

Best Evidence Statement (BESt)

Date posted November 2010

Topic and/or question as originally asked: Would having a physical therapist (PT) or occupational therapist (OT) at the wheelchair delivery with the vendor improve patient and family satisfaction?

Clinical Questions

P (population/problem)	In people with disabilities requiring custom rehabilitation equipment,
I (intervention)	does having a physical or occupational therapist present with vendor at time of delivery
C (comparison)	compared with vendor only present at delivery
O (outcome)	improve patient/family satisfaction, safety, or cost?

Target Population:

People of any age with disabilities, requiring custom rehabilitation equipment. People are excluded if their equipment is not custom or considered rehabilitation equipment.

Custom rehabilitation equipment is defined as equipment used to assist in mobility, positioning, activities of daily living, or pain control.

Recommendation (See [Table of Recommendation Strength](#) following references)

It is recommended, for any clients in need of a wheelchair or custom rehabilitation equipment, that the vendor and evaluating/prescribing OT or PT be present at the time of delivery of the wheelchair or custom rehabilitation equipment at the clinic where the evaluation/prescription was performed. [Moderate] (Batavia M, Batavia A, et al., 2001[5b]; Benedict R, Lee J, et al., 1999[4b]; Eggers S, Myaskovsky L, et al. 2009[5b]; Fuchs R and Gromak P, 2003[4a]; Hansen R, Tresse S, et al. 2004[2a]; Heonig H, Landerman L, et al. 2005[2b]; Huang I-C, Sudgen D, et al. 2008[4b]; Kettle M, Rowley C, et al. 1992[4a]; Samuelsson K, Larsson H, et al. 2001[4a]; Samuelsson K and Wressle E. 2008[4a]; Suzuki K, Lockerte G, et al. 2000[4b]; Ward A, Sanjak M, et al. 2010[4a]).

Note: There are currently no consistent active outcome measures being performed with regards to custom rehabilitation equipment delivery in the pediatric population.

Policy and Procedure: [J:\01. Policies - Procedures - Guidelines\Clinical Practice\Wheelchair and Adaptive Seating](#)

Discussion/summary of evidence

A literature search identified a total of 39 articles, 12 of which addressed the PICO question, therefore, the rest were not used in the EBP project. All the articles discussed the need for follow-up care provided after equipment delivery and 9 articles directly stated a therapist should be involved in follow-up (Batavia, et al, 2001, [5b]), (Eggers, et al, 2009, [5b]), (Hansen, et al, 2004, [2a]), (Hoenig, et al, 2005, [2b]), (Suzuki, et al, 2000, [4b]), (Benedict, et al, 1999, [4b]), (Kettle, et al, 1992, [4a]), (Samuelsson, et al, 2001, [4a]), (Samuelsson, et al, 2008, [4a]).

In a randomized controlled trial of people 16 years and older who required manual wheelchairs, active wheelchair check-ups were performed for 95 individuals by an occupational therapist within three months of wheelchair delivery in the active intervention group (n=95). The standard intervention group (n=121) consisted of no follow-ups. During the active check-up, it was noted that "99% of wheelchairs...needed some kind of attention (or repairs)" (Hansen, et al, 2004, p. 633 [2a]). This directly supports having a therapist present for follow-up at time of delivery and thereafter by documenting that a therapist assessing a wheelchair after fitting noted modifications needed to be made to improve function. In a quasi-experimental study of 84 patients served by the Durham VAMC, an OT or PT with expertise in

wheelchairs perform a structured assessment of the client, make recommendations for equipment needs, train the client in use of the wheelchair at time of delivery, and perform follow-up care. This was considered “active intervention”. “Standard care” was defined as when a therapist provided a standard wheelchair to a client without input from a wheelchair expert. The clients who received this active model of care were given interventions for 35.1 minutes more on average compared with those not seen by a OT or PT with expertise. Additionally, those clients in the active care model had much greater use of the wheelchair than the usual care group between 2 weeks and 6 months after receiving it ($p=.01$). (Hoenig, et al, 2005, [2b]). Having an OT or PT present can increase overall long-term use of the wheelchair.

