THE APPLICATION OF POWER SEAT FUNCTIONS

BEYOND THE BASICS

PROFESSIONAL EDUCATION PARTNERSHIP
THE FOUNDATION OF SMART BUSINESS

AGENDA

- Medicare coverage criteria for power tilt, power recline and elevating legrests
- RESNA position paper on tilt, recline and elevating legrests
- Medicare coverage criteria for power seat elevation
- RESNA position paper on seat elevation devices
- Evidence Based Practice

QUANTUM

Satisfactory Completion Requirements
As a learner….

1) **Sign-in.**
2) **100% Attendance requirement**
3) **Sign-out**
4) **Required to complete an evaluation form on the day of the event.**

- **Failure to abide by any of these will result in no credit.**
- **A learner must sign-in, sign-out, and complete an evaluation form to get a Certification of Completion**
- ***If one item is missing, it will be treated as if the learner was never in attendance***

No partial credit will be awarded

QUANTUM

LEARNING OBJECTIVES

1. Name at least 4 considerations involved in the selection of seating and power positioning options
2. State 2 clinical benefits of tilt and recline related to Pressure Management
3. List 2 potential contraindications for using power recline and 1 potential contraindication for using power tilt
4. State 1 clinical benefit for use of power adjustable seat height in participating or performing MRADLs
5. Discuss and utilize evidenced based research and apply to clinical decisions in the selection of power positioning systems

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CLINICAL CONSIDERATIONS

- Power Tilt **and** Recline
- Power Tilt **or** Recline

- Power Seat Elevation

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MEDICARE COVERAGE CRITERIA

A power seating system – tilt only, recline only, or combination tilt and recline – with or without power elevating legrests will be covered if criteria 1, 2, and 3 are met …

1. **The patient meets all the coverage criteria for a power wheelchair described in the Power Mobility Devices LCD; and**
2. A specialty evaluation that was performed by a licensed/certified medical professional, such as a physical therapist (PT) or occupational therapist (OT) or physician who has specific training and experience in rehabilitation wheelchair evaluations documents the patient's seating and positioning needs. The PT, OT, or physician may have no financial relationship with the supplier; and
3. The seating system is provided by a supplier that employs a RESNA-certified Assistive Technology Professional (ATP) who specializes in rehabilitation wheelchairs and who has direct, in-person involvement in the selection of the seating system for the patient; and

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ALGORITHMIC APPROACH TO MAE

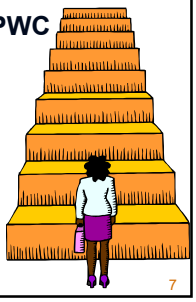
K0835 - K0891 PWC

K0813 - K0831 PWC

Scooter

Manual WC

Cane or Walker



7

MEDICARE COVERAGE CRITERIA

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3. The seating system is provided by a supplier that employs a RESNA-certified Assistive Technology Professional (ATP) who specializes in rehabilitation wheelchairs and who has direct, in-person involvement in the selection of the seating system for the patient; and

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MEDICARE COVERAGE CRITERIA

and if criterion 4, 5, or 6 is met:

4. The patient is at **high risk for development of a pressure ulcer** and is **unable to perform a functional weight shift**; or

5. The patient **utilizes intermittent catheterization for bladder management** and is **unable to independently transfer** from the wheelchair to bed; or

6. The power seating system is needed to **manage increased tone or spasticity**.

If these criteria are not met, the power seating component(s) will be denied as not reasonable and necessary.

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POSITION PAPERS

RESNA Rehabilitation Engineering and Assistive Technology Society of North America

- The Application of **Tilt, Recline** and Elevating Legrests for Wheelchairs (2010)
- The Application of **Tilt, Recline** and Elevating Legrests for Wheelchairs (2015)
- The Application of Seat-Elevation Devices

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TILT / RECLINE AND ELEVATING LEGS

It is RESNA's position that these features are often medically necessary, as they enable certain individuals to:

- Re-alignment posture and enhance function
- Improve physiological processes such as
  - Orthostatic Hypotension
  - Respiration
  - Bowel and bladder function
- Enhance visual orientation, speech, alertness and arousal
- Improve transfers biomechanics
- Regulate spasticity
- Accommodate and prevent contractures and orthopedic deformities
- Manage edema
- Redistribute and relieve pressure
- Increase seating tolerance and comfort
- Independently change position to allow dynamic movement

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POSTURAL RE-ALIGNMENT AND FUNCTION

- Increased independence with gravity-assisted positioning
- Improve head and trunk control
- Gain balance and stability
- Adjust angles for functional reach and completion of ADLs
- Safe negotiation of obstacles
- Safe negotiation of inclines

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POSTURAL RE-ALIGNMENT AND FUNCTION

Supported in Literature

- Alter center of gravity by altering angles to gain balance & stability (Kreutz, 1997; Lange, 2006)
- Important for children or adults with progressive or static scoliosis (Lange, 2000)
- **New clinical guidelines recommend incorporating seat functions into daily activities of people with various disabilities**
  (Bushby et al, 2010; Calhoun, Schottler & Vogel, 2013; Mcnamara & Casey, 2007)

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PHYSIOLOGIC IMPLICATIONS

- Maintain vital organ capacity
- Manage Orthostatic Hypotension
- Maximize breathing and speaking ability
- Improve chewing/swallowing - reduce risk for aspiration
- Independent management of tone
- Maintain muscle length and joint mobility
- Bowel and bladder management
- Improve visual orientation/line of sight
- Increase alertness/arousal

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ORTHOSTATIC HYPOTENSION

- Also known as postural hypotension
- This is a condition in which the blood vessels do not decrease in size, in response to lowered blood pressure, due to altered function of the autonomic nervous system

- The blood pools in the legs and pelvic region resulting in a feeling of "light-headedness" or "fainting“

