Objectives

• Participants will be able to identify the children who may benefit from adaptive equipment to enhance their lives
• Participants will be able to assess children for equipment needs beyond seating
• Participants will demonstrate evidence based clinical decision making within a family centered model of care
• ***Equipment that allows increased function in anticipation of life planning for the child***

Overview of Course

• Identification of non seating equipment options for children with complex adaptive needs
  – Standing Equipment
  – Gait Trainers
  – Alternative Seating Options
    • classroom chairs, feeding chairs, floor sitters
  – Bathroom Equipment
  – Hospital Beds
  – Lift Systems
  – Adaptive Tricycles
  – Combination Equipment Options
• Bringing Clinicians through the process of Prescreening & Evaluation for Functional Equipment
• Building an Equipment Blueprint for each Child
IDENTIFICATION OF NON SEATING EQUIPMENT OPTIONS FOR CHILDREN WITH COMPLEX ADAPTIVE NEEDS

First...

Understand the Patient / Family & Identify Primary Equipment Needs

• Primary Seating & Community / School Access
  – Wheelchair vs. Stroller
  – Age Appropriate Equipment
  – Usability (weight of equipment, environment, surgical expectations, medical prognosis & Hx)

• Lift Needs
  – Pneumatic / Electric Lifts
  – Overhead Lift Systems

• Other Medical Devices
  – Ventilator, IV Pump, Oxygen, Suction Machines...

Children with Complex Conditions

• Definition
• Characteristics of Child & Family
• Variety of Equipment Needs
  – Positioning
  – Function
    • Mobility
    • Feeding
  – Hygiene
Pediatric Life Care Plan

- Types of equipment to consider include:
  - Wheelchair mobility
  - Bathroom and bedroom safety equipment
  - Therapeutic equipment
  - Aids for daily living
  - Recreational equipment
  - Augmentative communication and environmental controls
  - Computer interface and vocational accommodations

- Areas of Consideration...
  - Growth
  - Activity level
  - Changes in physical / cognitive function (due to therapies & aging)
  - Safety
    * Awareness, Ability, Location – Bathroom, House, School, Community
  - Use in various settings with caregiver success

Example of Equipment Expectations – Children with Spinal Cord Dysfunction

- Functional Equipment Provides Optimal Alignment & Daily Exercise
- Children with spinal cord dysfunction
  - Medical care, development, mobility, self-care, play, school, employment
  - Equipment can lessen impact of disabilities
  - Enable to participate in age appropriate activities
- Infants and Toddlers (Birth to 2–3 Years Old)
  - Simple adaptations made to seating system as needed to support head and trunk
  - Children learn by independently moving in their environment... or use of powered mobility / toys if unable
  - Early Standing & Supported Weight bearing... Safe, Supported PLAY...

Example of Equipment Expectations – Children with Spinal Cord Dysfunction

- School-Age Children (Approximately 5–12 Years Old)
  - Corrective adaptations to seating system as needed to enhance function & positioning with multiple caregivers
  - Children need cognitive stimulation & access for learning
  - Variety of positioning throughout day... Facilitate independence & self positioning (Stander, Power wc, Transfers)
  - Tray Consideration on Equipment – Communication, Fe
  - Therapy vs. Education... Therapy & Education...

Example of Equipment Expectations – Children with Spinal Cord Dysfunction

- Adolescents (13 Years and Older)
  - Supportive adaptations to seating systems to enhance function and life skills
  - Process of life long management with equipment needs
  - Often a time of physiologic change & medical interventions
  - Practicality of Variety of Equipment Options, Participation in Life, Level of Assistance Needed for Use

Goals of Equipment

- Facilitation of Mobility
- Positioning
- Support / Adaptations to temporary or permanent conditions
- Optimization of Function
- Compliance / Acceptance by User/Family
- Secondary Uses
  - Fun, Age Appropriate Peer Interactions
  - Quality of Life (Compliance & Outcomes)

Seating Evaluation and Wheelchair Prescription

Beyond Seating...

