Modified Early Warning Score (MEWS) Value in the Intensive Care Unit

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Modified Early Warning Score (MEWS) Value in the Intensive Care Unit

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This presentation describes a case-control quantitative research study which examined the effects a modified early warning score (MEWS) had as a cardiac arrest event predictor in an adult ICU. Use of a MEWS tool demonstrated beneficial outcomes in its ability to enhance current treatment initiatives aimed at cardiac arrest event prevention.

Evidence

In published literature, the goal for Rapid Response Teams (RRTs) to decrease cardiac arrest events is inconsistently met. The author’s personal 7-year experience with an RRT in a 1,080-bed tertiary hospital aligned with the literature in that it did not achieve a significant reduction in cardiac arrest events. Contrasting evidence shows the use of some type of an early warning score yields positive outcomes in cardiac arrest prevention.

Study Purpose

Examine the effects of a modified early warning score (MEWS) tool as a cardiac arrest indicator.

Setting

32 bed Level 1 adult Medical-Surgical Intensive Care Unit (M/SICU) within a 1,080-bed tertiary care Magnet Hospital.

Population

Patients ≥18 admitted to the M/SICU 7/1/2011 -- 12/31/2012

Tool

MEWS scores calculated on admission and at 4-hour intervals for the first 24 hours of an ICU stay.

MEWS Score Tool

<table>
<thead>
<tr>
<th>Score</th>
<th>Respiratory Rate</th>
<th>Systolic Blood Pressure</th>
<th>Oxygen Saturation</th>
<th>Pain</th>
<th>4-Hour Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-34 breaths/minute</td>
<td>&lt;90 mmHg</td>
<td>≤92%</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>35-59 breaths/minute</td>
<td>90-109 mmHg</td>
<td>93-96%</td>
<td>Mild</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>60-79 breaths/minute</td>
<td>110-119 mmHg</td>
<td>97-98%</td>
<td>Moderate</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>80-94 breaths/minute</td>
<td>120-129 mmHg</td>
<td>99%</td>
<td>Severe</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>&gt;95 breaths/minute</td>
<td>≥130 mmHg</td>
<td>≥100%</td>
<td>Severe</td>
<td>4</td>
</tr>
</tbody>
</table>

Independent data and MEWS score validation were completed to ensure accuracy of data collection and MEWS score values.

Methodology

Research Design

Case-control method using retrospective medical record review.

Study Sample

Matched against identical time frame by age and gender
- Case sample – 45 subjects who experienced cardiac arrest during ICU stay
- Control sample – 45 subjects who did not experience a cardiac arrest

Research Question #1

What evidence is available on the use of MEWS and control group subjects existing a MEWS score of 5 or greater at least once in the first 24 hours of an ICU stay?

Results

<table>
<thead>
<tr>
<th>MEWS Score</th>
<th>N</th>
<th>No. of Cases</th>
<th>Cardiac Arrest</th>
<th>Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
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<td>2</td>
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<tr>
<td>5</td>
<td>13</td>
<td>13</td>
<td>12</td>
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</tr>
</tbody>
</table>

Conduction of the Wilcoxon signed-rank test comparing the case groups’ MEWS respiratory rate score parameter values immediately, four, and eight hours prior to a cardiac arrest event.

Implications

- Use of MEWS score offers standard language to predict cardiac arrest.
- Newer software associated with EMRs automatically calculates MEWS score, alerting clinicians to emergent patient decline.

REFERENCES: