Adult Manual Mobility

“Wheelchair Technology for Function and Performance”

Presented by:
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Seminar Content Disclosure

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• We do not intend to endorse any particular model, brand of product or manufacturer.

Housekeeping

- Restrooms
- Handouts
- Breaks
- CEUs
### To Receive CEUs

- **IACET CEU CREDIT**
- Must be paid in full
- Must sign in at the registration table
- Must provide last 4 of your SSN
  - If you didn’t provide it when you pre-registered, there will not be a certificate onsite
  - You can still provide the last 4 of your SSN now on your evaluation, certificate will be provided within 45 days
- Must complete the evaluation form and turn it in at the close of the seminar
- It is a requirement that to receive CEU credit, you must attend the full course

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### Course Objectives

*At the conclusion of this course attendees will be able to:*

- Recite 3 ways that proper configuration of a manual wheelchair can reduce repetitive strain injuries.
- Identify at least 5 essential components in the clinical assessment process when prescribing manual wheelchairs.
- Describe the proper stroke pattern for independent manual propulsion of a wheelchair.
- Identify 3 or more benefits and challenges of folding and rigid manual mobility frames.
- Recite at least 2 ways how using contemporary materials in manual wheelchair frames can impact mobility performance.

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### Agenda

- **45 mins** Assessment and Repetitive Strain Injury
- **60 mins** Choosing the correct manual frame
- **45 mins** Posture and stability
- **15 mins** Break
- **90 mins** Wheelchair configuration and materials
- **60 mins** Lunch
- **45 mins** Bariatric wheelchair considerations
- **30 mins** Tilt in space
- **15 mins** Break
- **30 mins** Accessories and additional considerations
- **60 mins** Documentation and Funding
- **15 mins** Questions and review
RSI – Repetitive Strain Injuries

RSI – injury to tendons, ligaments, nerves & muscles caused by frequent repeated motions

Characteristics Contributing to RSI:
- Wheelchair propulsion itself
  - Stroke frequency and rate of loading the push rim
- Wheelchair configuration
- User’s posture/seat position in the wheelchair
- Wheelchair weight and quality

Leading the Way!

What are some clinical best practices?

- Any related to seating and mobility?
- RESNA Wheelchair Provision Guide
  http://resna.org/dotAsset/22485.pdf

Making the Right Choices

- Where do we even begin?
Goals

Assessment: The Starting Line

Key Assessment Information

- Prior to the evaluation
  - Completion of an intake form by the client or parent/caregiver. Information should include:
    - Brief background of the client including experience with Assistive Technology and specifically power mobility.
    - Current level of function
  - If contact information is provided, contact should be made to the client’s school team and/or outpatient therapists.
  - Review any documents provided by the family or referring physician.
  - Arrange loaner equipment

Targeted areas for LMN

- Endurance: Cardio-Pulmonary
- Strength, ROM, Ortho, Tone
- Propulsion method
- Change in size or weight
- Seating and positioning
- Function and mobility
- Environment, transport, vocation
Key Assessment Information

OTHER AREAS OF CONSIDERATION

- COMFORT
- ACCEPTANCE
- FUN

How About…

- A thorough hands on mat evaluation
  - Identify flexible versus fixed postures
  - Identify the symptoms versus causes
  - Understand functional needs/limitations

Mat Assessment Ideas

- Should be done with the client sitting on a firm surface
  - Thighs should be level relative to the hip joint
  - Two people assist as needed
  - Be sure that feet are supported
- Use a caliper/firm measure stick or tape for accurate measurements
Measurements

Furthering Best Practices

- Translate clinical findings into product parameters
- Simulate the proposed solution prior to final prescription
- Client education on equipment use
- Understanding their current funding situation to allow you to order the best product within their coverage criteria.
- Future financial planning – plan of care - repairs etc.
- Understanding if and how a wheelchair grows

Expecting Change?

- Consider modularity
  - Can components be easily swapped to accommodate changes in growth and/or clinical condition

Multiple front frames and seat rails are easy to swap...
Where Do We Stumble?