Equipment Options

- Standing Equipment
- Gait Trainers
- Alternative Seating Options
  - classroom chairs, feeding chairs, floor sitters
- Bathroom Equipment
- Transportation Equipment
- Hospital Beds
- Lift Systems
- Adaptive Tricycles & Adaptive Recreation
- Combination Equipment Options

Goals for Positioning & Movement

- Children in GMFCS levels IV and V require adult assistance throughout the day for positioning and movement
- Goals and interventions include:
  - Implementation of a schedule of position changes during daily activities, hygiene times and routines
  - Planned opportunities for movement and aerobic exercise, and
  - Maintenance of respiratory function as a strategy for prevention of acute illness
  - Promote skin integrity - change position at least every 2 hours
- Provide the child with a variety of positioning options.
- Schedule (pictures) of the child demonstrating proper positioning
  - Provides visual reminder for child
  - Instructional tool for caregivers (1:1 & return demonstration for all providers / caregivers)
  - Video tapes - method of instruction on proper positioning
STANDERS

STANDING & WEIGHT BEARING EQUIPMENT

Benefits of Standing

• Psychological & Physiological Implications on Development
• Upright Orientation Improves Attention & Facilitates Social Interactions (Eye Level with Peers)
• Improving Bone Mineral Density - 45 min Daily
  – Hip Development with 75% WB (near vertical position)
• Decreasing Spasticity, Spasms & Contractures - 2 x 45 minutes Daily
• Improving renal function, drainage of the urinary tract, and reduction in urinary calculi leading to infections
• Preventing pressure sores & Improving circulation
• Improving bowel function
• Benefits Reversed once Standing Program Ceased
• Alignment... Alignment... Alignment...


© Robert J. Palisano & Karen Lally, 2007
Published and Distributed by CanChild Centre for Childhood Disability Research, McMaster University

Increases Circulation
- reduces orthostatic hypotension with ongoing standing
Builds Cardiovascular Endurance
- reduces swelling and pooling of blood in the lower extremities
Facilitates Respiration
- helps reduce respiratory infections
- increases oxygen intake by allowing lungs to completely expand
- normalizes bowel function
- increases gastrointestinal activity
- reduces the risk of constipation
Improves Urinary Drainage
- prevents or reduces urinary tract infections

Provides Positive Psychological Impact
- improves self-esteem
- increases cognitive function
Improves Motor Function
- increases muscle strength
- helps with upper extremity & head control
Increase Range of Motion
- helps prevent hip, knee and ankle contractures
Reduces Risk of Pressure Sores
- minimizes skin breakdown through changing positions
Maximizes Weight Bearing on the Long Bones
- prevents/ stabilizes osteoporosis & resultant hypercalciuria
- assists in skeletal development

Standing Equipment
• Supine — Used with children with poor head control / max supports
• Vertical Stander — use of LE static positioning w/ varied trunk control
• Mobile Standers / Para podium — UE mobility in upright
  — Kangaroo — www.kangaroo.com
• Sit to Stand Stander — independence, smooth transitions sit - stand
  — www.easystand.com & www.altimatemedical.com
• Prone — work on head control & weight shift; encourages extension
  — Leckey Prone Stander (www.leckey.com)
  — Gazelle Prone Stander (www.sammonspreston.com)
• Tri-stander - Multiple Use Standers
  — Tumble Forms (www.sammonspreston.com/Pediatrics)

*** Ease of use is Key… Caregiver Transfers = Increased Carryover ***

Documentation & Funding
• Who is this person medically, functionally, and socially
• Explain how the stander will help achieve functional goals/outcomes
• Describe trial use of the proposed stander
• List alternatives that were considered & rejected
  — Both least costly and most costly
• Provide the client’s history of standing compliance
• If needed, present photos & videos to convey the information along with written documentation
• Include supporting material
  — Clinical studies, papers and a resource list
Medical Justification of Standing Equipment

- Patient is unable to stand or ambulate independently due to conditions such as, but not limited to, neuromuscular or congenital disorders, including acquired skeletal abnormalities.
- Patient is at high risk for lower-limb or trunk contracture(s), or has contracture(s) that have not improved with other interventions (e.g., stretching, splinting, serial casting, medications, or other modalities).
- The alignment of the patient’s lower extremity is such that the foot and ankle can tolerate a standing or upright position.
- Patient does NOT have complete paralysis of the hips and legs (Insurance Specific).
- Patient has improvement in mobility, ambulation, function, or physiologic symptoms, or maintained status with the use of the selected stander (e.g., used in an inpatient or outpatient setting) and is able to follow a home therapy program incorporating the use of the stander.
- There is a home therapy plan outlining the use of the requested stander.

