Patient Mobilization and Rehabilitation

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10:20-11:00am
Objectives

• Discuss background/rationale for early mobilization programs

• Identify the benefits and barriers to implementing a successful program

• Discuss the protocols at UCSD

• Identify documentation requirements
Background

• There is growing evidence that many ICU survivors experience long-term physical, neuro-cognitive and mental health complications directly associated with their ICU experience.

• This has been termed post–intensive care syndrome (PICS)
Benefits of early Mobilization

• reduced ICU-acquired weakness,
• improved functional recovery within hospital
• improved walking distance at hospital discharge
• reduced hospital length of stay

Get up and go test

• Patient gets out of a chair and walks three meters turns around and walks back to the chair.
• 10 secs normal (12 sec cut off between N and <N)

• <20 secs adequate for independent transfer and mobility

• >30 secs greater dependence and risk for fall
Advantages of early mobilization

• higher mobility levels
• decreased hospital and neurologic ICU length of stay
• were more likely to be discharged home
• had decreased bloodstream infection
• hospital-acquired pressure ulcer
• less anxiety

Kline, Kate E et al, Clinical and Psychologic Effects of Early Mobilization in Patients Treated in a Neurologic ICU: A Comparative Study Critical Care Medicine 43(4) · December 2014
No improvement

• demonstrated in:
  – mortality
  – ventilator-associated pneumonia
  – deep vein thrombosis
  – depression
  – hostility

• Hodgson CL, Iwashyna TJ, Schweickert WD. All that work and no gain – what should we do to restore physical function in our survivors? Am J Respir Crit Care Med. 2016;15:1071–1072. doi: 10.1164/rccm.201512-2497ED
Safety Concerns

• Meta analysis of 48 studies where safety data reported
  – hemodynamic changes
  – oxygen de-saturation
  – Falls
  – Removal of ETT
  – removal or dysfunction of intravascular catheters
  – removal of catheters or tubes
  – cardiac arrest

Safety of Early Mobilization

• Requires careful assessment/management

• Clear protocols

• Interdisciplinary team cooperation and training

• Institutional support
  – Personnel
  – Lift equipment
Assessment prior to mobilization

- Criteria established by international consensus group

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
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<tbody>
<tr>
<td><img src="image" alt="Green Circle" /></td>
<td>Low risk of an adverse event. Proceed as usual according to each ICU’s protocols and procedures.</td>
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<tr>
<td><img src="image" alt="Yellow Triangle" /></td>
<td>Potential risk and consequences of an adverse event are higher than green, but may be outweighed by the potential benefits of mobilization. The precautions or contraindications should be clarified prior to any mobilization episode. If mobilized, consideration should be given to doing so gradually and cautiously.</td>
</tr>
<tr>
<td><img src="image" alt="Red Octagon" /></td>
<td>Significant potential risk or consequences of an adverse event. Active mobilization should not occur unless specifically authorized by the treating intensive care specialist in consultation with the senior physical therapist and senior nursing staff.</td>
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<tr>
<td>Level 1</td>
<td>Level 2</td>
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<tr>
<td>Bed level activity</td>
<td>Cardiac chair</td>
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**Document**

<table>
<thead>
<tr>
<th>Independent</th>
<th>Independent w/assistive device</th>
<th>1 person assist</th>
<th>2 or &gt; person assist</th>
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**Goal:**
- Clinical stability, passive/active ROM, patient begins to participate in mobility
- Improve trunk stability and extremity strength
- Goal: upright sitting, increased trunk strength, move arms against gravity
- Goal: increased strength, moves arms and legs against gravity, ready for weight bearing through legs
- Goal: Stands with minimal assistance, able to march in place
- Goal: increase endurance/strength, increase ambulation distance and frequency, performs all ADLs independently

**Recommended Activities:**
- P/AA/AROM all extremities
- OOB to cardiac chair 2x/day
- Pt to assist with ADLs in bed or cardiac chair
- P/AA/AROM all extremities every shift
- Dangle with assist every shift
- Pt may perform some ADLs at edge of bed
- OOB to chair with assist (SPH, Lift Team PRN) every shift
- ADLs sitting at edge of bed or in chair
- Bedside commode for toileting
- Consider pedicycle while sitting in chair
- OOB to chair for all meals or 3x/day
- ADLs sitting at edge of bed or in chair
- Bedside commode for toileting
- Consider pedicycle while sitting in chair
- Walk to bathroom for toileting
- Stand at sink for ADLs
- Consider pedicycle while sitting in chair
- Walk in hallway every 2 hours while awake

**Assistive Devices:** Use as needed for all activity (walker, bands, overhead frame and trapeze etc.).

**Pain:** Assess and treat actual or presumed pain prior to activity per MD orders and pain MCP 380.2.

**Abbreviations:**
- A = active; AA = active assist; AAROM = active assist to active range of motion; AROM = active range of motion; OOB = out of bed; P = passive; ROM = range of motion; SPH = safe patient handling.
Assessment-Timing