Fuchs, et al found that after providing clients with a questionnaire and an OT or PT evaluation following wheelchair delivery, several areas of concern were noted. This descriptive study concludes “lack of adequate follow-up and follow-along services may have contributed to the frequency of the problems discovered” (Fuchs, et al, 2003, p. 151 [4a]). In a descriptive study of 41 clients surveyed after being served by a seating clinic, the authors reported that areas of improvement in wheelchair delivery could include uniformity in client education of the vendor/equipment choices, communication with all parties to improve equipment delivery time, and scheduling follow-up appointments for equipment fittings and adjustments (Suzuki, et al, 2000, [4b]). Of the wheelchairs observed in the Fuchs study, nearly 47% were not to the prescribed specifications (either frame or components) (Fuchs, 2003, 4a). Ward, et al. completed a descriptive survey with 32 patients with Amyotrophic Lateral Sclerosis (ALS) to assess types of wheelchairs and components prescribed and decision making patterns in various phases of wheelchair delivery process. The results of this survey showed that “52% of clients noted changes needed at delivery to make the chair just right” (Ward, et al, 2010, p. 270 [4a]) and of these changes, 62% were recommended by therapist (Ward, et al, 2010, [4a]). Batavia, et al states that multiple fittings will likely be necessary to ensure the client can use the new wheelchair in all of his/her environments (Batavia, et al, 2001, p. 545 [5b]).

Eggers, et al, compiled several sub-models for service delivery, in which therapists hold a stakeholder role as critical as the client themselves and vendors. Their macro model of the wheelchair service delivery process asserts “education, counseling, and follow-up” is one of the influences related to wheelchair appropriateness and outcomes (Eggers, et al, 2009, p. 1033 [5b]). As outlined in these articles, OTs and/or PTs play a critical role in not only recommending changes to wheelchairs upon delivery, but a need for improved follow-up services has been identified.

Several seating and mobility specialists (both locally and in the rehabilitation world at large) were contacted during this literature search and asked their opinions on having an OT and/or PT present at equipment delivery with the vendor, why they feel this is appropriate, and if they believe this is a feasible practice. In an e-mail response on June 2, 2010, Melissa Tally, PT from the Aaron W. Perlman Center in Cincinnati, OH stated “fittings should be a collaborative team effort which will result in the most appropriate recommendations to allow for increased therapeutic function, increased compliance for use in environments, optimal growth, best utilization of funds, and best all around customer service”. Elizabeth McCarty, OTR/L, ATP also from the Aaron W. Perlman Center in Cincinnati, OH replied “it is important for the evaluating therapist to sign off on the equipment and be there to GUIDE the fitting and this is BEST PRACTICE” in her e-mail response to these questions on June 8, 2010. On July 2, 2010, Amy Meyer, PT, the Pediatric Seating Specialist at Permobil USA (a power wheelchair manufacturer) concluded therapists should be present at time of equipment delivery “to ensure that what you prescribed is what is being delivered, to ensure appropriate fit and positioning of seating components, to ensure safe use of equipment, to gain outcome measures, and satisfaction information”. In a separate e-mailing to the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) who credentials individuals interested in technology and disabilities, Anjali Weber, Director of Certification, responded on May 19, 2010 that “[RESNA] prefers team (therapist, vendor, and other relevant professionals) be present for the delivery and fittings to see that goals [related to positioning, driving/propelling, and equipment needs] are met”.

Of the articles found during the literature search, no articles directly addressed the cost of the therapist involved in the wheelchair delivery process. Fuchs, et al found that clients who received the active model of care were given interventions for 35.1 minutes more on average compared with those not seen by a OT or PT with expertise (Fuchs, et al, 2003, [4a]). Additionally, nearly 47% of the wheelchairs reviewed in the Fuchs article were not to the prescribed specifications (either frame or components). These statements both indirectly address cost associated with having

therapist present at delivery. Articles primarily focused on cost of the wheelchair solely. Due to insufficient evidence regarding cost, no recommendations for practice changes can be made related to wheelchair delivery.