- Sometimes shortcuts are taken with the evaluation
- Sometimes trial is not possible
- Sometimes we battle with the conflict between therapeutic perfection – safety and function.
- Sometimes we do not find out or understand their funding situation before the evaluation.

Assessment Findings Yield Product Selection

Independent:
- LE propulsion
- UE propulsion

Dependent:
- Transport
- Positioning

Independent Manual Wheelchair Categories

- Standard
- Custom Folding
- Custom Rigid
Selecting Wheelchair Frame Type

FACT OR FICTION?

- Folding frames have more footrest options?
- Rigid frames are easier to transport due to fewer moving parts?
- The flex in folding frames may absorb shock?
- Rigid frames allow for more energy transfer to the wheel during propulsion?
- There is a difference in durability between folding and rigid frame chairs?
- The rigid frame is lighter weight?
- Maintenance vs. maintenance-free?

Independent Standard Wheelchairs

• HCPCS Codes 001-004
  • Each code has specific criteria (size, seat to floor height, weight capacity)
  • Typically prescribed as rental chairs
  • Options such as Hemi Height, Heavy Duty, and Recline Back are available

Independent Standard Wheelchairs

- K0001 Standard Wheelchair
  - No frame modifications or adjustments
  - Weight of wheelchair greater than 36lbs
  - Weight capacity 250lbs or less
- K0002 Standard Hemi (low seat) Wheelchair
  - Same as K0001, except STFH less than 19”
  - Intended for individuals with shorter stature or for individuals who use his/her feet to propel
- K0003 Lightweight Wheelchair
  - Weight of wheelchair 34-36lbs
  - Standard STFH 19-21”
High Strength Lightweight Wheelchair (K0004)

- **WEIGHT**: < 34lbs w/o leg rests
- **WARRANTY**: Lifetime frame/cross brace
- **SEAT WIDTH(s)**: 14-20" available
- **SEAT DEPTH(s)**: 14"-18" available
- **SEAT HEIGHT RANGE**: 17"-21" is standard. Often available >17" as well
- **BACK HEIGHT**: Sectional or Adjustable 15-19"
- **ARM REST(s)**: Fixed or detachable; height adjustable
- **FOOT REST(s)**: Fixed or swing away detachable
- **FOOTPLATE EXTENSION RANGE**: 16-21"
- **Rear Wheel axle offers limited adjustability**

Suggested Client (K0004)

- Unable to propel in lightweight chair due to UE/LE weakness, endurance, cardiopulmonary conditions, pain, fatigue, arthritis, spasticity, ROM
- Propels with LE's and requires lower STFH than provided by lower coded chairs
- Spends > or = to (2) hrs/day in the chair and requires chair for > (3) months
- Needs to perform frequent activities that can not be performed in lower coded chair
- Requires specific back height due to balance, postural tone, and/or orthopedic conditions
- Balance, tone, posture, orthopedic issues require minimally adjustable axle plate to provide minimal changes in seat angles or orientation in space
- Should **NOT** have **SIGNIFICANT** deformities or spasticity or a progressive condition

HD and XHD Wheelchair K0006 & K0007

- K0006: >250 lbs
- K0007: >300 lbs
- Client’s body weight is over these weight capacities or they have **SEVERE SPASTICITY**
- **These chairs are just heavy duty STANDARD wheelchairs with limited options and no rear axle adjustments.**
Ultra Lightweight Wheelchair (K0005)

- Can be either a folding or rigid frame
- Weight: <30 lbs w/o leg rests
- Warranty: Lifetime on frame/cross brace
- Seat width range: 12-22" in 1" increments
- Seat depth range: Wide range depending on use of standard or hemi frame
- Seat height: Wide range depending on use of standard or hemi frame
- Arm rests: Several options available
- Foot rests: Several options available
- Rear wheel axle: Fully adjustable (vertical, horizontal, lateral, camber)

Effective 5.31.13 All K0005 frames must be evaluated by an ATP!

