

Review Article



Clinical Pharmacist Services in the Emergency Department

M Kumaraswamy¹, Dr. Jithin^{2*}, Dr. Joseph Varghese², Dr. Akhil Jain², Dr. Puneeth G.K²

1. Associate Professor, Department of Pharmacy Practice, Sri Adichunchanagiri College of Pharmacy, B.G.Nagar, 571448, Karnataka, India.

2. Pharm D Interns, Department of Pharmacy Practice, Sri Adichunchanagiri College of Pharmacy, B.G.Nagar, 571448, Karnataka, India.

*Corresponding author's E-mail: drjithinmathews@gmail.com

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ABSTRACT

The medical specialty of emergency medicine is focused on the diagnosis and treatment of an unanticipated illness or injury. By the "Model of the Clinical Practice of Emergency Medicine," includes a distinctive body of knowledge. The initial assessment, diagnosis, treatment, coordination of care among several physicians or community services, and disposition of any patient needing urgent medical, surgical, or psychiatric care are all included in the practice of emergency medicine. The emergency department (ED) is a hectic, risky, and frequently overworked workplace. The significance of clinical pharmacists in the emergency medicine (EM) situation has been recognized in formal policy declarations by several illustrious organizations. EM clinical pharmacists collaborate with emergency room doctors and nurses at the patient's bedside to enhance patient safety, boost the efficacy and efficiency of care, promote antibiotic stewardship, inform patients and clinicians, and support scientific endeavors. The history of EM clinical pharmacists and related training programs, the variety of duties and roles performed by EM clinical pharmacists, their influence on clinical and financial outcomes, and a conceptual framework for EM clinical pharmacist integration into ED patient care are all covered in this paper. Finally, constraints and obstacles to the implementation of EM clinical pharmacy programs are taken into account.

Keywords: Emergency Department, Clinical Pharmacist, Emergency Medicine.

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INTRODUCTION

The dynamic setting of the emergency room presents particular difficulties in choosing, administering, and monitoring medications. Care for high-risk populations, such as the critically ill, elderly patients, children, people with limited access to healthcare, and people with multiple comorbidities, in particular, frequently necessitates the use of high-risk medications and the requirement for time-sensitive medication decisions.¹

The emergency department and other areas of the health care delivery system benefit greatly from the clinical, administrative, and leadership services provided by emergency medicine specialists. Not restricted to, but encompassing, hospital-based and freestanding emergency departments, urgent care centers, observation medicine units, emergency medical response trucks, at disaster sites, or via telemedicine, emergency medicine is not location-specific.^{2,3}

The American College of Emergency Physicians (ACEP) supports health systems that support specialized positions for pharmacists inside the ED because it thinks that pharmacists

play a crucial role in ensuring effective, safe, and efficient drug use in the ED. To maximize pharmacotherapy for ED patients, the emergency medicine pharmacist should function as a well-integrated member of the ED multidisciplinary team that actively engages in patient care choices, including resuscitations, transitions of care, and drug reconciliation.⁴ ACEP thinks colleges should strive for a goal of 24/7 ED pharmacist coverage. The precise delivery mechanism for these services might differ among institutions based on size, financial resources, the presence of academic programs, and other considerations.

History of emergency medicine clinical pharmacists

In the 1970s, clinical pharmacists were first seen working in emergency departments. Initial papers described their function in terms of medicine delivery, but they also mentioned that they offered cognitive and advisory services based on the EM clinical pharmacist's specialized pharmacology and therapeutics knowledge.^{5,6} All respondents (physicians and nurses) to the first physician survey of EM clinical pharmacist services in single center research endorsed the EM clinical pharmacist as an essential team member, and 87% supported the pharmacist's delivery of treatment to select patients after physician diagnosis.⁷ The pharmacist's position in medical resuscitations includes being acknowledged as a drug treatment adviser for physicians.⁸

More recently, the role of the clinical pharmacist in emergency medicine has grown to place a greater focus on comprehensive direct patient care services. These services emphasize bedside patient evaluation with the EM



medical team and prompt delivery of patient-and disease-specific pharmacy advice. To maximize the effectiveness of care provided to ED patients, EM clinical pharmacists assist with medication selection, optimal dosing and delivery, drug information provision to patients and the interprofessional medical team, research and scholarly activities, and administrative and operational responsibilities.⁹

Emergency Department Pharmacist as a Safety Measure in Emergency Medicine was a project funded by the Agency of Healthcare Research and Quality (AHRQ) in 2005. The objective was to establish a toolbox to assist institutions in the justification and creation of EM pharmacy services as well as to maximize the function of the EM clinical pharmacist.¹⁰ This programme increased the national visibility and understanding of the value clinical pharmacists present in the ED, and this has contributed to the rapid expansion of their services over the past ten years. Related publications from the grant and an offshoot mentorship programme were also part of this programme.^{11,12,13}

Need for emergency medicine clinical pharmacists

The area of emergency medicine (EM) is complicated. It necessitates the management of various patient demographics and medical issues, requiring the use of a range of clinical specialties, from pediatrics to geriatrics, primary care to critical care. In the emergency room, the use of time-sensitive and dangerous drugs is prevalent (ED). The ED is one of the patient care environments with the highest risk due to its complexity.¹⁴ Medication mistakes are reduced when professional pharmacists from emergency medicine are involved in treatment planning and execution.¹⁵ The current interprofessional teams of doctors, advanced practice clinicians, nurses, respiratory therapists, and pre-hospital providers are completed with EM clinical pharmacist services.

In the past, hospital pharmacists prioritized distribution functions (e.g., medication procurement, preparation, and delivery to the patient's bedside). Clinical pharmacists of today concentrate on patient care that enhances drug therapy and consequently supports well ness, good health, and disease prevention.

