ICU Pediatric Early Mobilization

Order received to implement ICU Early Mobilization

Contraindication present?

Yes

- Establish PROM exercises with caregiver to reduce the likelihood of contractures
- Educate donning and doffing of PRAFO to prevent tightness on Achilles tendon and reduce the likelihood of footdrop
- Re-evaluate in 24 hours for early mobilization

Discuss with team (including RT for mechanically ventilated patients and surgical teams for post operative restrictions) prior to initiating mobilization activity

No

Evaluate for precautions

Precautions present?

Yes

- RT to be present during the entire session for artificial airway
- For established tracheostomy, RT to be present at beginning and end of session
- Ensure endotracheal tube or tracheostomy is secure before moving patient

Yes

- Proceed with mobilization interventions (see Appendix B)
- RT to be present if recent tracheostomy within 3 days

No

Patient on invasive mechanical ventilation?

Yes

Signs of intolerance (see Appendix C) which do not resolve within 10 minutes?

Yes

Suspend activity and re-evaluate within 6 hours

No

Re-assess mobility level every 12 hours

Continue with mobilization interventions as indicated by appropriate level

No

Patient on invasive mechanical ventilation?

Yes

RN/PT/OT to assess mobility level

No

Procedural activation

Yes

No

continued signs of intolerance (see Appendix C) during re-evaluation?

Yes

No

Re-assess mobility level every 12 hours

Continue with mobilization interventions as indicated by appropriate level

1 Contraindications
- Increased intracranial pressure (ICP) ≥ 15 mmHg
- Acute or uncontrolled intracranial event
- Positive end expiratory pressure (PEEP) ≥ 12 cm H₂O on invasive mechanical ventilation
- Volumetric diffusive respiration (VDR) or high frequency oscillatory ventilation (HFOV)
- Difficult airway
- Fraction of inspired oxygen (FiO₂) ≥ 0.60

2 Precautions
- Venous thromboembolism/Pulmonary Embolism
- External ventricular drain
- RASS score of +1 (see Appendix A)
- Mechanical ventilation
- Hemodynamic instability despite vasopressors
- Uncontrolled seizures
- Acute abdomen
- RASS score of -3 and lower, or +2 and higher (see Appendix A)
- Active bleeding
- Unstable fracture
- Uncontrolled pain
- Continuous dialysis
- Lumbar drain
- Spinal tap
- Vasopressor medication
- Hemoglobin < 8 grams/dL or platelets < 20 K/microliter

PROM = passive range of motion
PRAFO = pressure relief ankle foot orthosis
RT = respiratory therapy
RN = registered nurse
PT = physical therapy
OT = occupational therapy

Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson’s specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.
APPENDIX A: Richmond Agitation Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>RASS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Comitative</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
</tr>
</tbody>
</table>

APPENDIX B: Mobility Levels

<table>
<thead>
<tr>
<th>Mobility Level</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>PROM BID x 10 repetitions with family/nursing staff/nursing assistant staff</td>
</tr>
<tr>
<td>RASS -5 to +2</td>
<td>Splinting and repositioning every 2 hours by nursing staff/nursing assistant staff</td>
</tr>
<tr>
<td>Functional Level: Total Assist</td>
<td>Bed in chair position BID by nursing staff/nursing assistant staff for 20 minutes to 2 hours</td>
</tr>
<tr>
<td></td>
<td>Skilled therapeutic interventions by PT/OT as indicated</td>
</tr>
<tr>
<td>Level 2</td>
<td>ROM exercises BID x 10 repetitions with family/nursing staff/nursing assistant staff</td>
</tr>
<tr>
<td>RASS -2 to +2</td>
<td>Splinting and repositioning every 2 hours by nursing staff/nursing assistant staff</td>
</tr>
<tr>
<td>Functional Level: Maximum to Moderate Assist</td>
<td>Bed in chair position BID by nursing staff/nursing assistant staff for 20 minutes to 2 hours</td>
</tr>
<tr>
<td></td>
<td>Skilled therapeutic interventions by PT/OT as indicated</td>
</tr>
<tr>
<td>Level 3</td>
<td>Home exercise program BID</td>
</tr>
<tr>
<td>RASS -1 to +2</td>
<td>Reposition every 2 hours while in bed</td>
</tr>
<tr>
<td>Functional Level: Moderate Assist to Supervision</td>
<td>OOB to bedside chair for 30 minutes to 2 hours</td>
</tr>
<tr>
<td></td>
<td>Ambulate as directed by PT/OT</td>
</tr>
<tr>
<td></td>
<td>Skilled therapeutic interventions by PT/OT as indicated</td>
</tr>
<tr>
<td></td>
<td>Participate in ADL</td>
</tr>
</tbody>
</table>

APPENDIX C: Signs of Intolerance

- Oxygen saturation less than 88%
- Increased work of breathing
- Use of accessory muscles
- Perioral cyanosis
- Breath holding
- Nasal flaring
- Subcostal retractions
- Change in character of cry
- Development of any contraindications
- Vital signs outside of pediatric normative values (see Appendix D)
- Irritability

APPENDIX D: Pediatric Normative Values

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Respiratory Rate per minute</th>
<th>Heart Rate per minute</th>
<th>Systolic Blood Pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn (&lt; 1 month)</td>
<td>30-50</td>
<td>120-160</td>
<td>50-70</td>
</tr>
<tr>
<td>Infant (1-12 months)</td>
<td>20-30</td>
<td>80-140</td>
<td>70-100</td>
</tr>
<tr>
<td>Toddler (1-3 years)</td>
<td>20-30</td>
<td>80-130</td>
<td>80-110</td>
</tr>
<tr>
<td>Preschooler (4-5 years)</td>
<td>20-30</td>
<td>80-120</td>
<td>80-110</td>
</tr>
<tr>
<td>School age (6-12 years)</td>
<td>20-30</td>
<td>70-110</td>
<td>80-120</td>
</tr>
<tr>
<td>Adolescent (&gt; 12 years)</td>
<td>12-20</td>
<td>55-105</td>
<td>110-120</td>
</tr>
</tbody>
</table>

Key:
- Total Assist (patient performs 0-24%)
- Maximum Assist (patient performs 25-49%)
- Moderate Assist (patient performs 50-74%)
- Minimum Assist (patient performs 75-99%)
- Supervision (assist patient with set up and/or cueing)
SUGGESTED READINGS


DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the ICU Pediatric Mobilization experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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