Suggested Client (K0005)

- Unable to successfully propel a lower coded chair due to UE/LE weakness, ROM, endurance, pain, cardiopulmonary issues, orthopedic deformities, fatigue, arthritis, spasticity
- Can and does functionally propel in ultra lightweight chair
- Needs to perform functional activities of instrumental living that cannot be performed with a lower coded chair
- Appropriate for clients with progressive conditions
- UE weakness, ROM, endurance, balance, posture, tone and/or orthopedic issues require an adjustable axle plate for optimal rear wheel access and/or optimal seat angle and/or orientation in space
- Coverage is determined on individual consideration
- Documentation should include trials demonstrating why a K0005 chair is the most appropriate and which clinical issues are not accommodated by a lower coded chair—Include a list of indoor and outdoor ADL's
UPDATE K0009

- Current K0009 active manual wheelchairs coded as K0005 effective 5/31/13
- Current K0009 Bariatric Manual Wheelchair will now be coded K0007
- Current K0009 manual tilt in space chair with >20 degrees of tilt will be coded as E1161.

Selecting Wheelchair Frame Type

FACT OR FICTION?
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- Rigid frames are easier to transport due to fewer moving parts?
- The flex in folding frames may absorb shock?
- Rigid frames allow for more energy transfer to the wheel during propulsion?
- There is a difference in durability between folding and rigid frame chairs?
- The rigid frame is lighter weight?
- Maintenance vs. maintenance-free?

Common Features and Considerations

- Materials, Design
- Casters, Housing
- Seating, Footplates
- Backrests
- Rear wheels
- UE Supports
Ladder of Seating Options

- Custom made seating – molded
- Custom made seating – linear and contoured
- Off the shelf seating – customizable
- Basic off the shelf seating – non customizable

Seating Options

Additional Seating Components

- Positioning Belt
- Lateral
- Headrest
- Hip Guide
Postural Balance & Stability

- Respect precarious balance between position, stability and function
- Changing seat to back angles
- Footplate height and orientation
- Rear axle position
- Orientation in space all dramatically impact the seating footprint/contact area

Postural Balance and Stability

“Squeezing” the Frame:
- Assists with lower trunk, pelvic support in chair
- Can provide increased stability with propulsion
- Achieved by lowering rear seat height and closing back angle < 90 degrees
- Low back rest allows trunk extension for postural stability, repositioning

Seat Inclination

- Rear seat to floor height is **Lower** than the Front seat to floor height
Seat Inclination

- Posterior or anterior inclination for posture and function
- Environmental access
- Accommodates long LE’s, hip angles

Seat Inclination

Position client so they are sitting IN the chair, not ON the chair!!

YES!

TRY AGAIN!!

Seat Cushion and Back Interface

- How does seat height impact rear wheel access?
- How does cushion design impact positioning?
- How does backrest thickness impact seat depth, positioning?
Common Features and Considerations

- Seating
- Leg rests
- Backrests
- Casters, Housing
- Rear wheels
- UE Supports
- Materials Design

Lower Extremity Loading Surfaces

- Goal is always to optimize sitting footprint – load the feet
- Optimize turning radius – feet as close to body as possible
- Respect hamstrings and unique foot angles/positions
- Consider changing needs over time

Angle Adjustable Foot Plate

- This will typically be covered by funding sources if not a standard item.
- Simply justify its medical need and why a standard fixed footplate would not work for that specific patient.

