

Strategies for implementing emergency department pharmacy services: Results from the 2007 ASHP Patient Care Impact Program

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The Institute of Medicine (IOM) in 1999 and 2006 identified medication errors as the most common type of error in health care and emphasized the importance of safe medication systems that include redundancies to enhance patient safety.^{1,2} The annual cost of morbidity associated with preventable adverse drug events (ADEs) in hospitalized patients was estimated to be \$2.3 billion in 1993 dollars and \$3.5 billion in 1996 dollars.³ In a 2006 IOM report, *The Future of Emergency Care*, described emergency departments (EDs) in the United States, facing 114 million visits, to be “at a breaking point” due to reasons that include overcrowded EDs and an increasing shortage of inpatient beds, resulting in admitted patients staying in the ED for extended periods (often called boarders or “inpatient hold” patients).⁴

A higher prevalence of preventable ADEs has been reported in

Purpose. Strategies proposed during a patient care impact program for implementing emergency department (ED) pharmacy services are described.

Summary. In June 2007, the American Society of Health-System Pharmacists developed a patient care impact program entitled “Introducing an Emergency Department Pharmacist into Your Institution” to provide experiential training to practicing pharmacists seeking to establish ED services in their institutions. Under the guidance of four mentors, 19 pharmacists from a variety of practice settings, including community-based hospitals and academic and tertiary-care-based institutions, were selected for participation in the six-month program. Participants were divided into two groups, and each group was assigned two mentors. During their initial meeting, participants identified anticipated challenges to implementation of pharmacy services in the ED and began to define strategies with their mentors for effectively managing the anticipated challenges. Each group participated in one-hour monthly teleconferences with their mentors. In

addition to monthly teleconferences, participants regularly contacted their mentors for additional assistance and several visited their mentors’ institutions. Participants developed job descriptions for an ED pharmacist, developed a rationale and justification for implementing pharmacy services in the ED, obtained approval and support from appropriate parties for the ED pharmacist’s role, developed plans for introducing a pharmacist to the ED, and developed quality-assurance methods to monitor the effectiveness of the pharmacist’s role.

Conclusion. Despite the diversity in practice settings, participants of the program faced similar challenges in implementing ED pharmacy services at their institutions. Various strategies toward solutions to these challenges were shared among participants and mentors.

Index terms: American Society of Health-System Pharmacists; Hospitals; Patient care; Pharmaceutical services; Pharmacists; Pharmacy, institutional, hospital; Quality assurance

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EDs than in other hospital units.⁵ In 2002, Hafner and colleagues⁵ found that 3.6% of ED patients received inappropriate medications and 5.6% received inappropriate discharge instructions. The rationale for this high rate is that the ED is faced with challenges that include a fast pace of care, a large number of oral orders and handoffs, frequent interruptions, and unfamiliarity with patients.⁶ In addition, many of the safety mechanisms and redundancies that exist in other practice settings are not in place in the ED. Examples include access to complete medical records, pharmacist review and consultation as a member of the multidisciplinary team, and the consistent presence of family to clarify a patient's history at the time a critical decision is made.⁶

Several studies conducted during the past few decades have shown that clinical pharmacists improve drug management, decrease medication costs, prevent ADEs, contribute to total cost avoidance, and promote safe medication practices in a variety of practice settings, including the ED.^{1,6-12} It is often suggested that pharmacists in the ED play a similar role to those in other settings because, in addition to their traditional roles of reviewing medication orders, dispensing drugs, and educating, emergency medicine pharmacists participate in decision-making before medications are ordered or administered. The benefits of this have been observed by nurses and physicians. A recent study found that nurses and physicians overwhelmingly (74 [99%] of 75) felt that a dedicated pharmacist in the ED improved the quality of care in the ED.¹³ Further, the 2006 IOM report on hospital-based emergency care highlighted the need for interprofessional collaboration and recommended the inclusion of a clinical pharmacist in the emergency care team.⁴ Despite these reports, only a small percentage of EDs nationally have dedicated clinical pharmacists.^{7,13} The Joint

