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The Role of Occupational Therapy within the Early Mobility Team in the ICU

AMANDA WEEKS, MOT, OTR/L

Objectives

1. Identify the need for occupational therapy involvement in early mobilization in order to combat negative impacts of prolonged immobilization and continuous sedation in the patient with critical illness.

2. Select Occupational Therapy assessments unique to Early Mobility addressing delirium, cognition, communication, environment, sensory needs and ADL

3. Utilize occupational therapy intervention strategies specific to patients receiving Early Mobility with focus on cognition and delirium, communication, sensory and creative ADL intervention
Agenda

- Literature review describing negative effects of prolonged immobility and benefits of early mobilization
- OT assessments used specifically for early mobilization
- OT intervention specific to early mobilization with case examples
- Question/answer

Negative Effects of Prolonged Immobility in the Intensive Care Unit (ICU)
Decreased Strength

- **ICU-acquired weakness:**
  - Critical illness polyneuropathy (CIP), critical illness myopathy (CIM) or combination of both
  - Associated with a prolonged need for mechanical ventilation and increased ICU and hospital length of stay\(^1,2\)

- **Immobility** may result in **1.3 – 3.0 % loss in muscle strength per day** in healthy individuals\(^3\)

- Patients who survived ARDS lost an average of 18% body weight in ICU and were only able to walk 66% of their predicted value at 1 year after hospital discharge\(^4\)

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Impaired Functional Performance

- Significant delay in return to work with **only 77% returned to work at 5 year follow up**
  - Those who returned to work often required gradual transition, modified work schedule, or job retraining\(^4\)

- At 3 month follow-up ARDS survivors describe profound disability that interfered with BADL

- Patient perspective: *“to start with, when I tried to hold a cup, I spilled it in the bed. I could not brush my own teeth, I could not comb my own hair, and I wasn’t able to pick the covers up and move them.”*\(^5\)
Delirium

- Defined as a disturbance of consciousness with inattention accompanied by a change in cognition that develops in a short period and fluctuates over time.

- ICU delirium has been associated with prolonged hospital stays and increased mortality rates², 4, 6, 7, 8

- Associated with higher incidence of short-term health problems independent from severity of illness ⁶,⁷,⁹

Cognitive Dysfunction

- ICU survivors report persistent difficulties with memory, concentration and executive function (planning/organizing)⁷
  
  - Negatively impacts QOL, IADL, decision making, managing finances, ability to function autonomously, ability to return to work.

- 46% of ARDS survivors present with cognitive impairment ¹ year post and 25% ⁶ years post ⁶

- 1/3 of ARDS survivors at 2 year follow-up were unemployed or permanently left the work force largely due to cognitive impairment ⁷

- Higher incidence of depression, anxiety, & PTSD in ICU survivors compared to non-ICU patients (23-41% vs. 5-20%)¹⁰
Benefits of Early Mobility

- Decreased duration of delirium
- Reduced strength/ROM impairments
- Improved ability to perform BADL
- Reduced duration on mechanical ventilation
- Decreased ICU and hospital LOS\textsuperscript{11, 12, 13}

A study performed in 2012 by Winkelman et al. demonstrates patients who received early mobility vs. those who did not had better hospital discharge outcomes with less long term rehab required.\textsuperscript{14}
Occupational Therapy
Early Mobility Assessment

Early Mobility Assessment

- Delirium Assessment
  - CAM-ICU
- Cognition
  - Orientation, attention, direction following
  - Montreal Cognitive Assessment (MOCA)
  - Johns Hopkins Adapted Cognitive Exam (ACE)
- Communication
- ADL Assessment
- ROM/MMT
- Sensation
Confusion Assessment Method for ICU (CAM-ICU)

4 Features:
1. Acute onset/fluctuating course
   - Use RASS or past CAM-ICU scores
2. Inattention
   - SAVE-AHAART
3. Altered level of consciousness
   - RASS
4. Disorganized thinking
   - 4 yes/no questions, direction following

