AN OVERVIEW PHARMACIST ROLE IN EMERGENCY CASES OF TOXICOLOGY

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Abstract:
This article examines suitable treatments for often occurring cases of poisonings, medicine overdoses, and other toxicological emergencies. It also discusses the important role of pharmacists in ensuring that these treatments are readily accessible and used correctly. This study aims to provide an overview of the pharmacist's involvement in emergency instances of toxicology. Clinical pharmacists play a crucial role in ensuring the well-being and security of patients in the hospital, especially in specialized and high-risk environments. Emergency departments (EDs) pose distinct dangers that can be mitigated by including clinical pharmacists who have received specialized training and/or have experience working as ED pharmacists.

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Introduction:

On a global scale, the position of the pharmacist as a healthcare practitioner is undergoing transformation. Pharmacists participate in their conventional responsibilities of distributing medications and providing guidance on their use, as well as engaging in collaborative decision-making with other healthcare professionals, as required by the clinical environment. The involvement of pharmacists in complete patient care activities has empowered them and led to a decrease in the occurrence of adverse drug events and medication mistakes, as well as an enhancement in health outcomes [1]. The emergency department (ED) possesses distinctive and intricate attributes compared to other departments within the hospital. An emergency department (ED) is a dynamic and hazardous setting that often experiences excessive workload.Two The lack of pharmacy services in the emergency department (ED) of the hospital might have detrimental consequences, given the high-risk nature of the ED where drug mistakes are prevalent [2].

Clinical toxicology is a specialized field that primarily deals with disorders that are caused by or specifically linked to toxic chemicals [3]. Pharmacists possess expertise in the principles of clinical toxicology, encompassing concepts such as median lethal dose (LD50), median effective dose (ED50), margin of safety, therapeutic index (TI), risk assessment, spectrum of effects from a drug, regulatory agencies associated with drug and chemical handling, various types of toxic reactions, interactions between chemicals, and fundamental principles in the prevention and treatment of drug-induced poisoning. Clinical toxicologists provide medical care to individuals who have been exposed to toxic substances, including medications and chemicals, and also work on advancing methods for diagnosing and treating these poisonings [3].

Although there is evidence supporting the involvement of pharmacists in the emergency department (ED) and endorsement from national Emergency Medicine organizations such as the American College of Emergency Physicians [4], several hospitals still depend on pharmacy staff located outside the ED. Only a small number of emergency departments that have pharmacists on staff provide round-the-clock service.

Review:

Pharmacists possess extensive training in the fields of therapeutics and pharmaceutical care. The pharmacist's expertise and education play a crucial role in ensuring the appropriate and secure utilization of medications. They collaborate with other healthcare professionals in the hospital to advocate for logical therapeutic practices. Pharmacists evaluate prescription medications as well as those used for self-treatment, offer guidance on issues linked to medicine, assist with complex dose schedules, develop programs to ensure medication adherence, and suggest cost-efficient treatments to patients and healthcare professionals. In addition, they analyze and appraise medication regimens for potential drug-drug interactions. Within specific contexts, they can enhance patients' treatment regimens by computing pharmacokinetic parameters and overseeing instances of poisoning and drug overdose through the provision of toxicological/poison information services.Seven In addition, the pharmacist assesses patient-specific factors such as age, body surface area, renal function, hepatic function, and concurrent medications administered to patients in the emergency department [5].

In addition to their traditional duties, pharmacists now have additional responsibilities such as overseeing the administration of medications, preparing and maintaining a supply of medications for CPR equipment, offering drug information, and calculating doses as part of the CPR team [6]. In their study, Fairbanks et al [7] have provided a definition for the emergency pharmacist (EPh) as "a clinical pharmacist with a Doctor of Pharmacy degree, who has completed a residency program and works primarily in the Emergency Department. The EPh provides consultations to healthcare providers and nurses, reviews medication orders, participates in resuscitation efforts, and helps in quickly preparing necessary medications." A research done at a US university medical/trauma center's Emergency Department (ED) has demonstrated that having an Electronic Pharmacy (EPh) available for talks about drugs and verifying pharmaceutical orders, among other responsibilities, has improved the quality of treatment delivered in the ED. The guidance provided by the Emergency Physician (EPh) to doctors and nurses has resulted in an enhancement in the quality of patient treatment in the Emergency Department (ED) [7]. These findings have significant ramifications for ED and hospital leadership teams contemplating the implementation of an EPh program. Although concerns exist regarding potential opposition from physicians and nurses, the study unequivocally shows that ED practitioners and nurses in an established program strongly appreciate and actively seek out the EPh. Nevertheless, the

findings of this study may not be relevant to the worldwide context of eating disorders at nonacademic facilities or facilities with newly implemented programs, as the study was carried out in a facility that already had a well-established Eating Psychology program [7].

