ICU Adult Early Mobilization

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Order received to implement ICU Early Mobilization

- Refer to Level 0 (see Appendix A) and re-evaluate in 4-6 hours (refer back to Box A)
- RN/PT/OT to discuss mobility plan daily

A

Are any contraindications1 present?

Yes

No

Evaluate for precautions2

Precautions2 present?

Yes

No

Is patient on invasive mechanical ventilation?

Yes

No

Is patient on invasive mechanical ventilation?

Yes

No

Ensure endotracheal tube (ETT) or tracheostomy is secure before moving patient
- For Level 2 and 3 (see Appendix A), call Respiratory Therapist (RT) or Advanced Practice Provider (APP) for assistance if patient has a difficult airway

- 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 intolerance3 during re-evaluation?

No

Yes

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
- Unsecured airway

2. **Precautions**
- Continuous dialysis
- RASS +3 (Appendix B)
- Tracheostomy within 24 hours
- Active hemorrhage within 24 hours
- Active cardiac ischemia
- Blood pressure instability requiring active upward titration of vasopressors
- Uncontrolled acute arrhythmias
- Active end of life care orders
- Unstable fracture

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

Department of Clinical Effectiveness

Approved by the Executive Committee of the Medical Staff on 11/17/2020
GUIDELINES FOR MONITORING DURING ACTIVITY

Patient participating in ICU adult early mobilization activities with current level of monitoring

Return patient to safe resting position

Signs of intolerance observed?

Progress mobility to OOB or short distance ambulation within room with current level of monitoring

Was cardiopulmonary or neurological dysfunction observed within the last 24 hours?

Signs of intolerance observed?

Continue to progress mobility as tolerated per Page 1 with monitoring

Do signs of intolerance resolve with 5-10 minutes rest break?

Yes

No

Return patient to supine position in bed

Alert and recruit RN for assistance

Notify ICU team

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

Signs of intolerance observed?

No

Refer to Box A above

Yes

Continue with mobilization intervention as indicated by appropriate level (see Appendix A)


development or were observed within the last 24 hours)

1. Respiratory rate (RR) > 40 bpm (consult with medical team if resting RR is elevated at baseline)

2. Oxygen saturation < 88%

3. Mean arterial pressure (MAP) < 55 mmHg or > 130 mmHg

4. Heart rate (HR) ≤ 50 bpm or > 130 bpm (consult with medical team if resting HR is elevated at baseline)

5. Development of any contraindications

6. Increased intracranial pressure (ICP) > 10 mmHg

7. Intracranial event

8. Decline in mental status

9. Initiation of high flow oxygen delivery system with FiO₂ > 0.60 or flow > 25 L/minute

10. Initiation of or increasing vasopressor requirement

11. New onset of arrhythmias despite antiarrhythmic medications

12. Blood pressure instability with MAP < 65 mmHg or > 110 mmHg

13. Acute myocardial event

14. Acute pulmonary embolism

15. If indicated, recruit RN and/or APP for assistance

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#### APPENDIX A: Mobility Levels

<table>
<thead>
<tr>
<th>Level 0</th>
<th>RASS(^1) -5 to +2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Level:</td>
</tr>
<tr>
<td></td>
<td>Typically Total Assist(^2) and JH-LHM Score 1(^3)</td>
</tr>
</tbody>
</table>

**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 to 45 degrees
- 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\(^4\)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>RASS(^1) -5 to +2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Level:</td>
</tr>
<tr>
<td></td>
<td>Typically Total Assist(^2) and JH-LHM Score 2-3(^3)</td>
</tr>
</tbody>
</table>

**Interventions**
- PROM twice daily x 10 repetitions with nursing staff
- Reposition every 2 hours by nursing staff
- 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\(^4\)

<table>
<thead>
<tr>
<th>Level 2</th>
<th>RASS(^1) -2 to +2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Level:</td>
</tr>
<tr>
<td></td>
<td>Typically Maximum to Moderate Assist(^2) and JH-LHM Score 3-4(^3)</td>
</tr>
</tbody>
</table>

**Interventions**
- ROM exercises twice daily with family/nursing staff x 10 repetitions
- Reposition every 2 hours by nursing staff
- 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\(^4\)

<table>
<thead>
<tr>
<th>Level 3</th>
<th>RASS(^1) -1 to +2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Level:</td>
</tr>
<tr>
<td></td>
<td>Typically Moderate Assist to Supervision(^2) and JH-LHM Score 4-8(^3)</td>
</tr>
</tbody>
</table>

**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\(^4\)

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\(^1\) Johns Hopkins Highest Level of Mobility Score (JH-LHM):
- 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

\(^2\) Total Assist (patient performs 0-24%)
- Maximum Assist (patient performs 25-49%)
- Moderate Assist (patient performs 50-74%)
- Minimal Assist (patient performs 75-99%)
- Supervision (assist patient with set up and/or cuing)

\(^3\) See Appendix B

\(^4\) 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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Approved by the Executive Committee of the Medical Staff on 11/17/2020
APPENDIX B: Richmond Agitation Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</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>

-4: Overly combative, violent, immediate danger to staff
-3: Pulls or removes tube(s) or catheter(s); aggressive
-2: Frequent, non-purposeful movement, fights ventilator
-1: Anxious, but movements not aggressive or vigorous
0: Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (greater than or equal to 10 seconds)
-2: Briefly awakens with eye contact to voice (less than 10 seconds)
-3: Movement or eye openings to voice (but no eye contact)
-4: No response to voice, but movement or eye opening to physical stimulation
-5: Unarousable
APPENDIX C: Continuous Lateral Rotation Therapy (CLRT)

<table>
<thead>
<tr>
<th>CLRT for hemodynamically unstable patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Maintain head of bed (HOB) ≥ 15 degrees and 15 degrees reverse Trendelenberg position (to achieve 30 degrees)</td>
</tr>
<tr>
<td>- CLRT 18 hours per day, minimum of 6 complete rotations (optimally 8-10 rotations)</td>
</tr>
<tr>
<td>- Use training mode, or if not tolerated, set rotation at 60% and pause two minutes for right/left.center (minimum settings)</td>
</tr>
<tr>
<td>- Monitor that one lung is above the other lung with a turn. If not, increase rotation percentage as tolerated.</td>
</tr>
<tr>
<td>- Increase pause to one minute as patient adjusts</td>
</tr>
<tr>
<td>- 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.</td>
</tr>
<tr>
<td>- Use custom settings to adjust for body types</td>
</tr>
</tbody>
</table>
SUGGESTED READINGS


ICU Adult Early Mobilization

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

- Ellen Dilts, PT, DPT (Rehab/Physical Therapy)
- Wendy Garcia, BS
- Merline K. George, BS (Respiratory Care)
- Petra Grami, DNP, RN (Nursing Administration)
- Michelle Hauth, BSN, RN (Nursing-ICU)
- Rhea Herrington, MSN, RN-BC, CCRN (Nursing Education)
- Courtney Magoun, BSN, RN (Nursing-ICU)
- Daniel Melby, PT, DPT (Rehab/Physical Therapy)
- Vi Nguyen, OTR, BSRC, MOT (Rehab/Occupational Therapy)
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Développement Credts

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Notes:

- Development Leads
- Clinical Effectiveness Development Team

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