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ORTHOSTATIC HYPOTENSION

Supported in Literature

- High prevalence in the general population
  (Bradley & Davis, 2003)
  - Cardiac Disease, Spinal Cord Injury (SCI), Diabetes, Neuropathy, Multiple Sclerosis, & Parkinsonism
- Management - **assume a recumbent/semi-recumbent position**
  (Claydon, Steeves, & Krassioukov, 2006)
  - **Combination of tilt, recline, & power legrests to achieve the position**
    (Kreutz, 1997)
- Sleeping in bed (supine / recline) with the **head elevated at 10° to 20°** improves symptoms
  (Ten Harkel, Van Lieshout, & Wieling, 1992)

QUANTUM

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BOWEL AND BLADDER FUNCTION

- Another problem that may occur as a result of the lowered blood pressure is a decrease in the amount of urine produced by the kidneys
- After the individual reclines their leg bag (or protective under garments) may fill quickly as a result of the increase in blood pressure that occurs

QUANTUM

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BOWEL AND BLADDER FUNCTION

- Individuals with indwelling catheters may experience backflow of urine when using a tilt system
- Recline may allow an individual to perform their care independently and reduce the need for caregiver assistance OR eliminate the need to transfer from the chair when caregiver assist is required for B & B management

QUANTUM

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BOWEL AND BLADDER FUNCTION

Supported in Literature

- Reduce assistance needed
  (Wyndaele, 2002)
- Increase compliance
  - **reduce urinary tract infections and morbidity**
  (Salomon et al., 2006)

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VISUAL ORIENTATION, SPEECH, ALERTNESS, AROUSAL, RESPIRATION & EATING

- Tilt and recline systems can be used to:
  - Orient the trunk and head position
  - Stimulate the vestibular system
  - Improve line of sight
  - Allow for better communication
  - Maximize breathing by maintaining vital organ capacity
  - Reduce risk for aspiration

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RESPIRATION

Supported in Literature?

- Little research exists specifically evaluating the effect of tilt, recline or tilt and recline on respiratory function
- Widely accepted that the position of the skeletal system and internal organs and the impact of gravity effect the individual's ability to perform diaphragmatic breathing effectively

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TRANSFERS AND BIOMECHANICAL POSITION

- Improve transfer biomechanics
  - Use tilt and recline to stabilize the trunk in order to position themselves properly for a transfer
  - Recline may be used in combination with elevating legrests to enhance sliding transfers with a person in supine position
- Reduce the number transfers needed
- Reduce the risk for injury to patient and caregiver(s)

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TRANSFERS AND BIOMECHANICS

Supported in Literature

- Better positioning = Reduced Loading on Shoulders
  (Herberts, Kadefors, Hogfors, & Sigholm, 1984)
- Reduce need for assistance & caregiver injury
  (Edlich, Heather, & Galumbeck, 2003; Fragala & Bailey, 2003)

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SPASTICITY AND TONE

- Maintain or change joint angles?
  - Tilt maintains static joint angles and muscle fiber length
  - Recline changes joint angles and increases muscle fiber length
- Independent management of spasticity and tone

NOTE: Clinically, recline systems should be considered on a case by case basis for management of spasticity since it has been noted that in some individuals recline can increase tone, especially in the spine extensors

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SPASTICITY AND TONE

Supported in Literature

- Tilt systems maintain static joint angles
  - muscle fiber length
  - positional changes w/out increasing tone

    (Kreutz, 1997)
- Judiciously prescribe recline systems
  - can increase tone, especially in spine extensors

    (Lange, 2006)

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CONTRACTURES & ORTHOPEDIC DEFORMITY

- Static seating systems can lead to contractures, especially in the hamstrings
- When contractures are present seat to back and legrest position should be set to the appropriate accommodative angle(s)
- Elevating legrests, in combination with recline, allows hip extension with knee extension and prevents undue tension on the hamstrings, hip and knee joints

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CONTRACTURES & ORTHOPEDIC DEFORMITY

Supported in Literature

- Static seating systems = contractures, hamstrings

  (Lange, 2006)
- Power elevating legrests;
  - manage contractures or orthopedic deformities

    (Levy, Berner, Sandhu, McCarty, & Denniston, 1999)
  - passive movement to the knee joints

    (Lange, 2006)
  - **adjusted to prevent undue tension on the hamstrings and hip joints**
  - combination with recline when passive extension is limited
  - extending near end range can elicit reflex spasticity
- Tilt and/or recline systems used for limited hip flexion, with seat to back angle appropriately configured

  (Kreutz, 1997)

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EDEMA

- Elevation of the legs 30 cm (≈ 12 in.) above the left atrium is generally recommended as part of the management of edema
- Reduce venous pressure and increase capillary flow
- Leg elevation can be effective when used in combination with tilt but may be inadequate due to the flexion of the hip
- A combination of tilt and recline may be necessary for adequate leg elevation above the heart

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EDEMA

Supported in Literature

- Power elevating legrests help manage edema (Levy et al., 1999)
- Lower limbs of wheelchair users may act as a reservoir (Kinzer & Convertino, 1989)
- Elevate the legs above the heart (Abu-Own, et al., 1994; Douglas & Simpson, 1995; O'Brien, et al., 2005)
  - reduction in venous pressure
  - increases arterio-venous pressure and capillary flow
  - combined with tilt and recline systems for adequate elevation of legs
- **Using elevating legrests and tilting more than 30° in combination with full recline significantly improves lower limb hemodynamic states** (Fujita et al., 2010)

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PRESSURE RELIEF

- Best practice is to provide a **combination of cushion technology and** a means for **position change** to prevent/treat ulcers
- Tilt, when used alone, must be greater than 25° to achieve pressure relief and/or perfusion at the ischial tuberosities
  - Significant ischial pressure relief with **65˚ tilt**
  - ≤15˚ of tilt provides no pressure reduction
- Recline, when used alone, may provide reduction in pressure at the ischial tuberosities at angles greater than 90° - 100°.
  - 120˚ of recline with leg elevation reduces seating surface pressure
- **Tilt and recline provides the most pressure relief when used in combination**
  - Either 35° of tilt with 100° recline OR 15-25° tilt with 120° recline
  - 45˚ of tilt with 120˚ of recline provides a 40% load reduction