Composite
Composite Angle Adjust
Aluminum Angle Adjust
Leg Rest Positioning Options

Flared Front Hanger  Multi-Position Latch

Contracture Footrest System

Inside Mount  Outside Mount

Additional Lower Extremity Supports
Incorrect LE Measurements and Foot Plate Contact

- Foot plates too high
- Foot plates too low

Common Features and Considerations
- Materials, Design
- Casters, Housing
- Rear wheels
- UE Supports
- Seating
- Leg rests
- Footplates
- Backrests

Level of Support
- Shoulder Height
- Mid Thoracic
- Upper Thoracic
- Lower Thoracic
**Backrest Options**

- Non adjustable
- Folding adjustable
- Depth Adjustable
- Angle Adjustable

**Angle Adjustable Backrest**

- Multiple backrest angles (-14°, -12°, -9°, -7°, -1°, 0°, 3°, 5°)
- Adjustable to user's PSIS (3" & 4" pivot pt setting)
- Angle matches to curvature of the spine

![Accommodates a variety of cushion heights](image)

**More Backrest Options**

- Narrow Backrest Inset
- Telescoping Push Handles
Manual W/C Set-Up: Armrests

Arm support – when and why?
- Different types - How do they relate to funding?
  1. Padded swing away
  2. Dual post flip back height adjustable

Additional Upper Extremity Supports

Common Features and Considerations
Biomechanics of Propulsion

- [http://www.youtube.com/watch?v=BD9kp4u89Gc](http://www.youtube.com/watch?v=BD9kp4u89Gc)

Stroke Pattern Types

- Arc
- Semicircular
- Double loop
- Single Loop

Phases of Contact

- Initial Contact
- Push Phase
- Release
- Recovery Phase
**Optimal Rear Wheel Access**

- Tip of middle finger at hub
- 100-120° of elbow extension at top of push cycle
- Good lateral spacing

**Forward Axle Position**

- Increases access to push rim (push angle)
- Reduces impact loading on the push rims
- Reduces stroke frequency
- Less rolling resistance

Facilitates long smooth stroke pattern
  - Enhances mobility
    - Wheelies/curb climbing
    - Decreases: turning radius, downhill turning tendency, and reduced castor flutter

**Other Propulsion Considerations**

**Trunk Flexion:**
- Commonly seen with increased propulsion speed
- Increased hand rim contact (increased functional shoulder ROM)
- Increased torque on the hand rim (trunk mass moving forward)
- Commonly used on inclines, increases stability

- Importance of Strength Training
  - Rotator cuff strengthening to prevent RSI
Rear Axle Positioning

**Goal:** Adjust rear axle in best position to optimize propulsion!

Consider the following adjustments at EVERY delivery:

- Horizontal
- Vertical
- Lateral
- Camber

Rear Wheel Position

Why must we consider the following adjustments?

<table>
<thead>
<tr>
<th>Horizontal position affects:</th>
<th>Lateral position affects:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel access/UE position</td>
<td>Wheel access/UE position</td>
</tr>
<tr>
<td>Maneuverability</td>
<td>Overall width</td>
</tr>
<tr>
<td>COG/stability</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vertical position affects:</th>
<th>Camber affects:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel access/UE position</td>
<td>Wheel access/UE position</td>
</tr>
<tr>
<td>STFH</td>
<td>Maneuverability</td>
</tr>
<tr>
<td>Orientation in space</td>
<td>Stability</td>
</tr>
</tbody>
</table>

Horizontal Position - Rearward

**Positions COG forward**
- More weight on casters
- ↑ Strength required
- ↑ Work for UE muscles
- ↑ Overall length/turning radius
- ↑ Rearward stability

**Affect on wheel access:**
- Shoulder in excessive extension to initiate stroke
- Poor lever arm of force, inefficient stroke
- Increase risk of UE stress and damage
Horizontal Position - Forward

Positions COG rearward
- ↓ Weight on casters
- ↓ Strength required
- ↓ Work for UEs
- ↓ Overall length/turning radius
- ↓ Rearward stability
  - How much stability does your client need?

