

Prevalence of Pharmacists during Trauma Resuscitation at Level I & II Trauma Centers: A National Survey

Ashley Mohr*, Elizabeth Wegner-Busch*, Sue Nyberg, LaDonna Hale

Department of Physician Assistant. College of Health Professions

ABSTRACT

Background: The role of the clinical pharmacist continues to evolve as more pharmacists are being utilized as members of clinical hospital patient management teams. Anecdotal evidence suggests that an emerging role for pharmacists is as part of trauma resuscitation teams, however recent census data has not captured this information. The purpose of this study was to determine the prevalence of pharmacist utilization as trauma resuscitation team members at U.S. Level I and Level II trauma centers. **Methods:** A nine-item survey was designed and mailed to US trauma centers to investigate the prevalence and characteristics of pharmacist utilization in trauma resuscitations. **Results:** A total of 52.9% (246) of 465 US trauma centers completed the survey. Almost 25% of the respondents are currently utilizing pharmacists in trauma resuscitations, while an additional 11.4% were considering pharmacist utilization in the future. Duties and responsibilities reported to be performed by pharmacists during trauma resuscitations focused mainly on calculation of medication dosage, medication preparation and utilization as an information resource to other clinicians. **Conclusion:** Pharmacists are being utilized as members of trauma resuscitation teams. Additional research is indicated to determine if pharmacist participation in trauma resuscitation is an effective utilization of critical resources.

1. INTRODUCTION

Trauma centers have become an important part of the health care system, providing specialized expertise of care for critically injured patients. The first 60 minutes following a multi-system trauma is commonly referred to as the "golden hour." Decisions and interventions that are made during this hour substantially impact the patient's chances of survival[1]. Health care providers are required to make efficient and appropriate patient evaluations, time-critical decisions, and perform a multitude of tasks in order to save lives. Therefore, multidisciplinary trauma teams have been developed to improve patient outcomes. These teams often consist of trauma physicians, anesthesiologists, nurses, operating room

assistants, radiographers and other personnel. During trauma and emergency care, patients are twice as likely to suffer an adverse event as compared to non-trauma patients[2]. Perhaps the most common and preventable adverse events are those pertaining to medications[3]. The pharmacist's role in healthcare has evolved from the traditional function of dispensing medication to more directly impacting patient care in areas such as pediatrics, critical care, intensive care, and emergency care. The use of a clinical pharmacist in these areas has been shown to reduce hospital length of stay, adverse events, treatment costs and mortality rates[4-7]. However, little evidence of the utilization of pharmacists in trauma resuscitation exists.

The purpose of this study was to determine the prevalence of pharmacist utilization as trauma resuscitation team members at U.S. Level I and Level II trauma centers.

2. METHODS, RESULTS, SIGNIFICANCE

Methods: A list of 465 Level I and II trauma centers was obtained from the American Trauma Society. These centers were either verified as Level I or II by the American College of Surgeons (ACS) or through state/regional designation. In January 2007, a nine-item survey regarding pharmacist use as trauma resuscitation team members was mailed to the trauma director at each site. A total of 52.9% (246) surveys were completed.

Results: Of the responding sites, 23.2% (57) currently utilize pharmacists; 11.4% (28) were considering it for the future; and 4.3% (7) reported pharmacists were available by telephone if needed, but were not a routine member of the trauma team. Sites listed as ACS verified were no more likely to utilize pharmacists than other sites. Of the 161 centers neither using nor considering using

pharmacists, 22.4% (36) cited no need for pharmacists in this role, 16.8% (27) cited manpower issues, and 11.8% (19) cited cost as their main reason for non-use. Of those sites utilizing pharmacists, the typical number of hours per day that pharmacists respond to traumas was reported as: 29.8% (17) responding 0 - 8 hours per day; 24.6% (14) responding 9 - 16 hours per day; 36.8% (21) responding 17 - 24 hours per day; and 8.8% (5) answered this item as "other." **Table 1** lists the reported duties/responsibilities of pharmacists during trauma resuscitations.