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PRESSURE RELIEF

Supported in Literature

- **Pushups often done every 15-30 minutes (ineffective)** (Coggrave & Rose, 2003)
  - recommendations ranging from 1/min to 1/hr (Boninger & Stripling, 2007)
  - each lift should last nearly 2 minutes, regardless of frequency (Coggrave & Rose, 2003)
  - predispose to repetitive strain injuries (Bayley et al., 1987; Reyes, Gronley, Newsam, Mulroy, & Perry, 1995)
- **Forward or side to side leaning**
  - Can be effective (Coggrave & Rose, 2003; Henderson et al., 1994; Hobson, 1992; Vaisbuch et al., 2000)
  - not all have the UE strength or trunk control to perform (Lacoste et al., 2003)
  - autonomic dysreflexia or neurogenic bladder can limit (Vaisbuch et al., 2000)
  - may not be effective with some cushions (Koo, Mak, & Lee, 1996)

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PRESSURE RELIEF

Supported in Literature

- Higher pressure focused over smaller surface areas in those w/ disabilities (Aissaoui, Kauffmann, Dansereau, & de Guise, 2001; Hobson, 1992; Vaisbuch, Meyer, & Weiss, 2000)
- Cushions inadequate if the individual sits too long (Lacoste et al., 2003)
- Provide cushion AND means for position changes (Henderson, Price, Brandstater, & Mandac, 1994)
- **Performing tilt of 35° with recline of 120° for a duration of 3 min. is more effective than a duration of 1 min. in enhancing skin perfusion** (Yih-Kuen Jan, et al., 2012)

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PAIN, FATIGUE, SITTING TOLERANCE

- Seating systems should not be based on static postures, sitting tolerance is based on a dynamic phenomenon
- Individuals who have high interface pressures may seek alternative postures to prolong sitting tolerance but that are poor for overall postural alignment, skeletal development, or function or that may hasten the onset of fatigue or pain
- Power wheelchair users stated they primarily used power seat functions to promote comfort and reduce back and joint pain

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PAIN, FATIGUE, SITTING TOLERANCE

Supported in Literature

- Comfort may be very different from what anthropometry predicts (Kolich, 2003)
- Seating should not be configured based on static postures (Porter, Gyi, & Tait, 2003)
- More than 2 hours are needed to observe critical postures an individual assumes (Gyi & Porter, 1999)
- Higher pressure may be related to seating tolerance (de Looze, Kuijt-Evers, & van Dieen, 2003; Goossens, Teeuw, & Snijders, 2005)
- Users primarily use features to promote comfort (Lacoste et al., 2003; Dewey et al., 2004; Ding et al., 2008; Sonenblum et al. 2009 & 2011)
- **About 25% (of PWC users) feel that their wheelchair can be used to treat their pain by allowing position changes** (Frank et al., 2012)

QUANTUM

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DYNAMIC MOVEMENT

- Power tilt, recline, and elevating legrests can provide individuals who use wheelchairs with a means of providing and assisting with dynamic movement
- Dynamic movement is healthy for the spine
  - The loading and unloading of intervertebral discs that occur during dynamic repositioning of the spine may increase nutrient supply to the discs
- In order to perform a variety of functional tasks comfortably and safely, most users will need varying degrees of recline

QUANTUM

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DYNAMIC MOVEMENT

Supported in Literature

- People are usually in constant motion (Branton, 1969)
  - Cannot tolerate unsupported and static sitting (S. Reinecke, Bevins, Weisman, Krag, & Pope, 1985)
  - Need to change position constantly (Lueder, 2005)
  - **Change postures up to 30 times per hour while sitting** (Graf, Guggenbuhl, & Kreuger, 1991)
- Static seating restricts the variety of postures that are natural (Bendix & Biering-Sorensen, 1983; Bhatnager, Drury, & Schiro, 1985; Kroemar, 1994)
- **Encouraging periodic movement improved posture and productivity, and it decreased pain** (Cardon et al., 2004)

QUANTUM

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DYNAMIC MOVEMENT

Supported in Literature

- **Dynamic movement is healthy for the spine**
  (S. M. Reinecke, Hazard, & Coleman, 1994)
  (Andersson, 1981)
  (Kolditz, Kramer, & Gowin, 1985)
  (Holm & Nachemson, 1983)
  (M. Adams & Hutton, 1983)
  (M. A. Adams, Green, & Dolan, 1994)
  (M. Adams & Hutton, 1985)
  (Kumar, 2004)
  (M. Adams & Hutton, 1985)
  (Bendix & Biering-Sorensen, 1983)
  (Andersson, Murphy, Ortengren, & Nachemson, 1979)
  (Keegan, 1953; Lueder, 2005; Nachemson, 1981)
- **Most need varying degrees of recline to maintain function**
  (Lueder, 2005)
  (Grandjean, Hunting, & Pidermann, 1983)
  (Engstrom, 1993)

QUANTUM

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POWER TILT – MEDICARE

A power tilt seating system (E1002) includes:

- a solid seat platform and a solid back;
- any frame width and depth;
- detachable or flip-up fixed height or adjustable height armrests;
- fixed or swingaway detachable legrests;
- fixed or flip-up footplates;
- a motor and related electronics with or without variable speed programmability;
- a **switch control** which is independent of the power wheelchair drive control interface;
- any hardware that is needed to attach the seating system to the wheelchair base.

It does not include a headrest

It must have the following features:

- **ability to tilt to greater than or equal to 20 degrees from horizontal**;
- back height of at least 20 inches;
- ability for the supplier to adjust the seat to back angle;
- ability to support **beneficiary weight of at least 250 pounds**.