Affect on wheel access:
- Shoulder in more neutral position
- More efficient stroke
- Decrease risk of UE stress and damage

Horizontal Wheel Position

<table>
<thead>
<tr>
<th></th>
<th>Wheel Position Forward</th>
<th>Wheel Position Rearward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center of gravity</td>
<td>More Rearward</td>
<td>More Forward</td>
</tr>
<tr>
<td>Weight on casters</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>Strength required to</td>
<td>Increased</td>
<td>Decreased</td>
</tr>
<tr>
<td>propel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelbase-length /</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>overall turning radius</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rearward stability</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>(How much is required?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheel access</td>
<td>Shoulder position more neutral, more efficient stroke, decreased risk of RSI</td>
<td>Shoulder in excessive extension, poor lever arm/inefficient stroke, 0 UE risk</td>
</tr>
</tbody>
</table>

Vertical Wheel Position

- Access to push rim
- STFH
- Orientation in space
Rear Wheel Size

Wheels too low/small
- Wheels further from user
- ↓ Access to push rim
- Inefficient stroke
- ↑ Stress on UE muscles!!

Wheels too high/large
- Shoulders elevated during propulsion
- Risk of damage to shoulder complex
  - Impingement
  - Rotator cuff tears

More Vertical Wheel Position Thoughts

Pediatrics – have small, short UEs
Elderly – have ↓ ROM in UEs
- Lets think before using small rear wheels with these client populations
- Consider axle position to achieve the lower STFH
- REMINDER: DON'T FORGET CUSHION HEIGHT!

Vertical Wheel Position
- To change vertical wheel position:
  - Position camber tube above/below frame or move up/down in axle plate
- Remember impact to caster housing angle…
Vertical Position Fixed Tilt in Space

- To create a fixed tilt in space
  - Move axle plate, axle sleeve or camber tube up on the frame to lower the rear STFH
  - Do not change front STFH
- Must re-align the caster housing to perpendicular!

Use the Tools Available to You!
Lateral Wheel Positions

**Increased axle spacing:**
- Improved lateral stability
- Accommodates more camber
- Accommodates user growth
- Accommodates armrest hardware

**Reduced axle spacing:**
- Increased efficiency
- Environment concerns
- Smaller overall footprint

Lateral Rear Wheel Position

- To change lateral wheel position:
  - Thread axle sleeve in or out
  - Slide axle sleeve in or out

Camber

**Camber provides:**
- \( \uparrow \) Lateral stability
- \( \uparrow \) Efficiency of turns/propulsion
- \( \uparrow \) Wheel access
- \( \uparrow \) Overall width at base
Checking Rear Wheel Position

Any change to rear wheel position or size check for:

1. Toe in and Toe out
2. Wheel lock alignment
3. Caster housing angle

- Secure wheels to stabilize (no wheel locks)
- Locate middle of wheel (at axle level) for each wheel (mark)
- Measure between the 2 wheels at mark
- Repeat entire procedure at front
- Compare recorded distances between tires at front and rear of chair

Funding Ultra-Lightweights (K0005)

- Fully adjustable axle plates.
- Ultra lightweight frames
- Options and accessories

Common Features and Considerations
Caster Housing Adjustability

- Adjustable casting housing can be mounted in forward or rearward position
- Position of caster housing affects:
  - Performance, fit, safety and maneuverability

Caster Housing Angle

- Caster housing must be perpendicular to ground
- *Not squared*, causes:
  - Caster float, caster flutter
  - Increased effort to turn
  - Poor tracking of chair
- Check after changes to:
  - Wheel/caster size
  - Camber
  - Fork/stem bolt length
  - Axle plate adjustment

Caster Housing Mounting/Position

<table>
<thead>
<tr>
<th></th>
<th>Caster housing forward</th>
<th>Caster housing rearward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel base length</td>
<td>Longest</td>
<td>Shortest</td>
</tr>
<tr>
<td>Maneuverability</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Clearance between caster and footplate</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Clearance between caster and rear wheel</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td>Weight on casters</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Forward stability</td>
<td>More</td>
<td>Less</td>
</tr>
</tbody>
</table>
Optimal Caster – UE Propeller

- 20-30% weight over casters
- Minimize resistance to turning
- Allow optimal LE positioning
- Balance between indoor maneuverability and outdoor terrain navigation

