

_____ is a 23-yo woman with the diagnoses of Fredrick's Ataxia. She cannot ambulate independently, and requires maximum assistance to take a few steps. She cannot transfer or stand independently and requires maximum assistance to accomplish these tasks as well. Her bilateral lower-extremity spasticity (adductors, hamstrings and heel cords) and tightness (lack of dorsiflexion), make dressing, toileting and bathing difficult for her even with maximal assistance. When her caregivers have to pry her limbs apart and use force to separate her legs, she experiences pain. _____ also suffers from chronic constipation which requires long bouts of sitting on the commode and she relies on suppositories 3-4x/month to maintain her bowel function. When she is able to use a supported standing device daily for 30-45 minutes, her spasticity is reduced, her hip abduction and ankle dorsiflexion increases and she can complete her bowel care program more quickly and without the use of suppositories. Her care givers are able to bathe, transfer and dress her more easily, reducing _____ overall pain. Her activity and participation levels are increased when she has access to a supportive standing device; it is therefore deemed medically necessary. The attainment of these goals are evidence based and well documented in the scientific literature published in peer reviewed journals as w shall show in the below tables and charts.

In the recent past (see attached documents), Anthem BC/BS has denied _____ funding for a supported standing device citing that it is "experimental". The below documentation supplies the references that support _____ specific goals. Each citation has a corresponding CEBM rating. Level 1-3 are larger well conducted studies which have been published in peer review journals and must be accepted as scientific evidence. The Level 4-5 studies are lower level, usually case series, but sometimes randomized controlled studies that were presented as posters or platform sessions at a national conference, but not yet published as full text in a peer reviewed journal. It is the opinion of RESNA (http://www.rstce.pitt.edu/RSTCE_Resources/Resna_position_on_wheelchair_standers.pdf) and the APTA (<http://guidetoptpractice.apta.org/>) that supported standing is a well-established evidence based

practice pattern with known medical benefits. A recent systematic review may also assist Anthem in reviewing the literature to determine that supported standing cannot and should not be labeled as “experimental”. (<http://iospress.metapress.com/content/ln51p1tn131167q2/?p=69c647067925423fa186c046c5027e40&pi=6>).

Goal 1: Improve regularity of bowel function and decrease time performing bowel care

ICF category: b5 Functions of the digestive, metabolic, and endocrine systems

Includes b525 Defecation functions (Includes b5250-elimination of feces)

Studies reported by highest level of evidence

Author	Findings	CEBM Level/sample
Eng et al. (2001)	Supported standing program for 3-4x/week, average of 40 minutes/session: improved bowel and bladder function reported in 20 adults	3b (Survey) 38 of 126 adult users with SCI
Hoenig et al. (2001)	Prone standing table for 5x/week, 1 hour/session: improved frequency of defecation (decreased constipation) ($p < 0.05$); decreased bowel care time ($p < 0.05$); improvements decreased with reduction in standing from 5 to 3 sessions/week	3 (Case report) 62 year-old with SCI
Shields & Dudley-Javoroski (2005)	Supported standing wheelchair for 4x/week, 12 minutes/day at 61°: improved bowel program and negated improvement when not used	4 (Case report) 1 adult with SCI
Netz et al. (2007)	Standing box to perform exercises, 13-60 sessions: improved sphincter control ($p=0.048$)	4 (Case series) 13 elderly residents of nursing home (mean of 82 years)
Walter et al. (1999)	Re-analysis data from Dunn et al. (1998): Standing less than once/day: 18% had improved bowel regularity; standing more than once/day: 33% had improved regularity; standing for more than 30 minutes/day: increased bowel regularity to 39% ($p=0.05$)	4 (Survey) 99 adult users with SCI
Dunn et al. (1998)	Supported standing program 1-6X/week, 30-60 minutes/session: mixed outcomes for change in bowel care time; positive correlation between frequency and time for program with more regular bowel movements ($p=0.001$)	4 (Survey) 99 adult users with SCI

Clinical strategies based on the evidence:

Duration: 30-60 minutes/day, divided into 1-2 sessions

Frequency: 5x/week

Goal 2: Decrease spasticity

ICF category: b7 (Neuromusculoskeletal and movement related functions)

Includes b735 (muscle tone functions: Functions related to the tension present in the resting muscles and the resistance offered when trying to move the muscles passively. Inclusions: functions associated with the tension of isolated muscles and muscle groups, muscles of one limb, one side of the body and the lower half of the body, muscles of all limbs, muscles of the trunk, and all muscles of the body; impairments such as hypotonia, hypertonia, and spasticity)

