Statement of Medical Necessity and Equipment Justification
Powered Mobility Assessment

PATIENT'S NAME: Helena Bunsson
AGE: 22 years old
MEDICAL DIAGNOSIS: Muscular Dystrophy; Scoliosis; Lordosis
REFERRED FOR: powered mobility evaluation
REFERRED BY: MA Case Manager
THERAPIST EVALUATING: Karen M. Kangas OTR/L, *nationally certified and state licensed occupatioanl therapists, Seating and Positioning Specialist, Assistive Technology Specialist, Consultant, Clinical Educator, 6925 Upper Rd, Shamokin, PA 17872; 570-644-1032: email: kmkangas@ptd.net*
OTHERS PRESENT: parents, grandparents, RTS

Medical Necessity and Justification for Equipment

Identification of Needs/Reason for Referral

Mr. Smith of Home Healthcare contacted me from a referral he received from a case manager from PA Medical Assistance. We were to see a young woman, who is home-bound. Helena is a 22 year old female diagnosed with a form of muscular dystrophy which was identified when she was a very young child. She has been on a ventilator full-time since she was three years old.

She has never driven a powered chair, and she is not sitting in any type of wheelchair. Helena is not able to be seated upright on her buttocks. As her disease has progressed and her muscles have atrophied and her skeleton collapsed, instead of being in an upright posture, with a dramatic lordosis, collapsing forward (a posture very typical of young adults with muscular dystrophy), Helena is in a unique posture with her legs up underneath her trunk, in a prone posture, which allows her to maintain active range of motion in her head, and to use both hands. She cannot tolerate being up in a more standard seated posture as her lordosis has caused her head and neck to move into a hyperextended posture, from which if she were seated on her buttocks, her head would be so far back, her chin would be pointing towards the ceiling.

Helena is quite functional with her hands, her voice and her head control in this prone position she has discovered. However, she cannot tolerate any other position.

Our challenge is to provide Helena with a seating system on a powered base, and a method of access, she can use efficiently as well as manage her ventilator.

Medical Considerations

Helena appears to be quite medically stable, given her progressive disease. Although she is on a ventilator full-time (only off of it if she is transferred, and that is only for a minute or two), and she and her mom report she has had some hospitalizations where they have tried to change her vent or change her relationship to it, she could not tolerate the change. She is very anxious about her breathing, and described to me that when other types of ventilators were used, she could not speak at all, when on them, and she felt like she couldn't completely breathe. Although we will be developing a system which will support her current ventilator, her mother does report that she is worried about future use, since the ventilators they are using are no longer available, nor manufactured. Helena should be a candidate for a long term relationship with a

respiratory therapist who specializes in vents, in assisting the family in finding a ventilator Helena can use, and can still talk when using.

For this evaluation, Helena is able to use both hands, as she uses a laptop while in her posture on her bed. She is most comfortable in her bed, but she can also be carried down and placed on her family's couch, downstairs.

Motor Assessment

Range of Motion/ Motor Strength/ Voluntary, Isolated, Controlled Movements:

Helena exhibits more active range of motion in her upper extremities than in her lower extremities. She is able to place her wrists and hands, and is able to use a laptop and a cell phone from her prone posture on a flat surface, usually her bed. She is also able to wiggle her ankles and toes. Her muscles are weak, but retain active range, within the range she can control. Her trunk exhibits a dramatic lordotic and spinal curvature in a scoliosis.

When she is in her prone position, she is also able to manage her head, by turning it from one side to another, although she appears to have more active range in one side than the other, in a range of about 10-25 degrees from neutral. With this position, it looks like she actually has more had control that she actually does, since her neck is contracted in hyperextension. She has no real power in her proximal muscles at the shoulder or the hips.

Accuracy, Fatigue, Endurance:

This evaluation was a real challenge for all of us. We needed to first meet Helena and then obtain some real equipment to use for a trial. We worked with her on three visits, and each one she was able to work easily for over 90 minutes within the seating and powered systems we brought for trial.