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### Caster Size

<table>
<thead>
<tr>
<th></th>
<th>Small caster (i.e. 3”)</th>
<th>Large caster (i.e. 8”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propulsion (flat surfaces)</td>
<td>Easier</td>
<td>More difficult</td>
</tr>
<tr>
<td>Turning</td>
<td>Easier</td>
<td>More Difficult</td>
</tr>
<tr>
<td>“Grab” on uneven surfaces</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Interference with footplates</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Front stability (Depending upon position)</td>
<td>Less (?)</td>
<td>More (?)</td>
</tr>
</tbody>
</table>

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### Caster Tire Width

<table>
<thead>
<tr>
<th></th>
<th>Narrow tire</th>
<th>Wide tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propulsion (hard surfaces)</td>
<td>Easier</td>
<td>More Difficult</td>
</tr>
<tr>
<td>Turning</td>
<td>Easier</td>
<td>More Difficult</td>
</tr>
<tr>
<td>Propulsion in soft surfaces</td>
<td>More difficult</td>
<td>Easier</td>
</tr>
</tbody>
</table>

- 5 x 1½” and 6 x 1½” casters
- Beveled bottom creates good compromise
  - Middle of tire contacts ground on hard, flat surface
  - Full tire contacts ground when in softer surface
Caster, Fork and Stem Bolt

- Caster, fork and stem bolt – overall combination affects:
  - Front seat height
  - Function within the environment
  - Turning efficiency
  - Performance

Stem Bolt Selection

Choose longest stem bolt and shortest fork for optimal performance at desired seat to floor height

- Long fork with std stem bolt: Larger turning radius
- Short fork with + 1½” stem bolt: Shorter turning radius

Caster Fork Selection

- Length of fork affects:
  - Ease of turning
  - Size of caster that can be used

<table>
<thead>
<tr>
<th></th>
<th>Longer fork</th>
<th>Shorter fork</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turning radius</td>
<td>Most</td>
<td>Least</td>
</tr>
<tr>
<td>Turning efficiency</td>
<td>Least</td>
<td>Most</td>
</tr>
<tr>
<td>Options for caster size</td>
<td>Most</td>
<td>Least</td>
</tr>
</tbody>
</table>
Caster Placement

- Caster distance to the rear wheel
  - If the caster wheel is closer to the center-of-gravity than the rear wheel, it bears more weight and makes turning difficult.
  - If the caster wheel is further away from the center of gravity, it bears less weight and becomes easier to turn.

Common Features and Considerations

- Materials Design
- Seating
- Leg rests
- Footplates
- Backrests
- Casters, Housing
- Rear wheels
- UE Supports

Weight's Impact on Function

- Choose lightest chair possible.
  - Consider stop and start forces; inertia!
- Read the fine print!
  - How is overall weight achieved on the sell sheet or website
- Configuration of the chair
  - Rear wheel placement and components will also have a huge impact on propulsion
  - Full configuration versus transfer weight
Quality Impact on Function

Optimal design equals:
1. Weight savings
2. Performance
3. Durability

Oval tubing

Reduces Frame Flex

Options and Accessories

Lite Spoke
Spinergy SPOX
Spinergy LX
Ultra Lightweight
Mag
Lite Spoke
Ultra Lightweight

Rear Wheels

Mag
Lite Spoke
Spinergy SPOX
Spinergy LX
Mountain
Options and Accessories

Wheel Locks

High Mount Push
High Mount Pull
Ergo Scissor
Compact

More Assist Required??

POWER ASSIST SYSTEMS!

