Pediatric Emergency Dept. Alarm Fatigue

Nuisance alarms interfere with the work of nurses in the JHH Pediatric ED and contribute to alarm fatigue, which creates the potential for adverse events. Additionally, they have led to nurse dissatisfaction on the unit.

Our objectives were to reduce the total number of targeted physiologic alarms (high heart rate, SpO2 low, and SpO2 probe off) per week in the Pediatric ED by half by Dec. 31, 2016 (Fig. 1) and to reduce the average duration for warning and advisory alarms in the Pediatric ED by half by Dec. 31, 2016 (Tables 1 & 2).

**Methods**

- Quality Improvement Methodology used was Define, Measure, Analyze, Improve, Control (DMAIC)
- We gathered and analyzed data with the help of clinical engineering from the physiological alarm monitoring machines (see Figs. 2 and 3).
- Other methods included literature review and observation.

**Results**

1. Number of alarms sounding can safely be decreased by widening the parameters for certain age groups and certain types of alarms and by eliminating the SpO2 probe off alarm. PED nursing staff do not consistently set alarm parameters correctly or use functions such as pause appropriately.

2. Changes in the PED:
   - Modify Alarm Limits, Timing, Phone Escalation Pathway
   - Staff Education and addition of alarm management skills competencies.

**Conclusions**

- Staff education and addition of alarm management skills competencies.
- Modifications to alarm limits and timing.

**Future Directions**

Continue to monitor alarm counts and durations as system changes and education initiatives are implemented. Target additional education efforts or staffing policy changes based on new findings.

**References**


**Table 1:** Average of 23 weeks during 2016

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<thead>
<tr>
<th>Priority Level</th>
<th>Alarm Sound</th>
<th>Example</th>
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<tbody>
<tr>
<td>A - Requires immediate attention</td>
<td>Crisis: 3 audible beeps continuously</td>
<td>Asystole, VFib, VTach</td>
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<td>B - Requires attention as soon as possible</td>
<td>Warning: 2 audible beeps continuously System Warning: Continuous foghorn sound</td>
<td>CO: No Breath, Resp Apnea</td>
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<tr>
<td>C - Timely response required</td>
<td>Advisory: 1 audible beep continuously System Advisory: Single foghorn sound</td>
<td>SPO2 low</td>
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**Table 2:** Alarm priority, sound, and type information.

**Figure 2:** Count of Alarms by day of the week for 4 weeks.

**Figure 3:** Count of Alarms by hour of the day, consistent with patient census.