Commission recently emphasized the need to have greater pharmacist involvement in the ED;¹⁴ as a result, many institutions nationally are struggling with how best to implement clinical pharmacy services in their EDs, given time constraints, limited resources, lack of specialized residency training for pharmacists in emergency medicine, and an insufficient amount of rotation sites for pharmacy students and residents. In 2005, the Agency for Healthcare Research and Quality (AHRQ) funded a two-year project to optimize the role of the ED pharmacist and to develop a tool kit for institutions considering adopting new programs.¹⁵ This program helped increase the visibility of pharmacists in the ED and drew national attention to the value of their role.^{16,17}

In 2007, the American Society of Health-System Pharmacists (ASHP) offered a six-month patient care impact program, "Introducing an Emergency Department Pharmacist into Your Institution," to help provide experiential training to practicing pharmacists looking to establish ED services in their institution. The program was led by four mentors, including an emergency pharmacy specialist and ED physician from the University of Rochester Medical Center, an emergency pharmacy specialist from Cedars-Sinai Medical Center, and an emergency pharmacy specialist from Johns Hopkins University.

This article describes the experiences of participants in this program, focusing on the challenges of implementing pharmacy services to EDs and the strategies used to address these challenges.

Program overview

Practicing pharmacists interested in participating in the patient care impact program were asked to submit an application and a letter of intent to ASHP. Of the 36 applicants considered for the program, 20 were

selected, representing various practice settings, including community-based hospitals and academic and tertiary-care-based institutions. However, before the first meeting, 1 participant withdrew from the program.

Of the 19 participants, 8 were from community-based hospitals (appendix). These institutions ranged in size from 225 to 845 beds, with a reported range of annual ED visits of 36,000–80,000. The remaining 11 participants practiced in academic and tertiary care hospitals (appendix). These institutions ranged in size from 225 to 912 beds, with a reported rate of annual ED visits of 36,000–130,000. Before implementing ED pharmacy services, each institution's ED had very limited pharmacy involvement. Medication orders were processed either through a central pharmacy and removed from automated dispensing machines or through a satellite pharmacy.

The participants and mentors initially met at the ASHP 2007 Summer Meeting. At this meeting, the participants were provided with tools for developing an emergency pharmacist program and for measuring its effectiveness. The tool kit, which was developed by the University of Rochester's AHRQ-supported Partnerships in Implementing Patient Safety program, provided existing evidence supporting the benefits of implementing a pharmacist role in the ED, described a model program for introducing a pharmacist role into the ED, and provided medication-safety-related quality measures applicable to the ED environment.^{18,19,20} The participants were divided into two groups, and each group was assigned two mentors. During this initial meeting, the participants identified anticipated challenges to implementation of ED pharmacy services and began to define strategies with their mentors for effectively managing the anticipated challenges. During the six-month program, each group participated in one-hour monthly tele-

conferences with their mentors. Before the teleconference, brief reports on the progress and challenges were supplied by each participant and distributed to the group. Participants were then able to discuss any new challenges they had identified, proposed solutions for these challenges, and their overall progress. During the discussions, participants and mentors exchanged ideas and guidance based on their own experiences that helped them establish services in their institutions. Through mentorship and the use of the tool kits, participants developed job descriptions for an ED pharmacist, developed a rationale and justification for implementing pharmacy services in the ED, obtained approval and support from appropriate parties for the ED pharmacist's role, developed plans for introducing a pharmacist to the ED, and developed quality-assurance methods to monitor the effectiveness of the pharmacist's role. In addition to monthly teleconferences, participants regularly contacted their mentors for additional assistance, and several visited their mentors' institutions. The program concluded at the ASHP 2007 Midyear Clinical Meeting, where the participants each presented a poster summarizing their six-month journey and received a certificate of program completion. There were several common challenges and corresponding solutions identified by program participants, despite their different practice settings. The most common challenges encountered are discussed below.

