

Should Emergency Pharmacists Focus on Providing Care to Admitted Patients Rather than Non-admitted Patients?

THE “PRO” SIDE

Emergency pharmacists (EPhs) should give priority to patients requiring admission, both to improve patient outcomes and to reduce health care costs.^{1,2} I am making this argument with recognition that prioritization will always be required, as there are many other valuable activities to which EPhs can devote their time. The prioritization of inpatients is paramount during the provision of pharmaceutical care in the emergency department (ED), to address the factors contributing to high risk for adverse drug events (ADEs) and medication errors, such as ED overcrowding, diversity of clinical presentations, use of high-risk medications, and high patient–health care provider ratios.³

ED overcrowding has reached epidemic proportions, as a result of an imbalance between public demand and hospital capacity.⁴ It is associated with an increased risk for medication errors, which can be alleviated by the services that EPh provide.⁵ In Canada, about 11% of all ED visits result in inpatient admission.⁶ To put this statistic into perspective, about 60% of all hospital inpatients are admitted from the ED.⁶ Admitted patients' length of stay in the ED has been increasing steadily through the years, and patients can spend upward of 34 h in the ED awaiting a bed or transfer to another hospital.⁶ The American Society of Health-System Pharmacists⁷ endorses the concept that inpatient ward pharmacists be accountable for admitted patients, but adherence with this recommendation may not be feasible, depending on the location and acuity of individual patients. ED crowding with inpatients is often a direct result of overcapacity within the hospital, and inpatient ward pharmacists may not be able to provide timely pharmaceutical care because of their high existing workload. Brown and others⁸ were able to reduce medication errors involving ED patients with prospective pharmacy review by EPhs, which included dosage calculations; identification of inappropriate drugs, routes, or schedules; order clarifications; and drug allergy clarifications.⁸ Focusing the efforts of EPhs on patients who are being referred for admission is crucial, as these patients often have critical illnesses or urgent needs, and they represent high-risk populations. Through early, proactive involvement, EPhs can reduce the risk of medication errors.

The ED is characterized by a diversity of clinical presentations, and previous studies have supported the use of EPhs for timely administration of high-risk medications or procedures in acute phases of illness, such as cardiopulmonary resuscitation, pain management, sepsis management, procedural sedation, intubation, and antifibrinolytic therapy.⁹ Patients in need of such high-risk medications and procedures are often in critical, complex situations, have high pharmacotherapeutic needs, and are likely to be admitted. As such, EPhs should give them priority and be proactive in their management to improve patient outcomes. For example, rather than reactively identifying ADEs after admission orders have been processed, EPhs can proactively support the admission team at the time admission orders are prepared. This crucial role was apparent in a study showing that admitted patients seen by EPhs received more appropriate initial medication regimens, as reflected by a 75% reduction in interventions by ward pharmacists.¹⁰ Therefore, the ED is a good location for pharmacists to effectively identify and resolve preventable ADEs for patients who will be admitted with a diversity of presentations.

ADEs account for about 28% of all ED visits and 24% of hospital admissions.¹¹ Furthermore, more than one-third of drug-related ED presentations identified by pharmacists have been missed by emergency physicians.¹² These cases are associated with longer hospital stays, greater mortality, and higher costs to the health care system.¹³ Most preventable ADEs that happen in the ED are attributed to improper medication reconciliation or to inappropriate medication orders.¹⁴ Therefore, Accreditation Canada has identified medication reconciliation as a priority for Canadian hospitals, which are expected to complete this process for all ED patients with a decision to admit.¹⁵ Pharmacist-led management of ADEs and preparation of admission drug histories have been associated with lower mortality rates.¹ Importantly, EPhs are able to provide more accurate best possible medication histories (BPMHs) than other health professionals, and are associated with fewer medication errors.¹⁶ Thus, timely medication histories and identification of ADEs in the medication reconciliation process may result in admitted patients having an accurate medication regimen early in their hospital stay and early identification of medication-related events. Barriers to practice, such as insufficient time to perform medication reconciliation activities, may be overcome with adequate pharmacy staffing in the ED. This was made evident by a Canadian survey, in which only 23% of ED pharmacy teams surveyed reported that their

EDs had adequate staffing, and 81% of ED managers expressed the need for additional staffing in the ED to allow proper completion of BPMHs.¹⁷

The issues described above—overcrowding of the ED, driven by high numbers of admitted patients, who have diverse, clinically complex problems (including ADEs) and who are taking high-risk medications while awaiting transfer to the ward (with further potential for ADEs)—mean that the volume of patients frequently exceeds the capacity of the health care practitioners caring for them. ED nurses must frequently administer potentially dangerous medications, and medication orders may be given verbally in critical patient situations.¹⁸ Medication errors can occur because of the high patient–nurse ratios, nurses’ inability to properly check medicines being administered, nurses’ fatigue secondary to high patient volume, and therefore the possibility of nurses forgetting to administer medications. One study showed that ED nurses administered medications in a less timely manner than ward nurses for boarded (admitted) patients,¹⁸ the most common reason being “insufficient time”. In that study, medication reviews and intervention by EPhs ensured that medication administration complied with the orders prescribed.¹⁸ In addition, the provision of education about time-sensitive medications to other health professionals, such as timely administration of antibiotics for patients with sepsis, can improve patient outcomes.

In conclusion, as the volume of patients admitted from the ED increases with ED overcrowding, prioritization of these patients by the EPh is important for the safe and prompt treatment of these patients. EPhs are integral to ED medical teams, and ideally they should provide pharmaceutical care to all patients, regardless of admission status. However, because of funding constraints, only 39% of Canadian hospitals had at least 0.5 full-time equivalent clinical pharmacy services personnel in the ED.¹⁹ Therefore, until adequate pharmacy staffing is available in the ED, prioritization of those at highest risk of medication errors—who are often inpatients awaiting transfer to the ward—is crucial in the provision of care.

