Key Elements to Running a Successful Wheelchair/Seating Clinic

Mike Edgerton, PT, NCS, ATP

Course Objectives

1. Identify the key members of the wheelchair/seating clinic team.
2. Identify the equipment and time needs for running a successful wheelchair/seating clinic.
3. Identify the key elements to performing a subjective evaluation, mat evaluation and functional evaluation of a patient requesting a wheelchair/seating system.
4. Name the different types of manual wheelchairs.
5. Name the different types of power wheelchairs.
6. Name the different power seat functions available on the market.

Key Team Members

- Patient (client)
- Family/caregivers
- Referral source (Physician, PA, Nurse Practitioner)
- PT and/or OT (ATP or SMS certified preferable)
- ATP (supplier)
- Appropriate equipment manufacturer reps
- Support personnel in the seating clinic
  - Schedulers
  - Insurance specialists
- Funding Source
Clinic equipment needs

- High/low mat table
- Measuring Tools
  - Metal tape measure
  - Trunk width measuring tool
  - Goniometer
  - Blood pressure cuff
  - O2 sat monitor
  - Scale
  - Sliding boards (to measure hip width)
- Transfer equipment (Hoyer lift)
- Camera
- Pressure mapping system

Trial Equipment

- Wheelchairs
- Backrests
- Cushions

You also need an appropriate area to trial equipment

Time Requirements

- Evaluation: 90-120 minutes
- Documentation: 15-30 minutes
- Follow up appointments:
  - Further equipment trials
  - Fabrication of custom seating
  - Fitting: 60 - 120 minutes
Subjective Evaluation

- Medical status and history including:
  - Primary diagnosis and prognosis
  - Secondary diagnosis and co-morbidities
  - Past medical history
  - Past surgical history
  - Further surgical/medical/therapeutic interventions planned or being considered
  - Precautions
  - Medications
  - Allergies

Subjective Evaluation continued

- Living situation
  - Wheelchair accessibility issues
- Vocational/School
- Current functional level
  - Mobility related ADL's
  - Instrumental ADL's
- Transportation
- Cognitive issues that may interfere with wheelchair propulsion/seating
- Visual/perceptual deficits
- Time spent in the current wheelchair

Subjective Evaluation continued

- Integumentary (current skin condition and past history of pressure injuries)
  - Surgical history
  - Current method of performing pressure relief
- Bowel/bladder function
- Sensation
- Pain
- Fall history
- Supplemental oxygen needs
Subjective evaluation continued

- Current equipment
  - Exact measurements
  - Condition
  - Documentation of when it was purchased and how it was paid for

- Patient/family stated goals

Mat evaluation

- Posture
- Sitting balance
- Range of motion
- Strength
- Abnormal tone
- Measurements
- Skin check
- Functional Evaluation

Posture

It is important to evaluate posture in three different conditions:

- In the current wheelchair/seating system
  - Effect of the seating system on posture

- Edge of mat
  - Effect of gravity on posture

- Supine
  - Posture with gravity eliminated
Posture

In all 3 positions, look at:

- Balance
- Pelvic Tilt
- Pelvic Obliquity
- Pelvic Rotation
- Leg Position
- Lumbar Lordosis
- Thoracic Kyphosis
- Scoliosis
- Shoulder/scapula position
- Head Position

Sketches

This sketch represents:

- Low right shoulder
- Low left pelvic obliquity
- Right anteriorly rotated pelvis
- Left windswept deformity

Pelvic Obliquity

A pelvic obliquity is a frontal plane deformity and is always named for the low side.
**Posterior Pelvic Tilt**

A posterior pelvic tilt with a corresponding thoracic kyphosis is a common destructive postural tendency that we see in seating and positioning.

---

**Range of Motion**

- Hip AROM/PROM
- Knee AROM/PROM with the hips flexed
- Ankle AROM/PROM with the knees flexed
- Hamstring Length
  - Popliteal angle with the hips flexed to 90 degrees
- Upper extremity AROM/PROM
- Abnormal Muscle Tone
  - Modified Ashworth Scale
- Flexibility of postural abnormalities

---

**Strength**

It is important to perform and record manual muscle testing for the patient’s upper and lower extremities.

