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ADVANCES IN PHARMACY PRACTICE

Experience with integrating pharmacist documenters on cardiac arrest teams to improve quality

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ABSTRACT

Objectives: To determine if adding a clinical pharmacist to the cardiac arrest team in a documenter role improves completeness of documentation and quality of advanced cardiovascular life support (ACLS).

Setting: A 1541-bed, tertiary care, academic medical center with an integrated clinical pharmacy practice model.

Practice description: In 2012, we identified documentation of resuscitation activities during cardiac arrest events and compliance with published ACLS guidelines as opportunities for systematic quality improvement at our tertiary care academic medical center. Although clinical pharmacists provided pharmacotherapy support through active participation on multidisciplinary patient care rounds, pharmacists were not routinely accountable for care provided during cardiac arrest events.

Practice innovation: We integrated pharmacists on the cardiac arrest team in the unique role of documenter and pharmacotherapy consultant. The pharmacist documenter was responsible for recording all activities (e.g., medication administered, endotracheal intubation, vital signs), providing real-time quality assurance during the event, and assisting with any clinical or operational needs of the team. Participating pharmacists received didactic lectures, practical assessments, and a written examination to ensure baseline competency in ACLS and teamwork principles.

Evaluation: Using a before-and-after study design, we conducted a retrospective chart review to evaluate our pilot program. All cardiac arrest events requiring activation of the cardiac arrest team from January 2012 through December 2013 were included ($n = 80$).

Results: Pharmacists attended all cardiac arrest team events in the postintervention period during the scheduled coverage hours. The percentage of forms with all documentation components complete increased from 0% at baseline to 28% postintervention ($P = 0.002$). ACLS compliance also increased from 8% preintervention to 31% postintervention ($P = 0.024$).

Conclusion: Implementation of a dedicated pharmacist for documentation and pharmacotherapy consultation during cardiac arrest events is associated with improved documentation completeness and ACLS compliance. This was achieved without funding or additional pharmacist resources.

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Noncompliance with advanced cardiovascular life support (ACLS) is associated with decreased cardiac arrest survival.^{1,2} ACLS guidelines are updated every 5 years, with the most recent version published in 2015.³ The guidelines represent

the most up-to-date approach in management of cardiac arrest by using evidence-based medicine, including data from registries such as Get with the Guidelines—Resuscitation (GWTG-R).⁴ Submission to that registry permits benchmarking against other hospitals and comparison of cardiac arrest outcomes and quality markers. In order to submit in-hospital cardiac arrest data to the GWTG[®]-R, interventions performed during the resuscitation event must be reliably and accurately documented and collected.

Clinical pharmacists, with formal education in human physiology, pharmacology, and clinical therapeutics, are able

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Key Points**Background:**

- Noncompliance with advanced cardiovascular life support (ACLS) is associated with decreased cardiac arrest survival, and adequate documentation is required for submission of data to the Get with the Guidelines–Resuscitation registry.
- Pharmacist integration on cardiac arrest teams has been shown to improve the quality of ACLS documentation and adherence to ACLS guidelines and has been associated with reductions in patient mortality. Nonetheless, surveys indicate that pharmacists are not consistently included as members of cardiac arrest teams.
- We developed an internal training program, incorporated pharmacists as part of the cardiac arrest team in the role of documenter and pharmacotherapy consultant, and evaluated changes in documentation quality, ACLS compliance, survival, and other quality metrics after program implementation.

Findings:

- Pharmacist presence on the cardiac arrest team at our institution significantly improved documentation and compliance with ACLS algorithms.
- There was a significant increase in acute event patient survival in the analysis of weekday events pre- and postintervention, a finding that warrants further study given the small number of events in this subanalysis.
- Owing to the success of the pharmacist presence on the cardiac arrest team at our institution, we were able to successfully extend our coverage hours, expand to other hospitals, and incorporate pharmacist trainees into our program without requiring any additional funding or pharmacist resources.

to function as competent members of cardiac arrest teams. Training programs intended to promote competency of pharmacists in ACLS, in preparation to serve on the cardiac arrest team, have been described previously. The content of these programs is diverse and has encompassed core principles such as electrocardiography interpretation and medication preparation in both didactic and practical settings. Pharmacist interventions have traditionally focused on medication-related aspects of ACLS, including preparing I.V. medication admixtures, providing medication dosage recommendations and information on the compatibility of I.V. medications, procuring emergency medications, and documenting medication administration.^{5–8} Inclusion of a pharmacist on cardiac arrest teams has been associated with reductions in hospital mortality rates.⁹ These reductions in mortality may be attributed to the pharmacist's influence on reducing medication errors, which are more likely to result in patient death in the setting of cardiac arrest compared with non–cardiac arrest scenarios.¹⁰ Despite these positive findings, survey results

from 1992 indicate that pharmacists participated on cardiac arrest teams at only 30% of the institutions polled.⁹ A more recent survey of pharmacy residency program directors indicated that 68% of programs required or provided the option for pharmacy residents to attend cardiac arrest events, and 13% of programs required the attendance of a pharmacy technician in addition to other pharmacy personnel.¹¹ Although the prevalence of pharmacist integration on cardiac arrest teams has increased, it is likely that hospital pharmacy departments continue to struggle with assessment of resources, justifying the need for additional pharmacist resources if applicable, what role pharmacists should play on the team, and how to provide and maintain optimal competency to ensure successful patient outcomes.

Objective

The present study aimed to determine if adding a clinical pharmacist to the cardiac arrest team in a unique role as documenter improves completeness of documentation and quality of ACLS. We describe our approach to integration of a pharmacist team member on the cardiac arrest team and thus add to the growing body of literature describing these programs. We provide guidance to other institutions seeking to resolve issues with documentation quality and ACLS compliance during cardiac arrest events.

Setting

At the time of this study, Yale–New Haven Hospital (YNHH) was a 1541-bed, tertiary care, academic medical center in New Haven, CT. Clinical pharmacy services are provided through an integrated practice model. Unit-based pharmacists provide high-quality, specialized care for a specific patient care service by rounding and providing pharmacotherapy support while also supporting operational pharmacy practices primarily through order verification.

Practice description

Our institution uses the most current evidence-based ACLS algorithms to perform life-saving measures during cardiac arrest events.³ In late 2012, however, documentation of resuscitation activities performed during cardiac arrest events and actual compliance with published ACLS guidelines were identified as opportunities for systematic quality improvement at our institution. Because the majority of the ACLS compliance issues identified were medication related (Figure 1), it was thought that a pharmacist team member could improve these deficiencies. Some examples of ACLS noncompliance with medications included patients incorrectly receiving amiodarone 150 mg as the initial antiarrhythmic dose instead of 300 mg (drug dose), patients incorrectly receiving vasopressin as a replacement for the third epinephrine dose (drug selection), and patients incorrectly receiving epinephrine doses 6 minutes apart (drug timing). Before initiation of our program, the pharmacy department's involvement in cardiac arrest events was limited to dispensing and quality assurance of resuscitation carts. Although clinical pharmacists provided pharmacotherapy

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