• Using the Progressive mobility protocol
  – Assess pt asap after admission then Q 1 shift
  – Handoff
  – Prior to each mobilization
  – With each transition through protocol- Allow 5-10 mins for equilibration before assessing tolerance
Pre-Assessment criteria

- $\text{SpO}_2 > 90\%$
- $\text{RR} \ 10-30, \ \text{PEEP} \leq 10, \ \text{Pao}_2/\text{Fio}_2 \ \text{ratio} > 250$
- No new onset cardiac arrhythmias or ischemia
- $\text{HR} \geq 60, \leq 120$
- $\text{MAP} \geq 55, \leq 140$
- $\text{SBP} \geq 90, \leq 180$
- $\text{RASS} \geq 3$
- No new or increasing vasopressors
- Non combative, cooperative behavior
Additionally

- Balance/Strength assessment prior to mobilizing pts who have
  - not be ambulatory
  - have been on bed rest
  - OOB for first time
  - Have documented weakness or conditions that impair their ability to ambulate safely.
Balance Strength assessment

• Prior to having the pt stand;
  – Sit pt on side of bed

• Pt must demonstrate
  – Trunk stability-steadiness while sitting
  – Ability to lift each knee up off bed
  – Ability to straighten each leg
  – No dizziness

• While standing-look straight ahead and shift weight from foot to foot.
Pre mobilization

• Assess for anticipated pain - pain policy

• Assess for any sacral pressure injury or breakdown - skin guidelines

• Assess for fall risk
• Fall prevention policy
Safety

• Prior to mobilization:
• Check all lines for slack to allow for movement
• Ensure all lines tubes and dressings are secure
• Do not leave high fall risk pt unattended
• Pt to have non-skid footwear
• Provide assistive devices as indicated
• Maintain EKG monitoring
• Follow foley catheter removal protocol, empty bag, keep bag below bladder
Safety

• Pts with high risk of skin breakdown use waffle pad.

• Follow infection control guidelines
Protocols

• Allow pt 5-10 minutes for equilibration then assess tolerance. Change levels as indicated.
• Use safe handling protocols
• Instruct pt to look straight ahead not down.
• Instruct pt to shift weight while seated
• Consider use of pedicycle
• For pt with bedrest orders ROM qd (minimum) with 3-5 repetitions on each extremity
Interdisciplinary team

- Dialysis
- Respiratory therapy
- Physical Therapy
- Occupational therapy
CRRT patients

• Nephrology order needed in addition to Attending

• Notify Dialysis RN
  – Stabilizes access is therapy is continuing
  – If ambulating- will return and re-circulate system.
  – Prefer mid morning sessions
Ventilated patients

• RN and RT will evaluate pt for readiness to get OOB or ambulating.

• RT supervisor will be notified to arrange for RT staffing, and transport ventilator at bedside.

• If unavailable pt can march at bedside or get to a chair on standard ventilator.
Interdisciplinary team

- RT works as team to ensure artificial airway is secure and stable.

- RT to provide transport ventilator if ambulation is the goal

- RT will assist RN with

- ambulation
PT/OT

- PT/OT not necessarily present for mobilization
- Consult PT for their assessment on Activity level, Coordination problems, postural instability, recommendations for assistive devices, stroke, joint contractures.

- OT for ADLs
Communication/Documentation

• MD order for progressive mobilization Protocol
• Plan of Care entry
• Daily mobility goal- discuss with pt and family
• Document family education in EMAR
• Document each activity
• Daily Care will have activity level noted
• Assistance required noted/Assistive device
• Pt tolerance of activity.
Barriers to mobilization

• Patient Safety- sedation
• Instability
  – Respiratory
  – Cardiovascular
  – Neurological
• Integrity of invasive lines
• Confidence of RN- Unit culture
• Institutional support
Institutional factors

• Organizational change:
• dedicated mobility team
• leadership including a champion who would assist with multidisciplinary team planning
• team meetings and daily goal setting
• resources to provide adequate staff, training and equipment for mobilization in this complex area.
Potentially avoidable barriers to mobilization

- femoral vascular catheters
- timing of procedures
- sedation management
- agitation and early transfer to the hospital ward.
Conclusion

“Despite the publication of safety recommendations and clinical practice guidelines..., the implementation of early mobilization remains a challenge in the ICU, with limited information on safe levels of vasoactive support, ongoing evidence of over-sedation of mechanically ventilated patients and poor staff resources limiting the ability to deliver early mobilization”

Carol L Hodgson, Elizabeth Capell, Claire J Tipping Early Mobilization of Patients in Intensive Care: Organization, Communication and Safety Factors that Influence Translation into Clinical Practice. Critical Care 22:77
The Role of Ca in Citrate Anticoagulation

- The objective of anticoagulation is to prevent clotting in the dialyzer.
- The patient needs to maintain their clotting status.
- Calcium is infused into a central vein away from the Citrate infusion.
- Calcium replaces the Calcium lost in the filter from the low CA dialysate bath and CA bonded to the Citrate and prevents the patient from being anticoagulated.
- The liver breaks down Citrate and releases the CA, three molecules of NA and HCO₃ (providing an excellent base buffer to the blood).