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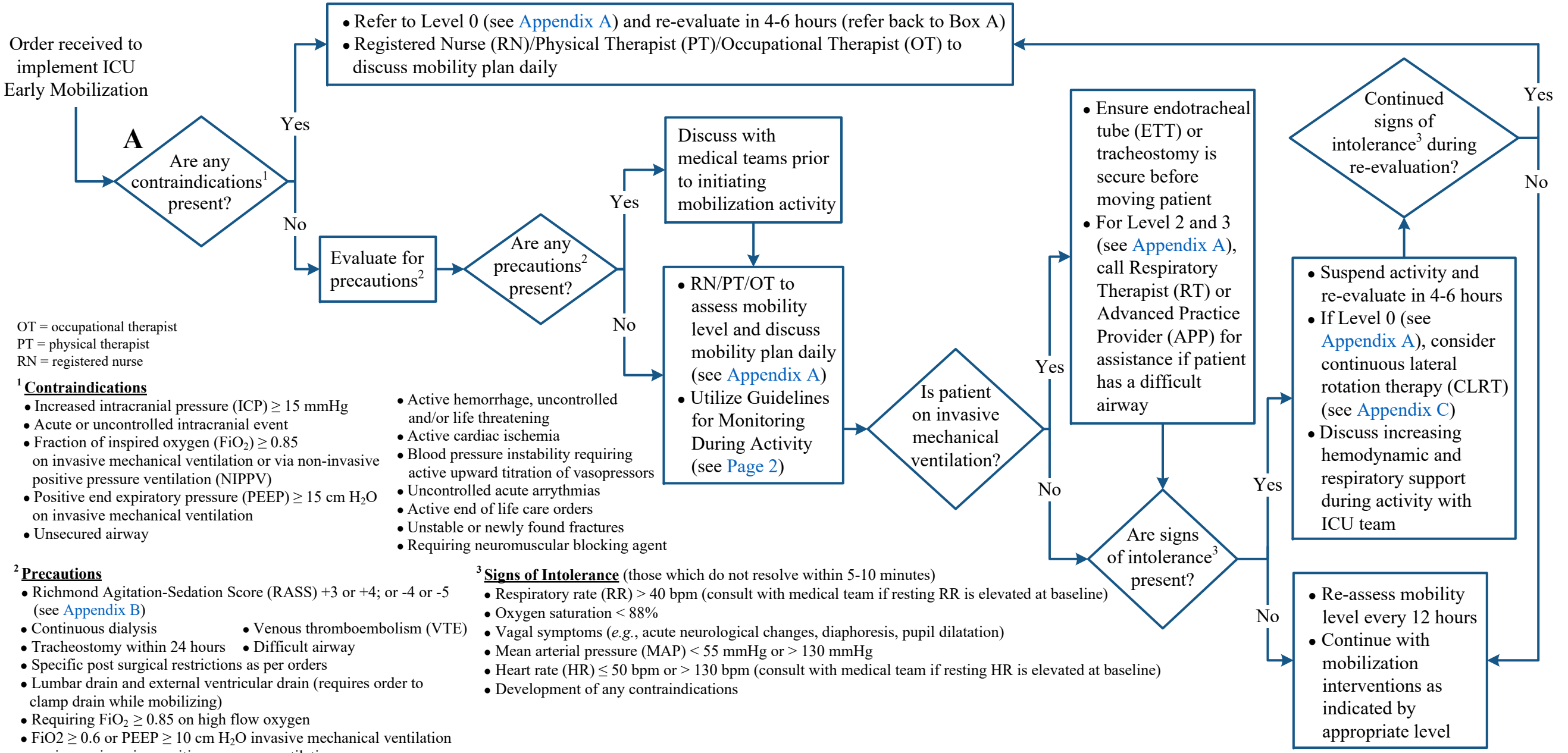MD Anderson Cancer Center
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Order received to implement ICU Early Mobilization

A — Are any contraindications[1] present?

- Yes →
  - Refer to Level 0 (see Appendix A) and re-evaluate in 4-6 hours (refer back to Box A)
  - Registered Nurse (RN)/Physical Therapist (PT)/Occupational Therapist (OT) to discuss mobility plan daily
- No → Evaluate for precautions[2]

Are any precautions[2] present?

- Yes → Discuss with medical teams prior to initiating mobilization activity
- No →
  - 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 →
  - 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
- No → Are signs of intolerance[3] present?

Are signs of intolerance[3] present?
- Yes →
  - 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
- No →
  - Re-assess mobility level every 12 hours
  - Continue with mobilization interventions as indicated by appropriate level

Continued signs of intolerance[3] during re-evaluation?
- Yes → (back to: Refer to Level 0 ... re-evaluate in 4-6 hours)
- No → (back to: Suspend activity and re-evaluate in 4-6 hours)

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

[1] Contraindications
- Increased intracranial pressure (ICP) ≥ 15 mmHg
- Acute or uncontrolled intracranial event
- Fraction of inspired oxygen (FiO_2) ≥ 0.85 on invasive mechanical ventilation or via non-invasive positive pressure ventilation (NIPPV)
- Positive end expiratory pressure (PEEP) ≥ 15 cm H_2O on invasive mechanical ventilation
- Unsecured airway
- Active hemorrhage, uncontrolled and/or life threatening
- Active cardiac ischemia
- Blood pressure instability requiring active upward titration of vasopressors
- Uncontrolled acute arrythmias
- Active end of life care orders
- Unstable or newly found fractures
- Requiring neuromuscular blocking agent