MassHealth - Guidelines for Medical Necessity Determination for Standers

Medical Justification by Type

Patient requires standing program for above medical reasons...

- **Supine**
  - Patient requires graded increase in tilt due to BP issues, positional control issues, Lack of postural control, inability to maintain WB position against gravity
- **Prone**
  - Patient with good head control, tolerates WB through arms, tolerates prone pressure, able to transition sit to stand into stander, will progress to full upright WB with standing program; use of tray for functional activity/postural support/feeding
- **Vertical Stander**
  - Patient is able to tolerate full WB, has varied trunk control, is able to transition sit to stand into device, demonstrates adequate head control in upright, use of tray for functional activity/postural support/feeding
- **Mobile Standers / Para podium**
  - Patient typically presents with paraplegia or LE involvement, UE mobility in upright desired to move around environment
- **Sit to Stand Stander**
  - Patient is focused on independence, sit to stand allows for graded trunk control and progressive levels of weight bearing
- **Tri-stander**
  - Multi user stander, Patient would benefit from supine to prone based on diagnosis / prognosis

Standing vs. Ambulation:

Duplication of Services?

<table>
<thead>
<tr>
<th>Standing &amp; Walking</th>
<th>Standing vs. Walking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing...</td>
<td></td>
</tr>
<tr>
<td>Walking...</td>
<td></td>
</tr>
</tbody>
</table>
Pediatric Walkers...

- Standard / Variety of Pediatric Walkers
- Hand/Forearm Supported Gait
- Anterior Support
- Posterior Support
  - Kaye Posture Control Red Walker
  - Guardian Strider Walker
- Minimal Postural Supports
  - MJM Adapt a walker
  - MJM Platform walker

Medical Justification of Walkers

- Functional Ambulation
  - Hand / Forearm Supported Walking
  - Requirements for external supports
    - Balance, Strength, Safety, Speed, Fatigue, Coord of Movement
    - Changes in Gait / Posture / Support
    - Transfers and Mobility
    - Sequencing of movement with external supports
  - Need to demonstrate use in ALL settings
  - Unable to ambulate household distances (<50 ft) or community distances (150 – 1800 ft) functionally
    - Site locations and limitations need to be considered
    - "what is functional for this child"
Benefits of Gait Trainers for Ambulation

- **Body Support Walker / Gait Trainer**
  - Standing, mobility, and social interaction
  - Use with children who lack trunk & arm control needed to use conventional hand-support walker

- **Support body weight through legs and walk short distances with physical assistance** of an adult are important outcomes...

- **Standing transfer with assistance of one person** improves the ease of care giver assistance and reduces the risk for care giver injury from lifting

- **BMD, Circulation, Functional Mobility, etc…..**

Gait Trainers

- Vary in support and positioning
- **Types:**
  - Gator Gait Trainer ([www.snugseat.com](http://www.snugseat.com))
  - Crocodile
  - Mini walk / Mey walker
  - Bronco & Pony
  - Posture Control Walker ([www.kayeproducts.com](http://www.kayeproducts.com))
  - Mulholland Walkabout
  - Cricket™ Gait Trainer
  - Discovery & Explorer Gait Trainers ([www.leckey.com](http://www.leckey.com))
  - Kid Walk ([www.primeengineering.com](http://www.primeengineering.com))
Medical Justification of Gait Trainers

• Functional Ambulation
  – Patient unable to use walker level of support in all areas of functional gait (i.e., Use in school, unable at home)
  – Requires supports greater than hand/forearm
    • Trunk, Ankle, Pelvic, Thigh, Head

• Non Functional Ambulation
  – Patient not a primary ambulator
  – Use of Gait trainer for strengthening, WB, Functional UE use, social interactions, improvements in transfers, aerobic endurance, exploration of environment & change in position

ALTERNATIVE SEATING OPTIONS...