Grip strength measurements are also valuable to measure and record.
Measurements

- Height
- Weight
- Lower leg length
- Bottom of buttocks to olecranon
- Bottom of buttocks to inferior angle of scapula
- Bottom of buttocks to shoulder
- Bottom of buttocks to top of head
- Hip width soft tissue boundary
- Hip width bony boundary
- Popliteal space to the back of the buttocks
- Width of trunk
- Forearm length to wrist
- Forearm length to fingertip

Mat evaluation

- Insert video

Functional Evaluation

- Transfer ability
- Balance Assessment (Berg Balance Scale)
- Gait (level of assist, assistive device, distance, fatigue, O2 saturation levels)
- Pressure relief techniques
- Manual wheelchair propulsion in an optimally configured wheelchair
- Power wheelchair driving ability with an optimally configured joystick
- Power wheelchair driving ability with optimally configured alternative drive controls
Step one: Determine appropriate type and level of wheelchair

- Standard weight wheelchair
- Bariatric wheelchair
- High Strength Lightweight wheelchair
- Ultralight, fully customizable wheelchair
- Tilt-In-Space wheelchair

Standard weight wheelchair
This is your standard weight, least expensive option. This is a wheelchair designed for infrequent, short duration use. Very little adjustability.
**Bariatric Wheelchair**

A heavy duty wheelchair that will accommodate a user weighing greater than 250 pounds. For even larger clients, you must make sure that the wheelchair will accommodate their weight. Accessibility becomes an issue with wider seat widths.

**High Strength, light weight wheelchair**

A high strength, light weight wheelchair can be justified for a full time user of the wheelchair. Usually they have height adjustable, flip back armrests, but only limited vertical axle adjustability.

**Ultralight wheelchair**

A fully customizable (adjustable and/or configurable) wheelchair that is as light as possible. Typically under 25 pounds. This wheelchair must have characteristic features that can be specified to match anatomical dimensions of the individual as well as the individual’s functional ability.
Customizable features of the ultralight wheelchair

- Seat surface height at front edge
- Seat surface height at rear edge
- Seat plane angle
- Seat width
- Seat depth
- Back support height
- Seat to back support angle
- Foot support to seat height
- Leg to seat surface angle
- Horizontal and vertical position of the rear axle
- Rear wheel camber
- Wheel type and size
- Caster type and size

Ultralight configuration

Safety and reliability of the system is highly dependent upon wheel position. A more forward axle position decreases overall rolling resistance, allows easier negotiation of variable terrain, and limits the risk of upper extremity strain or injury over time. Yet, an axle that is too far forward can result in injury from tipping backward. Ideal set up is to have the fingertips reach the hub, with the hub directly below the shoulder.

Tilt-In-Space manual wheelchairs

Designed for the dependent user who typically does not self-propel, but needs tilt-in-space for pressure relief and repositioning. Most tilt-in-space wheelchairs tilt from 0-50 degrees. For pediatric manual wheelchair users, some of the latest tilt-in-space seat frames can adjust in width to accommodate growth changes.
Power assist systems

Power assist systems have become much lighter, decreasing strain when lifting them. Moreover, a system now exists that drastically reduces the quantity of propulsive strokes. With the first stroke the motor engages and keeps the chair going until the user decides to stop or needs to stop.

Power wheelchairs

- Scooters
- Group 2 power wheelchairs
- Group 3 power wheelchairs

Scooters

Typically used for outdoor use only. These are difficult to get covered by Medicare.
Group 2 Power Wheelchairs
Rental power wheelchairs. Medicare will rent the power wheelchair for 13 months, at which time the wheelchair is purchased for the patient. These are lower end power wheelchairs used mostly for mobility with little need for any specialty seating.

Group 3 Power Wheelchairs
Higher end power wheelchairs that can be set up with specialty seating, custom seating, power seat functions and specialty controls. Medicare will cover these wheelchairs if "Mobility limitation is due to a neurological condition, myopathy or congenital skeletal deformity". Medicare implies that myopathies and deformities should be progressive and/or congenital.

