



Pediatric Seating and Mobility

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Goals of Wheelchair

- Provide an optimal seating recommendation that depends on an accurate, comprehensive assessment and the ability of the seating therapist to interpret the data in a way that is most meaningful and helpful to the client.
- Provide optimal position in order to allow children to engage in functional activities
 - Instrumental ADLs and Mobility related ADLs
 - Eating, Social Integration, Communication, Self -Care, Mobility
 - What is optimal position- 90/90 ?
 - Seated comfortably within available range with proper support in order to be functional



Goals of Wheelchair Con't

- Specific Goals
 - Provide postural support
 - Assist in prevention of respiratory complications
 - Improve ease of care-giving
 - Assist in prevention of joint contractures
 - Encourage and Facilitate independent mobility
- Child/Family goals
 - Difference in opinion



Goals of Seating Intervention

- Prevention (child, trauma, chronic disability)
 - Pressure Ulcer
 - Abnormal posture
- Accommodate
 - Skeletal Deformity (non-flexible)
- Assist in correction
 - Skeletal deformity (flexible)

Mobility Considerations in Pediatrics

Functional Level

- Dependent/Independent
- Decline in function
 - Inability to stand for prolonged time, inability to ambulate, unable to sit in one position for prolonged time
- Diagnosis
 - Cerebral Palsy, Spina Bifida
 - Trauma
 - TBI
 - SCI
- Environment

Wheelchair Process

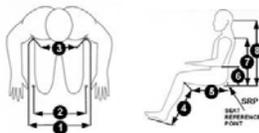
Mat Assessment : Objective and Subjective

- ROM /MMT
- Skin/Sensation
- Posture/control
 - Ability to weight shift
- Functional mobility
 - Observe/assist with transfers
- Home environment
 - Caregiver present
 - Barriers – no elevator
- Intended use/reason for seating
- Discussion of goals
- Trial of equipment
 - May require continued training

Wheelchair Process

Measurements

- Hip Width
- Chest width
- Heel to knee
- Shoulder height
- Head height



Wheelchair specifications

- Clinical Decision/Rational
 - Current functional mobility/future need
 - Child's activity level- active vs sedentary
 - Postural needs
 - Skin integrity
 - Child/family- purpose/goal of equipment
 - Environment- primary use/barriers

Wheelchair Process

Wheelchair specifications cont'd

- Clinical rationale
 - Stability- level of activity
 - Functional status
 - Family needs overall structure
 - Environment- primary use/barriers
 - Insurance guidelines
- Interim Fitting
- Delivery
 - Family education
 - Posture , pressure relief, educate on all parts/adjustments
 - Training/Demo
 - Battery, open/ close chair , simple adjustments – Allen keys

Wheelchair Process

- Follow up/maintenance
 - Ideal 3 months after delivery
 - Growth spurt
 - Change in functional mobility
 - Pain
 - Primary Therapist - First to see changes ; recommend Allen Keys

Types of Pediatric Equipment

- Manual
 - Tilt in space
 - Reclining
 - K1-K5
- Power
 - Tilt in space
 - Reclining
 - K1-K5
- Stenders
 - BTS
 - Riftton
- Gait Trainers
 - Trekker
 - Kid walk



Classification of Manual Chairs

- Ultra light weight (K5)
 - Rigid
 - Foldable
- Reclining
- Tilt



Components of Manual Wheelchair



Multi-Positional (K5)

- ~28 pounds
- Cross frame
- Variable rear wheel position
- Higher performance
 - Example: Quickie 2

■ What type of Patient

- High functioning
- Good UE strength
- Good trunk control
- Ambulatory and non ambulatory



Dependent Bases (Tilt in space)

- 35-60 lbs (weight of chair)
- Non-folding/folding
- Tilt and/or recline feature
 - Examples: Solara, Quickie Iris

■ What type of Patient

- Poor posture
- Unable to weight shift
- Dependent



Dependent Bases (Reclining)

- Only the back reclines
- Lighter than tilt in space
- Less trunk support
- Weight capacity 250 lbs
- Foldable

■ What type of Patient

- Limitations in range of motion, especially hips.
- Temporary post surgery



Manual Wheelchair

■ Advantages

- Size
- Foldable
- Weight
- Increase in energy expenditure
- More adjustability

■ Disadvantages

- Need UE strength (not tilt)
- Need good core muscle (not tilt)
- Repetitive stress to joints
- Tilt/recline option dependent on caregiver

Classification of Power Wheelchairs

- Power base - modular seating
- Power add-on units
- Power-assist propulsion wheels



Components of a Power Chair



Power Chair Seat Functions

- Power tilt
 - Weight shift
- Power recline
 - Pain, hygiene
- Power elevating leg rests
 - Edema
- Power seat elevation
 - ADLS
- Power sit-to-stand

Power Chair – Seat Functions



Power Tilt



Power Recline



Power Tilt & Recline

Seat Functions Continued

- Elevating leg rests



- Seat elevator



Power Mobility

■ Advantages

- Decreased energy expenditure
- Increased independence (mobility, positioning, ADLs)
- Incorporate technological devices (augmentative communication)
- Psychosocial benefits