Benefits to Alternative Seating

• Change in positioning every 2 hours
  – Respiratory & Skin Benefits
• Alteration in Alignment
  – Improve UE Function & Postural Control (head & trunk)
  – Feeding Positioning
• Variety of Positions
  – Vertical is Cognitively Alerting
  – Floor time with support for PLAY
  – Social Interactions
Alternative Seating Options

• High / Low
  – Leckey Advanced Seat (www.leckey.com)
  – Wombat (www.snugseat.com)
  – The UGO Chair (new designs…)
  – Thomashilfen EASY
  – Kimba

• Classroom Chairs
  – Rifton High Back (www.rifton.com)
  – Kinder Chair
  – Leckey Easy Seat

• Floor & Corner
  – Leckey Corner Chair
  – Ladybug Corner Chair (R.E.A.L. Designs)
  – Tumble Forms 2 Universal Corner Chair

• Feeding
  – MPS mobile & Height Right Chair (www.specialtomato.com)
  – Tripp-Trapp Chair (www.stokke.com) – Not Medical
  – European Chair (www.onestepahead.com) – Not Medical

Medical Justification of Alternative Seating Options

• Primary Considerations…
  – Why child needs seating options beyond wheelchair?
  – What functional, educational, social, cognitive, physiological gains does this chair provide child?
    • Respiration, Muscle Elongation, Balance Reactions…
  – Safety during functional tasks (ie. Feeding)

• Secondary Considerations…
  – Does the equipment reduce transfers?
    • To floor (hi / low) or around environment (mobile base)
  – Does the equipment aide caregivers / provide safe positioning alternatives?

BATHROOM EQUIPMENT
Benefits of Bathroom Equipment

- Provide a safe environment
  - Transfers, Positioning, Successful Performance
- Maximize independence & Safety with ADLs
  - Showering, Bathing, Toileting
- Decrease level of Caregiver Assist
  - Especially as children grow

Bathroom Equipment Options

- Commode Chairs
  - Columbia Low Back Toilet Support
  - Aquanaut ([www.ottobockus.com](http://www.ottobockus.com))
  - Blue Wave Complete ([www.rifton.com](http://www.rifton.com))
  - Versa Frames, Grab Bars, Stools, etc...
- Bath / Shower Chairs
  - Manatee ([www.snugseat.com](http://www.snugseat.com)) & Others...
  - In tub Sitting Supports
- Transfer Systems
  - Omni™ Reclining Shower / Commode / Bath Transfer System([www.columbiamedical.com](http://www.columbiamedical.com))
  - Aquatec Bath Lift Systems ([www.invacare.com](http://www.invacare.com))

Medical Justification of Bathroom Equipment

- Hygiene is a medical necessity...
  - Skin Integrity, General Health, Requires a Functional Task to Complete
    - Toileting, Showering, Bathing...
- Ability of Child to Partake in ADL Activity
- Supports required for Independence
- Simulation (Trial of Equipment Difficult w/ bath equipment...)
- Examples...
  - Child with fair sitting balance may benefit from low back toilet support and step stool for independent toileting...
  - Child Dependent for All Transfers may need Columbia Elite Bath/Shower Transfer System because lift system does not work in bathroom for transfers...
TRANSPORTATION EQUIPMENT

Benefits of Transportation Equipment

• Provide safe transportation to children with special needs
  – Post Operative Return Home
  – Access to School, Medical Appointments, Community Family / Friends
• Positional Support for children
• Wheelchair Transportation is sometimes the only option...
• Listing of available car seats...
  [www.carseat.org/Pictorial/ColorPict,2010NP.pdf]

Transportation Equipment Options

• Car Seats
  – Traveler Plus EL ([www.britaxusa.com](http://www.britaxusa.com))
  – Columbia Medical TheraPedic™ Car Seat
    • Airline Approved (Must state on Car Seat)
  – Hippo for spica cast ([www.snugseat.com](http://www.snugseat.com))
  – AngelRide Infant Car Bed ([www.angel-guard.com](http://www.angel-guard.com))
• Vests
  – Modified & Easy On Vest ([www.easyonpro.com](http://www.easyonpro.com))
  – CARES Child Aviation Restraint ([www.kidsgflysafe.com](http://www.kidsgflysafe.com))
Medical Justification of Transportation Equipment