Helena is usually up all day and sleeps through the night.

Current Seating

As stated before, Helena has no real seating. She resides on her bed's flat surface most of her days, unless she is carried downstairs by her father, to be in the couch. In both these settings she is on a flat but comfortable surface, which allows her to remain safely in prone, with her lower extremities tucked up under her, and supports her access to her ventilator.

Helena is a petite young woman, weighing less than 90 lbs, see attached photos.

Current means of mobility

Helena has no current means of moblity. She can wiggle a bit on her bed, and lie her head down, and to the side. But she is not independent at all in mobility within her environment.

Equipment Trial

Equipment Used

1. Quantum Rehab's power base with powered recline. 20" x 20"
2. Adapted seating made from foam, flaxseed pillows, and towels to create a flat surface
3. A standard joystick
4. An alternative mini joystick

Means of Activation

Helena is able to use her right hand to drive.

Results of Trial:

With the use of a powered base that had a full recline feature on it, I was able to create a flat seating surface for Helena by filling in all the nooks and unevenness (between the back and seat, and contours) with flaxseed pillows upon which I then laid over three layers on one inch foam, covered by towels. Using the 20 x 20" system, we could then create a wide enough surface, (see photos) and flat, stable, yet soft enough for Helena to be upon to try driving.

Our driving distance was limited as the ventilator was not able to work longer than its tubing, but Helena was able to make turns, go forward, reverse, and manage the space within her living room, and towards the kitchen.

Although a standard joystick was initially placed up by her right hand, it required that she really have her wrist at an aggressive angle to manage it. She could use it, but it was awkward, and required too much effort. We would return at a later date with a different mini-joystick and various electronic switches to try.

However, upon the return visit, the electronic switches were not needed, as the mini-joystick worked well. Helena was easily able to manage it on the surface of the platform, and it was readily placed for her accessibility.

Our only challenge was the programming of the electronics on this chair. It was not easy to alter the "short throw" in this chair, nor easily change the speed and sensitivity and acceleration of the joystick. Instead, multiple parameters had to be managed, as these electronics are set up with minimums and maximums in all parameters (forward speed, turning speed, reverse speed, acceleration, deceleration) making it difficult to train Helena and her parents on how to alter the programming of the chair.

It is critical that the programming of the chair's performance is readily available to Helena and her family. As she uses her chair and becomes more competent the performance of the chair needs to change. However, it may also need to change if she is having a particularly weaker day, or is more fatigued. The MK6 electronics on Invacare's chair does not deal with maximums nor minimums, but is straightforward in its terminology and programming. The two power bases (Quantum Rehab's and Invacare's TDX) are very similar in their mid-wheel drive, their turning radius, their size and their cost. So, we chose the TDX for its ease of programming.

Helena will also be using the micro-mini joystick from Adaptive Switch Labs, Inc. for driving. It is a very small, but durable joystick, housed in a flat small box, which can be placed on the surface where Helena is located (see attached photos).

Current Seating and Powered Chair Recommendations

We need to replicate what Helena has found to work for her body. She is not able to tolerate being brought up into any standard pattern of seating, as her spine is too lordotic and with her head in hyperextension, she cannot tolerate being in a typical "up" position, since she no longer has control of the trunk, nor the shoulder and pelvic girdles. Her neck exhibits a contracted hyperextension that when brought "up" her head is almost lying behind her. She cannot tolerate this posture, nor should she be expected to. Instead, we can develop a flat surface that resides on a power base, and has adjustable hip and foot guides to provide her with a safe surround while driving. She does not "fall" nor "roll" nor wiggle around much, so we simply need a flat surface that has a firm base, but also has softer top layers so that there is no pressure forming on any of her bony prominences.

