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Improving resuscitation team coordination in the Emergency Department through standardized role assignment and code blue activation: A quality improvement project

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Abstract

Resuscitation in the emergency department is fast paced and depends heavily on clear roles, effective communication and coordinated teamwork. In our setting, roles were often assigned informally during the event itself, and Code Blue activation for cardiac arrest was inconsistent. This frequently resulted in confusion, delays and duplication of tasks during critical situations. This quality improvement project aimed to improve resuscitation team coordination by introducing a standardized team role chart at the start of each shift and mandatory Code Blue activation for all cardiac arrest events. We conducted a single-center pre implementation and postimplementation survey-based study. Baseline data were collected from 46 staff members, and follow-up data from 34 staff members during the first 4 weeks after implementation. Outcomes included role assignment practices, role confusion, delays, task duplication, overall coordination and staff perceptions of effectiveness. After implementation, standardized role pre-assignment was reported in 38.2% of cases, and Code Blue activation occurred in 58.8% of cardiac arrest events. Overall coordination was rated moderate (mean 3.44/5). Although challenges persisted, confusion, delays and duplication were less frequent when both interventions were used. Most participants perceived the intervention as effective (82.4%) and supported its continuation (91.2%). These findings suggest that simple, structured interventions can improve resuscitation team coordination, although consistent implementation remains essential.

Introduction

Problem description

Resuscitation in the emergency department requires rapid decision-making, clear communication and effective teamwork. In high-pressure situations such as cardiac arrest, unclear role allocation can lead to delays and inefficiencies in care delivery.

In our setting, resuscitation roles were often assigned informally during emergencies, and Code Blue activation was inconsistently performed. Staff frequently reported confusion about responsibilities, duplication of tasks and delays in initiating key interventions.

4.Available knowledge

Previous studies have demonstrated that structured team roles and clear leadership improve coordination and performance during resuscitation. [1,2]

5. Rationale

Clearly defined roles and structured activation systems can improve communication, reduce errors and enhance efficiency during emergency response. [1,3] However, these approaches are not consistently implemented in many emergency departments.

6.Specific aims

This project aimed to improve resuscitation team coordination by introducing predefined role assignment at the start of each shift and ensuring consistent Code Blue activation for cardiac arrest events.

Methods

7.Context

This project was conducted in a single-center emergency department in a tertiary hospital setting in Nepal.

8. Intervention(s)

Two interventions were introduced:

1. A standardized resuscitation team chart completed at the beginning of each shift

2. Mandatory Code Blue activation for all cardiac arrest events

9. Study of the intervention

A pre -implementation and postimplementation survey-based design was used to evaluate the interventions.

10. Measures

Outcomes assessed included:

• role assignment practices

• role confusion

• delays related to unclear responsibilities

• duplication of tasks

• overall team coordination

• staff perceptions of effectiveness and sustainability

11.Analysis

Data were analyzed using descriptive comparisons between pre-implementation and postimplementation responses.

12. Ethical considerations

This project was conducted as a quality improvement initiative. Participation was voluntary, and responses were anonymized and handled confidentially.

Results

Baseline Findings

At baseline (n = 46), resuscitation roles were most commonly assigned informally or during the emergency. Role confusion and delays due to unclear roles were frequently reported, and overall team coordination was most often rated as low to moderate. Despite these challenges, staff demonstrated strong support for standardized role assignment and structured Code Blue systems. Baseline characteristics of participants are presented in (Table 1).

Post-implementation Findings

During the 4-week post-implementation period (n = 34), standardized pre-assignment of roles was reported in 38.2% of cases, and Code Blue activation occurred in 58.8% of cardiac arrest events. Overall coordination was rated as moderate (mean 3.44/5). Role confusion, delays, and task duplication remained common but were less frequently reported when both standardized role assignment and Code Blue activation were applied.

Most respondents perceived the system as effective (82.4%) and supported its continued use (91.2%). Post-implementation findings and comparisons are summarized in (Table 2).

