ICU Adult Early Mobilization

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Order received to implement ICU Early Mobilization

A

Are any contraindications present?

Yes

No

Evaluate for precautions

Precautions present?

Yes

No

RN/PT/OT to discuss mobility plan daily

Precautions present?

Yes

No

Discuss with medical teams prior to initiating mobilization activity

RN/PT/OT to discuss mobility plan daily

A

RN/PT/OT to assess mobility level and discuss mobility plan daily (see Appendix A)

Utilize Guidelines for Monitoring During Activity (see Page 2)

Is patient on invasive mechanical ventilation?

Yes

No

Suspend activity and re-evaluate in 4-6 hours

If Level 0 (see Appendix A), consider continuous lateral rotation therapy (CLRT) (see Appendix C)

Discuss increasing hemodynamic and respiratory support during activity with ICU team

Continued signs of intolerance during re-evaluation?

Yes

No

Re-assess mobility level every 12 hours

Continue with mobilization interventions as indicated by appropriate level

OT = occupational therapist
PT = physical therapist
RN = registered nurse

1 Contraindications
- Increased intracranial pressure (ICP) ≥ 15 mmHg
- Acute or uncontrolled intracranial event
- Richmond Agitation Sedation Score (RASS) ≥ 4 (Appendix B)
- Fraction of inspired oxygen (FiO₂) ≥ 0.85 on invasive mechanical ventilation
- Positive end expiratory pressure (PEEP) ≥ 15 cm H₂O on invasive mechanical ventilation

2 Precautions
- Continuous dialysis
- Venous thromboembolism (VTE)
- Difficult airway
- Specific post surgical restrictions as per orders
- Lumbar drain and external ventricular drain
- Requiring FiO₂ ≥ 0.85 via non-invasive positive pressure ventilation (NIPPV) or high flow oxygen

3 Signs of Intolerance (those which do not resolve within 5-10 minutes)
- Respiratory rate (RR) > 40 bpm (consult with medical team if resting RR is elevated at baseline)
- Oxygen saturation < 88%
- Mean arterial pressure (MAP) < 55 mmHg or > 130 mmHg
- Heart rate (HR) ≤ 50 bpm or > 130 bpm (consult with medical team if resting HR is elevated at baseline)
- Development of any contraindications

Appendix A
Appendix B
Appendix C

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ICU Adult Early Mobilization

GUIDELINES FOR MONITORING DURING ACTIVITY

1. Signs of Intolerance (those which do not resolve within 5-10 minutes)
   - Respiratory rate (RR) > 40 bpm (consult with medical team if resting RR is elevated at baseline)
   - Oxygen saturation < 88%
   - Mean arterial pressure (MAP) < 55 mmHg or > 130 mmHg
   - Heart rate (HR) ≤ 50 bpm or > 130 bpm (consult with medical team if resting HR is elevated at baseline)
   - Development of any contraindications

2. Signs of Cardiopulmonary or Neurological Dysfunction (those that developed or were observed within the last 24 hours)
   - Increased intracranial pressure (ICP) > 10 mmHg
   - Intracranial event
   -Decline in mental status
   - Initiation of high flow oxygen delivery system with FiO2 > 0.60 or flow > 25 L/minute
   - Initiation of or increasing vasopressor requirement
   - New onset of arrhythmias despite antiarrhythmia medications
   - Blood pressure instability with MAP < 65 mmHg or > 110 mmHg

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Decision Points:

**A.** Do signs of intolerance resolve with 5-10 minutes rest break?
- Yes: Continue to progress mobility as tolerated per Page 1 with full monitoring within room
- No:
  - Signs of Intolerance observed?
    - Yes: Continue to progress mobility as tolerated per Page 1 with full monitoring within room
    - No: Continue to observe for signs of intolerance
  - Signs of Intolerance observed? (continued)
    - Yes: Return patient to safe resting position
    - No:
      - Was cardiopulmonary or neurological dysfunction observed within the last 24 hours? (Box A)
        - Yes:
          - Progress mobility to outside of ICU room within the same pod
          - Use portable pulse oximetry for monitoring
          - Recruit RT for assistance if patient requires mechanical ventilation
        - No:
          - Signs of Intolerance observed?
            - Yes: Continue to progress mobility as tolerated per Page 1 with full monitoring within room
            - No: Continue to observe for signs of intolerance