- Safe Transportation to and from ______ is essential
  - School
  - Medical Appointments
  - Social, Religious & Family Gatherings
- NOT able to use any commercially available car seat
  - Requires additional supports
  - Outgrown size (ht/wt) requirements of commercial seat
  - Child is unsafe, unbuckles, behaviors in car make it unsafe for driver / other passengers
  - Does not have w/c accessible vehicle

HOSPITAL BEDS

Hospital Bed Options

- A fixed height hospital bed allows manual adjustments to head and leg elevation but not to height.
- A variable height hospital bed allows manual adjustments to height and to head and leg elevation.
- A semi-electric hospital bed allows manual adjustments to height and electric adjustments to head and leg elevation.
- A total electric hospital bed allows electric adjustments to height and to head and leg elevation.
- A pediatric hospital bed may be manual, semi-electric, or total electric and may include a safety device such as a 360 degree side enclosure.
- A pediatric crib is a hospital grade bed and may include an added safety enclosure.
Medical Justification of Hospital Beds

• **A fixed height hospital bed** requires that one or more of the following criteria are met:
  – Patient has a medical condition that requires positioning the body in ways not feasible with an ordinary bed.
    • Elevation of the head/upper body less than 30 degrees does not usually require the use of a hospital bed
    • In order to alleviate pain
  – Patient requires the head of the bed to be elevated more than 30 degrees most of the time due to a medical condition (for example, congestive heart failure, chronic pulmonary disease, or problems with aspiration).… Pillows or wedges have been tried / considered
  – Patient requires traction or other equipment, that can only be attached to a hospital bed
    • IV poles, Trapeze to A bed mobility, Side Rails to A mobility / Safety where commercial rails will NOT work

• **Variable height hospital bed**
  – Patient requires bed height different from a fixed-height hospital bed to permit transfers to a chair, wheelchair, or standing position.

• **Semi-electric hospital bed**
  – Patient requires frequent changes in body position and/or may need immediate change in body position and the child / parent is functionally and cognitively able to operate the controls for adjustment, with or without accessories as needed.

• **Total electric hospital bed**
  – Patient meets the criteria for a variable-height hospital bed and semi-electric hospital bed, Child performs stand pivot transfers and caregiver needs elevated surface during day… and that it is the least costly medically appropriate alternative.

• **Pediatric hospital bed or crib (without added safety enclosure)**
  – Child meets the criteria for any of the above-mentioned hospital beds.

• **Pediatric hospital bed or crib (with added safety enclosure)** requires that all of the following criteria are met:
  – Child has a medical condition that puts her or him at risk for falling out of or seriously injuring herself/himself while in an ordinary bed or standard hospital bed (for example, cognitive or communication impairment or a severe behavioral disorder);
  – History of behavior involving unsafe mobility (e.g., climbing out of bed) that puts the child at risk for serious injury while in an ordinary bed or standard hospital bed; or Risk of entrapment; and
  – less costly alternatives (e.g., wearing a protective helmet) were tried and were unsuccessful or contraindicated

• **Pressure Relief is not going to be discussed but is important factor…**

LIFT SYSTEMS...
Benefits to Lift Systems

- Safety of Patient and Caregiver
- Decrease TOTAL number of manual lifts / transfers daily
- Access to multiple positioning devices / floor
- Increased access to community, social activities, family/friends’ home with travel system

Variety of Lift Options

- Mechanical / Pneumatic Lift Systems
- Power Lift Systems
- Portable Lifts
- Sit to Stand Lifts
  - Sabina II (www.liko.com)
- Home Modifications
  - Stair Lifts (www.acornstairlifts.com)
  - Elevators (www.savrina.com)
  - Overhead Lift Systems
    - www.surehands.com
  - Ramps

Medical Justification of Lift Systems

- Child’s weight >50 lbs
- Risk for Falls / Dependent Lift
- Physiologic issues create unsafe transfers
  - Seizures, Dystonia, Excessive Hypotonia, Spasticity
- Several Positional needs throughout day
  - Lowering to Floor & lifting into bed
- Many times is clinician driven... Families seem to “just have a way” to move child... Nsg needs...
  - Justification that “everyone caring for the child” needs a safe and effective way to transfer
RECREATION & PLAY

Benefits of PLAY...