Challenges of implementing ED pharmacy services. The most common challenges faced by the pharmacists during the initial stages of the programs were gaining hospital administration approval, lack of a consistent pharmacist presence within the ED, obtaining ED clinical staff support, expanding workflow in the ED, and determining how best to define the role of the pharmacist in the ED.¹⁹

Strategies for overcoming challenges. Some of the strategies used to gain hospital administration support by participants included writing formal budget proposals and presenting these proposals to hospital leadership within their institution.¹⁹ A few participants conducted a formal presentation to hospital management on the documented benefits of having a pharmacist in the ED. Others conducted a survey of the ED clinical staff, requesting information on how they best thought the ED could utilize the services of a pharmacist. Various techniques to document interventions were attempted through paper documentation or electronic programs. Some of the electronic programs enabled participants to add a cost-avoidance total to the interventions, allowing them to show the savings to hospital administration.¹⁹

Given that all of the participants were practicing pharmacists from a variety of settings, many struggled with how best to balance their other responsibilities and provide a consistent presence within the ED. One of the techniques used to provide a balance was to create office space within the ED for pharmacists to work on other responsibilities while remaining physically present and available within the ED.¹⁹ In addition, many used a pager, cell phone, or both so that the clinical ED staff could contact the pharmacist even when he or she was not present in the ED. Some participants created signs to alert ED staff when the pharmacist was available, and many pharmacists would frequently walk the floor of the ED to alert the staff of their presence. It was also important for the clinical pharmacist to collaborate with both the ED and the inpatient and outpatient pharmacy staff to help increase understanding of their respective workflow to maintain continuity of care for ED patients when the pharmacist was off-duty.

Gaining the support of the clinical ED staff is crucial. One method

used by several program participants included shadowing ED clinical staff, nurses, residents, and attending physicians to gain an understanding of the ED workflow.¹⁹ In addition, many pharmacists conducted frequent, self-initiated rounds (walking the floor of the ED) to maintain a highly visible presence and to integrate themselves into the ED team. During these rounds, the pharmacist reviewed patient charts and medication orders, answered drug-information questions, assisted in the care of high-acuity patients, optimized orders when appropriate, and intervened to avoid medication errors. Other techniques used included the provision of educational sessions for ED staff on the services provided by the pharmacist, drug-information updates, guidelines, and a review of preexisting hospital protocols.¹⁹ Many pharmacists also participated in relevant department and committee meetings. All of these strategies were used to allow the pharmacist to become actively involved in the care of patients in the ED, in contrast to waiting for ED staff to approach the pharmacist.

In an effort to improve the medication-use process in the ED, some participants established satellite pharmacies, while others implemented automated medication dispensing machines or created disease-specific medication order sets for the ED's computerized-order-entry system.¹⁹ In addition, participants arranged for ED patients admitted to the hospital but awaiting inpatient beds to have their orders processed through the inpatient pharmacy, created standardized drug-information sheets on high-risk medications for use by nurses, and identified and established processes to reduce medication errors.

Finally, most participants found it initially difficult to clearly define the direct patient care role that the pharmacist would have in the ED. All of the participants had a very limited

dispensary role, confined to medication preparation in emergency resuscitation codes, procedural sedation, rapid-sequence intubations, or other types of urgent situations.¹⁹ This was a deliberate strategy intended to keep the pharmacist available for clinical consultation. At most institutions, the pharmacist provided answers to drug-information questions, conducted discharge counseling for high-risk patients, clarified relevant medication histories or allergies, and assisted in guideline development. Other common tasks included providing evidence-based pharmacotherapy recommendations, providing formulary conversions, adjusting doses in special populations, identifying and reviewing high-risk patients, and assisting in developing processes to comply with the requirement for medication review.¹⁹

Outcomes of the mentorship program

To date, all 19 clinical emergency pharmacy programs have been successfully implemented, providing dedicated services that range from 8 to 16 hours daily for four to seven days per week. Many of the participants have been able to successfully secure funding for additional positions. Other individuals successfully implemented protocols for management of diseases such as deep venous thrombosis, stroke, sepsis, and procedural and rapid-sequence intubations. Of the participants who documented their interventions, all noticed a positive trend toward an increased number of interventions performed with each month spent in the ED. In an effort to expose the next generation of pharmacists to the specialty of emergency medicine, many participants have established clinical rotation sites for pharmacy students, with plans to extend to residents in the future by following ASHP Accreditation Standards for Specialized Residency Training. In addition, ASHP has continued the

patient care impact program for two additional years, adding an additional 20 institutions to the mentorship list through 2009.

Conclusion

Despite the diversity in practice settings, participants of the program faced similar challenges in implementing ED pharmacy services at their institutions. Various strategies toward solutions to these challenges were shared among participants and mentors.

