American College of Medical Toxicology

ACMT Position Statement:
The Role of Clinical Pharmacists in the Emergency Department

Disclaimer

The position of the American College of Medical Toxicology (ACMT) is as follows:

Clinical pharmacists are integral to the care and safety of emergency department (ED) patients. Emergency department pharmacists positively impact time to critical therapies, including antibiotics for sepsis and door-to-balloon time for acute myocardial infarction. Pharmacists optimize pharmacotherapy regimens involving high-risk therapeutic classes, such as thrombolytics. Clinical pharmacists improve patient safety by intercepting prescription errors and recognizing adverse drug events. The potential cost avoidance of reducing errors and meeting standards for reimbursement provides financial justification for dedicated ED clinical pharmacist staffing. We support 24-hour staffing of emergency departments with dedicated ED pharmacists.

While individual practices may differ, this is the position of the American College of Medical Toxicology (ACMT) at the time written, after a review of the issue and pertinent literature.

Background

Clinical pharmacists are integral to the care and safety of patients in the hospital, particularly in specialty and high-risk settings. Emergency departments (EDs) represent care environments that carry unique risks that may be addressed through the addition of clinical pharmacists specifically trained and/or experienced as an ED pharmacist. Adult and pediatric patients present with undifferentiated medical, neurological, traumatic, psychiatric, and surgical complaints 24 hours a day, 7 days a week. Patients are generally unfamiliar to the emergency care providers, may be unable to communicate relevant medical information, and may require time-sensitive interventions. When present, ED crowding is associated with increased risk for medication errors [1-4]. Other factors that raise the risk for error include the expanding pharmacopeia, the increasing complexity of patient drug regimens [5-6] and problems related to health information technology [7-9].

Despite evidence supporting the role of pharmacists in the ED and support from national Emergency Medicine groups including the American College of Emergency Physicians [10], some hospitals rely on pharmacy personnel positioned outside the ED. Among EDs with dedicated pharmacists, few have 24-hour coverage. This position statement by the American College of Medical Toxicology outlines the importance of dedicated pharmacists in the ED to improve care of adult and pediatric ED patients at all times.

August 4, 2017

Importance: ED Pharmacists have demonstrated a positive impact on patient specific outcome measures, timely medication administration, optimization of therapy, medication safety, and cost of care.

Timely medication administration

Published data demonstrate that the presence of an ED pharmacist is associated with a reduction in time to antibiotics administration for patients with sepsis [11-13], time to first analgesic in trauma patients [14], time to sedation and analgesia after rapid sequence intubation [15-16], time to thrombolysis for patients with acute ischemic stroke [17], and door-to-balloon time for patients with acute myocardial infarction [18].

ED pharmacists also facilitate medication management for other time-sensitive situations such as cardiac resuscitations [19-22] and mass casualty events [23-24.] This frees clinicians from retrieval and medication preparation, allowing them to remain at the bedside to render care.

Optimization of Therapy

Pharmacists are uniquely trained to verify medication orders for appropriateness, taking into account the indication, dosing intervals, and adjustment for patient specific variables such as weight, organ function, allergies, and drug interactions. In addition, pharmacists can rapidly access documents regarding drug resistance patterns, current therapeutic guidelines, and local hospital antibiograms to improve selection of antimicrobial therapy [6, 12, 15, 25]. In some settings, ED pharmacist review of post-discharge cultures allows regimen modifications while also decreasing return visits and subsequent admissions [26-30]. In addition, ED pharmacists routinely make recommendations to optimize pharmacotherapy regimens particularly in regards to high-risk therapeutic classes such as central nervous system and cardiovascular medications, opioids, insulin, anticoagulants, and thrombolytics [31-33]. Pharmacists in the ED can review discharge prescriptions with patients and providers to improve ensure optimal therapy [34] and improved compliance for chronic illnesses such as asthma, chronic obstructive pulmonary disease, and congestive heart failure [35]. ED pharmacists also work collaboratively with emergency physicians and nurses, hospital pharmacists, medical toxicologists, and regional poison centers to manage patients with toxic exposures [36]. As part of the care team, pharmacists can recommend interventions that improve medication utilization and adherence to evidence-based medicine and national quality standards [31]. This has been particularly important with the increasingly prevalence of critical drug shortages including antidotes [37-38].