Table 1: Duties/Responsibilities of Pharmacists during Trauma Resuscitations

Duty/Responsibility	Result
Calculate medication dosages	91.2% (52)
Provide medication information	89.5% (51)
Prepare medications for administration	86.0% (49)
Ensure medication compatibility	80.7% (46)
Provide therapeutic recommendations	68.4% (39)
Provide quick access to controlled medications	64.9% (37)
Provide medications in areas remote to the ED	38.6% (22)
Assure documentation of med administration	15.8% (9)
Assure accurate billing	10.5% (6)
Other; not specified	1.8% (1)

Data are reported as a percent (number).

Clinical Significance: To our knowledge, this is the first study attempting to assess the prevalence of pharmacist utilization as trauma resuscitation team members at U.S. Level I and Level II trauma centers. This survey also identified possible reasons for non-use and the most common duties and responsibilities performed by pharmacists on such teams. A few respondents stated that they had never considered pharmacists in this role prior to taking this survey, but now were intrigued with the concept.

The most common reason given for not utilizing pharmacists was that there was no need for pharmacists in trauma resuscitations. However, previously published research has shown a clear benefit when pharmacists have been added to other critical-care multidisciplinary teams[4-7]. Therefore the potential benefits of pharmacists as trauma resuscitation team members should be studied before being discarded.

A lack of manpower and financial resources were the second and third most commonly reported reasons for not utilizing pharmacists in trauma resuscitations. The challenges of the current pharmacist shortage and the financial burden of staffing an additional pharmacist are understandable difficulties hospitals will face[7]. In 1999, Leap et al. described how a pharmacist could be utilized in the intensive care unit without

requiring any additional resources, only a different use of an existing pharmacists' time[4]. Possible solutions to manpower and resource issues should be studied and discussed in relationship to the potential benefits of pharmacists in this role. If these benefits are well documented, the financial impact they have can be analyzed and used to justify the cost.

This study identified the most common duties and responsibilities performed by pharmacists during trauma resuscitations. Several of these duties are closely tied to preventing adverse drug reactions and medication errors such as calculating dosages, providing medication information, and ensuring compatibility. Other duties would likely increase efficiency such as preparing medications for administration, providing quick access to controlled medications, and providing medications in areas remote to the emergency department (ED). In the fast-paced, error-prone environment of trauma resuscitation, the integration of a pharmacist may prove crucial to patient outcomes. The results of this study justify a closer examination of this topic and provide a forum for further discussion

3. CONCLUSION

Pharmacists are being utilized as members of trauma resuscitation teams. Because such little information exists in the literature supporting and describing pharmacists in this role, additional research is indicated to determine if pharmacist participation in trauma resuscitation is an effective utilization of critical resources.

References:

1. Trauma ACoSCO. Advanced Trauma Life Support for Doctors. 1997.
2. Lazarus HM, Fox J, Evans RS, et al. Adverse drug events in trauma patients. *The Journal of trauma*. Feb 2003;54(2):337-343.
3. Croskerry P, Shapiro M, Campbell S, et al. Profiles in patient safety: medication errors in the emergency department. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*. Mar 2004;11(3):289-299.
4. Leape LL, Cullen DJ, Clapp MD, et al. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. *JAMA : the journal of the American Medical Association*. Jul 21 1999;282(3):267-270.
5. Kane SL, Weber RJ, Dasta JF. The impact of critical care pharmacists on enhancing patient outcomes. *Intensive Care Med*. May 2003;29(5):691-698.
6. Bond CA, Raehl CL, Franke T. Clinical pharmacy services, pharmacy staffing, and the total cost of care in United States hospitals. *Pharmacotherapy*. Jun 2000;20(6):609-621.
7. Horn E, Jacobi J. The critical care clinical pharmacist: evolution of an essential team member. *Critical care medicine*. Mar 2006;34(3 Suppl):S46-51.