QUANTUM

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POWER TILT

Clinical Benefits

- Significant ischial pressure reduction with 65˚ tilt
- Maintain optimal joint angles and position
- Tilting 10° - 15° reduce the effects of gravity to accommodate poor trunk balance/poor head control
- Improve visual field for individuals with kyphosis
- Gravity assisted swallowing and/or aide in digestion

Disadvantages

- Tilt must be greater than 25° - 30° to see some tissue perfusion at the ITs

QUANTUM

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POWER RECLINE – MEDICARE

A power recline seating system (E1003-E1005) includes:

- a solid seat platform and a solid back;
- any frame width and depth;
- detachable or flip-up fixed height or adjustable height arm rests;
- fixed or swingaway detachable legrests;
- fixed or flip-up footplates;
- a motor and related electronics with or without variable speed programmability;
- a **switch control** which is independent of the power wheelchair drive control interface;
- any hardware that is needed to attach the seating system to the wheelchair base.

It does not include a headrest

It must have the following features:

- **ability to recline to greater than or equal to 150 degrees from horizontal**;
- back height of at least 20 inches;
- ability to support **beneficiary weight of at least 250 pounds**.

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POWER RECLINE

Clinical Benefits

- 120° of recline with leg elevation reduces seating surface pressure
- Catheterization, bladder and/or bowel care in WC or decrease risk of backflow of urine into bladder
- Promote supine transfers
- Changes in joint angles and to promote orthopedic health
- Achieve a recumbent positio without transferring

Disadvantages

- Increased risk of shear
- May increase spasticity and/ reflex activity

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CAUTIONS/CONSIDERATIONS FOR RECLINE

- Shear – force between the patient's back and buttocks and the back of the wheelchair
- Shear reducing systems for power recline
  - **Low** Back to seat hinge is above the union of the back and seat, above the cushion
  - **Zero** Back of seating system is attached to a sliding mount, back lowers during the recline phase
- Patients tend to slide forward when reclined only - contraindicated if they cannot be repositioned (with tilt, and/or caregiver assist)
- **Watch for changes in spasticity and reflex activity during recline**
- Supportive back with lateral trunk supports don't work well – laterals migrate with back and can compress the axilla

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POWER TILT & RECLINE – MEDICARE

A power tilt/recline seating system (E1006-E1008) includes:

- a solid seat platform and a solid back;
- any frame width and depth;
- detachable or flip-up fixed height or adjustable height arm rests;
- fixed or swingaway detachable legrests;
- fixed or flip-up footplates;
- a motor and related electronics with or without variable speed programmability;
- a **switch control** which is independent of the power wheelchair drive control interface;
- any hardware that is needed to attach the seating system to the wheelchair base.

It does not include a headrest

It must have the following features:

- **ability to tilt to greater than or equal to 20 degrees from horizontal**;
- **ability to recline to greater than or equal to 150 degrees from horizontal**;
- back height of at least 20 inches;
- ability to support **beneficiary weight of at least 250 pounds**.

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POWER TILT AND RECLINE

Clinical Benefits

- 25°- 45° Tilt with 110°- 150° Recline provides the **greatest pressure relief** when used in combination
- 45° of tilt with 120° of recline provides a **40% load reduction**
- Tilt before recline **decreases shear**
- Multiple angles provide ease of independent or caregiver assisted repositioning
- 30° of tilt with full recline improves lower limb hemodynamic states (**edema**)
- Dynamic seating allows a variety of postures throughout the day to participate in or perform **ADLs**

Disadvantages?

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POWER TILT AND RECLINE

It is RESNA's position that tilt, recline and elevating legrests are medically beneficial for wheelchair users by:

- Improving functional reach and access to enable participation in ADLs;
- Managing posture and fatigue;
- Improving mobility and lower limb function;
- Improving ROM and reduced risk for contractures;
- Promoting vital organ capacity;
- Promoting bone health;
- Improving circulation;
- Reducing abnormal muscle tone and spasticity;
- Reducing the occurrence of pressure ulcers and skeletal deformities; and,
- Providing numerous psychosocial and quality of life benefits

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CLINICAL CONSIDERATIONS

- Power Tilt and/or Power Recline with **Power Leg Elevation**

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MEDICARE COVERAGE CRITERIA

Elevating legrests (E0990, K0046, K0047, K0053, K0195) are covered if:

1. The beneficiary has a musculoskeletal condition or the presence of a cast or brace which prevents 90 degree flexion at the knee; or
2. The beneficiary has significant edema of the lower extremities that requires an elevating legrest; or
3. The beneficiary meets the criteria for and has a reclining back on the wheelchair.

NOTE: E1010 or E1012 – ADDITION TO POWER SEATING SYSTEM, POWER LEG ELEVATION SYSTEM, INCLUDING LEG REST(FOOT PLATFORM), is not included in the above list of HCPCS codes; however, the criteria typically applies

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POSITION PAPERS

RESNA Rehabilitation Engineering and Assistive Technology Society of North America

- The Application of Tilt, Recline and **Elevating Legrests** for Wheelchairs (2010)
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- The Application of Seat-Elevation Devices

http://www.resna.org

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RESNA – POWER LEG ELEVATION

- Manage edema and/or pain associated with edema
- Manage orthostatic hypotension episodes
- Manage episodes of autonomic dysreflexia when used with tilt / recline
- Treatment and management of lower extremity decubitus ulcers
- Raise the feet to negotiate various environmental terrains

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POWER LEG ELEVATION – MEDICARE

A power leg elevation feature (E1010) involves:

- a dedicated motor and related electronics with or without variable speed programmability which allows the legrest to be raised and lowered independently of the recline and/or tilt of the seating system;
- a switch control which may or may not be integrated with the power tilt and/or recline control(s);
- either articulating or non-articulating legrests.

The unit of service of code E1010 is a **pair**.

