Wheelchair Seating Assessment: A step by step process.

Objectives:
At the end of this session, participants will be able to:
1. List at least 2 reasons why a systematic wheelchair assessment process is critical.
2. Describe the 8 steps of the service delivery process recommended by the World Health Organization related to wheelchairs and seating.
3. Discuss 2 reasons why a mat assessment is a critical component of a wheelchair seating assessment.

Poll #1:
1. How familiar are you with the World Health Organization’s “Wheelchair Service Training Packages”?
   A. I have never heard of it
   B. I have heard of it, but never seen it
   C. I have a copy and have looked at it
   D. I have used it in my practice or in training/education

Poll #2:

Wheelchair Assessment Team

Wheelchair Assessment Process

Wheelchair user’s role in service delivery
- Experienced wheelchair users often know what will be “an appropriate wheelchair” for them.
- If they have used a wheelchair already, they will have ideas about what works for them, and what they would like to change.
- Wheelchair users who have not used a wheelchair before will need more information.
- Wheelchair user should be an equal participant on the wheelchair seating team.
World Health Organization’s Wheelchair Service Delivery Steps

1. Identification of Need and Referral
2. Assessment
3. Prescription (selection)
4. Funding/Ordering
5. Product (Wheelchair) Preparation
6. Fitting/Delivery
7. User Training
8. Maintenance/Repairs

Step 1: Identification of Need & Referral

Step 2: Assessment

Step 3: Prescription (selection)

Step 4: Funding & Ordering

Step 5: Product (wheelchair) preparation
Step 6: Fitting

Step 7: User Training
- How to handle a wheelchair
- Getting in and out of the wheelchair
- Wheelchair mobility
- Looking after the wheelchair
- Ways to prevent pressure injuries

Step 8: Maintenance, repairs and follow up

Poll #2:
1. How might the “8 steps” of the service delivery process developed by the World Health Organization differ in different types of environments?
   A. The members of the clinical team might be different
   B. The particular technologies that are used might be different
   C. The resources available to reimburse for the process and the equipment might be different
   D. All of these might differ depending on the environment

WHO Step 2: Assessment
- Purpose of assessment
- Components in the assessment process
  - Intake and history
  - Functional assessment
  - Physical assessment
  - Sitting assessment
  - Mat assessment
  - Simulation
  - Measurements

Purpose of Assessment
The information gained from an assessment helps the wheelchair user and wheelchair service personnel to:
- Choose the most appropriate wheelchair
- Choose the most appropriate wheelchair components including postural support devices and accessories
- Determine what training the wheelchair user and/or the family need to make the best use of the wheelchair
Communication Tips
- Speak clearly
- Make eye contact (where appropriate)
- Be respectful
- Use straightforward terms
- Explain what is going to happen before it happens
- After explaining something, check that the wheelchair user understands
- Listen carefully and check to make sure you have understood the wheelchair user correctly
- Show you are interested
- Don’t assume you know best

Intake and History

Interview components include:
- Information about the wheelchair user
- Medical history & physical issues
- Home environment
- Community environments
- Existing wheelchair/seating system

Wheelchair User Information
- Basic demographic information
- Reason for referral
- History of mobility impairment
- Social history
- Living environment
  - Roles and responsibilities – e.g. parent, caregiver, student
  - Available assistance/ supports
  - Typical environments encountered
- Typical daily activities
- Funding information
- Initial Goals

Medical History
- Diagnosis related to mobility impairment, ICD 10 Code(s)
  - Including onset, progression, prognosis
- Other diagnoses or medical problems
- Surgical history and planned surgeries
- Tone management strategies
  - Medication management – oral vs implanted pump
  - Surgical or injectable (e.g. Botox)
- Other technologies used

Home Environment
- Home: house, apartment, assisted living, other
- Lives alone or with others
- Entrance to home:
  - stairs (how many)
  - ramp
  - width of door
- Width of narrowest doorway inside
- Accessible bathroom?
- Storage of wheelchair
- Heights of dining room table, bed, sink

Community Environments
- Work and/or school environments
- Other typical environments
- Transportation
  - Public vs private: bus, van, car
  - Driver or passenger; vehicle seat or wheelchair
  - Entry: lift, ramp, head clearance, door width
  - Wheelchair securement and occupant restraint
  - Storage/ securement of wheelchair
Current Equipment Assessment

Current mobility base
- Manufacturer, model, serial #
- Size and configuration
- Age and condition
- Funding source
- General function of equipment

Current seating system
- Manufacturer
- Describe seat base, cushion, back support, supports, angles
- Age and condition
- General fit of seating
- General appearance in equipment

Functional Assessment

• Mobility status
  - Transfers
  - Bed mobility
  - Ability to weight shift (repositioning)
• Ambulation function
  - Equipment used
  - Assistance needed
  - Fall risk assessment
• Endurance

Standing and Ambulation

Standing Balance
- Independent
- Assisted
- Fair
- Poor
- Unable to stand without assist
- Posture

Ambulation
- Unable to ambulate
- Ambulates with device
- Independent without device
- Independent short distances
- History of falls
- Unsafe

Wheelchair Mobility Function

- Manual wheelchair propulsion
  - Both arms or one?
- Both feet, one or none?
- Functional limitations: strength, control, pain, endurance
  - Unable, pushed by helper
  - Operate scooter
  - Operate power wheelchair
  - Able to perform weight shifts/pressure redistribution?