Table 1
Baseline characteristics of emergency department staff participating in the quality improvement project

Characteristic	Pre-implementation (n = 46)	Post-implementation (n = 34)
Study period	Apr 7–12, 2025	Jan 7–28, 2026
Setting	Emergency Department	Emergency Department
Doctors	Majority	Majority
Nurses	Minority	Minority
Experience < 1 year	Present	Predominant
Experience 1–3 years	Present	Present
Experience > 3 years	Present	Present
Prior resuscitation team experience	Common	Common

Comparison of Pre- and Post-Implementation

Compared with baseline, post-implementation data demonstrated increased standardization of role assignment and improved confidence in team coordination. However, persistent role confusion and delays highlighted incomplete adoption of the intervention. Outcomes were consistently better when roles were pre-assigned and Code Blue was activated, reinforcing the importance of implementation reliability (Table 2).

Table 2
Comparison of resuscitation team coordination measures before and after implementation

Measure	Pre-implementation	Post-implementation (4 weeks)
Role assignment method	Mostly informal or assigned during emergency	Pre-assigned standardized roles reported in 38.2%
Role confusion during resuscitation	Common (frequent/occasional)	Still common overall (82.4%), less frequent when roles pre-assigned
Delays due to unclear roles	Frequently reported	Reported by 73.5%, less frequent when Code Blue activated
Duplication of tasks	Common	Sometimes/often in 79.4%, reduced with role clarity
Code Blue activation	Inconsistent	Activated in 58.8% of arrests
Overall coordination score (1–5)	Mostly 2–3	Mean 3.44, median 3
Perceived system effectiveness	Mixed	82.4% reported effective
Support to continue system	High	91.2% supported continuation

Discussion

14. Summary

This quality improvement project demonstrates that implementing a resuscitation team chart at the beginning of each shift and mandating Code Blue activation for cardiac arrest was feasible and well accepted by ED staff. The findings are consistent with prior QI and observational studies showing that structured role allocation and role delineation improve teamwork and coordination during resuscitation.

Despite these improvements, role confusion, delays, and task duplication persisted during the early post-implementation period. These findings suggest that the primary limitation was incomplete implementation fidelity, rather than ineffectiveness of the intervention itself. Visual role identification and structured role frameworks are supportive tools but require consistent activation, leadership reinforcement, and staff familiarity to achieve sustained impact.[2]

This project demonstrates that simple, structured interventions can improve resuscitation team coordination in the emergency department.

15.Interpretation

Introducing predefined roles improved clarity of responsibilities, while consistent Code Blue activation enhanced team mobilization. These findings are consistent with previous studies highlighting the importance of teamwork and role delineation in resuscitation. [1,2]

16.Limitations

This project relied on self-reported survey data, which may not directly reflect objective resuscitation performance. The post-implementation evaluation was limited to four weeks, during which full adoption may not have occurred. Nursing representation was limited, and objective time-based metrics (e.g., time to defibrillation) were not collected during this initial cycle.

Conclusion

Structured role assignment and mandatory Code Blue activation are feasible and practical interventions that can improve resuscitation team coordination. Future improvement cycles should focus on strengthening implementation reliability and incorporating objective outcome measures.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting or dissemination plans of this quality improvement project.

Declarations

Competing interests

None declared.

Ethics statements

Patient consent for publication: Not applicable.

Ethics approval

This project was conducted as a quality improvement initiative involving healthcare staff participants. Formal ethics committee approval was not obtained as the project was undertaken as service improvement work. Participation was voluntary and responses were handled confidentially. The project was conducted in accordance with the principles of the Declaration of Helsinki.

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Author Contribution

S.S. conceptualized and designed the quality improvement project. S.S.,K.M. and A.G. were involved in data collection and implementation of the intervention.S.S., K.M. and A.G. performed data analysis and interpretation.S.S. drafted the main manuscript, critically reviewed and revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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