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POWER ELEVATING LEGREST

Clinical Benefits

- Allows independent positioning of each lower extremity
- Accommodates positioning components for postural asymmetries (contractures, hip ABduction, tone or reflex involvement)
- Allows for unilateral foot supports and/or positioning components
- Swing laterally out of the way for safe transfers

Disadvantages

- Not available on all PWC configurations (FWD)
- Increase turning radius
- Not intuitive to operate

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POWER ELEVATING FOOT PLATFORM

Clinical Benefits

- Smaller turning radius = more maneuverable
- Footplate flips up for a 1 step operation to transfer
- Allows for lower extremity positioning at or near 90° for increased postural stability
- Open area at the front of the seat accommodates adipose tissue
- Increased access to functional surfaces

Disadvantages

- Not available on all PWC configurations (RWD)
- Can cause some users to sit with LE ABduction and/or a windswept posture

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RESNA POSITION

Tilt, recline, and elevating legrests **may be useful and medically necessary** to address issues related to postural alignment, function, physiology, transfers and biomechanical issues, contractures or orthopedic deformities, edema, spasticity, pressure management, comfort, or dynamic movement. However they are **not required for or desired by everyone** therefore **clinical judgment is required in prescription**. RESNA therefore recommends power tilt, recline, and elevating legrests when such features are needed to treat or prevent the medical issues described above and **when the user cannot operate the manual versions of these features**.

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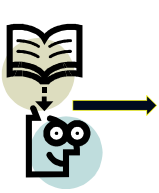
"EVIDENCED BASED PRACTICE"

Clinical research and solid documentation



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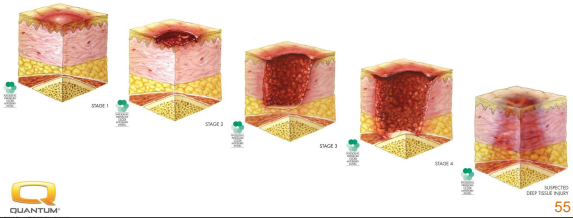
"EVIDENCED BASED PRACTICE"

4. Does the comprehensive medical record confirm that the beneficiary is at high risk for the development of a decubitus ulcer (over the seating surface)?	Addressed ☐	Implied ☐	Omitted ☐
Does the beneficiary currently have a decubitus ulcer on the seated surface?	Yes ☐ Comment:	No ☐	
Does the beneficiary have a history of a decubitus ulcer on the seated surface?	Yes ☐ Comment:	No ☐	
Does the beneficiary have a documented risk for the development of a decubitus ulcer?(Braden Score < 12, Waterlow Score 15+, Norton Score < 13, etc.)	Yes ☐ Comment:	No ☐	
Does the beneficiary have absent or impaired sensation?	Yes ☐ Comment:	No ☐	
Other evidence of high risk for the development of a decubitus ulcer?	Comment:		



QUANTUM

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"EVIDENCED BASED PRACTICE"

AND Does the comprehensive medical record confirm that the beneficiary is unable to perform a functional weight shift?	Addressed ☐	Implied ☐	Omitted ☐
Does the beneficiary have < FAIR+ sitting balance such that they cannot shift their weight from side to side and unweight the ischial tuberosities without risk of falling?	Yes ☐ Comment:	No ☐	
Does the beneficiary have limitations of strength, range of motion, endurance, coordination or pain that precludes or limits their ability to perform a w/c push-up a sufficient #of times/hour (4+) or of sufficient duration (15+ sec.) for reperfusion?	Yes ☐ Comment:	No ☐	
Does the beneficiary require ANY assistance to come to stand, or a partial standing position from the PWC?	Yes ☐ Comment:	No ☐	
Other evidence of the inability to perform a functional weight shift (i.e., pressure mapping)?	Comment:		

QUANTUM

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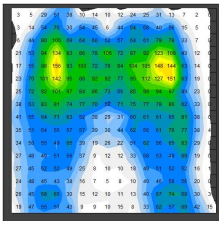
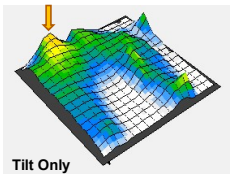
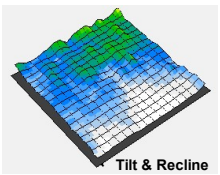
What position provides the greatest reduction in pressure over the seated surface?

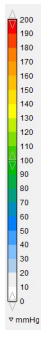




Tilt Only



Tilt & Recline



55

"EVIDENCED BASED PRACTICE"

5. Does the comprehensive medical record confirm that the beneficiary requires intermittent catheterization?	Yes ☑ Comment:	No ☐		
AND Does the comprehensive medical record confirm that the beneficiary is unable to transfer independently to/from the bed?	Addressed ☐	Implied ☐	Omitted ☐	
Does the beneficiary use a mechanical lift to transfer?	Yes ☐ Comment:	No ☐		
Does the beneficiary require assistance (maximal, moderate, minimal, stand by, contact guard or supervision) to transfer to/from the PWC to bed?	Yes ☐ Comment:	No ☐		
OR	Addressed ☐	Implied ☐	Omitted ☐	
6. Does the comprehensive medical record confirm that the beneficiary manages their increased muscle tone/spasticity with power tilt, power recline or a combination of power tilt and recline?				
Does the beneficiary have spasticity documented?	Yes ☐ Comment:	No ☐		
Does the comprehensive medical record document HOW the beneficiary will manage their spasticity with the power seating function?	Yes ☐ Comment:	No ☐		

Finding the "SWEET" Spot

QUANTUM

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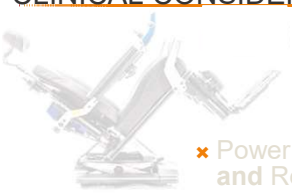
CLINICAL CONSIDERATIONS

- Power Seat Elevation

- Power Tilt **and** Recline
- Power Tilt **or** Recline



QUANTUM

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EVIDENCE BASED CLINICAL CRITERIA?

A power seat elevation feature (E2300) is **non-covered** because it is **not primarily medical in nature**.

