalities and renal and hepatic compromised patients. The resident learns about various infusion techniques and systems for administering nutritional agents.

Psychiatric

The resident gains experience in treating diverse psychiatric and behavioural problems, including schizophrenia, depression, mania, bipolar disease, phobic states, substance abuse, personality disorders and related behavioural problems, and neurological disorders in adolescents and adults. Patient communication and assessment skills are emphasized, along with research activities, drug information and education.

Pharmacotherapy

Residency programme in this area prepares the resident to ensure safe, appropriate, and economical use of drugs in patients. Among the

specialized functions of this residency are to collect and interpret data, to design, recommend, implement, monitor, and modify patient specific pharmacotherapy, interpret, generate, and disseminate drug therapy knowledge and design, recommend, implement monitor and modify system-specific policies and procedures in collaboration with other professionals to optimize health care.

Primary Care

Primary care pharmacy residency emphasizes communication and assessment skills, chronic disease management and preventive care, acute care and emergency care, and therapy modifications for special patient groups. Other skills developed include drug literature analysis, and the development of new clinical services in a variety of ambulatory care settings. Opportunities for further refinement in drug information, pharmacokinetics consults, and maintaining patient records and statistical data for continuity of care and research are available. (Specialized residencies: A document of American Society of Health-system Pharmacists and University of New Mexico, Residency Programme Guidelines).

Pharmacy Practice Management

In pharmacy practice management residency, emphasis/focus is on operational, fiscal and health care related issues which influence pharmaceutical care. Leadership skills such as effective communication, negotiation, and departmental management are emphasized. Appropriate skills necessary to conceptualize, implement and evaluate innovative pharmacy services are also stressed.

Management care pharmacy systems

A residency in management care pharmacy practice prepares the resident to manage populations, outcomes and systems. The resident builds the knowledge, skills and abilities needed to assume administrative or managerial roles and responsibilities in any managed care setting, including pharmacy benefit management companies and health maintenance organizations.

Other emerging areas of specialization/residency include: High risk obstetric services; HIV-AIDS services; Rehabilitation services; Trauma Intensive service; Ambulatory Care Service; In-patient Anticoagulation Service.

All these specialized pharmacy service residencies are twelve month programmes designed to prepare a practitioner to lead in conceptualizing, planning, developing and demonstrating specialized pharmacy services (University of New Mexico, Residency programme guidelines).

The Place And Benefits Of Specialized Pharmaceutical Services In Hospital Pharmacy Practice

In rapidly developing profession of Pharmacy the place of specialization in Hospital pharmacy practice can not be over emphasized. The benefits derivable from these specialization are enormous. Specialization in any field results in increased competence and improved services. The rapidly evolving clinical oriented pharmacy practice in the hospitals has been hampered in Nigeria, largely because of conflict of interest, inter-professional rivalries and the present

structure of our Health centres. Presently, Hospital pharmacists are still largely confined to the traditional role of dispensing of drugs to the patients. The impact of the pharmacist as a patient counselor and as a monitor of drug therapy and its outcome on the patient and in the hospitals is yet to be felt. It is important to state here that the extensive academic background of pharmacists and their traditional role in preparing and providing medicines and informing patients about their use position them to assume responsibility for the management of drug therapy. In an increasing complex health care environment, it has become difficult to compare the effectiveness of different treatments. Health care interventions can no longer be based on opinion or individual experience alone. Scientific evidence build up from good quality research should be used as a guide, and should be adapted to each individual patient's circumstances. While it is true that the undergraduate training in our medical schools and faculties of pharmacy are somewhat general in nature, competence in the varied areas of the medical field requires specialization in these fields. For pharmacist to make meaningful contributions in the area of patient oriented clinical services and for them to be fully integrated into the patients care processes, specialization in various areas of practice is critically important. A position paper on critical care pharmacy services, prepared jointly by the Society of Critical Care Medicine and the American college of Clinical Pharmacy highlighted derived benefits from specialized pharmaceutical services in Hospital pharmacy.

Some of these benefits are:

Better management of drug costs and therapy

Illustration: A patient having spinal TB was placed on streptomycin injection for the first few weeks. The condition did not show any signs of improvement. Input by a Pharmacist specialized in pharmacotherapy, for instance would not only have saved this patient, but cost of wrong and ineffective therapy would have been avoided and the patient would have been better managed.

Reduction in mortality - Clinical pharmacy services such as clinical research, provision of drug information, drug admission histories and participation on a cardiopulmonary resuscitation team were associated with reduced mortality

Reduction in Adverse drug effect- Prospective controlled trials demonstrated that when pharmacists assume responsibility for pharmacotherapy as part of a multidisciplinary health care team, significant reductions in Adverse Drug Events were achieved.

Reduction/Elimination of prescribing errors. A study involving critical pharmacists showed that preventable Adverse Drug Events was reduced by 66% i.e. from about 10 to 4 per 1000 patients per day.

In conclusion, it must be emphasized that to incorporate specialized pharmaceutical services into Hospital pharmacy practice, a number of issues must be considered.

Existing guidelines and literature for clinical pharmacy practice and drug use process in the hospitals must be reviewed and adapted for each area of specialization

Each pharmacy unit in the Hospitals and practitioners should continually strive for the highest level of service possible

Special practice experiences are essential for specialized pharmaceutical services in Hospitals and these specialized experiences are gained through residencies. Hospital pharmacists and Hospital pharmacy administrator should initiate the establishment of pharmacy specialty residency programmes.

Active and participatory emphasis on clinical oriented pharmacy practice should be strengthened and the scope of activities expanded.

The introduction of specialized pharmaceutical services and/or residencies in our tertiary Hospitals in particular, will attract many more young pharmacists into Hospital pharmacy practice and improve clinical services rendered.

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