Interdisciplinary Approach to Seating and Positioning Skills

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Objectives

- Identify how to utilize available equipment in all settings
- Demonstrate appropriate transfer and positioning techniques
- Describe options for mobility related activities of daily living

Before we start . . .

BASIC POSITIONING IN A WHEELCHAIR

Focus of this session:

A wheelchair appropriate for long-term use is lighter and customized to the unique biomechanical and functional needs of the individual.
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Why is positioning so important?

Following spinal cord injury or disease (SCI/D), improper positioning in a wheelchair will cause serious problems:

- Pressure ulcers
- Impaired breathing
- Functional limitation
- Secondary musculoskeletal conditions

Are you uncomfortable yet?

Positioning Essentials

- Posture
- Wheelchair dimensions
- Sitting surface
- Pressure reliefs

Optimal Sitting Posture

Position:
- Buttocks fully back on the seat & centered
- Spine upright with neutral alignment
- Feet supported to properly position thighs

Benefits:
- Respiratory function
- Skin integrity
- Current & future functional capacity
- Current & future musculoskeletal health

Optimal Wheelchair Dimensions (Early Post-Injury Seating)

Seat width:
- Hips, thighs should not contact armrests.
- Seat < 1 ¼ inches wider than patient.

Quick check:
- Slide hands lateral to patient’s thighs, hips.
Optimal Wheelchair Dimensions (Early Post-Injury Seating)

**Seat depth:**
- Anterior border of seat and cushion should be 1 – 2 inches from the popliteal fossa.

**Quick check:**
- 2 – 3 fingers should fit between the front of the seat/cushion and the posterior calf.

**Cushion height will affect the dimensions for height of footrests, backrest, and armrests.**

Optimal Wheelchair Dimensions (Early Post-Injury Seating)

**Footrest height:**
- Feet are supported, posterior thighs are in contact with cushion.

**Quick check:**
- With feet flat on the footplates, thighs should be ~ parallel to the seat.

**Footrest height:**
- > 2” clearance between the footplate and the floor is optimal, but not necessary for early mobility indoors.

**Quick check:**
- Footplates should not contact the floor when adjusted to optimize sitting posture.

Optimal Wheelchair Dimensions (Early Post-Injury Seating)

**Backrest height:**
- High enough to support trunk, low enough to avoid restricting shoulder motion.

**Quick check:**
- > 1 finger width below inferior angle of scapula.
- ~ 4 fingers should fit between backrest & axilla.

Optimal Wheelchair Dimensions (Early Post-Injury Seating)

**Armrest height:**
- Should allow forearms to rest on armrests with trunk fully erect, scapulae in neutral elevation.

**Quick check:**
- Can the patient rest both forearms on armrests without leaning forward or laterally, and without scapular elevation?
Optimal Wheelchair Dimensions (Early Post-Injury Seating)

Reclining wheelchair:
- Backrest and headrest should be tall enough to support the head when chair is fully reclined.
- All other seating dimensions: Same as standard wheelchair.

Note: Axle position in reclining wheelchair → poor upper extremity positioning for propulsion.

Sitting Surface

A standard, “stock” wheelchair can appropriately be used early post-injury.

IN CONTRAST, a standard wheelchair cushion is NOT appropriate, due to HIGH risk of pressure ulcers in this population.

Optimal Wheelchair Dimensions

Reclining wheelchair:
- Backrest and headrest should be tall enough to support the head when chair is fully reclined.
- All other seating dimensions: Same as standard wheelchair.

Sitting Surface

An APPROPRIATE pressure-relieving cushion is critical for preventing pressure ulcers.

Whenever sitting in a wheelchair, the patient should sit on a cushion designed to provide adequate pressure distribution for this high-risk population.

The cushion’s width and depth should match those of the wheelchair seat.

Pressure Reliefs

- Purpose: to prevent pressure ulcers.
- Relieve pressure frequently whenever the patient is in a wheelchair.
- Recommended intervals vary.
  - Every 15 – 20 minutes?
  - Every 30 minutes?
- Varies with characteristics of patient and cushion.