**Pros**
- Healthy People 2010
- Mental Health
- Ability Focused

**Cons**
- Costly
- Time Consuming
- Geography / Access
Adaptive Recreation Equipment

**ADAPTIVE TRIKES**

Benefits of Adaptive Tricycles & Adaptive Recreation

*Not usually considered medically necessary*
- Used in Treatment for PT/OT
- Family fun and recreation
- Age Appropriate Activity

- **Roller Racers**
- **Beach Wheelchairs**
  - Many Recreation Parks / Beaches have on request

Adaptive Bikes & Trike Options

- **Bikes & Trikes**
  - Rifton Trike ([www.rifton.com](http://www.rifton.com))
  - AMBUCS™ ([www.ambucs.org](http://www.ambucs.org))
  - Discovery ([www.freedomconcepts.com](http://www.freedomconcepts.com))
  - The Duet ([www.frankmobility.com](http://www.frankmobility.com))
Jon’s Clinical Justification

• Head Control
• UE functional reach
• Reciprocal LE use
  – Simulate Gait
• Trunk Control
• Increased Endurance

Adaptive Recreation Programs

• Look Local...
  – Adaptive Soccer (www.topsoccer.org)
  – Adaptive Baseball (www.littleleague.org/learn/about/divisions/challenger.htm)
  – Kids in Disability Sports (www.kidsinc.us)
  – Special Olympics
  – Adaptive Ski Programs
  – Disability Organizations
    • Northeast Passage

• Equipment Trial / Rental
  – State & Non-Profit Organizations
    • Parks & Rec, DHHS, Partners in Health, Easter Seals, UCP, Regional Agencies

Combination Equipment Options

• Sit to Stand Standers
  – Use during day for frequent position changes
• Bath / Commode / Transfer Systems
  – Cost Containment to purchase (1) system vs Three
  – Space Savings in home
• Off Label Uses...
  – Bath Chair at the Beach...
  – Sling for Positioning Assistance...
  – Car Seat in Home as recliner...
    • w/c seat for pelvic control...
Useful Starting points...

• Web sites for Options...
  – www.adaptivemall.com
  – www.nepassage.org/resources.html

• Refurbished Equipment Options (liability)
  – www.kidsmobility.org
  – www.getATstuff.com
  – Local MDA, State & Private Organizations
    • Pass it On, etc.

Equipment Evaluation

• Initial Therapy Evaluation
• Understanding the family & patient’s needs & Strengths
• Overview of where and how to incorporate equipment into child’s life
• Trial of Equipment (Simulation) in all settings
• Prescription & Letter of Medical Necessity
Equipment Blueprint

- Child and Family have predictable needs
  - Life Planning
  - Current Equipment Available to Child
  - Outgrowth / Wear & Tear
  - Up coming Needs of Child (5 year plan)

- Always cognizant of...
  - Functional Potential (don’t under estimate)
  - Possible Declines in Function
  - Growth & Development
  - Additional Medical Needs
  - Insurance Restrictions

---

SAMPLE LETTER OF MEDICAL NECESSITY

- Demographics
- Introduction
- Medical Profile
- Cognition & Vision
Despite our best efforts, we can get our equipment denied even if we deem it medically necessary.

If after appeals, phone calls, letters, etc, we still have not received insurance authorization, keep in mind that other local organizations are often willing to assist in purchase of medical equipment.
Alternative Funding

• Foundations
  — Travis Roy Foundation
  — Children’s Hospital Foundations
  — National Associations (BIA)
• Local Charitable Organizations
  — Knights of Columbus
  — Rotary Club
• Personal Fundraisers
• Community Fundraisers, Church Organizations, Employee Fundraisers
• Loaner Programs…

Questions

JGreenwoodPT@comcast.net