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## APPENDIX A: Mobility Levels

| Level 0 | RASS^1 -5 to +2  
| Functional Level:  
| Typically Total Assist^2 and JH-HLM Score 1^3  
| Interventions  
| ● Evaluate for prone positioning  
| ● Attempt manual turn to lateral position  
| ● Pre-oxygenate  
| ● Use slow speed of turn  
| ● Use wedge, start with 15 degree turn, hold for 15 seconds; if tolerance criteria met, increase to 30 degrees for 15 seconds; if tolerated, increase up to 45 degrees as indicated  
| ● Weight shift patient every hour  
| ● Reposition head, arms and legs every hour with heel elevation  
| ● PROM twice a day x 10 repetitions by nursing staff  
| ● Daily implementation of Morning Bundle^4  
| | Level 1 | RASS^1 -5 to +2  
| Functional Level:  
| Typically Total Assist^2 and JH-HLM Score 2-3^1  
| Interventions  
| ● PROM twice daily x 10 repetitions with nursing staff  
| ● Reposition every 2 hours by nursing staff^1  
| ● Heel elevation  
| ● Bed in chair position twice a day by nursing staff greater than 20 minutes but less than 2 hours  
| ● Skilled therapeutic interventions by PT/OT as indicated  
| ● Daily implementation of Morning Bundle^4  
| | Level 2 | RASS^1 -2 to +2  
| Functional Level:  
| Typically Maximum to Moderate Assist^2 and JH-HLM Score 3-4^1  
| Interventions  
| ● ROM exercises twice daily with family/nursing staff x 10 repetitions  
| ● Reposition every 2 hours by nursing staff^1  
| ● Heel elevation  
| ● Bed in chair position twice a day by nursing staff greater than 20 minutes but less than 2 hours and OOB to neuro chair  
| ● Skilled therapeutic interventions by PT/OT as indicated  
| ● Participate in ADL  
| ● Daily implementation of Morning Bundle^4  
| | Level 3 | RASS^1 -1 to +2  
| Functional Level:  
| Typically Moderate Assist to Supervision^2 and JH-HLM Score 4-8^1  
| Interventions  
| ● Complete individualized exercise program  
| ● Reposition every 2 hours while in bed  
| ● Heel elevation  
| ● Progressive mobility at least twice daily by nursing and rehab staff as indicated  
| ● OOB to bedside chair  
| ● Ambulate as directed by PT/OT  
| ● Skilled therapeutic interventions by PT/OT as indicated  
| ● Participate in ADL  
| ● Daily implementation of Morning Bundle^4  

ADL = activities of daily living  
OOB = out of bed  
PROM = passive range of motion  
ROM = range of motion

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1 See Appendix B  
2 Total Assist (patient performs 0-24%)  
   Maximum Assist (patient performs 25-49%)  
   Moderate Assist (patient performs 50-74%)  
   Minimal Assist (patient performs 75-99%)  
3 Johns Hopkins Highest Level of Mobility Score (JH-HLM):  
   8 = Walk 250 feet of more  
   7 = Walk 25 feet or more  
   6 = Walk 10 steps or more  
   5 = Standing (1 or more minutes)  
   4 = Move to chair/commode  
   3 = Sit at edge of bed  
   2 = Bed activities/dependent transfer  
   1 = Lying in bed  
4 Morning Bundle Components:  
   Between 6 - 8 AM:  
   ● Lights on  
   ● Window shades up  
   ● Head of bed (HOB) elevated  
   ● Sedation holiday  
   ● Reorientation as indicated  
   By 10 AM:  
   ● Up in chair position or OOB to chair  

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### APPENDIX B: Richmond Agitation Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overly combative, violent, immediate danger to staff</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
<td>Pulls or removes tube(s) or catheter(s); aggressive</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent, non-purposeful movement, fights ventilator</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious, but movements not aggressive or vigorous</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
<td>Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (greater than or equal to 10 seconds)</td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Briefly awakens with eye contact to voice (less than 10 seconds)</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Movement or eye openings to voice (but no eye contact)</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
<td>No response to voice, but movement or eye opening to physical stimulation</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation</td>
<td>Unarousable</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td>Unarousable</td>
</tr>
</tbody>
</table>
### APPENDIX C: Continuous Lateral Rotation Therapy (CLRT)

#### CLRT for hemodynamically unstable patients

- Maintain head of bed (HOB) $\geq 15$ degrees and 15 degrees reverse Trendelenberg position (to achieve 30 degrees)
- CLRT 18 hours per day, minimum of 6 complete rotations (optimally 8-10 rotations)
- Use training mode, or if not tolerated, set rotation at 60% and pause two minutes for right/left/center (minimum settings)
- Monitor that one lung is above the other lung with a turn. If not, increase rotation percentage as tolerated.
- Increase pause to one minute as patient adjusts
- Every 2 hours, check to ensure that the patient is in optimal position to promote effective turn. Shoulders should be aligned with the lung picture on the bed.
- Use custom settings to adjust for body types
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SUGGESTED READINGS


Brower, R. G. (2009). Consequences of bed rest. Critical Care Medicine, 37(10 Suppl), S422-S428. https://doi.org/10.1097/01.CCM.0b013e3181b6e30a


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DEVELOPMENT CREDITS

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