An audit of sleep and sedation practices in UK Intensive Care Units

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Background

- Sleep disruption may be associated with the delirium in ICU patients (Bellapart and Boots 2012; Trompeo et al 2011), which in turn has been shown to be associated with worse morbidity (van den Boogaard et al 2012) and mortality (Ely et al 2004)

- Noise, nursing or medical procedures, presence of staff / family & mechanical ventilation are extrinsic barriers to patient sleep in ICU (Elliot et al 2010; Hopper et al 2015)

- Insufficient training, lack of structured protocol and nurses failure to prioritise patient sleep makes the provision of sleep for the ICU patient impossible (Nesbitt 2013)

- The use of non-pharmacological for sleep promotion are suggested as an alternative to pharmacological interventions to prevent ICU delirium (Hu et al 2015).

- Little is known regarding nurses' role in ICU sleep and sedation practices.

- The aim of this study was to undertake an audit of existing practice to determine current sleep and sedation practices in ICUs across the United Kingdom
Methods

- An audit of 150 intensive care units across England, Wales and Northern Ireland was conducted as part of a larger international study.

- The questionnaire was adapted from a previous version developed in the Netherlands (Hofhuis et al 2012).

- Circulated via the Critical Care National Network Nurse Lead (CC3N) via a Survey Monkey web to 150 ICUs in England, Wales and Northern Ireland.

- Data was analysed in Excel.

- Service evaluation which did not require ethics approval.
Questionnaire

Four Domains:

✦ Characteristics of sleep
✦ Sleep and sedation practices
✦ Non-pharmacological and pharmacological interventions to improve sleep
✦ Autonomy & influence of nurses on sleeping practices in the ICU

Results

- Forty-eight ICU's responded to the questionnaire (32% response rate)
- Hospitals were mainly University affiliated (47%) or Community / teaching hospitals (36%)
- Majority of units were Medical and Surgical ICUs (78%)
- ICUs were mainly Intensivist led (89%)
Characteristics of participating hospitals

Number of ICUs in each hospital

- Number of ICUs: 1 (60%), 2 (20%), 3-5 (15%), >5 (5%)

Number of registered nurses in ICU

- Number of registered nurses: <40 (20%), 40 to 80 (40%), 80 to 120 (20%), >120 (10%)

Number of beds in responding ICU

- Bed number in responding ICU: <10 (60%), 10 to 14 (20%), 15 to 19 (15%), >20 (5%)
### Sleep identifiers used to identify whether a patient is sleeping in the ICU

<table>
<thead>
<tr>
<th>Sleep Identifier</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lying quiet with closed eyes</td>
<td>40</td>
</tr>
<tr>
<td>Decreased blood pressure</td>
<td>34</td>
</tr>
<tr>
<td>Respiration slow and regular</td>
<td>28</td>
</tr>
<tr>
<td>Decreased pulse</td>
<td>27</td>
</tr>
<tr>
<td>Snoring</td>
<td>26</td>
</tr>
<tr>
<td>Decreasing heart-beat</td>
<td>25</td>
</tr>
<tr>
<td>Decreasing respiratory rate</td>
<td>23</td>
</tr>
<tr>
<td>Unintentional muscle movements</td>
<td>13</td>
</tr>
<tr>
<td>Very slow respiratory rate</td>
<td>4</td>
</tr>
<tr>
<td>Respiration slow, irregular and shallow</td>
<td>3</td>
</tr>
<tr>
<td>Increased blood pressure</td>
<td>1</td>
</tr>
</tbody>
</table>

### Bar Chart

The bar chart visualizes the frequency of sleep identifiers used by nurses. The vertical axis lists the sleep identifiers, and the horizontal axis represents the number of nurses using each identifier. The chart shows that "Lying quiet with closed eyes" is the most commonly used identifier, followed by "Decreased blood pressure" and "Respiration slow and regular."
Do you pay attention to non-pharmacological intervention to improve sleep?