Medication Safety

ED pharmacists provide real-time decision support and order verification [39-41], and can intercept prescribing errors before patient harm occurs [33, 40, 42-43]. Transitions of care are improved through medication reconciliation [44], thereby reducing errors and outpatient treatment failures [29, 34, 45-47]. Pharmacists may also recognize adverse drug events that another provider has not identified[48]. Finally, pharmacist-driven error reporting facilitates identification of safety deficits [49].

Impact on Cost of Care:
The potential cost avoidance in reducing errors, eliminating antibiotic redundancies, meeting quality standards for reimbursement, improving patient satisfaction, and reducing ED revisits are important factors in the financial justification for dedicated ED staffing [50-51].

Summary
The ED is a unique setting with a diverse and complex patient population presenting around the clock with urgent and emergent needs. Emergency physicians readily utilize and value the presence of ED pharmacists to aid in this care [10, 52-54]. We support 24-hour staffing of Emergency departments with dedicated ED pharmacists as part of the clinical care team. ACMT also supports studies to further define the impact and value of pharmacists in the ED and other areas of ED expansion such as urgent care and observation units.

References
1. Coil CJ, Flood JD, Beyeu BM, et al. The effect of emergency boarding on order completion. Ann Emerg Med. 2016;67:730-36.
2. Kulstad EB, Sikka R, Sweis S, et al. ED overcrowding is associated with an increased frequency of medication errors. Am J Emerg Med. 2010;28:340-9.
3. Manias E, Gerdtz MF, Weiland TJ, and Collins M. Medication use across transition points from the emergency department: identifying factors associated with medication discrepancies. Ann Pharmacother. 2009;43(11):1755-64.

4. Marconi GP and Claudicus I. Impact of emergency department pharmacy on medication omission and delay. Pediatr Emer Care. 2012;28:30-33.
5. Fairbanks RJ, Hays DP, Webster DF, et al. Clinical pharmacy services in an emergency department. Am J Health Syst Pharm. 2004; 61: 934-7.

6. Morganti KG, Bauhoff S, Blanchard JC, et al. The evolving role of emergency departments in the United States. Research report. Rand Corporation 2013. http://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR280/RAND_RR280.pdf accessed 22 March 2016

7. Ash JS, Berg M, and Coiera E. Some unintended consequences of information technology in health care: the nature of patient care information system-related errors. J Am Med Inform Assoc. 2004;11(2):104-12.
8. Farley HL, Baumlin KM, Hamedani AG, et al. Quality and safety implications of emergency department information systems. Ann Emerg Med. 2013;62(4):399-407.
9. Koppel R, Metlay JP, Cohen A, et al. Role of computerized physician order entry systems in facilitating medication errors. JAMA. 2005;293(10):1197-203.
10. American College of Emergency Physicians (ACEP). Clinical pharmacist services in the emergency department. Ann Emerg Med. 2015;66:444-5.
11. DeFrates SR, Weant KA, Seamon JP, et al. Emergency pharmacist impact on health care-associated pneumonia emiric therapy. J Pharm Pract. 2013;26:124-30