Clinical pharmacists collaborate with other healthcare professionals and provide knowledge in the therapeutic use of drugs. They also take responsibility and accountability for managing therapy in settings where patients get direct care.¹⁶ Reductions in patient mortality, hospital readmission rates, and prescription mistakes are just a few of their well-documented contributions to patient care and better outcomes. Additionally, they have shown to be excellent team players in an EM setting.^{17,}

¹⁸

Roles and Responsibilities

In practicing settings, ranging from big universities and community centers to tiny and rural EDs, EM clinical pharmacists take on several tasks.

The role of the clinical pharmacist in the ED was defined in an updated guideline for EM pharmacist services released in 2011 along with goals for pharmacy services to satisfy institutional needs and best practices.

A 2015 nationwide survey research provided the most recent summary of the activities of EM clinical pharmacists.

The bulk of clinical pharmacist activities includes face-to-face interactions with patients, doctors, nurses, and other team members at or near the bedside.¹⁹

Activities of emergency medicine clinical pharmacists:

Bedside clinical activities

- Resuscitation team at the emergency department (cardiopulmonary arrest, trauma and burn resuscitation, myocardial infarction, stroke, sepsis)
- Direct care at the bedside while taking high-risk medications (rapid sequence intubation, procedural sedation)
- Pharmacotherapy advice
- Drug knowledge
- Medication selection
- Medication dosage (depending on parameters unique to the patient, such as age, weight, method of administration, and renal function)
- Medication therapy monitoring
- Drug compatibility for admixing or administration
- drug identification
- drug interaction analysis
- error and adverse event reporting
- patient counselling and education
- Toxicology recommendations.
- Prospective medication order review and verification
- targeted disease state counselling (e.g., allergy, anticoagulation)
- antimicrobial stewardship actions, including microbiological culture and susceptibility follow-up, and assistance with drug preparation/purchasing (advanced knowledge of medication storage and distribution and institutional policies and procedures)
- Administration of medication



- Administration of vaccines and emergency preparation
- Assistance with medication histories and supervision of pharmacist extenders (e.g., technicians, students)
- Training and instruction Updates on pharmaceutical therapy and instruction on the best possible medication regimen for ED team members (often takes place at the bedside or in the ED)
- Participation in multidisciplinary simulations as part of post-graduate EM pharmacy residency training programs. Education through conferences and pharmacology rotations for EM attendees and residents. improvement in performance
- Formulary management, guidelines, protocols, and process creation, as well as medication dispensing cabinet optimization
- Optimization of drug procurement processes; medication safety efforts; involvement in failure mode and effect analysis (FMEA) and root cause analysis (RCA); support for adherence to institutional and regulatory medication usage rules.
- Participation in interdisciplinary research committees that review ED-related research protocols

Medication safety

Medication mistakes are frequent in emergency departments (EDs) and can occur during clinical decision-making, prescribing, transcribing, dispensing, or administration of drugs. Medication mistakes are reduced and the number of errors is raised when clinical pharmacists are part of the emergency department team. Most prescription-related mistakes may be corrected by ED pharmacists, especially those involving numerous medicine prescriptions and those issued by EM residents.²⁰

During a 1000-hour research period, EM pharmacists discovered 364 medication mistakes, according to a prospective multicenter investigation of four geographically different academic and community EDs. The majority of mistakes were found when conducting consultations and going through pharmaceutical orders. The most frequent form of error repair turned out to be improper dosage. Another prospective multicenter observational research discovered that throughout the course of an 800-hour study period, EM pharmacists discovered 504 prescription mistakes.

The most frequent errors were improper frequency, medication omission, and dosage—alarmingly, over half (47.8%) of detected errors were rated as serious because they had the potential to harm organs or

impair life function. Further prospective studies conducted in the United States and Canada have shown that EM pharmacists detect and greatly reduce prescription mistakes. Retrospective studies have also demonstrated that EM pharmacists improve prescription mistake reporting and tracking.²¹

Although many medication mistakes may not hurt the patient, they are nonetheless clinically relevant. These incidents are referred to as adverse drug events. Although it is obvious that having a pharmacist around decreases the likelihood of prescription mistakes, additional study is required to ascertain if this also reduces the likelihood of clinically important adverse drug events (ADE). To adequately describe the impact of EM clinical pharmacist practice, we advocate thorough studies of outcomes.²²

Clinical pharmacists in emergency care and their effects on clinical outcomes:

- An increase in the proportion of incorrect antimicrobial treatment interventions based on culture findings.
- A decrease in the proportion of drugs that are incorrectly revised following a culture.
- Reduction in the number of uninsured patients who return to the ED following the culture review.
- Better patient education on medications and disease states, the detection of adherence problems, and the optimization of pharmaceutical management in those whose primary complaints are chronic obstructive pulmonary disease, chronic heart failure, or exacerbations of asthma.
- The most frequently observed interventions included drug information, dose modification, nursing inquiries, formulary exchanges, and suggestions for the start of drug therapy.

CONCLUSION

EM clinical pharmacists collaborate with emergency room doctors and nurses at the patient's bedside to enhance patient safety, boost the efficacy and efficiency of care, promote antibiotic stewardship, inform patients and clinicians, and support scientific endeavors. Clinical pharmacists collaborate with other healthcare professionals and provide knowledge in the therapeutic use of drugs. They also take responsibility and accountability for managing therapy in settings where patients get direct care. Reductions in patient mortality, hospital readmission rates, and prescription mistakes are just a few of their well-documented contributions to patient care and better outcomes. Additionally, they have shown to be excellent team players in an EM setting.



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