We need to create a **"seating system**" which has a very stable surface, **about 5 inches thick; two inches of MEDIUM visco-elastic memory foam, covered with two inches of SOFT visco-elastic memory foam, and then finally topped with one inch of standard foam.**

This will allow Helena to "sink" in just a bit onto the surface of the system, yet the system will have a firm base on its steel platform base. Just like any seat and back cushion, this "platform" seating needs to have a **removeable cover,** easy to launder. Yet the material needs to be **breathable**, and NOT slick, so that Helena will not feel like she is ever going to "slide" on this surface.

For support, **three "hip" guides (4" x 12") mounted on tall gooseneck mounts** will be placed at the base of her feet, and one on the side of her hips, and the other on the side of her torso, thus allowing them to be placed directly up and over closer or a bit farther away from Helena, matching up to her body, once she is located on the platform. These do not need to "hold" her, but rather need to be guides and act as "bumpers" when the chair traverses any uneven terrain, or hits any type of bump. A **long and padded dual pull seatbelt** will also be created to reach over Helena's back to be able to be pulled snugly for traveling out of doors.

This platform needs to be placed on a base which also has **powered elevation**. This will allow Helena to more easily be transferred safely, and will allow for more room to mount the vent below the platform.

Helena's vent will need to have a **custom vent tray** built to fit under the surface of the platform of her seat, and have **a cable** which will be able to use power from the chair's batteries.

Helena demonstrated that she is able to use the **micro-mini joystick**. This is a fully proportional joystick, that is small, and easily managed from Helena's usual posture.

Helena needs **Invacare's power base: TDX SP with G-trac technology with CG Elevating Seat.** This chair is a mid-wheeled drive power base, which has a true clean turning radius, and **programmable electronics**. It comes with the **powered elevating seat function**, which is needed to place the seating platform on where Helena will be located. Its electronics are easily programmed, and easy to teach, which is critical for both Helena to learn and for her parents, as they will be altering the performance of the chair as Helena's experience increases and environments are managed. Invacare's electronics also allow for **G-trac technology** which is a method of electronically allowing "forward" to be straighter without a lot of joystick play. This is critical for drivers who have upper extremity weakness, as trying to hold a joystick in the forward position is the most challenging and energy demanding posture. Obviously, Helena with a diagnosis of muscular dystrophy needs the G-trac technology. She will also need **the remote programmer** on the chair to allow both she and her parents to alter the parameters of the chairs' functioning as she gains experience and/or loses strength and/or fatigues.

This power base **needs transport brackets** for safe use within a van's tie-down system. Its tires need to have **foam-filled inserts**, so that no maintenance is required, nor is there a chance of a "blow out" which would be an emergency situation for Helena otherwise.

As mentioned above, she will need G-trac technology (and its module), **the power harness for expandable electronics** (another word for programmable), the **visual display** (this is how the chair turns on and off, and is a display for Helena to "read" as she is driving. This is standardly a part of the joystick but Helena will be using an alternative joystick, so the visual display will be a separate entity.

A proportional attendant control will also be necessary for the family to manage the chair once Helena is transferred out of it. They should not use the micro-mini joystick as it is not meant to be managed by "strong" hands. Alternative access is easily broken when the able-bodied family members attempt to use it to manage the chair when the patient is not in it. Instead, a simple smaller attendant control will be needed. However, in this case, the proportional contol will be critical as it is easier to manage and this chair will be carrying

Helena's ventilator, so managing the chair adequately and accurately is even more important. This control needs to be located, under the seat when no one is using it, yet this would be too low to manage, so it needs a **quick release mount** to pull it up and out when needed to be used.

Helena's chair also **needs batteries,** (obviously, to work) **a battery charger** (to charge the batteries) and **wheel locks** (for additional safety when traveling in a van).

Training and Practice

On the day of delivery an initial lesson will occur. At this time, Helena will be taught how to manage the chair, and the family will be taught how to manage the chair. The chair will be programmed for initial use. A follow-up visit or two will be important, as Helena gains experience and competence. It is critical that training occur at an individual and appropriate pace. Often, this lack of training is why a powered chair is never fully mastered. The chair changes the entire environment of Helena and her family. ALL of them need to feel safe, secure, and competent in its use.