QUANTUM

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DEFINITION OF "DURABLE MEDICAL EQUIPMENT"

Durable medical equipment is equipment which:

- ✓ Can withstand repeated use,
- ? Is primarily and customarily used to serve a **medical purpose**, *and*
- ✓ Generally is not useful to a person in the absence of an illness or injury, *and*
- ✓ Is appropriate for use in the home.

Equipment, which basically serves comfort or convenience functions or is primarily for the convenience of a person caring for the patient such as elevators . . . do not constitute medical equipment.

https://secure.ssa.gov/poms.nsf/lnx/0600610200

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POWER SEAT "ELEVATION" SYSTEM

ELEVATOR

ONE OF THESE THINGS IS **NOT** LIKE THE OTHER

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SEAT LIFT MECHANISM

POWER SEAT "ELEVATION" SYSTEM

ONE OF THESE THINGS **MAY BE** LIKE THE OTHER

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~~POWER SEAT ELEVATION~~

Power Adjustable Seat Height (PASH)

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POWER ADJUSTABLE SEAT HEIGHT

National Coverage Determination for MAE

- Medicare beneficiaries who depend upon mobility assistance are found in varied living situations. Some may **live alone and independently** while others may **live with a caregiver** or in a custodial care facility.
- The beneficiary's environment is relevant to the determination of the appropriate form of mobility assistance that should be employed. For many patients, **a device of some sort is compensation for the mobility deficit**.

https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=219&ncdver=2&bc=AAAAgAAAAAAA%3d%3d&

65

POWER ADJUSTABLE SEAT HEIGHT

National Coverage Determination for MAE

- MAE is reasonable and necessary for beneficiaries who have a personal mobility deficit sufficient to impair their participation in [**one or more**] mobility-related activities of daily living (MRADLs) such as **toileting**, **feeding**, **dressing**, **grooming**, and **bathing** in customary locations within the home.

https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=219&ncdver=2&bc=AAAAgAAAAAAA%3d%3d&

66

POWER ADJUSTABLE SEAT HEIGHT

National Coverage Determination for MAE asks if

- other limitations exist; can they be ameliorated or compensated sufficiently such that the additional provision of MAE will be reasonably expected to significantly improve the beneficiary's ability to **perform or obtain assistance to participate in** MRADLs in the home?

https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=219&ncdver=2&bc=AAAAgAAAAAAA%3d%3d&

POSITION PAPERS

RESNA Rehabilitation Engineering and Assistive Technology Society of North America

- The Application of Tilt, Recline and Elevating Legrests for Wheelchairs (2010)
- The Application of Tilt, Recline and Elevating Legrests for Wheelchairs (2015)
- The Application of **Seat-Elevation Devices**

http://www.resna.org

RESNA – SEAT ELEVATION DEVICE

- Transfers
- Reach
- Psychological
  - Eye-to-eye contact
  - Communication
  - Social engagement
- Physiological
  - Decrease hyperlordotic cervical curvature

http://www.resna.org/sites/default/files/legacy/resources/position-papers/RESNAPositionontheApplicationofSeat-ElevatingDevices.pdf

RESNA – TRANSFERS

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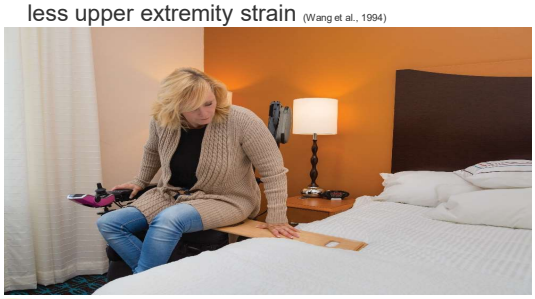
RESNA – TRANSFERS

- Transferring in a downward direction requires less upper extremity strain (Wang et al., 1994)



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FMA STUDY – UPMC

Seat Elevators:
How to Utilize the Functional Mobility Assessment (FMA) to Track Function and Justify Medical Necessity

Corey W. Hickey, DO, PGYIV
Academic Chief Resident
Department of Physical Medicine and Rehabilitation
University of Pittsburgh Medical Center

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FUNCTIONAL MOBILITY ASSESSMENT

6. My current means of mobility allows me to transfer from one surface to another:
(e.g., bed, toilet, chair)

Comments:

Ask HOW they transfer, observe WHAT the challenges to transferring are, and WRITE IT DOWN!

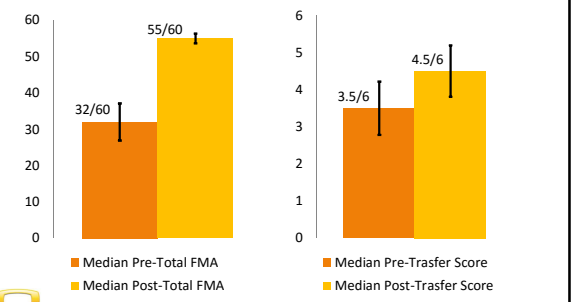
Completely Agree	Mostly Agree	Slightly Agree	*Slightly Disagree	*Mostly Disagree	*Completely Disagree	Does not apply	Rating priority
6	5	4	3	2	1		

Would the addition of a power adjustable seat height system have a positive impact such that the response could be "**completely agree**"?