1. Individuals with limited upper extremity strength
2. Individuals with compromised respiratory systems
3. Individuals not “ready” for a power mobility device
   – Environment reasons
   – Psychological reasons

Heavy Duty Manual Chair Considerations

- Reinforced for additional weight capacity
- Double cross brace
- Stabilizer bar for additional rigidity
- Size of the chair
  – Doorway accessibility
  – Maneuverability
- Weight of system plus client
  – Ramps and lifts
  – Transport
  – Propulsion
  – UE stress and risk of RSI
Body Styles and Seating

- Increased adipose tissue laterally
  - Requires increased seat width, but……
    - Width is from adipose tissue not pelvic width
    - May have problems with fit if cushion contoured
  - Poor rear wheel access
    - May have difficulty achieving 15 degrees of shoulder abduction when reaching the push rims, resulting in inefficient propulsion

Wheelchair Configuration

Consider:

- Appropriate weight capacity
- Appropriate size
- Least roll resistance
- Flat or slight anterior seat slope
- Appropriate seat to floor height for transfers

Measurements
**Dependent Custom Manual**

- **Folding**
- **Non-Folding**

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**Adult Manual Tilt-in-Space (E1161)**

- Must have the ability to manual tilt the frame greater than or equal to **20 degrees** from horizontal while maintaining the same seat to back angle.
- Only for dependent end users???

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**Dependent Manual Mobility**

- **Understanding the benefits of tilt in space, and recline**
Clinical Justifications: Tilt

- Provides for pressure redistribution
- Accommodates joint contracture(s)
- Maintains specific seated angles
- Adds no resulting shear forces
- Minimizes extensor spasticity

- Provides for position change
- Minimizes effects of gravity
- Provides increased trunk stability and head control
- Improves postural alignment
- Improves visual field (fixed kyphosis)
- Maintains access to specialty devices mounted on chair

Clinical Concerns: Tilt

- Poor access to perineal area
- No change in hip or knee position
- Risk of contracture
- Discomfort with sensate clients?

Clinical Justification: Recline

- Provides change in position & body angles
  - Provide relief for sensate clients
- Allow for personal care while in chair
  - Bladder management, dressing
  - Avoid additional transfers
- Allow supine transfers
Clinical Justification: Recline
• Shifts and expands weight bearing surfaces
• Decreases peak pressures
• Provides different body angles

Clinical Concerns: Recline
• Shear Forces During Recline
• Pivot point of equipment does not match client’s pivot point at hip
• Extensor Spasticity

Consider a Product Ladder
• Product hierarchy
  – What changes from bottom to top?
    • Adjustability
    • Weight
    • Materials
    • Options
    • Cost
    • Amount of justification?
Manual Wheelchair Set Up

- Make the Right Choices Based on:
  - Client’s Goals
  - Evaluation Findings
  - Research Findings
  - Product Knowledge
  - Funding Criteria

- CREATE the optimal configuration for:
  - Performance, Function and Fit

The Road of Documentation

- As we travelled through today’s course, you have seen how each part ties to the documentation you create and how it will be used for insurance coverage.
- Documentation plays a critical role within the evaluation process.

Critical Questions

- Who is the funding source?
- What is the client’s medical history?
  - Diagnosis (primary, secondary, etc.)
  - Surgeries (previous and upcoming)
  - Medications (past, present, future)
- What equipment has the patient had?
  - Not just wheelchairs
  - When was it received, why does it no longer meet their needs (medical - primary)? Who funded the equipment?
Replacing Equipment

- For many funding sources...
  Largest denial cross-country: Same/similar
- Documentation is key!
- Life of equipment - 5 years plus….
- Change of condition - what is needed? This is where eval’s are crucial.
- No automatics
- So… what do you do? What do you need?

Common Funding Sources

- State Medicaid Programs
  - These vary by state
  - Become involved
  - Work with your providers
- Private Insurance
- Medicare
  - Issues with previous users, now new to Medicare
- How does secondary insurance work?
  - Will it matter to you?
- Others…?

Therapists’ “Keys” in the Area of Funding

- To provide justification that clearly documents that the client meets the coverage criteria for their funding source.
- Be sure you are asking for the least amount that is medically needed for this client to have the independence that this funding source provides for…
- Key items:
  - Independent
  - Functional
  - Safety
The First Steps

Preparation......
• Think about… Who will review the letter or request for funding?
• What is this person’s medical background? Do they have an understanding of the Durable Medical Equipment (DME) world that we live in every day?
• Remember... The reviewer only knows your patient by what is on paper. It is your job to “tell” the detailed story.