[2] Precautions
- Richmond Agitation-Sedation Score (RASS) +3 or +4; or -4 or -5 (see Appendix B)
- Continuous dialysis
- Tracheostomy within 24 hours
- Specific post surgical restrictions as per orders
- Lumbar drain and external ventricular drain (requires order to clamp drain while mobilizing)
- Requiring $FiO_2 \geq 0.85$ on high flow oxygen
- $FiO2 \geq 0.6$ or PEEP ≥ 10 cm H_2O invasive mechanical ventilation or via non-invasive positive pressure ventilation
- Venous thromboembolism (VTE)
- Difficult airway

[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%
- Vagal symptoms (*e.g.*, acute neurological changes, diaphoresis, pupil dilatation)
- 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

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GUIDELINES FOR MONITORING DURING ACTIVITY
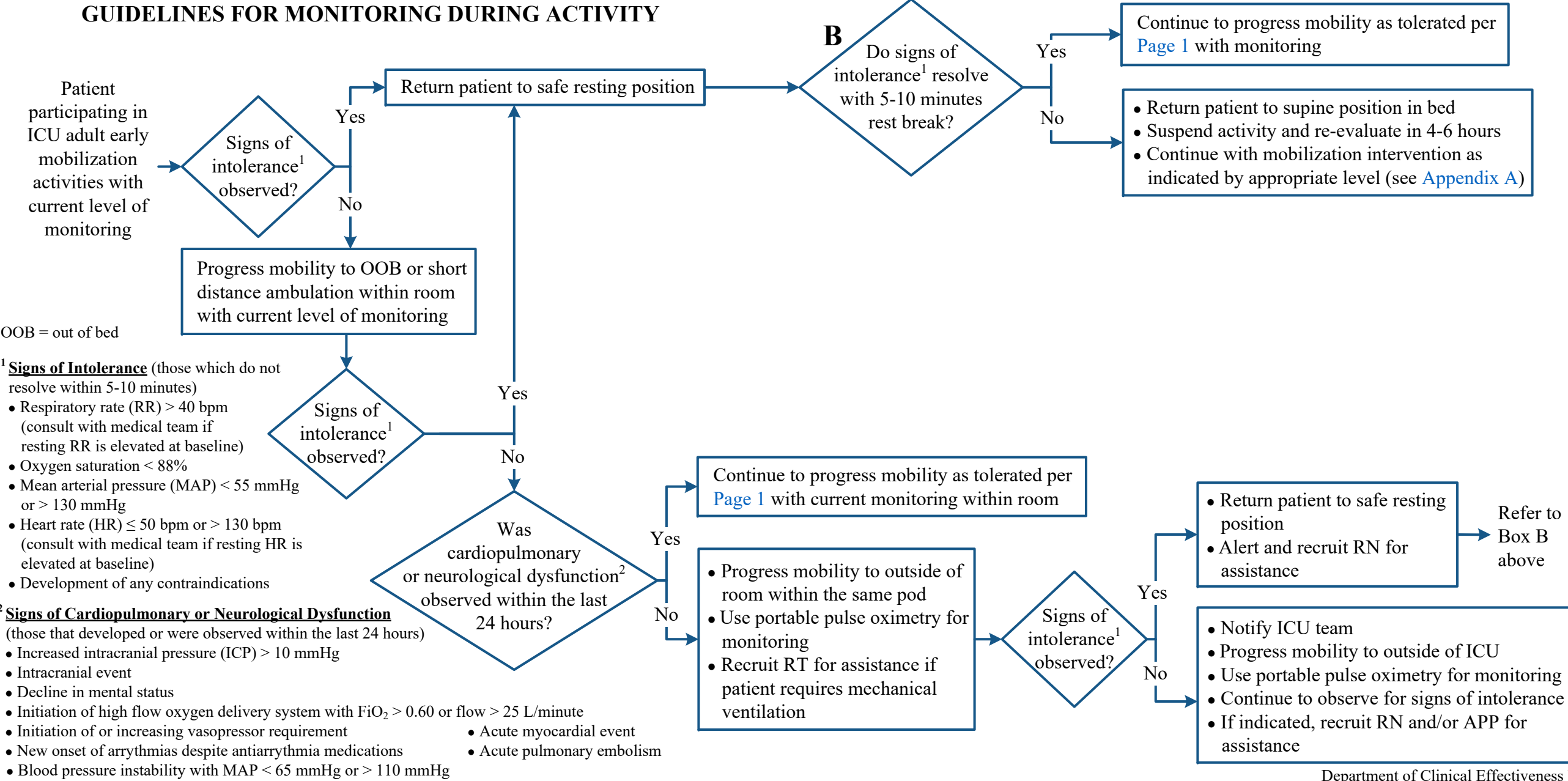
OOB = out of bed

[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 FiO_2 > 0.60 or flow > 25 L/minute
- Initiation of or increasing vasopressor requirement
- New onset of arrythmias despite antiarrythmia medications
- Blood pressure instability with MAP < 65 mmHg or > 110 mmHg
- Acute myocardial event
- Acute pulmonary embolism

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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[3]

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 > 20 minutes but < 2 hours
- Dependent transfer to neuro chair
- 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[3]

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 > 20 minutes but < 2 hours **and** OOB to 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[3]

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

[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%)
 Supervision (assist patient with set up and/or cuing)

[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)

+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent, non-purposeful movement, fights ventilator
+1	Restless	Anxious, but movements not aggressive or vigorous
0	Alert and calm	-
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (≥ 10 seconds)
-2	Light sedation	Briefly awakens with eye contact to voice (< 10 seconds)
-3	Moderate sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	Unarousable

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ICU Adult Early Mobilization

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APPENDIX C: Continuous Lateral Rotation Therapy (CLRT)

CLRT for hemodynamically unstable patients

- Maintain head of bed (HOB) ≥ 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

ICU Adult Early Mobilization

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