Rescue Me: Identifying Patients at Risk for Deterioration

Nicole Kellogg, BSN, RN, CCRN, TNCC
Nicole.Kellogg@advocatehealth.com
Rapid Response Team
Advocate Sherman Hospital, Elgin, IL

Advocate Aurora Health™

Background

- In the US, 98,000 hospital deaths were due to medical errors (Mushta, Rush, & Andersen, 2018), with a reported annual failure to rescue rate of 13.7% (AHRQ, 2017).
- The delay in recognition and treatment of deterioration can result in a preventable increase in morbidity and mortality (Sebat et al., 2018).
- In January 2018, 21.2% of all patients admitted to the Adult Medical Unit experienced a Code event (28 Codes, 132 patients).
- In the twelve months preceding the intervention, the Adult Medical Unit averaged greater than one Code Blue call per month.
- Current hospital policy on Rapid Response call criteria focus on vital sign derangements.
- Current standard of care for vital sign monitoring on the Adult Medical Unit is every 12 hours.
- The purpose of this project was to enhance the nurse's knowledge with the Signs of Vitality (SOV) assessment and vital sign algorithm coupled with an intervention process to promote earlier identification of patient deterioration and prevent failure to rescue events.

Literature Review

- Even with Rapid Response Teams (RRTs), failure to rescue events occur (Sebat et al., 2018).
- A key safety and quality concern is to reduce hospital processes that contribute to failure to rescue (Mushta et al., 2018).
- Physical signs of deterioration and vital sign abnormalities are present hours before obvious deterioration (Mok et al., 2015).
- Literature review did not reveal a consensus on best practices for vital sign monitoring.
- The Signs of Vitality (SOV) assessment uses physical assessments, vital signs, and lab results to identify patients at risk of physiological instability (Funk et al., 2005).
- SOV assessment has been used to guide RRT activation, leading to an improvement in patient outcomes, specifically an increase in Rapid Response calls and decrease in Code Blue calls (Sebat et al., 2018).

Methods

Subjects and Setting

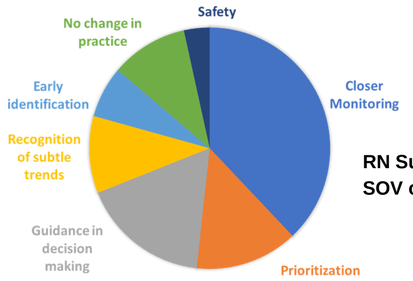
- Education was provided to 45 unit RNs, 6 float pool RNs, and 16 RRT RNs caring for patients on the Adult Medical Unit of a 255-bed community hospital in Elgin, IL.
- Over 6 weeks, the intervention was performed by RNs on all patients older than 18 years of age. Patients admitted for inpatient hospice or with comfort care orders were excluded.

Intervention

- Vital signs/SOV were performed on all patients at 0700, 1500, and 1900, and at the direction of the primary RN.
- Urine output was charted in real-time, rather than the previous practice of every 12 hours.
- RNs performed the SOV assessment on each of their assigned patients at the start of the shift or with any change in condition, and followed the intervention process:
  - SOV within normal limits: recheck SOV/vital signs at next scheduled interval
  - **1 bold criteria** and/or 1+ non-bold criteria within triggering parameters: recheck SOV/vital signs in four hours
  - **2+ bold** within triggering parameters: immediately call a Rapid Response

Sign of Vitality	Triggering Parameters	Current Rapid Response call criteria
Temperature	< or equal to 96.8°F	none
Heart Rate (heart beats per minute)	<50 or >100	<40 or >130
Pain	**New or significant**	sudden onset of acute pain
Respiratory Rate (breaths per minute)	**<6 or >20**	<8 or >28
Oxygen saturation	**<90% and increased oxygen requirements**	<90%
Blood pressure	**Systolic Blood Pressure <90 Mean Arterial Pressure <60**	Systolic Blood pressure <90
Level of consciousness	**Anxiety, lethargy**	Sudden change in level of consciousness
Capillary Refill	**> 3 sec**	none
Urine output	**<30ml/hour x5 OR <100ml/4 hrs (excluding renal failure)**	none
Base Deficit	**> or equal to 5 OR Lactic Acid >2.0 on lab work performed in the previous 12 hours from assessment**	none

Results



RN Survey: Reported Effect of SOV on Nursing Practice (n=29)

Vital Signs

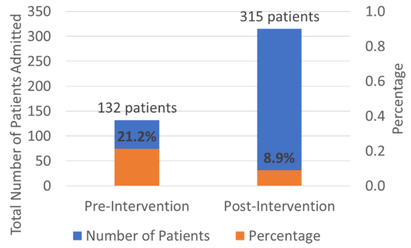
- Significant [t=3.48(54), p<0.05] decrease in the amount of time between a Code call and the most recent set of vital signs (265.6 minutes pre-intervention to 94.5 minutes post-intervention)

SOV

- Instrumental in decision-making for 82% of Codes called
- Most frequent SOV used for Code call decision-making was respiratory rate (n=23) followed by oxygen saturation (n=11). Capillary refill and urine output were not used in decision-making.
- Pain significantly [X2 (2, N=28)= 7.65, p<0.05] associated with Codes called for cardiac reasons.

Code Events

- Post-intervention Rapid Response call rate of 8.9% (28 Codes, 315 patients)
- No Code Blue events during the intervention period
- 50% increase in change of shift Rapid Response calls post-intervention (8 pre-intervention, 12 post-intervention)



In both the pre- and post-intervention periods, the n=28 patients while the percentage of Rapid Response calls differed.

Conclusion

- Decrease in Rapid Response call rate along with survey results may indicate that RNs were identifying changes in patient condition and intervening before the patient's condition warranted a Code response.
- Increase in Codes at change of shift may be due to the assessment of SOV at the start of shift with prompt activation of RRT.
- Results support the use of the SOV and vital sign algorithm to determine the frequency of vital sign monitoring based on patient need, rather than per routine or subjective assessment.
- This project provides an evidence-based method of determining the frequency of vital sign monitoring to facilitate earlier detection of patient deterioration.

Future Implications

- Re-evaluation of Rapid Response call policy may be needed to determine whether call criteria are appropriate and evidence-based.
- Consideration for integration into EHR with notification of RRT to ensure prompt evaluation and intervention for at-risk patients.
- Further research over an extended period of time is needed to better evaluate the effects of the use of the SOV assessment and intervention process on patient outcomes.
- Future work will be directed at enculturating this process on all inpatient units.

References

Funk, D., Sebat, F., & Kumar, A. (2009). A systems approach to the early recognition and rapid administration of best practice therapy in sepsis and septic shock. *Current Opinion in Critical Care*, *15*, 301-307.

Sebat, F., Vandegrift, M. A., Childers, S., & Lighthall, G. K. (2018). A novel bedside-focused ward surveillance and response system. *The Joint Commission Journal on Quality and Patient Safety*, *44*, 94-100.

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