Use of Sedation Protocols Can Impact Outcomes

SEDATION ADMINISTRATION
While hundreds of thousands of patients are mechanically ventilated each year, and sedation is often used to facilitate this treatment, the administration of sedation varies across institutions and there is no true consensus on what constitutes optimal sedation.

• Lack of standardization in sedation administration can result in either undersedation or oversedation, both of which can have detrimental impact on patient outcomes. Oversedation, specifically, has been associated with increased time on mechanical ventilation, ICU stay, delirium and mortality.¹

SEDATION PROTOCOL STRUCTURE
The use of sedation protocols takes the guesswork out of medication administration and provides structured guidelines for sedation management.

• Sedation protocols typically involve either administration of sedation according to an algorithm, daily interruption of sedation infusion or a combination of both.
• Algorithms are typically guided by scores obtained via administration of sedation assessment tools, including the Ramsay Sedation Scale (RSS), Riker Sedation-Agitation Scale (SAS) and the Richmond Agitation-Sedation Scale (RASS).

EVIDENCE SUPPORTING PROTOCOL USE
There is ample evidence to support the use of sedation protocols. (See Table 1) Some of the more significant effects protocol use has on outcomes include:

• Decreased time on mechanical ventilation
• Reduction in ICU and hospital length of stay
• Decreased mortality
• Decreased use of sedatives and other medications (e.g. analgesics)

Additional outcomes observed with protocol use include:

• Decreased incidence of tracheostomy
• Decreased pressure sores
• Decreased delirium

A 2015 meta-analysis assessed the effects of protocolized sedation compared with usual care without protocolized sedation on clinical outcomes in mechanically ventilated adults.² Protocolized sedation was associated with significant reductions in:

• Overall mortality (15%)
• ICU length of stay (1.73 days)
• Hospital length of stay (3.5 days)
• Tracheostomy (31%)
## Evidence supporting the use of protocolized sedation management (NS, non-significant; NA, not assessed)

<table>
<thead>
<tr>
<th>AUTHOR/YEAR</th>
<th>SEDATION SCALE USED</th>
<th>PROTOCOL IMPACT ON DURATION OF MV</th>
<th>PROTOCOL IMPACT ON ICU LOS</th>
<th>PROTOCOL IMPACT ON HOSPITAL LOS</th>
<th>PROTOCOL IMPACT ON SEDATION USE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brook 1999&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Ramsay Scale</td>
<td>▼ (55.9 vs. 117.0 hrs) 52% reduction</td>
<td>▼ (5.7 vs. 7.5days)</td>
<td>▼ (14.0 vs. 19.9days)</td>
<td>▼ duration of continuous IV sedation</td>
<td>▼ tracheostomy %</td>
</tr>
<tr>
<td>Kress 2000&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Ramsay Scale</td>
<td>▼ (4.9 vs. 7.3days)</td>
<td>▼ (6.4 vs. 9.9days)</td>
<td>NA</td>
<td>▼ use of morphine and midazolam</td>
<td>▼ testing to assess changes in mental status</td>
</tr>
<tr>
<td>Delonghe 2005&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Adaption to Intensive Care Environment (ATICE) instrument</td>
<td>▼ (4.4 vs. 10.3days) 57.3% reduction</td>
<td>▼ (8 vs.15d) median</td>
<td>NA</td>
<td>▼ mean daily and cumulative doses of midazolam</td>
<td>▼ pressure sores</td>
</tr>
<tr>
<td>Girard 2008&lt;sup&gt;6&lt;/sup&gt;</td>
<td>RASS</td>
<td>↑ ventilator-FREE days (14.7 vs. 11.6days)</td>
<td>▼ (9.1 vs.12.9d) median</td>
<td>▼ (14.9 vs. 19.2days)</td>
<td>▼ total dose of benzos and opiates</td>
<td>↑ self-extubations</td>
</tr>
<tr>
<td>Robinson 2008&lt;sup&gt;7&lt;/sup&gt;</td>
<td>RASS</td>
<td>▼ days on MV (1.2 vs. 3.2days) ↑ ventilator-free days (26.4 vs. 22.8days)</td>
<td>No difference</td>
<td>▼ (12 vs 18days)</td>
<td>▼ total amount of opiates &amp; propofol, and ↑ lorazepam infusions</td>
<td>NA</td>
</tr>
<tr>
<td>Mansouri 2013&lt;sup&gt;8&lt;/sup&gt;</td>
<td>RASS</td>
<td>▼ (19 vs. 40hrs)</td>
<td>▼ (97 vs. 170hrs)</td>
<td>NA</td>
<td>▼ use of propofol &amp; fentanyl</td>
<td>▼ mortality rate (12.5 vs. 23.8%)</td>
</tr>
<tr>
<td>Dale 2014&lt;sup&gt;9&lt;/sup&gt;</td>
<td>RASS</td>
<td>▼ duration of MV by 17.6% (16 vs. 20hrs) ↑ ventilator-Free days (26 vs. 25 days)</td>
<td>▼ median duration of 12.4%</td>
<td>▼ duration 14%</td>
<td>▼ mean hourly benzo dose by 34.8%</td>
<td>▼ delirium by 3.9%</td>
</tr>
</tbody>
</table>

### References