Pressure Reliefs

- forward
- lateral
- tilt

What is wrong in these pictures?
What problems could this cause?
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Positioning Practice

TRANSFERS

Transfers

- Mechanical Lift
- Dependent transfer
- Sliding board
- Lateral scoot

It's about the journey, not the destination!

Make it therapeutic: focus on process and technique.

Mechanical Lift

- Brand name: Hoyer
- Electric vs. hydraulic
- Sling: Hammock vs. Split-leg
- Can this transfer be “Functional/Therapeutic/Skilled?”

Wheelchair Position
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**Leg Position:**  
tibias ~ perpendicular to floor

**Head-Hips Relationship:**  
dependent, assisted, independent  
head forward and away

**Sliding Board Basics:**  
- Safe, easy, versatile  
- Choosing a sliding board  
  - Ultraslick  
  - Handles  
  - Length

**Board Position:**  
angled under proximal thigh

**Dependent Sliding Board Transfer:**  
- One helper vs. two helpers  
- Caregiver body mechanics  
- Proper patient position
**Assisted Sliding Board Transfer**
- One helper vs. two helpers
- Caregiver body mechanics
- Proper patient position

**Lateral Scoot**
- Progression from sliding board

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**BASIC POSITIONING IN A BED**

**Focus of this session:**
Appropriate positioning in bed

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**Why is positioning so important**

Following spinal cord injury or disease (SCI/D), improper positioning or the lack of position changes when in bed will cause serious problems:

- Pressure ulcers
- Impaired breathing
- Functional limitations
- Secondary musculoskeletal conditions
Some Pressure Ulcer Facts
- In acute care settings and early rehabilitation stays, the most frequent areas to develop breakdown are the sacral region and heels.
- In the latter part of rehabilitation or once discharged to the community, the ischia followed by the sacrum and trochanters are most likely to develop pressure ulcers.
- Patients admitted to rehabilitation within one week of injury are less likely to develop a pressure ulcer.
- The presence of a pressure ulcer interferes with achieving maximum benefit and optimal outcomes while in rehabilitation.

Impaired Breathing Issues
- Pneumonia is the most common cause of death in SCI patients.
- Ineffective or weak cough prevents mobilization of pulmonary secretions.
- Frequent position changes will help mobilize secretions and prevent pooling in lower lung fields.

Functional Limitations
- Improper positioning may result in shoulder or arm damage.
- Improper handling may result in shoulder or arm damage.

Secondary Musculoskeletal Conditions
- Infrequent position changes will lead to contractures.
- Inadequate foot support will cause foot drop.
- Improper positioning can cause soft tissue injury and pain.

Proper Positioning in Bed
- Supine
  - Keep HOB below 30 degrees if possible.
  - Elevate FOB first to prevent sliding/shearing if HOB must be elevated.
  - Provide arm and shoulder support.
  - Offload heels.
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**Side-Lying**

- Keep body rotation to about 30 degrees, avoid placing patient directly on trochanter or shoulder
- Protect bony prominences using pillows

**Prone**

- Ensure proper shoulder and foot placement
- Use pillows to bridge joints
- Promote prone position when possible to help prevent hip and knee flexion contractures

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**Equipment**

- Pillows and wedges
- PRAFOS
- Lift sheets
- Specialty mattresses

**Position Changes**

- Every two hours
- Side/side/back/prone

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**Safe Handling Techniques**

*Protect the Patient and the Caregiver*

- Body Mechanics
- Pelvis and Scapula Used as Points of Control

**Positioning for ADL**

*Look good, feel good! Appearance is important - even in the hospital.*

- Where do YOU get ready for the day?
- Where do patients get ready?
- Where are personal items stored? ...within reach?
Can your patient see themselves in the mirror?
Can they access and reach the sink?

Positioning for ADL

“Do I have to go to the bathroom in my bed forever?”

Positioning to cath
• Bed vs. chair vs. toilet
• Helper vs. Independent
• Clothing management