SPECIFIC EQUIPMENT RECOMMENDATIONS

Please note:** *These specific items are the exact items that this person needs. The specifications and brands themselves should* ***not *be changed. They have been chosen with great care, for durability, ease of use, compatibility, and accessibility and for this individual's own particular needs.*

1. Type of chair

Invacare Formula CG Elevating Seat for TDX SP with G-trac Technology
w/Wet Black Frame finish
w/Omit seat frame
w/Wheelchair Transport Brackets
w/14' x 3" tires with foam filled inserts
w/G-trac module
w/Harness for expandable electronics
w/MK6 Display only
w/Proportional Attendant Control with quick release mount
w/Programmer
w/batteries and battery charger
w/Wheel locks

From: Invacare Corporation,One Invacare Way, P.O. Box 4028, Elyria OH 44036-2125; 800-333-6900; www.invacare.com
Local: Mr. Smith, AAA Home HealthCare

2. Customized Adaptive Seating Insert

a. Seat cushion/platform

38" long x 20" wide
5 inches thick containing 2 inch base of MEDIUM visco-elastic memory foam, with 2 inch middle of SOFT visco-elastic memory foam, with one inch of standard foam on top
Breathable, removable cover

b. Three Hip Guides

3 Permobil Hip Guides, 4 x 12 on gooseneck mounts

c. 48 inch long seat belt

Two inch fully padded, dual pull, push button seatbelt

From: Permobil Inc., 6961 Eastgate Blvd., Lebanon, TN 37090; 800-736-0925; FAX: 800-231-3256; www.permobil.com
From:Bodypoint Designs, Inc., 80 South Washington #303, Seattle, WA 98104; 1-800-547-5716; . www.bodypoint.com
Local: Mr. Smith, AAA Home Healthcare

3. Access Method & Interfaces (if needed)

a. Micro-mini joystick and its interfaces

From: Adaptive Switch Labs & ,125 Spur 191, Suite C, P.O. Box 626, Spicewood TX 78669; 1-800-626-8698; www.asl-inc.com

Local: Mr. Smith, AAA Home Healthcare

4. Other Adaptations Needed

a. Customized Seat Platform, fitted to Powered Seat Elevation

b. Custom Ventilator Tray to be mounted onto base of Powered Chair

Ventilator is: Nellcor Puritan Bennett LP10
with MR410 Resp.Humidifier Fisher Paykel Healthen

Measurements: Depth, front to back 15"
Height, bottom to top: 10" ; 14" with humidifier (humidifier has 8" depth)
Width 14" with humidifier 20"

From: Motion Concepts, 700 Ensminger Rd, Suite 12, Tonawanda, NY 14150; 888-433-6818; www.motionconepts.com

Local: Mr. Smith, AAA Home Healthcare

5. Delivery Assembling, Instruction, Training

This is another critical piece of this entire chair actually working. This whole chair needs to be assembled and checked, so that each piece fits, and to change a piece if it does not. This system must be safe and fit Helena adequately. This is the final customization and one of the most important parts of the entire process. Both the therapist and the medical supplier need to be involved, working together.

If there are any questions regarding the costs of the chair and the components, please call Mr. Smith first, and/or the manufacturers. I have chosen the components based on my expertise as a therapist dealing with seating and positioning of difficult or complicated patients. The choice of items is mine, the delivery and putting together is both the medical supplier's and my responsibility. Any cost questions are for the medical supplier. I choose products as to the patient's needs and the match between the features of the product and the needs of the patient, not their cost, but their value. If there are products which have equal characteristics and a price variation is noticeable, cost effectiveness is always considered.

If there are any questions or concerns regarding this report, please do not hesitate to contact me.

Therapist Date

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Seating and Positioning Specialist, Assistive Technology Specialist, Consultant, Clinical Educator,
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Physician Date