What's Your Style?

• Is your evaluation completed electronically or hand-written?
• Make a game-plan to keep it simple.
• Does your evaluation document need to be “tweaked?”
  – What could be a clue?
  – What is one way to find out?

What About Templates?

• Do you? Don’t you?
• Should you? Shouldn’t you?
• Things to consider:
  – Your clients are individuals
  – Proof-read!
  – Contradictions
Things to Know…

- Nothing is really paid based only on diagnosis
- Assume the reader knows nothing of the client, the presenting condition, or the requested equipment
- Establish a professional appearance with the report
- Keep information CLEAR and CONCISE!
- Manufacturer order forms are good to use as a guide to understand what needs to be justified
- Add pictures/video if value can be added – Can assist with appealing a denial.

Simplify

Your time is limited…

- As you go through your evaluation, keep in mind that at the same time you are also creating your documentation.
- Think about “climbing a ladder” to justify the equipment selected.
- Tie your thought process and selections to what will be down on paper.

Parts & Pieces

- What Can be Billed Separately???
  - Width or Depth less than 15” (K1-K9, E1161)
    - If a seat width or depth is 14” or less it’s considered to be Pediatric and should be billed with the appropriate code.
  - Width or Depth greater than 19” (K1-K9, E1161)
    - E2203 - 20” to less than 22” Depth
    - E2204 - 22” to 25” Depth
    - Justification….
  - Height Adjustable Arms - E0973, ea
  - Flat Free Inserts - E2213, ea
  - Positioning Belt/Seat Belt - E0978
    - Patient has weak upper body muscles, upper body instability or muscle spasticity which requires use for proper positioning.
  - Anti-tips - E0971, ea
Parts & Pieces

What Can be Billed Separately???

- Angle-Adjustable Footplates - K0040, ea.
  - No specific criteria - so be smart.
- Wheel-lock Extensions - E0961, ea
  - No specific criteria - so be smart.
- Impact Guards/Side Guards - K0108
- Arm Troughs - E2209
  - Patient has quadriplegia, hemiplegia, or uncontrolled arm movements.
- There are other items - but these are primary to the products reviewed today.

No Need to Justify

- Many options/accessories are included with the base of the wheelchair, therefore there is no need to spend the time justifying them.
- MWCs - Plastic coated hand rims, solid tires, camber, casters (unless getting flat frees).
- Others…?

Questions to Ask Yourselves

1. Have I specified that the recommended equipment is in fact the minimal equipment essential to this client?
2. Have I demonstrated how I ruled out lesser level equipment?
3. Has the coverage policy been adhered to?
4. Is the equipment that I am recommending in fact the least costly alternative?
5. Have I left the reader with a clear picture of the consequences to the client in the absence of having the recommended equipment?
Can You “Upgrade” Products?

• Will the funding source allow this?
• What about the $$?

Course Objectives

At the conclusion of this course attendees will be able to:

• Recite 3 ways that proper configuration of a manual wheelchair can reduce repetitive strain injuries.
• Identify at least 5 essential components in the clinical assessment process when prescribing manual wheelchairs.
• Describe the proper stroke pattern for independent manual propulsion of a wheelchair.
• Identify 3 or more benefits and challenges of folding and rigid manual mobility frames.
• Recite at least 2 ways how using contemporary materials in manual wheelchair frames can impact mobility performance.

Want More Information??

• “Functioning in a Manual Wheelchair; What are the Necessary Considerations?” (.4 CEU’s)
• “Rolling For Success” (.2 CEU Seminar)
• “Let’s Roll!” (.1 CEU Webinar)
sunrisemedicaleducation.com
EducationinMotionBlog.com
Questions

Thank You For Attending!

“Embrace every challenge! Determination and perseverance will significantly impact someone’s life!”
Steve Boucher, Clinical Education Specialist
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“Always remember that at the end of the day, your client is your number one priority!”
Angie Kiger, Clinical Education Specialist
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