Modified Early Warning System (MEWS)

Marilou Cruz, RN, PHN, MSN
Northbay Vacaville Hospital, Vacaville, California, 95688

Introduction

The 100.000 Lives Campaign is a nationwide initiative launched by the Institute for Healthcare Improvement (IHI) to significantly reduce morbidity and mortality in American healthcare (IH, 2012). This initiative includes deploying a rapid response team (RRT) at the first sign of patient deterioration. The Modified Early Warning Scoring (MEWS) system was designed to complement the RRT program.

The purpose of the MEWS project is to develop and implement a risk assessment tool for nurses to identify patients who are at risk for clinical instability and providing medical intervention at an earlier stage before their conditions escalate. Research shows that 70% of arrests show evidence of respiratory or neurological deterioration prior to arrest (Duncan & McMillan, 2011) but with early intervention, there is a significant reduction in mortality. The MEWS concept is based on evidence-based practice and research that clinical deterioration is frequently identifiable in patients’ vital signs prior to a higher level of care or before cardiac arrest (Morris & Davies, 2010). Quality improvement analysis methods were used in this Evidence Based Practice project. The results, which reached statistical significance, showed increased nurse satisfaction in their clinical practice and improved patient outcomes. The MEWS is now being used by nurses in the unit as part of their patient assessment and guides them in prioritizing care.

Methods and Approach

Design

Pre and Post-Control/Intervention Comparison
- Baseline data were collected on patients that an RRT was activated before and after MEWS implementation. MEWS were calculated 4, 8, 12 and 16 hours before initiation of RRT.
- Data from baseline group were compared to the intervention group.
- MEWS scores were analyzed to see if patients of the intervention group who are declining can be identified at a lower score than those in the baseline group.

Procedure

A procedure guideline was developed on how the MEWS was to be utilized. Direct-care nurses were given in-service on how to use the MEWS. The MEWS measures five physiological parameters:
- Blood pressure
- Temperature
- Heart rate
- Respiratory rate
- Level of Consciousness/Central Nervous System (CNS)

The primary care nurse scores each indicator according to the range of vital signs or patient observations and calculates MEWS according to the criteria (Figure 1) and follows the action algorithm (Figure 2). Important to note: MEWS does not take the place of the nurses’ assessment and clinical judgment.

Methods and Approach (cont’d)

Data from baseline group were compared to the intervention group. MEWS scores were analyzed to determine whether patients from the intervention group who are deteriorating can be identified earlier.

The mean MEWS score for the RRT calls in the pre-implementation group was 3.72, while the mean score for the post-implementation group was 2.72. A sample t-test on collected data yielded a p-value of .016, which indicates a statistically significant lower MEWS score for the intervention group than for the pre-implementation control group. See Graph.

Results

Subtle changes in patients’ signs and symptoms became apparent with MEWS, therefore medical intervention occurred at an earlier stage. This is shown by the lower MEWS scores of patients in the intervention group.

The MEWS project resulted in improved patient outcomes by identifying patients at risk of clinical deterioration and providing appropriate care before their conditions get worse.

Conclusion

• When incorporated with the RRT system, the MEWS system increases the chances of improving patient outcomes and decreasing mortality or failure to rescue.

• The MEWS risk assessment tool plays an important role in assisting direct-care nurses in critically thinking through the nursing process and prioritizing their care.

• This RRT project was successful in providing direct-care nurses with a consistent and standardized assessment tool in the early recognition of deteriorating patients.

References


Acknowledgements

Elisa Jang, RN, MS, CNS, Clinical Practice Manager
Fio Araujo, RN, MSN, Clinical Manager
LWAC Care Unit
Shelley Johnson, RN, BSN, MHA, Director, Medical/Surgical Services
Kim Williamson, RN, MSN, Director, Cardiopulmonary Services
Denis Waldron, Statistician
Ellen McDaniel, RN, Performance Management Coordinator
Celia Llanes, RN, BSN, CHN, RN Study Personnel
Dorothy Ramsey, RN, BSN, Quality Control Coordinator
LWAC Care RNs and staff

Contact Information:
Marilou Cruz, RN, PHN, MSN
Clinical Nurse IV, 1 West Acute Care Unit
Northbay Vacaville Hospital, Vacaville, CA 95688
Tel. No: (707) 624-7016
Email: mcruz@northbay.org