References

1. Lee AJ, Boro MS, Knapp KK et al. Clinical and economic outcomes of pharmacist recommendations in a Veterans Affairs medical center. *Am J Health-Syst Pharm.* 2002; 59:2070-7.
2. Aspden P, Wolcott J, Bootman JL et al., eds. Preventing medication errors: quality chasm series. Washington, DC: National Academies Press; 2006.
3. Bates DW, Spell N, Cullen DJ et al. The costs of adverse drug events in hospitalized patients. *JAMA.* 1997; 277:307-11.
4. Board on Health Care Services. The future of emergency care: dissemination workshop summaries. Washington, DC: National Academies Press; 2006.
5. Hafner JW, Belknap SM, Squillante MD et al. Adverse drug events in emergency department patients. *Ann Emerg Med.* 2002; 39:258-67.
6. Fairbanks RJ, Hays DP, Webster DF et al. Clinical pharmacy services in an emergency department. *Am J Health-Syst Pharm.* 2004; 61:934-7.
7. Lada P, Delgado G. Documentation of pharmacists' interventions in an emergency department and associated cost avoidance. *Am J Health-Syst Pharm.* 2007; 64:63-8.
8. Leape LL, Cullen DJ, Clapp MD et al. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. *JAMA.* 1999; 282:267-70.
9. Kaushal R, Bates DW, Landrigan C et al. Medication errors and adverse drug events in pediatric inpatients. *JAMA.* 2001; 285:2114-20.
10. Kane SL, Weber RJ, Dasta JF. The impact of critical care pharmacists on enhancing patient outcomes. *Intensive Care Med.* 2003; 29:691-8.
11. Kaboli PJ, Hoth AB, McClimon BJ et al. Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med.* 2006; 166:955-64.
12. Kucukarslan SN, Peters M, Mlynarek M et al. Pharmacist on rounding teams reduce preventable adverse drug events in hospital general medicine units. *Arch Intern Med.* 2003; 163:2014-8.

13. Fairbanks RJ, Hildebrand JM, Kolstee KE et al. Medical and nursing staff value and utilize clinical pharmacists in the emergency department. *Emerg Med J.* 2007; 24:716-8.
14. Thompson CA. Joint Commission says emergency dept. medications need pharmacist review. www.ashp.org/import/news/HealthSystemPharmacyNews/newsarticle.aspx?id=2521 (accessed 2009 Nov 11).
15. Fairbanks RJ, Rueckmann RA, Kolstee KE et al. Clinical pharmacists in emergency medicine. In: *Advances in patient safety: new directions and alternative approaches.* Rockville, MD: Agency for Healthcare Research and Quality; 2008.
16. Clancy C. Emergency pharmacists: a new road to medication safety. *Patient Saf Qual Healthc.* 2007; 4(5):8-11.
17. Clancy CM. Forging a new path to medication safety with emergency pharmacists. *J Patient Saf.* 2008; 4(1):1-2.
18. University of Rochester Medical Center. The Emergency Pharmacist Research Center resources and toolkit. www.emergencypharmacist.org/toolkit.html (accessed 2009 Oct 13).
19. American Society of Health-System Pharmacists. 2007 patient care impact program: introducing an emergency department pharmacist into your institution. www.ashp.org/s_ashp/docs/files/PCIP/PCIP02.Poster_Abtracts.pdf
20. Szczesiul JM, Fairbanks RJ, Hildebrand JM et al. Survey of physicians regarding clinical pharmacy services in academic emergency departments. *Am J Health-Syst Pharm.* 2009; 66:576-9.

Appendix—2007 ASHP Patient Care Impact Program participants

Community-based hospitals

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Meriter Hospital, Madison, WI
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Michelle Malatlian, Pharm.D.

Sentara Careplex Hospital, Hampton, VA
Tanya L. Claiborne, Pharm.D.

Union Memorial Hospital, Baltimore, MD
Rebecca K. Drake, Pharm.D.

William Beaumont Hospital, Troy, MI
Jennifer L. Pilotto, Pharm.D.

York Hospital, York, PA
Jon D. Horton, Pharm.D.

Academic or tertiary-care-based hospitals

Brigham and Women's Hospital, Boston,
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