There is sufficient data to substantiate the importance and function of the pharmacist in the emergency department. Grindrod et al. [8] reported on an incident at the Royal Columbian Hospital in Canada, where pharmacists provided suitable sedatives and analgesics to patients based on their medical state and relevant information, including their medical and prescription history. If the prescribing physician was not available, the pharmacist conveyed the patient's information and the correct administration techniques for tranquilizers and pain relievers to the other attending physicians. The patient's family or caretakers were provided with comprehensive information on the administration of these drugs, as well as the need of maintaining accurate records of narcotics. Additionally, a thorough discussion was conducted regarding the potential side effects of the medications. The pharmacists will provide support to nurses in the ED by aiding in the preparation of medications and other medicine-related tasks. Pharmacists can assist in gathering a comprehensive medication history, which includes details about any drug allergies, concurrent use of other medications (including over-the-counter and complementary medicines), and the timing of the last meal or drink intake. In addition to the drug history, the pharmacist can also ascertain the patients' height, weight, body surface area, and vaccination history. In the absence of the ED pharmacist, the emergency physician assumed responsibility for prescribing medications, including tranquilizers and pain relievers, by assessing patients' medical histories. The medication history collected by the ED pharmacist and physician were compared, revealing that the medication histories obtained by the pharmacists in the ED were more comprehensive than those obtained by other health providers. Therefore, the pharmacist's role in promoting the appropriate and logical use of sedatives and analgesics was highly appreciated in the emergency department [8].

In 2018, Roman et al [9] performed a comprehensive study that identified three primary domains of the emergency department pharmacist's practice that are linked to favorable patient outcomes. The contributions encompassed managing critically ill patients, fulfilling antimicrobial stewardship tasks, and generating prescription orders for nurse-administered home medicines for patients admitted to the ED [9].

pharmaceutical misadventure include pharmaceutical mistakes, bad drug responses, and adverse drug occurrences. A medication error is a mistake in the treatment process that can cause harm to the patient. An adverse drug reaction is a harmful or unpleasant reaction that occurs as a result of using a medication. This reaction indicates a potential risk for future administration and requires prevention, specific treatment, adjustment of the dosage, or discontinuation of the medication. An adverse drug event is a harm caused by a substance during medical treatment [10]. Vasileff et al [11] performed a research in a teaching hospital in South Australia among patients in the emergency department who were at risk of medication mistakes. A comparative analysis was conducted on the medication history acquired by physicians and pharmacists. The comparison was conducted between two groups of patients: one group received usual care, where pharmacists collected a medication history following the prescription of medications by doctors, and the other group received pharmacist medication charting, where pharmacists obtained and documented drug histories before approval by a doctor. In the "usual care" group, 75.6% of patients experienced one or more accidental differences in their prescriptions, whereas only 3.3% in the "pharmacist medication recording" group had such disparities. This led to an average of 2.35 missed doses per patient in the "usual care" group and 0.24 in the intervention group. Furthermore, the "usual care" arm witnessed an average of 1.04 erroneous dosages per patient, whereas the "pharmacist medication documenting" arm had none. The research advocated for the involvement of pharmacists in the admission process of emergency department patients, namely in tasks such as reconciling medications and documenting preadmission medicines. The study solely focused on analyzing clinical results and did not assess crucial factors such as staff and patient satisfaction, as well as the cost-effectiveness of the intervention. It would be intriguing to ascertain the cost-effectiveness of chart review conducted by pharmacists in compared to that performed by doctors [11].

Kucukarslan et al [12] did a study where they evaluated the effects of including a pharmacist in the healthcare team on avoidable adverse medication events in general medicine units. The study was single-blind and had a standard care-controlled design. Additionally, the researchers

documented the interventions made by the pharmacist during patient rounds. The study revealed a 78% reduction in the occurrence of preventable adverse medication events, dropping from 26.5 incidents per 1000 hospital days to 5.7 incidents per 1000 hospital days. This study conducted a comparison between patients receiving treatment from a healthcare team that included a pharmacist and patients receiving standard care from a healthcare team that did not include a pharmacist [12].

Brown et al [13] conducted a research to quantify medication mistakes in an emergency department (ED) before and after the assignment of an ED pharmacist to review prescription orders. The study observed a reduction in the frequency of various medication mistakes in the emergency department (ED) when pharmacists participated in the assessment and authorization of drug prescriptions or orders. The participants were categorized into two distinct groups: a control group and an intervention group. An assessment was conducted on 490 prescriptions issued for 198 individuals to identify any mistakes. The control group had a total of 37 medication mistakes, whereas the intervention group had 14 medication errors. The mistake rate for the control group was 16.09 per 100 drug orders, whereas for the intervention group it was 5.38 per 100 orders, resulting in a drop of 66.6% (P = .0001). This study provides evidence for the inclusion of pharmacists in the emergency department (ED) to reduce prescription mistakes, assist with dosage calculation, and identify drug allergies and interactions [13].

Conclusion:

The Emergency Department (ED) is a distinct environment that deals with a varied and intricate group of patients that require immediate attention and care at all times. Emergency physicians highly appreciate and actively employ the assistance of ED pharmacists in providing care. Pharmacists have a crucial role in mitigating poisoning and overdose injuries and fatalities by aiding in the prompt identification of toxic exposures and advising emergency personnel on the appropriate storage, selection, and administration of antidotal therapies.

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