12. Flynn JD, McConeghy KW, Flannery AH, et al. Utilization of pharmacist responders as a component of a multidisciplinary sepsis bundle. Ann Pharmacther 2014;48:1145-51.
13. Moussavi K and Nikitenko V. Pharmacist impact on time to antibiotic administration in patients with sepsis in an ED Am J Emerg Med. 2016; 34(11):2117-21.
14. Montgomery K, Hall AB, and Keriazes G. Pharmacist's impact on acute pain management during trauma resuscitation. J Trauma Nurs. 2015;22:87-90.
15. Amini A, Faucett EA, Watt JM, et al. Effect of pharmacist on timing of postintubation sedative and analgesic use in trauma resuscitations. Am J Health-Syst Pharm. 2013;70:1513-17.
16. Johnson EG, Meier A, Shirakbari A, et al. Impact of rocuronium and succinylcholine on sedation initiation after rapid sequence intubation. J Emerg Med. 2015;49:43-9.
17. Montgomery K, Hall AB, and Keriazes G. Impact of an emergency medicine pharmacist on time to thrombolysis in acute ischemic stroke. Am J Emerg Med. 2016;34(10):1997-9.
18. Acquisto NM, Hays DP, Fairbanks RJ, et al. The outcomes of emergency pharmacist participation during acute myocardial infarction. J Emerg Med. 2012;42:371-8.
19. Bond CA and Raehl CL. Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. Pharmacotherapy. 2007;27:481-93
20. Ernst AA, Weiss SJ, Sullivan A, et al. On-site pharmacists in the ED improve medical errors. Am J Emerg Med. 2012;30:717-25.
21. Groth CM and Acquisto NM. Pharmacists as members of the rapid response team. J Pharm Pract. 2016;29(2):116-20.
22. Porter E, Barcega B, and Kim TY. Analysis of medication errors in simulated pediatric resuscitation by residents. West J Emerg Med. 2014;15:486-90.
23. Erickson K. An emergency department pharmacist's experience at the Boston Marathon. Am J Health Syst Pharm. 2013;70(19):1652,1654.
24. Sylvester KW, Rocchio MA, Belisle C et al. Pharmacy response to the Boston Marathon Bombings at a tertiary academic medical center. Ann Pharmacother. 2014;48(8):1082-1085.
25. Weant KA and Baker SN. Emergency medicine pharmacists and sepsis management. J of Pharm Pract. 2012;26:401-5.
26. Baker SN, Acquisto NM, Ashley ED, et al. Pharmacist-managed anticmicrobial stewardship program for patients discharged from the emergency department. J Pharm Pract. 2012;25:190-4.
27. Dumkow LE, Kenney RM, MacDonald NC, et al. Impact of a multidisciplinary culture follow-up program of antimicrobial therapy in the emergency department. Infect Dis Ther. 2014; 3:45-53.
28. Miller K, McGraw MA, Tomsey A, et al. Pharmacist addition to post-ED visit review of discharge antimicrobial regimens. Am J Emerg Med. 2014; 32:1270-4.
29. Randolph TC, Parker A, Meyer L, et al. Effect of a pharmacist-managed culture review process on antimicrobial therapy in an emergency department. Am J Health Syst Pharm. 2011;68:916-9.
30. Van Devender EA. Optimizing antimicrobial therapy through a pharmacist-managed culture review process in the ED. Am J Emerg Med. 2014;32(9):1138.

