THE WARREN ALPERT
Medical School
BROWN UNIVERSITY

Rhode Island STROKE SYMPOSIUM

Early Mobilization After Stroke: Crucial Role of PT & OT

Christina Beltis, PT, DPT, CBIS
Senior Physical Therapist
Rhode Island Hospital

DISCLOSURE

- No relevant financial relationships to disclose
- My talk will not include any off-label discussion

Objectives

- Understand the difference between Physical and Occupational Therapy roles in acute stroke care
- Recognize medical and environmental challenges and barriers to the delivery of PT and OT in acute care
- Discuss some cognitive challenges and the importance of physical exercise during hospitalization

Roles and Differences of Physical Therapy and Occupational Therapy

PHYSICAL THERAPY

Goal of PT evaluation or treatment in stroke care is mobilization. PT will focus on strength, hemodynamic stability, activity tolerance, balance, postural retraining, transfers, and functional mobility. The goal is to minimize deconditioning, promote improved function and work toward baseline level of mobility.

OCCUPATIONAL THERAPY

Goal of an OT evaluation or treatment in stroke care is to engage the patient in their environment. OT will focus on cognition, orientation, UE strength/functionality, activity tolerance, working towards baseline ADLs and activities.

PHYSICAL THERAPY

Hemodynamic Stability: Including changes in O2 requirements (may decrease or increase with positioning/mobility), position/mobility affect on blood pressure and focal neuro deficits.

Assessing ROM/Tone: active or active assisted ROM. Tone management and positioning including specialized pillows/bracing to protect joints, pressure areas, and skin integrity. Minimize tonal effects, and minimize edema.

Balance/Head/Trunk Control: Including dependent transfers to edge of bed, with additional focus on neuro stimulation and promoting alertness and participation.

Early Mobilization: edge of bed (EOB), out of bed (OOB) to chair via functional transfer, gait training, level of assist and recommendations for nursing driven mobilization.

Discharge Planning: Using clinical judgement of patient performance to initiate DC planning in conjunction with CM/SW/rehab and medical team. Assessing fall risk and needs for rehab vs home including supervision, assistance and equipment.

OCCUPATIONAL THERAPY

Basic ADLs: feeding grooming, bathing, dressing, and toileting with the patient actively participating.

Assessing ROM/Tone: contracture management including custom orthotics/splinting. Active or active assisted ROM. Tone management and positioning to protect joints, pressure areas, and skin integrity. Minimize tonal effects, and minimize edema.

Preparatory Activities for ADLs: including head control, arm/hand function, sitting/standing tolerance, hemodynamic stability, adaptive equipment.

Visual and Cognitive Functions: visual-perceptual assessment and re-training, alertness, orientation, command following, memory, judgement, safety awareness; MOCA administration, safety cards.

Discharge Planning: Using clinical judgement of patient performance to initiate DC planning in conjunction with CM/SW/rehab and medical team. Assessing needs for rehab vs home including supervision, assistance and equipment.

Considerations for and Challenges in Mobilization of Patients in Acute Care

"Inactivity is pervasive among hospitalized patients and is associated with increased mortality, functional decline, and cognitive impairment."

"Among inpatient populations, 87–100% of time was spent sitting or lying in-bed. Among medical inpatients monitored over a 24-hour period, 70 minutes per day was spent standing/walking."

Fazio et al, 2020

Considerations for Mobilization

- Stroke intervention and bedrest protocols
  - Mechanical Thrombectomy
  - Thrombolytic
- Groin pseudoaneurysm or hematoma
- Activity orders
- Lab values, ie: H/H, troponin
- Blood pressure parameters
- Perfusion dependent exam
- Changes in status
  - Lethargy, headache, vomiting
  - Worsening neuro symptoms
  - Further imaging warranted

Mobilization After Intervention for AIS

- 12 hours post thrombolytic
- 12 hours post mechanical thrombectomy
  - Assist with cerebral perfusion
    - A change in head position from 0 to 30 degrees can result in a 15% reduction in cerebral blood flow (Silver et al, 2020)
- In certain circumstances, with provider discussion, may see a patient 6 hours post mechanical thrombectomy

- Assess access site before and after mobility
- Radial access precautions, for 24 hours: NWB affected UE, no repetitive wrist ROM, no lifting >2lb

Considerations for Mobilization

- External Ventricular Drain (EVD)
- Decompressive Hemicraniectomy (DHC)
- Spontaneous subarachnoid hemorrhage (SAH) with unsecured aneurysm protocol
- Medications, ie: Nicardipine, Heparin, Norepinephrine

Challenges in Acute Care Therapy

- Work up and testing
- Uninsured, under-insured
- Limited progress
- Limited family availability, support
- Limited equipment
- Patient/family declining services/rehab

Impaired Cognition and Mobilization

Cognitive Considerations for Mobilization

- Lethargy, delirium, agitation, acute change
  - Assess if progression of stroke, hospital delirium, acute change, prior dementia, baseline cognition, medication affect
    - PT/OT can often assist in this assessment
- Not following commands
  - Elicit participation, provide stimulus
- EOB and OOB to chair activities
  - Improves wakefulness, alertness, interaction

Impact of Physical Exercise on Cognitive Function

Hospitalization increases chances of developing cognitive decline in older adults.

Randomized Control Trial, Control group: PT as needed

Intervention group: Two 20 minute sessions 5-7 consecutive days/week including resistance, ambulation, and balance exercises

Intervention group compared to control: improvements in gait speed, MMSE scores, executive function, and verbal fluency

No adverse affects, no hospitalizations were modified related to intervention

De Asteasu et al, 2019

Review

- Roles and goals of PT and OT overlap but have distinct differences
- Multi-disciplinary approach in providing rehabilitative care for patients after stroke
- Extensive chart reviews and considerations prior to initiating rehab evals and mobility
- Multiple challenges and barriers to providing effective and optimal therapy in acute care
- Cognition and functional mobility during hospitalization often rely on each other to improve

Works Cited

- Fazio S, Stocking J, Kuhn B, Doroy A, Blackmon E, Young HM, Adams JY. How much do hospitalized adults move? A systematic review and meta-analysis. Appl Nurs Res. 2020 Feb;51:151189. doi: 10.1016/j.apnr.2019.151189. Epub 2019 Sep 3. PMID: 31672262; PMCID: PMC7051878.
- Silver B, Hamid T, Khan M, Di Napoli M, Behrouz R, Saposnik G, Sarafin JA, Martin S, Moonis M, Henninger N, Goddeau R, Jun-O'Connell A, Cutting SM, Saad A, Yaghi S, Hall W, Muehlschlegel S, Carandang R, Osgood M, Thompson BB, Fehnel CR, Wendell LC, Potter NS, Gilchrist JM, Barton B. 12 versus 24 h bed rest after acute ischemic stroke thrombolysis: a preliminary experience. J Neurol Sci. 2020 Feb 15;409:116618. doi: 10.1016/j.jns.2019.116618. Epub 2019 Dec 5. PMID: 31837536; PMCID: PMC7250250.
- Sáez de Asteasu ML, Martínez-Velilla N, Zambom-Ferraresi F, Casas-Herrero Á, Cadore EL, Galbete A, Izquierdo M. Assessing the impact of physical exercise on cognitive function in older medical patients during acute hospitalization: Secondary analysis of a randomized trial. PLoS Med. 2019 Jul 5;16(7):e1002852. doi: 10.1371/journal.pmed.1002852. PMID: 31276501; PMCID: PMC6611563.