In summary, the literature consistently concludes that follow-up appointments need to be a part of the continuum of care related to wheelchairs and custom rehabilitation equipment. This includes education, ensuring proper fit of wheelchair, any changes that may need to be made to the newly fit wheelchair, and answering questions from the client or family. Occupational therapists and/or physical therapists play a critical role in follow-up and additional education. Follow-up and additional education are critical components to the entire wheelchair and custom rehabilitation equipment assessment, recommendation, ordering, delivery, and fitting process for all clients with disabilities.

Body of evidence is graded at **Moderate**.

Health Benefits, Side Effects and Risks

	Some (be explicit)	Minimal (comment?)	None (comment?)
Health Benefits	<input checked="" type="checkbox"/> improve posture and positioning, decrease pain, improve social functioning in the environment, as well as reduce risk for skin breakdown, detriments to disease process related to w/c	<input type="checkbox"/>	<input type="checkbox"/>
Side Effects	<input type="checkbox"/>	<input checked="" type="checkbox"/> skin issues could get worse or not improve as quickly if family waits for appointment, increased pain or worsening posture if waiting in a bad seating system	<input type="checkbox"/>
Other Risks	<input type="checkbox"/>	<input checked="" type="checkbox"/> increased cost to family (i.e. Insurance billed), time burden for families and providers, travel time/cost to families, inconvenience to vendor	<input type="checkbox"/>

References/citations

Batavia, M., A. I. Batavia, et al. (2001). "Changing chairs: anticipating problems in prescribing wheelchairs." Disabil Rehabil **23**(12): 539-548 [5b].

Benedict, R., Lee, J., et al. (1999). "Assistive Devices as an early childhood intervention: evaluating outcomes." Technology and Disability **11**(1999): 79-90 [4b].

Eggers, S. L., L. Myaskovsky, et al. (2009). "A preliminary model of wheelchair service delivery." Arch Phys Med Rehabil **90**(6): 1030-1038 [5b].

Fuchs, R. and P. Gromak (2003). "Wheelchair Use by Residents of Nursing Homes: Effectiveness in Meeting Positioning and Mobility Needs." Assistive Technology **15**: 151-163 [4a].

Hansen, R., S. Tresse, et al. (2004). "Fewer accidents and better maintenance with active wheelchair check-ups: a randomized controlled clinical trial." Clinical Rehabilitation **18**: 631-639 [2a].

Hoenig, H., L. Landerman, et al. (2005). "A Clinical Trial of a Rehabilitation Expert Clinician Versus Usual Care for Providing Manual Wheelchairs." Journal of American Geriatrics Society **53**: 1712-1720 [2b].

Huang, I.-C., Sugden, D., et al. (2008). "Assistive devices and cerebral palsy: factors influencing the use of assistive devices at home by children with cerebral palsy." Child: care, health, and development **35**(1): 130-139 [4b].

Kettle, M., Rowley, C., et al. (1992). "A national survey of wheelchair users." Clinical Rehabilitation **6**: 67-73 [4a].

Samuelsson, K., H. Larsson, et al. (2001). "Wheelchair seating intervention. Results from a client-centred approach." Disability & Rehabilitation **23**(15): 677-690 [4a].

Samuelsson, K. and E. Wressle (2008). "User satisfaction with mobility assistive devices: an important element in the rehabilitation process." Disability & Rehabilitation **30**(7): 551-558 [4a].

Suzuki, K., G. Lockerte, et al. (2000). "Client satisfaction survey of a wheelchair seating clinic." Physical & Occupational Therapy in Geriatrics **17**(2): 55-65 [4b].

Ward, A., Sanjak, M., et al. (2010). "Power Wheelchair Prescription, Utilization, Satisfaction, and Costs for Patients with Amyotrophic Lateral Sclerosis: Preliminary Data for Evidence based Guidelines." Arch Phys Med Rehabil **91**: 268-272 [4a].

