

Chapter-20

EARLY WARNING SYSTEMS: A COMPREHENSIVE APPROACH TO IMPROVE PATIENT DETERIORATION AT A TERTIARY HOSPITAL

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INTRODUCTION

The healthcare sector in India is confronting an escalating number of inpatient fatalities within hospitals, attributed to factors like cardiac arrest, stroke, sepsis, and critical illnesses. While certain factors may be beyond the control of healthcare professionals, others can be effectively managed through timely medical interventions [1]. IHME (Institute for Health Metrics and Evaluation) statistics reveal that chronic heart disease, neoplasm, chronic respiratory diseases, infections such as tuberculosis (TB), chronic kidney disease, and diabetes are the leading causes of death among individuals above 50 years in India, comprising nearly half of the total deaths. This underscores the necessity for a comprehensive healthcare approach, emphasizing the management and prevention of chronic diseases, especially in the elderly demographic. Beyond chronic illnesses, patients in hospitals may manifest evident signs of health deterioration hours before a collapse. These early warning signs encompass changes in blood pressure, heart rate, respiratory rate, and consciousness levels. Nurses and healthcare professionals can easily document these vital signs during routine patient visits or at regular intervals. The concept of an Early Warning Scoring System has been developed to promptly identify abnormal changes in vital signs, assigning scores based on predefined limits. These scores serve as triggers for an expedited emergency response to clinically manage patients before the condition progresses fatally [2].

The timely detection of deterioration not only decreases the likelihood of mortality or severe complications but also brings advantages to both the healthcare organization and the workforce. A standardized system contributes to risk reduction, leading to improved resource allocation. For instance, upon early recognition of warning signs, a patient can be prioritized, and resources can be allocated accordingly, ensuring critical care is provided to those in greatest need. This approach establishes an effective communication system and fosters teamwork. Early identification of warning signs prompts a swift response from the rapid response team, encouraging collaboration to address patient management [3].

RESEARCH QUESTION

Was the implementation of Code Orange activation criteria executed accurately and in compliance with the Early Warning Signs policy at Medanta Hospital?

RESEARCH AIM

To assess the precision of code orange activation criteria in alignment with adherence to the protocol for identifying early warning signs.

RESEARCH OBJECTIVES

1. To determine the percentage of cases of code announced as per MEWS Score more than 4 during code.
2. To evaluate determine the compliance of percentage of cases of code announced with correct per and post event documentation.
3. To assess the compliance to Arrival of RRT on code activation time of the code orange team within 15 mins.
4. To determine the level of awareness about Early Warning Signs and code orange activation among nurses deployed in IPDs and Day care.

RESEARCH METHODOLOGY

The research design outlined a comprehensive strategy and plan of action that was implemented to address the research question and achieve the study's objectives. The study took place at Medanta-The Medicity Hospital, a multi-specialty facility with 1250 beds and approximately 40 specialties, located in the Delhi/NCR region. Under the guidance of the Head of the Quality department, the study unfolded from March to April 2023. The research employed a retrospective and prospective cross-sectional approach within a tertiary hospital in India. Utilizing a quantitative methodology with a sample size of n=56, data collection occurred from January 2023 to April 2023. The inclusion criteria covered all in-patients (adult or paediatric) for whom a code orange was activated based on bedside MEWS score calculation. Cases

that progressed to Code Blue and code orange mock drills were excluded from the study.

RESULTS AND DISCUSSION

The demographic profile revealed that around three-fourths of code orange activations were for males (65.2%), with a mean age of 62.6 years, and the age group between 50-60 years had a higher likelihood of fatal outcomes.

The analysis also covered MEWS-based code activation, compliance with MEWS score documentation, and the turnaround time of the rapid response team. Compliance with MEWS score documentation improved from 80% to 100%, and the rapid response team consistently arrived within the 15-minute policy timeframe post-intervention. Additionally, the study examined the final outcome of treatment, indicating that 49% of cases were clinically managed, 27% resulted in death, and there was a slight improvement in death outcomes post-intervention.

The average length of stay (ALOS) was 17.02 days. The awareness assessment showed that 85% of nurses correctly identified the reason for code orange activation. The study provided valuable insights into the effectiveness of the implemented interventions and their impact on patient outcomes and healthcare practices.

CONCLUSION

The improvement in overall compliance and adherence to code activation based on the MEWS score, along with proper documentation, resulted in reduced fatalities and enhanced patient management. Activating a code based on the appropriate threshold score not only facilitated the rapid response team's timely arrival but also optimized resource allocation. This approach allowed for prioritization of patients, directing critical care resources to those in genuine need, contributing to more efficient and effective healthcare practices.

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