73

FMA Study – UPMC

NO SE AT BASELINE – RECEIVED ONE (N=8)



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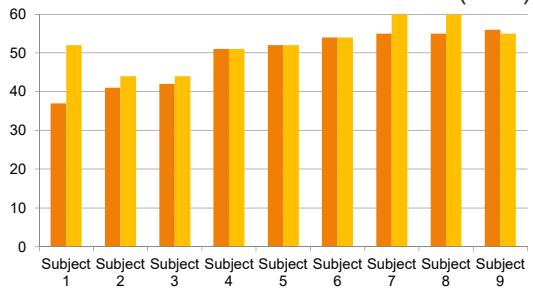
FMA Study – UPMC

SE AT BASELINE – RETAINED IT (N=9)



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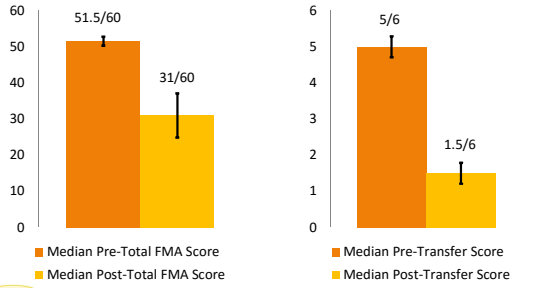
FMA Study – UPMC

SE AT BASELINE – LOST IT (N=5)



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FMA STUDY – UPMC

- Conclusion
  - PWC with SE are associated with improved mobility:
    - For those receiving one for the first time
    - Continued improvements for those who retain a SE
  - Once the SE is removed, there is a decrease in transfer ability
- Funding Review of 61 Participants
  - 32/61 SE paid by Insurance (52.5%)
  - 1/61 SE paid by Vocational Rehab Services
  - 1/61 SE paid for privately
  - 15/61 SE pending approval
  - 12/61 SE denied by third-party payor (19.7%)

Corey W. Hickey, DO, PGYIV
Academic Chief Resident
Department of Physical Medicine and Rehabilitation
University of Pittsburgh Medical Center

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RESNA – FUNCTIONAL REACH

- Limited use of UE's – replaces UE function (not a luxury item)

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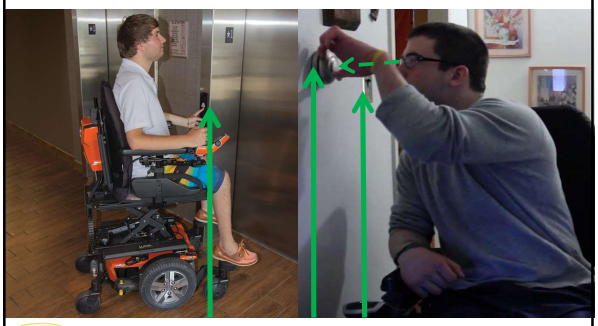
RESNA – FUNCTIONAL REACH



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FUNCTIONAL MOBILITY ASSESSMENT

5. My current means of mobility allows me to reach and carry out tasks at different surface heights as independently, safely and efficiently as possible:
(e.g., table, counters, floors, shelves)

Comments:

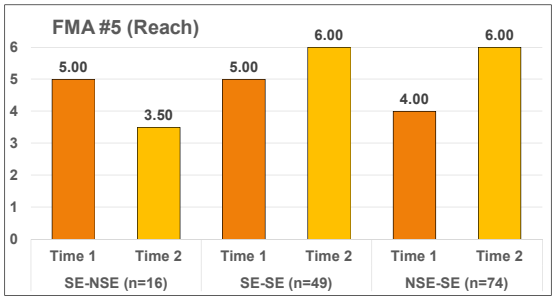
Ask/observe WHAT surfaces/heights cannot be reached and/or what tasks cannot be preformed safely/timely/efficiently and WRITE IT DOWN!

Completely Agree	Mostly Agree	Slightly Agree	*Slightly Disagree	*Mostly Disagree	*Completely Disagree	Does not apply	Rating priority
6	5	4	3	2	1		

Will the addition of a power adjustable seat height system have a positive impact such that this response could be "**completely agree**"?

80

ASSESSMENT OF SEAT ELEVATOR USER SATISFACTION (N = 139)



Vince Schiappa ISS 2017 Paper Presentation PS2.2 March 2, 2017

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OVERHEAD REACH COMPARISON

- A study comparing the frequency and duration of overhead arm activity between wheelchair users and occupationally matched non-wheelchair users during an 8-hour workday found that:
  - Wheelchair users performed an average of **297** episodes of overhead arm activity
  - Non-wheelchair users performed an average of **53** episodes of overhead arm activity
- The total time spent in an overhead position was **five times greater** for wheelchair users as compared with standing adults.

Newsam, C. J., Requejo, P. S., Isaacs, J., Balikian, T., Hall, S., & Valenzuela, S. (2007, May). *Comparison of overhead arm activity in wheelchair users and non-wheelchair users during an 8 hour workday*. Proceedings from American Spinal Injury Association Meeting '07, Tampa, FL.

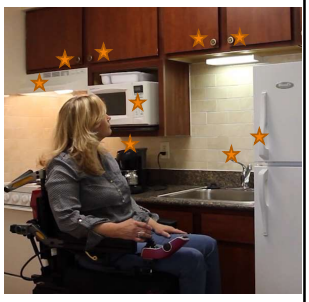
82

OVERHEAD REACH COMPARISON

297/day x 365 days/yr x 5 yrs = **542,025** reaches overhead during the reasonable useful lifetime (RUL) of the feature

VS.

53/day x 365 days/yr x 5 yrs = **96,725** reaches overhead



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RESNA – PSYCHOLOGICAL AND PHYSIOLOGICAL

- Reduce trunk and/or neck strain
- Promote “eye to eye” communication
- Fully interact with the environment

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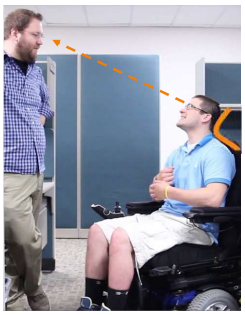
RESNA – PSYCHOLOGICAL AND PHYSIOLOGICAL

- When talking at eye level with others, **typical hyperlordotic cervical curvatures of the spine can be reduced**. This relieves strain on the neck and may help enhance vision, thus helping to prevent secondary complications.
- An elevating seat may also allow a person in a wheelchair to **hear and engage in conversations** within a noisy environment, as well as to **see and navigate** more safely through a crowd of people.