Note: Full tables of evidence grading system available in separate document:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (abbreviated table below)

Table of Evidence Levels (see note above)

<i>Quality level</i>	<i>Definition</i>
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

Table of Recommendation Strength (see note above)

<i>Strength</i>	<i>Definition</i>
"Strongly recommended"	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
"Recommended"	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

Dimensions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.

1. Grade of the Body of Evidence (see note above)
2. Safety / Harm
3. Health benefit to patient (*direct benefit*)
4. Burden to patient of adherence to recommendation (*cost, hassle, discomfort, pain, motivation, ability to adhere, time*)
5. Cost-effectiveness to healthcare system (*balance of cost / savings of resources, staff time, and supplies based on published studies or onsite analysis*)
6. Directness (*the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]*)
7. Impact on morbidity/mortality or quality of life

Supporting information

Introductory/background information

Wheelchairs (and custom rehabilitation equipment) can be used to “increase, maintain, or improve the functional capabilities of individuals (of all ages and diagnoses) with disabilities” (Benedict, 1999, p. 79, [4b]). To acquire custom rehabilitation equipment for individuals with disabilities, a comprehensive evaluation must be performed by an occupational therapist (OT) and/or physical therapist (PT), and have the presence of an equipment provider, called a vendor. After authorization is received for the prescribed custom rehab equipment, the delivery of the equipment is scheduled. Current standards of practice differ between vendors with regards to having the evaluating OT or PT present at the time of delivery. Many OTs and PTs who work in the area of custom rehabilitation equipment deem it an essential requirement for the evaluating therapist to be present at delivery of this equipment (Local Consensus [5]). Often, families come back to therapists with concerns regarding the fit or function of their custom rehabilitation equipment. The purpose of this EBP project was to ascertain if evidence exists to support having an OT or PT present at time of delivery of custom rehabilitation equipment and if this impacts patient and/or family satisfaction, safety, and cost.

Group/team members

Molly Thomas, PT, DPT, ATP, Point of Care Scholar

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Search strategy

A review of the literature was undertaken from February 2010 through June 2010 using various keywords and search terms related to wheelchairs, adaptive equipment, and satisfaction. Dates of articles included January 1990 through June 2010.

Search terms: wheelchair, wheelchair fitting, delivery, wheelchair delivery, satisfaction, patient satisfaction, pediatrics, children, durable medical equipment, DME, equipment, equipment needs, mobility device, mobility, assistive device, wheelchair safety, safety, wheelchair cost, cost of the wheelchair, physical therapist, therapist, Cerebral Palsy, Myelomeningocele, Amyotrophic Lateral Sclerosis, Spinal Cord Injury, Muscular Dystrophy, scoliosis

Databases: PubMed, Cinahl, PEDro, Hooked on Evidence, Scopus, Medline, National Guideline Clearinghouse

Applicability issues

Some exceptions may include: transportation issues for the family, third party payor requirements for delivery times, or scheduling constraints, but are limited to special circumstances.

Barriers in schedule for OT/PT and/or vendors

Potential increased cost to family's insurance for physical/occupational therapy visits associated with follow-up

Family's buy-in to policy

Vendor's buy-in to policy

Therapist's buy-in to policy

Copies of this Best Evidence Statement (BESt) are available online and may be distributed by any organization for the global purpose of improving child health outcomes. Website address: <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/default.htm>

Examples of approved uses of the BESt include the following:

- copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- hyperlinks to the CCHMC website may be placed on the organization's website;
- the BESt may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at HPCEInfo@cchmc.org for any BESt adopted, adapted, implemented or hyperlinked by the organization is appreciated.

Additionally for more information about CCHMC Best Evidence Statements and the development process, contact the Center for Professional Excellence/Research and Evidence based Practice office at CPE-EBP-Group@chmcc.org for the contact information.

Note

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Reviewed against quality criteria by 2 independent reviewers.