<table>
<thead>
<tr>
<th>Noise</th>
<th>Intervention</th>
<th>1. Never (%)</th>
<th>2. Seldom (%)</th>
<th>3. Frequently (%)</th>
<th>4. Often (%)</th>
<th>5. Routinely (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td></td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
<tr>
<td>1</td>
<td>Reducing ICU staff noise</td>
<td>0.0</td>
<td>2.2</td>
<td>22.2</td>
<td>28.9</td>
<td>46.7</td>
</tr>
<tr>
<td>2</td>
<td>Reducing nursing interventions at night</td>
<td>2.2</td>
<td>22.2</td>
<td>17.8</td>
<td>28.9</td>
<td>28.9</td>
</tr>
</tbody>
</table>

Environment

<table>
<thead>
<tr>
<th>Rank</th>
<th>Intervention</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Delaying routine blood work until morning</td>
<td>0.0</td>
<td>11.1</td>
<td>13.3</td>
<td>13.3</td>
<td>62.2</td>
</tr>
<tr>
<td>2</td>
<td>Providing a visible clock</td>
<td>2.1</td>
<td>10.4</td>
<td>12.5</td>
<td>14.6</td>
<td>60.4</td>
</tr>
</tbody>
</table>

Light

<table>
<thead>
<tr>
<th>Rank</th>
<th>Intervention</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Room lights off</td>
<td>0.0</td>
<td>2.1</td>
<td>4.2</td>
<td>14.6</td>
<td>79.2</td>
</tr>
<tr>
<td>2</td>
<td>Curtains closed</td>
<td>10.6</td>
<td>19.1</td>
<td>12.8</td>
<td>8.5</td>
<td>48.9</td>
</tr>
</tbody>
</table>
Sleep assessment

KEY:

1. Do you consider patient's sleeping preferences?

2. Do you ask re sleep problems / medications?

3. Do you use a sleep-questionnaire in your ICU?

4. Consult other disciplines when patient sleeping poorly?
**Sedation scoring**

**Do you target sedation to a score?**
- 79% Day and night
- 14% During the day
- 7% No, never

**Which sedation score do you use in your ICU?**
- 83% RASS-score
- 15% Ramsay-score
- 2% Bloomsbury

**How often are you using a sedation score in your ICU?**
- 0% Other?
- 7% Once per shift
- 14% Every two hours
- 21% Every hour

Percentage of ICUs
Which factor determines the decision to give (extra) sleep medication?

Factors

- Other
- Sedation score
- Patient or family member request
- Clinical assessment
- Combination sedation score & clinical assessment

Frequency
Decisions regarding sleep medication

KEY:

1. Who decides sleep medication prescription?
2. Who determines the efficacy of sleep medication?
Which of the following medications do you use for sleep?

<table>
<thead>
<tr>
<th>Drug</th>
<th>3. Frequently (%)</th>
<th>4. Often (%)</th>
<th>5. Routinely (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remifentanyl</td>
<td>45.8</td>
<td>16.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Propofol</td>
<td>36.4</td>
<td>11.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Temazepam</td>
<td>28.9</td>
<td>11.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Oxazepam</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Promethazine</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>10</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>Nitrazepam</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rohypnol</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chloralhydrate</td>
<td>5.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Melatonin</td>
<td>21.4</td>
<td>7.1</td>
<td>0</td>
</tr>
<tr>
<td>Midazolam</td>
<td>16.3</td>
<td>4.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Sufentanil</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Morphine</td>
<td>10.5</td>
<td>2.6</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Percentage of nurses who use drug frequently, often or routinely.
Nursing autonomy & decision making

How would you rate nursing autonomy regarding sleep and sedation practices of the ICU patient?

Dependent | Independent
---|---
0 | 10

How often do nurses influence decisions regarding sleep management in ICU patients?

Never | Always
---|---
0 | 10

How would you rate sleep quality of the average patient in your ICU?

Bad | Excellent
---|---
0 | 10
Reasons given for sleep score <7

- Pain
- Light
- Sleeping on the ward vs single room
- Mechanical ventilation
- Anxiety
- Fear
- Nursing interventions
- Noise annoyance
- Delirium
- Disturbed night/day cycle

Frequency
Sleep protocol and research

KEY:

1. Does your ICU have a sleep protocol?
2. Would you like to see a protocol implemented?
3. Do you feel a study assessing sleep interventions is important?
4. Do you think your ICU would take part in a sleep study?
Conclusion

✦ There is a need for further research to understand the challenges to enhancing sleep and sedation practices in ICU

✦ A range of non-pharmacological strategies need to be explored with a particular focus on those that promote quality/depth/length of sleep

✦ Factors supporting and hindering the implementation of extrinsic strategies to reduce sleep need to be understood to improve practice
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