Score = Feature 1 + 2 and either 3 or 4

Johns Hopkins Adapted Cognitive Exam (ACE)

- Adapted from the Mini-mental status exam (MMSE)
- Designed to assess cognition in critically ill intubated and non-intubated patients using non-verbal gestures to communicate response

Areas of assessment:
- Orientation
- Language
- Registration
- Attention/Calculation
- Recall
Occupational Therapy
Early Mobility Intervention

Impairment:
- Activity tolerance
- Balance (seated or standing)
- Impaired gross/fine motor coordination
- Decreased ROM/strength
- Neuropathy

Treatment Interventions:
- Grade time spent in various positions (EOB, OOB, standing)
- Neuro re-education
- Therapeutic activities
- Therapeutic exercises
- Remedial and compensatory strategies
- Use of meaningful patient-selected activities

Patients often have multiple physical impairments limiting BADL performance.
ADL Participation

- Oral Care
- Promote Upright Activity

Leisure Participation

- Email
- Computer games
- Video chat
- Simple or complex crafts
- Puzzles & Brain Teasers
Occupational Therapy Cognitive & Mood Dysfunction Interventions

Impairment:
- Orientation & arousal/attention
- Communication/expression
- Concentration/processing
- Command following
- Anxiety
- Sensory tolerance

Treatment Interventions:
- Establish routine for daily activities, sleep-wake cycle
- Orientation aides/devices
- Communication devices, adaptive strategies
- Environmental modification, task simplification
- Grade commands (1 step vs. multi-step)
- Relaxation strategies
- Introduction to various stimuli

ICU Room
Adaptive Communication

Simple vs. Complex

Low Tech vs. High Tech

Case Example #1 “Nancy”

Patient is a 45 y/o female with metastatic breast CA to brain and bone (pelvis & spine – WBAT) admitted to ICU with respiratory insufficiency as a result of PNA.

PMH: s/p mastectomy, chemotherapy, XRT, hx DMII

Ventilator settings: AC, PEEP 8, FiO2 40%, IP 8

Vitals: BP: 108/65, SPO2: 100%, HR: 120s (vitals stable on 1 vasopressor within past 24 hours).
Early Mobility Assessment

- CAM-ICU Negative
- Communicates needs using non-verbal gestures & yes/no head nod – becomes frustrated 2/2 poor coordination with writing
- Oriented x 2 (person and place – requires cues for date/time)
- ACE impairment with recall, orientation, calculation
- Requires moderate A for bed mobility (rolling, supine to sit EOB), sit to stand with mod A x 2, transfer to chair mod A x 2
- AROM WFL of Upper and Lower extremities, strength at least 3/5 BU/LEs
- Generalized edema noted limiting fine motor coordination and overall mobility

2 Week Goals

1. Patient will participate in grooming task standing x 5 min with min A demonstrating fair balance and good activity tolerance maintaining attention to task 100% time without cues.
2. Patient will demonstrate A & O x 3 5/5 consecutive days with use of compensatory device without assist from caregiver.
3. Patient will demonstrate effective communication with caregiver/medical team 100% time using adaptive communication device pm.
4. Patient/caregiver will be independent with OT home program for increased BUE strength/coordination and activity tolerance in order to improve ADL performance.
5. Patient will complete all surface transfers (i.e. bed, chair, toilet) with min A demonstrating good safety awareness.
Treatment

- Provide daily reminder: full date, place, PT, OT, RN
- Given AROM UE therex & foam block – caregiver and patient educated, provided with written handouts and left message to perform 100 reps a day on TV.
- Worked on increasing tolerance for OOB activity, functional transfers (bed, chair, commode)
- Standing endurance – reaching/therapeutic activities

Case Example 2 “Mike”

Patient is a 34 y/o male hx ALL s/p BMT with multiple transplant complications in the ICU for respiratory distress 2/2 fungal PNA, has been intubated for 3 days on high vent settings referred for early mobility after decrease in support.

