Helping Understand Sleep Heals-ICU Alarm Counts and Richard-Campbell Sleep Questionnaire

Gabriela DePaulo BSN, RN  
*Lehigh Valley Health Network*, gabriela.depaulo@lvhn.org

Marion Daku  
*Lehigh Valley Health Network*, Marion.Daku@lvhn.org

Denise Davis-Maludy RN, CCRN  
*Lehigh Valley Health Network*, Denise.Davis-Maludy@lvhn.org

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**Helping Understand Sleep Heals-ICU Alarm Counts and Richard-Campbell Sleep Questionnaire**

By: Gabriela DePaulo, Marion Daku RN, CCRN, Denise Davis-Maludy RN, CCRN
Lehigh Valley Health Network, Allentown, Pennsylvania

### Background

- The United States Environmental Protection Agency (EPA), the guidelines for background noise are 45 decibels (dB) during the day and 35 dB at night in patient rooms.
- Research has shown that hospital noise levels exceed this recommended guideline of the EPA, making sleep difficult to an already hectic environment.
- Poor sleep quality leads to:
  - Slower healing
  - Poor immune response
  - Decreased cognitive function
  - Increased length of hospital stay
- Sleep deprivation has been linked to:
  - A rise in patient falls
  - Increased patient confusion
  - Decreased cognitive function
  - Increased length of hospital stay
  - Increased use of restraints and 1:1s
  - Slower healing
  - Increased length of hospital stay
  - Increased patient confusion
  - Increased use of restraints and 1:1s
  - A rise in patient falls

It can take as little as 24 to 48 hours for the body to begin reacting negatively to a lack of sleep in patients.

The purpose of the current study was to decrease the level of noise and the number of controllable alarms to help aid in increased patient and staff satisfaction.

### Goals & Evaluation Methods

**Goals:**

- Improve quiet time (HCAPHS improvement)
- Improve patient sleep quality
- Reduce activity levels

**Methods:**

- General shifts in controllable silence areas by BMI
- Team loudness

- The tools for measurement and evaluation of the project include:
  - HCAPHS
  - Manual Alarm Counts
  - Decibel Reader Readings
  - Phillips Monitor Alarm Trigger Printouts
  - Richard-Campbell Sleep Study

### H.U.S.H. Results

<table>
<thead>
<tr>
<th>Decibel Levels</th>
<th>Averages of Phillips Monitor Trigger Count</th>
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</thead>
<tbody>
<tr>
<td>Pre-Launch True &amp; False Alarms</td>
<td>Launch True &amp; False Alarms</td>
</tr>
<tr>
<td>Alarm Types Pre-Launch</td>
<td>Alarm Types Launch</td>
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<tr>
<td>Alarms Lengths</td>
<td>Quietness Score within ICU</td>
</tr>
<tr>
<td>Richard-Campbell Sleep Survey Responses</td>
<td></td>
</tr>
</tbody>
</table>

### Interventions

- **Quiet Time:**
  - Lights are dimmed
  - Television volume should be turned down
  - Head sets and ear buds may be used
  - Staff will interact quietly and remind anyone entering the unit that “quiet time” is in progress
  - Staff will limit nursing activities during those times and not enter the patient room unless necessary
  - Patient’s door will be closed if able to safely
  - When therapeutic interventions are necessary they will be performed as quietly as possible
  - Removal of hallway ventilator alarms that averaged 86 to 90 plus decibels

### Conclusion

- Most of the data collected had no significant difference, but there were some exceptions.
- Percentage of false alarms, the maximum of alarm lengths, and the patient scoring of noise on the Richard-Campbell sleep study did show slight improvements.
- From the data that was collected, one can see why noise levels in the hospitals are a main concern especially in regards to sleep and the EPA guidelines.
- This correction of high noise levels can possibly lead to better sleep at night. This trickle-down effect can lead to a shorter stay in hospitals, and eventually decreasing the hospital cost.

### REFERENCES

multimedia
5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3745711/
6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3745711/
7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3745711/