■ Disadvantages

- Expense
- Requires maintenance
- Difficult to transport
- Limited by architectural barriers
- Heavy
- Requires more space to maneuver

Power Sit-to-Stand



Cushions / Back Supports

- Prevention of pressure sores
 - Pressure mapping
- Reduce risk of further skin breakdown
- Comfort
- Accommodate fixed postural asymmetries
- Alter flexible postural asymmetries



Types of Cushions

■ Foam

- Polyurethane foam – general use cushion
- Viscoelastic foam – adds more pressure relief
- Dual molded – soft foam layer over a molded firm foam layer
- Laminar foams – layered to provide comfort and pressure relief

■ Pros

- Require minimal maintenance
- Lightweight
- Can be contoured to client

■ Cons

- Compressed easily
- Limited durability
- High Shear

Types of Cushions

■ Combination (foam/gel)

- Viscoelastic fluid/Gel containment – firm foam positioning with pressure relief

■ Pros

- Maximum postural support
- High Pressure redistribution

■ Cons

- Heavy
- Can Leak
- Require manual distribution of fluid to return to baseline shape

Types of Cushions Cont'd

■ Air filled – pressure relief

- Roho
- Star



■ Pros

- Lightweight
- Provide even pressure distribution
- Suitable for incontinent client; draw moisture away from skin, do not conduct temperature

■ Cons

- Can Leak
- Require consistent maintenance
- Need postural stability for upright posture

Types of Cushions Cont'd

■ Plastic (Honeycomb) – sweating, incontinence

■ Air/foam combination – pressure relief with positioning

- Varilite
- Jay 3 Air



Cushion Category

- Skin Protection
 - Active or Hx of Skin Ulcer
 - Impaired Sensation
 - Unable to weight shift
- Positioning
 - Postural Asymmetries (fixed/flexible)
 - Scoliosis, Pelvic Obliquities, Pelvic Rotation, PPT
- Skin protection and positioning

Types of Backs

- Sling supported
 - Regular
 - Tension adjustable
- Contoured inserts
 - Matrix, Jay 3
- Custom linear
- Custom molded



Pediatric Seating Intervention

- Seating is an adjunct to therapy; its part of the whole treatment
- Seating intervention is not a quick fix; Patients need to be monitored for change in posture/comfort and change in function
- Based on functional need
- Quality of Life
- Reassessments/changes within short time
- Education
- Team approach

Pediatric Seating Intervention

- Categories in which powered mobility is appropriate
 - Non ambulatory aside from therapy session
 - Inefficient mobility
 - Those who will eventually ambulate
 - Loss of independent mobility
- Seating System/Wheelchair is not intended to exercise upper extremity
 - There are other alternatives
 - HEP

Pediatric Population

- Powered seating can begin as early as 12-18 months
- Social/environment exploration
 - Motor interactions
- Other options: ride on toys – James C. Galloway



Insurance guidelines

- Medicaid
 - Ensure proper justification
 - Medically necessary
 - Least costly alternative
 - 5 Year
 - Stander/Gait Trainer
 - Need to choose one
 - There is a cap for standers
- Medicare
 - In home mobility
 - Requires specific MD documentation
 - Face to Face
 - 7 element
- Private Insurance
 - Guidelines are specific to that ins

Thank You

Questions



Resources

www.cms.org
www.hmeny.net
www.permobil.com
www.quantumrehab.com
www.seatingandmobility.ca
www.sunrisemedical.com
<http://wheelchair4kids.org>



Wheelchair Clinics Available in NY

- Seating and Mobility Program at New York Presbyterian-Columbia University Medical Center
 - (212) 305-5949 – Scheduling (212) 305-2872
 - For New Patients or Outside patient to pursue Columbia Seating and Mobility – must meet requirements
- NYU-Rusk Outpatient Referrals
 - Adult: (212)263-6033 Adult, option 3. Adult Fax: (212)263-0113
 - Pediatrics: (212)598-6248 Pediatric Fax: (212)263-4555
- Hospital For Special Surgery
 - Adult and Pediatrics (212)606-1167
 - They do not take outside referrals
- Mount Sinai Hospital
 - Clinical Coordinator Jeannie Resto (212)824-7628
 - They do not take outside referrals



Wheelchair Clinics Available in NY

- St. Charles Hospital Port Jefferson, NY
 - (631)-474-6463
- NS-LIJ Children's Hospital-Queens
 - (718)470-4011
- Blythdale:
 - (914)592-7555
- VA Hospital Manhattan and Brooklyn
 - Must be US Veteran. Need to have a Primary Care Provider in VA system. Call office to make appt BK(718)836-6600. Manhattan (212)686-7500. Primary Care Physician will then refer to outpatient Rehab Clinic for a WC assessment.
- For Local Suppliers of Basic Power WC/Scooters/Walkers, for Patients With Medicare: <http://www.medicare.gov/supplierdirectory/search.html>