PMH: as above, chemo

**Vent Settings:** AC, PEEP 8, FiO2 70% IP 12

Vitals: BP 128/76, HR 118, 02 98%

Patient desaturates with movement – FiO2 increased to 100% during session
Early Mobility Assessment

- **CAM-ICU Positive**
  - Did not perform ACE (patient with decreased attention/agitation with multiple questions)
  - Oriented x 2 (person and place)
  - Patient communicating with head nod and non-verbal gesturing
  - **Follows 1 step commands ~ 75% time** – requires max redirection
  - Bed mobility min A, seated EOB able to maintain for 1 min with min A – **quickly fatigued and impulsive requiring MAX trunk support for safety**
  - AROM/strength of BU/LEs WNL
  - BP stable, HR 150s, O2 sat 92-95%
  - Deferred transfer to chair or standing – unsafe at this time.

2 Week Goals

1. Patient/caregiver will be Independent with OT home program for increased activity tolerance and **incorporate relaxation strategies** in order to improve ADL performance.
2. Patient will complete bed mobility with Supervision demonstrating good safety awareness and activity tolerance in prep for OOB activity participation.
3. Patient will participate in ADL task (grooming) seated at EOB ~ 5 min with close Supervision demonstrating good seated balance and activity tolerance while **maintaining attention to task and demonstrating good safety awareness 100% time**.
4. Patient will demonstrate A & O x 3 3/3 consecutive days using compensatory device without assist from caregiver.
5. Transfers and OOB activity to be assessed as appropriate.
Treatment

- Use of simple calendar
- Having wife bring in pictures of family members/pets and familiar items
- Implementing relaxation strategies (diaphragmatic breathing exercises, visualization, use of soothing music)
- Patient intubated for extended period of time, because of poor STM wife taking pictures to show patient daily progress.
- Seated EOB tolerance while performing therapeutic exercise or activity
- Progress as tolerated to OOB to chair

Case Example #3 “Bob”

Patient is a 72 y/o male with hx esophageal CA s/p Ivor Lewis esophagectomy in PACU patient with cardiac arrest, resuscitated, transferred to ICU for further management. Patient in ICU for ~24 hours and stable, referred for Early Mobility.

PMH: as above, HTN, Afib, CAD s/p stents x 2, DMII, hypercholesterolemia, hx ETOH, ex smoker, COPD on 2L O2 at home

Vitals: BP 168/84, HR 85, O2 98%

Vent: S, PEEP 5, FiO2 45%, PS 8
Early Mobility Assessment

- CAM-ICU Negative
- A & O x 3
- Communicates with writing using a built up pen – requires cues for legibility
- AROM U/LEs WFL, strength WFL
- Bed mobility with moderate A
- Maintained EOB with min A for trunk support
- *Sit to stand and transfer to chair with mod A*
- *OOB in chair and returned with nursing ~ 1 hour after OOB*

2 Week Goals

1. Patient will be Independent with OT home program for increased activity tolerance and energy conservation strategies in order to improve ADL performance.
2. Patient will complete all surface transfers (i.e. bed, chair, toilet) mod I.
3. Patient will participate in *grooming task in standing x 10 min* mod I with good tolerance and balance.
4. Patient will complete UB/LB dressing mod I.
5. Patient will complete toileting mod I.
**Treatment**

- OOB receiving OT at least 3x per week separate from PT
- Work on both seated EOB and standing activity tolerance with ADL, therapeutic exercise and therapeutic activity
- Participate in leisure/social activity both seated and standing

**In Summary**

- Early Mobilization is key to eliminating negative effects of prolonged immobilization.
- Occupational therapy serves a unique and important role in the assessment and treatment of cognitive and functional impairments in this population.
Questions??

Thank You!

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References


References