31. Abu-Ramaileh AM, Shane R, Churchill W, et al. Evaluating and classifying pharmacists' quality interventions in the emergency department. Am J Health Syst Pharm. 2011;68:2271-5.
32. Bakhsh HT, Perona SJ, Shields WA, et al. Medication errors in psychiatric patients boarded in the emergency department. Int J Risk Saf Med. 2014;26:191-8.
33. Rothschild JM, Churchill W, Erickson A, et al. Medical errors recovered by emergency department pharmacists. Ann Emerg Med. 2010; 55:513-21.
34. Cesarz JL, Steffenhagen AL, Svenson J, Hamedani AG. Emergency department discharge prescription interventions by emergency medicine pharmacists. Ann Emerg Med 2013;61(2):209-14.
35. Hohner E, Ortmann M, Murtaza U, Chopra S, et al. Implementation of an emergency department-based clinical pharmacist transitions-of-care program. Am J Health Syst Pharm 2016;73(15):1180-7.
36. Thomas MC, Acquisto NM, Shirk MB, Patanwala AE. A national survey of emergency pharmacy practice in the United States. Am J Health Syst Pharm. 2016;73:386-94.
37. Mazer-Amirshahi M, Hawley KL, Zocchi M, et al. Drug shortages: implications for medical toxicology. Clin Toxicol. 2015;53(6):519-24.
38. Rosoff PM, Patel KR, Scates A, Rhea G, Bush PW, Govert JA. Coping With Critical Drug Shortages. Arch Intern Med. 2012;172(19):1494-1496.
39. Patanwala AE, Hays DP, Sanders AB, et al. Severity and probability of harm of medication errors intercepted by an emergency department pharmacist. Int J Pharm Pract. 2011;19:358-62.
40. Patanwala AE, Sanders AB, Thomas MC, et al. A prospective, multicenter study of pharmacist activities resulting in medication error interception in the emergency department. Ann Emerg Med. 2012;59:369-73.
41. Sin B, Yee L, Claudio-Saez M, et al. Implementation of a 24-hour pharmacy service with prospective medication review in the emergency department. Hosp Pharm. 2015;50:134-8.
42. Brown JN, Barnes CL, Beasley B, et al. Effect of pharmacists on medication errors in an emergency department. Am J Health Syst Pharm. 2008; 65:330-3.
43. Stasiak P, Afilalo M, Castelino T, et al. Detection and correction of prescription errors by an emergency department pharmacy service. CJEM. 2014; 16:193-206.
44. Pevnick JM, Shane R, and Schnipper JL. The problem with medication reconciliation. BMJ Qual Saf 2016;25:726-30.
45. Ajdukovic M, Crook M, Angley C, et al. Pharmacist elicited medication histories in the emergency department: identifying patient groups at risk of medication misadventure. Pharm Pract. 2007; 5(4):162-8.
46. Becerra-Camargo J, Martinez-Martinez F, and Garcia-Jimenez E. A multicenter, double-blind, randomised, controlled, parallel-group study of the effectiveness of a pharmacist-acquired medication history in an emergency department. BMC Health Services Research. 2013;13:337.
47. Okere AN, Renier CM, and Tomsche JJ. Evaluation of the influence of a pharmacist-led patient-centered medication therapy management and reconciliation service in collaboration with emergency department physicians. J Manag Care Spec Pharm. 2015;21:298-306.

48. Hohl CM, Zed PJ, Brubacher JR, Abu-Laban RB, et al. Do emergency physicians attribute drug-related emergency department visits to medication-related problems? Ann Emerg Med. 2010;55:493-502.
49. Weant KA, Humphries RL, Hite K, et al. Effect of emergency medicine pharmacists on medication-error reporting in an emergency department. Am J Health Syst Pharm. 2010;67:1851-5.
50. Hamblin S, Rumbaugh K, and Miller R. Prevention of adverse drug events and cost savings associated with PharmD interventions in an academic Level I trauma center: an evidence-based approach. J Trauma Acute Care Surg. 2012; 73:1484-90.
51. Lada P and Delgado G Jr. Documentation of pharmacists' interventions in an emergency department and associated cost avoidance. Am J Health Syst Pharm. 2007;64:63-8.
52. Coralic Z, Kanzaria HK, Bero L, et al. Staff perceptions of an on-site clinical pharmacist program in an academic emergency department after one year. West J Emerg Med. 2014;15:205-10.
53. Fairbanks RJ, Hildebrand JM, Kolstee KE, et al. Medical and nursing staff highly value clinical pharmacists in the emergency department. Emerg Med J. 2007;24:716-9.
54. Nana B, Lee-Such S, and Allen G. Initiation of an emergency department pharmacy program during economically challenging times. AJHP. 2012;69:1682-6.