Functional Assessment/Screening

Functional assessment
- ADL and IADL Assessment
  - Dressing
  - Eating/Meal prep
  - Grooming/hygiene
  - Bowel/bladder management
  - Handedness
  - Vision/visual processing
  - Hearing
  - Sensory processing skills

Screening of body functions
- Cardiovascular/pulmonary
- Circulatory
- Integumentary
- Gastrointestinal

Communication and Cognition

- Expressive and receptive communication abilities
- Use of communication equipment/enhancements
  - Mounting and integration needs
- Cognitive Status
  - Memory
  - Problem solving
  - Judgment
  - Motor planning
  - Attention
  - Behavior
  - Learning skills
Physical Examination

- Posture assessment
  - Sitting
  - Supine
- Range of Motion
  - Supine
  - Sitting
- Determination of flexibility
  - Supine
  - Sitting
- Skin assessment
- Strength assessment
  - Muscle power
  - Muscle endurance
- Neuromuscular assessment
  - Muscle tone
  - Reflexes
  - Coordination
  - Motor control
  - Impact on function

Physical Examination: Current Sitting Posture

- Be systematic.
- Look at and feel the posture of:
  - Pelvis
  - Hips
  - Knees, ankles & feet
  - Trunk
  - Head
  - UE’s
- Assess stability in sitting
  - Balance and control
  - Ability to respond to challenge

Seated Posture Assessment

Mat assessment

Determine flexibility as in supine:

- Fixed
- Flexible
- Partially flexible
  - Pelvis
  - Hips
  - Knees
  - Ankles
- Add:
  - Trunk/spine
  - Head
  - Amount of support needed

Sitting Balance

- Good sitting balance
  - Hands free to function
- Fair sitting balance
  - Achieves close to neutral posture
  - Needs postural supports
- Poor sitting balance
  - Unable to achieve neutral posture
  - Needs custom supports

Physical Examination

- Sensation
- Pain
- Skin integrity
  - Current skin issues
  - History of skin issues
  - History of skin surgeries
Physical Examination

- Supine Mat Assessment
- Joint ROM for Sitting
  - Pelvis
  - Hips
  - Knees

Flexibility/ Range of Motion

- Pelvis: neutral (tilt, obliquity or rotation can be reduced)
- Trunk: neutral (flexion, extension, rotation, lateral flexion can be reduced)
- Hips: flexion to 90°, abd/adduction to 5-8° abduction, int/ext rotation to 0°
- Knees: extend to 90° with the hips flexed to 90°
- Ankles: flexed to 90°

Flexibility of Posture

**Fixed:** With gentle force there is no movement in particular part of the person’s body.

**Flexible:** With gentle force the parts of the person’s body that are not in neutral can be brought to neutral position.

**Partly Flexible:** With gentle force the parts of the person’s body that are not in neutral can be moved only part way toward neutral.

Fixed vs. Flexible

- Posterior Pelvic Tilt

Seating Simulation

- Hand simulation: Using your hands and different parts of your body to provide postural support for the person.
  - First, assess if you find the same limitations of motion that you found in the supine assessment (pelvis, hips, knees).
  - Next, assess if the person can sit in a neutral or close to neutral sitting posture with support.
  - What support is needed and where?
- Using a Seating Simulator: A special wheelchair that is designed for easy configuration in different dimensions and with different supports.
  - What dimensions are used?
  - What postural supports are needed?

Basic Measurements: Considerations

- Patient sits as upright as possible or in their neutral sitting posture (may need support)
- Use a metal retractable tape measure
- Can use clipboards and calipers
- Use foot blocks to position/support the feet
- Align your line of sight with the tape measure at the correct angle.
Basic Measurements

- Buttock/thigh depth (left and right)
- Lower leg length
- Ischial depth
- PSIS height
- Bottom of inferior angle of scapula
- Shoulder height
- Chest width
- Hip width

Measurements

Buttock/thigh depth (left and right)
Lower leg length
Ischial depth
PSIS height
Bottom of inferior angle of scapula
Shoulder height
Chest width
Hip width

Conclusion

- An appropriate wheelchair provides personal mobility, works optimally in the wheelchair user’s environment, increases independence, and optimizes health.
- There are eight steps in the WHO wheelchair service delivery process.
- A thorough seating evaluation, including a mat assessment, is most likely to result in the information needed for optimal equipment selection.

References/Resources


Questions – Now or Later!

- Barbara Crane
  - bcrane@hartford.edu
  - Phone 860-768-5371
  - Fax 860-768-4558