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A Survey of Pharmacist Participation in Trauma Resuscitation

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Abstract. Pharmacists are increasingly being used on hospital medical response teams. An estimated one in five US level I and II trauma centers offer pharmacy services during trauma resuscitation, however, these services are not well described in the literature. The purpose of this study was to gain insight into the roles and responsibilities of pharmacists participating in trauma resuscitation and the characteristics and implementation of this pharmacy service. A previous national survey of trauma directors identified 57 facilities that use pharmacists during trauma resuscitation. A new survey was mailed to the pharmacy department at each of these facilities. An online survey was offered to all initial non-responders. The results of this survey provided detailed descriptive data regarding pharmacist participation in trauma resuscitation. This information may serve as a resource for trauma centers considering expansion of pharmacy services into the trauma setting.

1. Introduction

The roles/responsibilities of the hospital pharmacist have evolved from entering orders and dispensing medications from a remote location to working alongside other healthcare professionals to play an active role in patient care. Consistent with this trend toward expanding pharmacy practice there has been a movement toward the establishment of emergency medicine based pharmacy services. Many benefits have been associated with utilization of pharmacists in these areas including decreased drug costs, decreased adverse drug reactions, decreased medication errors, and overall improved outcomes and quality of life.[1,2] Trauma response teams generally consist of medical professionals from various disciplines who converge upon the trauma patient in order to provide quick and efficient patient care during a very critical period of time. Each team member performs specific tasks in order to stabilize, diagnose, and provide treatment for the patient based on their individual expertise. The organized approach of trauma teams has been shown to reduce mortality and improve patient outcomes.[3] Pharmacists can provide additional expertise which may further benefit effectiveness of the trauma team.

An estimated one in five US level I and II trauma centers offer pharmacy services during trauma

resuscitation, however, the roles/responsibilities and characteristics of this clinical pharmacy service are not well described in the literature.[4]

The purpose of this study was to gain insight into the roles and responsibilities of pharmacists participating in trauma resuscitation and the characteristics and implementation of this pharmacy service.

2. Methods, Results, Significance

Methods: A previous national survey of trauma directors identified 57 facilities using pharmacists during trauma resuscitation.[4] This study attempted to survey one pharmacist at each facility. A paper survey was mailed to each pharmacy department. An online survey was offered to all non-responders. Only those surveys indicating that pharmacists did provide trauma resuscitation services beyond cardiac arrests were included for analysis. Contact was achieved with 27 (47%) facilities; six were excluded stating they did not attend trauma resuscitations; 21 surveys were analyzed.

The survey consisted of 49 items. The first 21 items focused on characteristics of the facility and trauma pharmacy service; 15 focused on the frequency of responsibilities performed; five inquired about implementation; three items asked the respondent's opinion regarding the value, advantages and disadvantages of pharmacist participation in trauma resuscitation; and five obtained respondent characteristics.

Results: The mean number of certified beds at each facility was 452 ± 257 , range 155 to 1,040; with 67 ± 41 intensive care unit beds and 51 ± 38 ED beds. Fifty-two percent of respondents were male with 13.0 ± 10.2 years total pharmacist experience and 8.4 ± 7.0 years experience at their current facility. The majority of respondents, 86%, attended trauma resuscitations themselves with 7.7 ± 7.3 years of such experience.

Relying on respondent estimations, the mean number of trauma alerts attended by pharmacists each month was 41 ± 40 , range 0.5 to 150. Ten (48%) facilities provide

24 hour coverage. The mean hours of operation were 18.0 ± 6.3 hours during weekdays and 14.4 ± 10.2 hours during weekends. It was most common that the typical 3rd shift hours were not covered. The majority of facilities used a pager system to notify the responding pharmacist of the incoming trauma (76%) and/or overhead paging (43%). Fifty-two percent had a pharmacist dedicated to the ED; at these 11 facilities, the ED pharmacist was designated as the trauma resuscitations pharmacist. Over 85% stated they usually or always perform the following during trauma resuscitation: prepare medications, ensure IV compatibility, calculate and correct dosages, and provide drug information.

Table:

Role/Responsibilities of Pharmacists during Trauma Resuscitation		
Role/Responsibility	Always or Usually	Rarely or Never
1. <i>Prepare</i> meds or IV fluids	20(95.2)	1(4.8)
2. Ensure intravenous compatibility	19(90.5)	2(9.5)
3. Calculate medication dosages	18(85.7)	3(14.3)
4. Provide drug info	18(85.7)	3(14.3)
5. Dosage corrections	17(81.0)	4(19.0)
6. Formulary substitutions	16(76.2)	5(23.8)
7. Identify meds brought in with patient	15(71.4)	6(28.6)
8. Suggest therapeutic recommendations	15(71.4)	6(28.6)
9. Suggest initiation of medications	15(71.4)	6(28.6)
10. Assist with accurate charging	14(66.7)	7(33.3)
11. Provide meds in areas remote to ED	14(66.7)	7(33.3)
12. Assist with accurate documentation	12(57.1)	9(42.9)
13. Program infusion pumps	6(28.6)	14(66.7)
14. <i>Administer</i> meds or IV fluids	2(9.5)	19(90.5)
15. <i>Manipulate the patient physically</i>	1(4.8)	20(95.2)

Data are reported as number (percent).

When asked how responding to traumas affects pharmacist workflow, 57% of respondents reported that other pharmacists cover the duties of the responding pharmacist; 38% reported that the trauma pharmacist must “catch-up” because no coverage is provided; and 24% reported that workflow is not affected because the pharmacist is devoted specifically to that duty. Fourteen (67%) respondents stated that pharmacists bring medications beyond what is available in the trauma bay.

Answer trends were noted in the open-ended questions. Regarding *advantages*, three major themes emerged: pharmaceutical expertise of the pharmacist, freeing nurses’ time, and focused attention towards medication safety and improved patient outcomes. All respondents stated that they felt these services were valued by others. Regarding *disadvantages*, two themes emerged: workflow disruption and the crowded environment of the trauma bay. Six pharmacists specifically stated there were no disadvantages.

When asked *who drove the development* of these services, 43% stated pharmacy; 19% stated pharmacy

and ED/trauma personnel; and 14% stated ED/trauma personnel. When asked *who opposed* the idea, 43% stated that no one opposed the idea; one respondent each listed ED staff, ED nurses, patient safety committee, and code committee.

When asked what *obstacles* were faced during implementation, 52% stated they faced no opposition. Other pharmacists discussed a variety of barriers such as gaining acceptance by some physicians and some nursing staff; unwillingness or uneasiness of some pharmacists to fulfill this new role; and concerns about pharmacy staff availability and cost.

When asked what *improvements* they would like to make to their current services, two themes emerged: improved/enhanced pharmacist training in handling of traumas and increasing the hours of trauma coverage provided by their facility.

Significance: Further research is warranted to evaluate the opinions of other trauma response team members regarding advantages/disadvantages of pharmacist participation in trauma resuscitations. Direct measures of clinical benefits as well as cost-benefit analysis and workflow studies would also be beneficial.

3. Conclusion

The results of this survey provide detailed descriptive data regarding pharmacist participation in trauma resuscitation. This information may serve as a resource for trauma centers considering expansion of pharmacy services into the trauma setting.

4. Acknowledgments

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