Wheelchair Positioning and Safety for Healthy Outcomes

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Objectives

- Gain an understanding of the benefits of good wheelchair positioning
- Learn basic techniques to achieve optimal wheelchair positioning
- Acquire knowledge to do a basic wheelchair safety check and maintenance

Positioning—Where do I start?

Base MUST be Supported and Aligned
Guidelines for positioning

- Hips flexed and even
- Weight evenly distributed
- Thighs supported
- Knees flexed comfortably
- Feet supported
- Back straight and in midline
- Head erect in midline
- Shoulders back
- Arms supported

What happens without good positioning?

- Pressure Sore
- Deformities
- Falls
- Discomfort/Poor tolerance
- Decreased function
- Eating difficulties/Aspiration risk

Benefits of Good Wheelchair Positioning

- Improve function/movement
- Maintain alignment/prevent deformities
- Enhance body systems function
- Promote comfort/tolerance of position/decrease fatigue
- Prevent skin breakdown
- Improve socialization/communication
- Ensure safety
- Facilitate care provision (mobility, nursing, therapy)
**Equipment Categories for Wheelchair/Seating**

Wheelchair frame
- Power
- Manual
- Specialized for dependent mobility
- Standard
- Recline
- Tilt in space

Seating
- Sling
- Planar
- Prefabricated Planar
- Contour
  - Standard Modules
  - Molded
  - Custom contoured-Hand shaped

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**Wheelchair Frames**

- Standard
- Reclining
- Tilt in Space

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**Sling Seats**

- Common
- Easy for transport
- Needs adaptation for prolonged sitting
Planar Seats
- Definition—Flat surfaces that support the body—contact limited frequently to boney prominences
- Basic structure for people who require minimal support

Prefabricated Planar Seats (Pan Seating)
- Definition—Prefabricated planar pieces made in standard sizes. Designed to fit a wide range of clients.
- Some adjustability to accommodate change in posture or size

Contour—Standard Modules
- Definition—Curved Surfaces to more closely match shape of body.
- Designed for those with relatively good motor control and less deformities
Contour—Molded (Foaming or Vacuum)

- Definition—Molded directly to the person using the process of mixing foam to fit around person or vacuum fitting. Mold may be covered directly or used as a mold.
- Typically what is available when needed to accommodate significant deformities.

Contour—Custom Hand Shaped

- Definition—Layered foams of varying densities and carving out the body contours
- Need for people with significant deformities

What can I do from the closet

- Choose best fit
- Solid seats inserts
- Lap tray
- Blanket rolls
- Foam Wedges
- Consult with OT/PT
Problems from the closet
- Egg Crate
- Fire codes
- Changes fit
- Using inappropriate recycled contoured systems
- Sheepskin
- Inappropriate use of gait belts
- Equipment in poor repair (loose upholstery, broken footrest, etc.)

Study by Brienza, et al. (2010)
- 232 Nursing Home residents at risk for skin breakdown
- All rec’d a wheelchair assessment to make sure chair fit correct
- Randomized into 2 groups
- One with a segmented foam cushion
- One with a prescribed Skin Protection Cushion (i.e. Jay or Roho) – used pressure map
- Everyone had weekly chair adjustments, brake check and cushion checks

Con’t Study by Brienza (2010)
- Results
  - 222 completed study
  - 115 foam cushion users-8 pressure ulcers
  - 107 custom cushion users-1 pressure ulcer
- Recommendations
  - More attention to wheelchair fit and cushion maintenance
  - Use pressure mapping in cushion selection (best practice)
Need Something Better!! BUT
Budget/Money issues
- Health Cost of not having good seating
  - Pressure sores
  - Definition
  - Common locations/causes
- Other Medical complications
  - Respiratory Problems
  - Cardiac and vascular changes
  - Bowel movements
- Medical Costs

Getting Individualized Equipment
- Full seating evaluation
- Custom vs. non custom—
  - Facility provided vs. other payment?
- Cheaper from internet
  - Who will be able to repair?

Isn’t that a restraint???
- Mechanical supports—safety and function
  - Seatbelt
  - Lap tray
  - Chest Vest
  - Thoracic Pads
  - Foot straps
The chair fits, now we need--proper positioning in the chair

- Hips back, even
- Components in place
- Gel kneaded
- Correct inflation

2 hour Repositioning

- 2 hours
  - Clinically accepted practice
- What should it really look like
- Tilt in space may not be enough

Tilt in Space—Pressure Relief?

Individual differences as to how much and effectiveness. This indicates can be done for this individual with tilt AND recline.
General Maintenance/Safety Checks

- Before each use
- Weekly-thorough

Brakes

- Check
  - Wear
  - Adjustment

Wheels and Casters

- Wheels check
  - Tread
  - Bearings
  - Axles
- Casters Check
  - Stems
  - Wheels
  - Bearings
**Armrests**

- Check
  - Mounts
  - Releases
  - Upholstery
  - Even

**Seatbelts**

- Check
  - Fit
  - Wear
  - Smooth adjustment
  - Lock/release
  - Secure mount

**Leg/Footrests**

- Check
  - Secure mount
  - Swing away mechanism
  - Secure inserts
  - Footrest alignment
Positioning Components

Check
- Upholstery wear
- Location
- Stability
- Secured
- Foam integrity

Wheelchair frame

Check
- Cracks
- Tears
- Rust
- Loose screws/bolts
- Wear
- Cables

Tools—used by knowledgeable maintenance staff
- Combination wrench Set (3/8-1 1/8)
- Socket set and ratchet with extension
- Allen wrench set
- Phillips head screwdrivers #1,2,3
- Soft hammer
- Grease gun
- Oil (not WD-40)
- Rags
Wheelchair Cleaning to Maintain Optimal Condition

- Weekly
- Gather supplies
  - Cleaning agent for chrome and upholstery
  - Rags
  - Assorted brushes
  - Rubber gloves
  - Bucket with warm water
  - Absorbent pad for under the chair

- Remove
  - Headrests
  - Lateral Pads
  - Abduction Pommel
  - Chest Vest
  - Armrests

- Do not remove backs or seats.
- Do NOT use excessive force.
- Do NOT unscrew anything.

Spray parts with cleaner

- This includes wheels, chrome, frame and the seating system.

- Wheelchairs MAY NEVER be placed in a shower or on a slab and hosed off.
Pay special attention to cracks and crevices

- Clean completely by using brushes and rags
  - Under hip pads
  - Under the abduction pommel
  - Wheels
  - Footrests
  - Armrests

Dry and reassemble

- Wipe dry all parts
- Put all piece back with the chair
- Clean up supplies
- Make sure the floor does not have any wet spots

Questions?
References

- Le maire, Y and Delcay, M Pressure Sores and Other Complications of Immobilization; International Encyclopedia of Rehabilitation; Article 347.

Additional References

- www.sci.washington.edu/info/forums/reports/pressure_map.asp
- NRRTS reference library, National Registry of Rehabilitation Suppliers, www.nrpts.org
- Center for Medicare & Medicaid. Guidance to Surveyors for Long Term Care Facilities, Baltimore, MD.: Centers for Medicare & Medicaid Services, US Department

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