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THE “CON” SIDE

For most pharmacists, stepping into the emergency department (ED) can feel like stepping into the jungle: scary, unpredictable, and chaotic. These feelings are justified. The ED is a fast-paced, complex environment with a diverse population (ambulatory to critical care, pediatrics to geriatrics, medical to surgical, and involving resuscitations and traumas).¹ The ED is particularly prone to medication errors given the high volume of patients, frequent interruptions, high frequency of verbal orders, and common use of high-risk medications.² To enhance the quality of care and the safety of drug delivery in the ED, an emergency pharmacist (EPh) must fulfill a unique role that is different from those of both ambulatory and inpatient pharmacists. To optimize this role, the EPh should prioritize

the care of non-admitted patients (i.e., ambulatory patients not requiring admission and patients who are ill enough to require admission but have not yet been formally admitted to a hospital service).

Other countries have recognized the ED as a unique clinical environment and have developed guidelines for EPh roles. The American Society of Health-System Pharmacists (ASHP) lists medication order review, drug information, and patient care involving high-risk medications and procedures as priorities for the EPh, placing lower importance on medication reconciliation and care of admitted patients.³ When EPh staffing is insufficient (e.g., when only a single EPh is present in the ED, as is the case for most of Canadian hospitals⁴), the ASHP recommends that the ward pharmacist, not the EPh, be accountable for admitted patients remaining within the ED.³ Similarly, the practice standards of the Society of Hospital Pharmacists of Australia advocate for the prioritization of patients at greatest risk of adverse drug reactions, with lower priority being given to admitted patients provided they can be assessed by the ward pharmacist within 24 h.⁵

In Canada, the role of the EPh is still relatively new. The Canadian Society of Hospital Pharmacists has not developed any guidelines for the EPh role, and standardization is lacking. A recent survey of Canadian EPhs revealed a wide range of activities performed, with heavy emphasis on medication reconciliation and care of admitted patients.⁴ The lack of ED specialty residencies and role models, and a paucity of emergency medicine training in Canadian pharmacy curricula may limit pharmacists' confidence to care for non-admitted patients. The reported activities may reflect pharmacists' familiarity and comfort, rather than what's in the best interest of the ED and its patients.

By prioritizing the care of admitted patients, EPhs miss the opportunity to intervene with the assessment, prescribing, administration, and monitoring of all medications administered by the ED team. The literature suggests that both the quality and safety of care of ED patients are improved when EPhs are involved as early as possible in the ED visit (Box 1).⁶⁻¹³ The EPh improves outcomes through involvement in traumas, resuscitations, and the care of patients requiring time-sensitive medications before the decision to admit. These patients often have multiple non-drug-related issues requiring physician and nursing care, such that without involvement of an EPh focusing on the optimization of medications, drug therapy issues may be overlooked by the rest of the team. The clinically significant end points in Box 1 can be achieved only when the EPh is available throughout the assessment and care of these critically ill patients before their admission.

EPhs can also facilitate positive outcomes through their care of less acutely ill patients who are likely to be discharged home. For example, more than 1 in 9 ED visits are drug-related, but only one-third of the affected patients are admitted to hospital¹⁴; the remaining two-thirds would benefit from assessment by an EPh. As another example, in the absence of interaction with an EPh, the drug therapy of non-admitted patients may not be assessed until a later visit to a community pharmacist, who will not have access to the

Box 1. Quality and Safety Outcomes of Selected Emergency Pharmacist Activities

Trauma

- Decreased time to postintubation sedation (by 19 min) and analgesia (by 23 min)⁶
- Improved appropriateness of antibiotics for type 3 open fractures (74% versus 29%)⁷

Resuscitation

- Higher survival to hospital admission (25% versus 17.8%)⁸
- 13-fold reduction in errors during trauma and resuscitation⁹

Stroke

- 20-min reduction in time to thrombolysis¹⁰
- Lower stroke disability scores at 24 h¹¹

Sepsis

- 20% improvement in appropriateness of empiric antibiotics¹²
- 44-min reduction in time to first antibiotics¹³

hospital medical record and laboratory results. When EPhs review ED discharge prescriptions, they may intervene in up to 10% of cases.¹⁵ Outcomes are also improved when EPhs provide discharge education targeting high-risk medications such as opioids¹⁶ and anticoagulants.¹⁷

When EPhs are freed from caring for admitted patients, a door opens upon new opportunities. Many innovative EPh-led programs have been described in which an EPh takes on nontraditional roles as a value-added service to the health care system. EPh-driven programs have led to a 50% decrease in time to administration of prothrombin complex concentrate in patients with warfarin-associated hemorrhage¹⁸ and to discontinuation of antibiotics for 55% of patients without a urinary tract infection (as determined by post-discharge culture review).¹⁹ Safe and effective patient outcomes have also been demonstrated when EPhs managed phenytoin dosing²⁰ and influenza vaccinations²¹ or led a venous thromboembolism clinic.²²

In summary, EPhs are not simply inpatient pharmacists located in the ED. Medication reconciliation and assessment of admitted patients can be done by other members of the pharmacy team, and prioritizing admitted patients impedes the EPh's ability to perform value-added activities. Each ED is unique, and EPhs should work with physician, nursing, and pharmacy leaders to identify departmental priorities and determine how they can best improve the quality and safety of ED care. It is time to expand our conceptions of the EPh role. Together, let's lace up our boots and bravely go deeper into that jungle.

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