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POSTURAL CONTROL

86

IN A W/C WITH A **STATIC SEAT** HEIGHT OF __21”__ VERTICAL HEIGHT IS LIMITED TO __??”__

IN A W/C WITH **POWER ADJUSTABLE SEAT HEIGHT** VERTICAL HEIGHT RANGES FROM __??”__ TO __!!”__

LINE OF SIGHT

85

LINE OF SIGHT

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RESNA – SOCIAL INTERACTION

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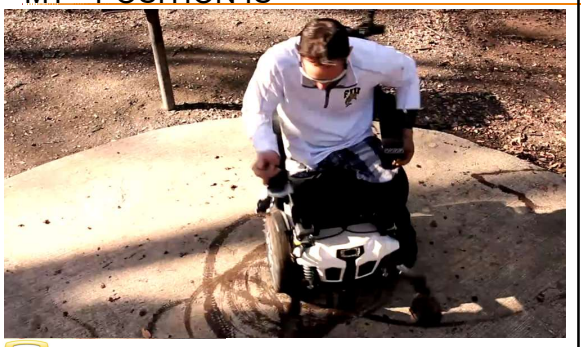
RESNA POSITION

RESNA Rehabilitation Engineering and Assistive Technology Society of North America

"It is RESNA's position that **seat elevators are often medically necessary** for wheelchair users by enabling them to reach, improving MRADL abilities, facilitating or enabling transfers, providing peer height at different ages, enhancing independence and productivity, and delaying or preventing pain and secondary complications of the upper extremities."

90

“MY” POSITION IS –



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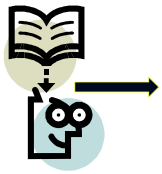
“EVIDENCED BASED PRACTICE”

Clinical research and **solid documentation**



N = 1

92

“EVIDENCED BASED PRACTICE”

How HIGH and WHY?

A “Day in the Life” of Stephanie

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Use of the power adjustable seat height system has been assessed for Stephanie and is deemed essential to:

- Facilitate independent transfers (or reduce transfer assist needed)
- **NOTE:**
  - Document the static seat height **AND** the height of the seat for each transfer
  - Describe **WHY** the seat needs to be adjusted to a specific height or multiple different heights to transfer and/or describe **WHY** a specific seat height cannot be established or customized for transfers.
- **REMINDER**: This may include the ability to transfer to a doctor's examination table.

TRANSFERS

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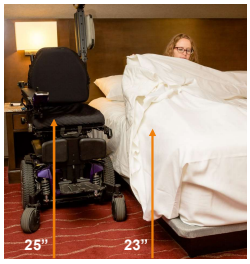
UNABLE TO TRANSFER **TO** THE W/C AT A HEIGHT OF **25"** **FROM** THE **Bed** AT A HEIGHT OF **23"**



ABLE TO TRANSFER **TO** THE W/C AT A HEIGHT OF **21"** **FROM** THE **Bed** AT A HEIGHT OF **23"** USING A **Sit Pivot** METHOD

TRANSFERS

95

Stephanie is unable to / requires assist to reach the ! ! ! ! ! at a height of ? ? " (list all) and perform/participate in (**MR**)ADLs:

- Dresser drawers; clothes rod; washer and dryer
- Medicine cabinet; bathroom sink /faucet; mirror; shower head/faucet
- Freezer/refrigerator; oven/stove; microwave; drawers/cupboards/shelves; counter; sink/faucet
- Light switches; thermostat; fire alarm; phone; door eye hole/viewer; elevator buttons
- **OTHER**

AUGMENT / FACILITATE REACH

96

IN A W/C WITH A **STATIC SEAT** HEIGHT OF **21"** VERTICAL REACH IS LIMITED TO **??"**

IN A W/C WITH **POWER ADJUSTABLE SEAT HEIGHT** VERTICAL REACH RANGES FROM **??"** TO **!!"**

AUGMENT / FACILITATE REACH

97

Grooming

98

Dressing

99

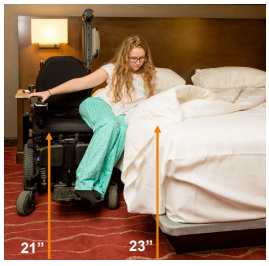
Feeding
(Part 1)

100

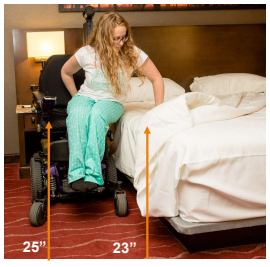
Feeding
(Part 2)

101

UNABLE TO TRANSFER **FROM** THE W/C AT A HEIGHT OF **21" TO** THE **Bed** AT A HEIGHT OF **23"**



ABLE TO TRANSFER **FROM** THE W/C AT A HEIGHT OF **25" TO** THE **Bed** AT A HEIGHT OF **23"** USING A **Sit Pivot** METHOD



TRANSFERS

QUANTUM

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WHAT IS THE COST OF INDEPENCENCE?

Personal Care Attendant (median salary) **= $10/hr**

Transfers

2 hrs/day x 365 days/yr = $7,300 x 5yrs = $36,500

Grooming/Dressing/Feeding

3 hrs/day x 365 days/yr = $10,950 x 5 yrs = $54,750

Reducing PCA by 1hr/day pays for the PASH system in < 9 months!

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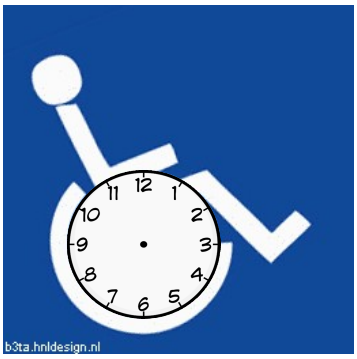
CASE STUDIES



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QUANTUM®

The Rehab Power Chair Solutions Company

THANK YOU FOR YOUR TIME- ANY QUESTIONS?

Professional Education Partnership