Power Drive Wheels
A power wheelchair can be set up in one of three drive configurations:

- Rear-Wheel Drive
- Front-Wheel Drive
- Mid-Wheel Drive
Rear Wheel Drive Configuration

Historically, rear-wheel drive configurations were most available. However, they have an expansive footprint, resulting in a large turning radius and accessibility issues. This eventually led to the development of mid-wheel and front-wheel drive technologies.

Mid-Wheel Drive Configuration

A mid-wheel drive wheelchair is the most maneuverable as it has the tightest turning radius and smallest 360 degree turning circumference, making it a great indoor wheelchair.

Front-Wheel Drive Configuration

Front-wheel drive wheelchairs navigate tight corners better due to the small front end but making turning 360 degrees difficult due to the long back end. The location of the large drive wheels at the front of the base allows it to traverse obstacles with ease, making it a great wheelchair for variable terrains.
Power Wheelchair Safety

- Improved suspension systems
- Tracking technology
- Light packages
- Charging ports for phones, tablets and ventilators
- Bluetooth capability

Power Seat Functions

- Power Tilt-In-Space
- Power Recline
- Power Elevating Leg rests (articulating)
- Power Seat Elevators

Medicare will cover power seating on a qualified power wheelchair base, if all of these are true:

1. The user meets all the coverage criteria for a power wheelchair described in the Power Mobility Devices LCD (documented in the Face to Face chart note and the therapy evaluation) AND
2. A specialty evaluation was performed by a licensed/certified medical professional (evaluation includes specific objective functional assessment, is signed by the LCMP, plus a concurrence statement is signed by the ordering physician. The PT, OT and physician may have no financial relationship with the supplier AND
3. A RESNA certified Assistive Technology Professional (ATP) has direct, in-person involvement in the wheelchair selection for the beneficiary.
Seat Elevators

At this time, seat elevators are not covered by Medicare.

The technologies for seat elevators have improved significantly. The newer technologies allow users to continue driving while actively elevating and maintaining higher speeds, eliminating disruption in the users' participation. Additionally, the user can obtain up to 14 inches of elevation, which greatly improves functional reach and social interaction.

Alternative Drive Controls

Some examples:
- Head Array
- Sip/Puff
- Specialty Joysticks
- Chin Control

I highly recommend taking online courses by RESNA to learn about different Alternative Drive Controls. As a clinician, you should also take the time to learn how to drive with specialty controls.

Determine appropriate positioning needs

- Cushions
  - Basic
  - Pressure relieving
  - Posture
  - Custom

Cushion materials have not changed much in recent years; however, configurations have. Hybrid designs promote balance of the pros and cons of each material, improving the user experience. For example, foam can be used at the anterior portion of the cushion to provide a more rigid surface for transfers, while air or gel can be used under higher risk areas, like the ischial tuberosities.
Positioning needs continued

- Backrests (sling, basic, posture, lateral support, custom)
- Head rests
- Arm rests
- Hip guides
- Abductor wedges
- Side guards
- Footrest configuration

Plan

- Trial at home
- Follow up clinic appointments for custom seating or further trials
- Home Health or Outpatient therapy to work on driving ability
- Fitting at home or in the clinic

Letter of Medical Necessity

- Specialty letter versus thorough evaluation documentation that includes medical justification

At our clinic, we document a thorough evaluation that includes medical justification for the equipment and all upcharges. Our suppliers create this list for us. This evaluation/letter of medical necessity then gets sent to the referral source for signature. If we need to do a letter of medical necessity at a later date, then we addend our original evaluation.
Wheelchair and seating technologies are constantly changing. It can be overwhelming to try to keep track of the changes and to know what products are best for your clients. Thus, it is important to have good working relationships with suppliers and/or manufacturer representatives to keep up with the changes. A client-centered approach can guide the evaluation and equipment recommendation process, ensuring that the technology best meets the user’s needs.

Bibliography

Bibliography continued
Bibliography continued


Questions?

Email: mjedgerton@aol.com