Modified Early Warning System: A Multidisciplinary Response Pathway

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BACKGROUND

In 2015, 20% of the serious safety events at Vidant Health were due to a delay in care or treatment. Changes in measurable physiologic factors are present for hours prior to a patient's catastrophic decline resulting in unexpected ICU admissions, cardiac arrest, and death. Early recognition of these physiological changes through utilization of a Modified Early Warning Scoring (MEWS) system has shown to be effective at reducing overall hospital mortality.

PROJECT AIM

• Globally, to improve patient outcomes through early recognition and intervention with potential clinical decline
• Specifically, we aim to leverage the EHR to decrease serious safety events due to a delay in care by 5% from baseline and improve mortality index

PROJECT DESIGN/STRATEGY

• PDSA 1: multidisciplinary committee formation, density analysis, warning score selection
• PDSA 2: education planning, IT build, pilot unit selection
• PDSA 3: pilot went live June 2016 on general medicine unit at VMC and VBMA, analysis of BPA frequency, interventions, and ERT data
• PDSA 4: workflow modification, automatic 5 score

RESULTS/OUTCOMES

<table>
<thead>
<tr>
<th>Modified Early Warning Score</th>
<th>0-2</th>
<th>3</th>
<th>4</th>
<th>≥ 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Rate</td>
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<tr>
<td>Respiratory Rate</td>
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<tr>
<td>Temperature</td>
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<td>Systolic BP</td>
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MEWS
• Continue routine/ordered monitoring
• VS frequency q1h for 3 hours, confirm MEWS every hour
• If MEWS unchanged, resume routine VS
• If MEWS escalation, restart protocol

ACTIONS
• Actions for MEWS 3
• Apply pulse oximeter
• Apply cardiac monitor
• Inform attending and develop plan of care
• VS frequency q30min for 2 hours, confirm MEWS every 30 min
• Actions for MEWS 4
• ERT activation

DISCUSSION

• Significant downward trend in mortality index. However, other quality projects occurring simultaneously (ie. sepsis efforts).
• Vidant score calculation differ from national by including automatic 5. During pilot, patients transferred to ICU with low MEWS.
• Escalation of care doesn’t represent a failure in treatment/management. Earlier response can hopefully avoid escalation or reduce time spent at a higher level of care.
• While a down trending mortality index is encouraging, there is an upward trend in ERT activations.
• Multiple activations on same patient which cause multiple BPAs.
• Response protocol can be further modified to meet specific needs of unit.

NEXT STEPS

• Combined SIRS BPA and MEWS BPA
• Emergency Department rollout
• Pediatric specific early warning score

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