Studies reported by highest level of evidence

Author	Findings	CEBM Level/sample
Tremblay et al. (1990)	Tilt table standing for one 30-minute session: prolonged muscle stretch resulted in reduced spasticity in ankle muscles ($p < .05$); inhibitory effects lasted up to 35 minutes after standing; capacity to voluntarily activate plantar flexors significantly increased post-stretch ($p < .05$)	2b (RCT) 22 children with cerebral palsy (CP): 12 experimental; 10 control group
Taylor (2009)	Standing frame programs 30-40 minutes/day: 16.2% noted reduction in spasticity as a very important benefit	2c ?? (Survey) 386 school-based PTs
Salem et al. (2010)	Regular therapy vs regular PT plus standing 3x/week, 9 weeks: Improvement in standing group in muscle tone during walking ($p < .02$); improvements not maintained at 3 weeks	3b (Case series) 6 children with CP
Chang et al. (2004)	Tilt table: reduced tone reported by 38 (65.5%)	3b (Survey) 86 PTs in acute care hospitals
Eng et al. (2001)	Supported standing program for 3-4X/week, average of 40 minutes/session: improved reflex activity in 23 adults; 9 reported reduced muscle spasm	3b (Survey) 38 of 126 adult users with SCI
Dunn et al. (1998)	Sit to stand and standing wheelchair 1-6x/week, 30-60 minutes/session: decreased spasticity for 42% of adults, increased spasticity for 4%; correlation between time spent in stander (>30 min) and reported decreased spasticity ($p < .05$)	4 (Survey) 99 adult users with SCI
Tsai et al. (2004)	Tilt table to stretch ankle plantar flexors for 30 minutes resulted in increased passive range of motion for ankle plantar flexors ($p < .05$)	4 (Case series) 17 adults with CVA
Kunkle et al. (1993)	Supported standing program, average of 144 hours over 135 days did not alter range of motion, reflexes, or tone	4 (Case series) 6 adults with SCI
Odeen & Knutsson (1981)	Tilt table standing in at 85° upright in 15° ankle dorsiflexion or plantar flexion during standing for 30 minutes resulted in greatest reduction in resistance to passive movement; average reduction from stretch in supine was 17%	4 (Case series) 9 adults with SCI
Shields & Dudley-Javoroski (2005)	Supported standing wheelchair, 4x/week, 12 min/day, at 61 degrees upright: decreased spasticity	4 (Case report) 1 adult with SCI
Bohannon	Supported standing at 80 degrees, 30 minutes/session: immediate	4 (Case report)

(1993)	reduction in lower extremity spasticity lasting until the following morning; no long-term trend after several days	1 adult with SCI
Walter et al. (1999)	Re-analysis of data from Dunn et al. (1998): 34% who stood less than once/day and 63% (p<.05) who stood more than 1x/day reported decreased spasticity; 34% who stood less than 30 minutes/day reported decreased spasticity, 51% who stood more than 30 minutes/day ???	4 (Survey) 99 adult users with SCI

Clinical strategies based on the evidence:

Duration: 30 minutes can be in short bouts of 15 minutes each

Frequency: 2-5x/week

Goal 1: Improve range of motion

ICF category: b7 (Neuromusculoskeletal and movement related functions)

Includes b735 (muscle tone functions) and b7353: tone of muscles of lower half of body: Functions related to the tension present in the resting muscles and the resistance offered when trying to move the muscles passively.

Studies reported by highest level of evidence

Author	Findings	CEBM Level/sample
Ben et al. (2005)	Tilt table: stretch on ankle dorsiflexors resulted in 4 degrees improvement	1b (RCT) 20 adults with SCI
Baker (2007)	Oswestry Standing Frame 3 times/week, 30 minutes/session, followed by 3-week exercise program: improved hip and ankle ROM (significantly)	2b (RCT) 6 adults with MS
Richardson (1991)	Tilt table, 7-day protocol for 27 days: increased ROM of plantarflexors (dorsiflexion)	3b (Case report) 1 adult with TBI
Salem et al. (2010)	Usual physical therapy treatment, then prolonged standing program 3x/week, in addition to usual physical therapy treatment, then usual physical therapy treatment for 9 weeks: significantly improved stride length (p <.001), gait speed (p <.001), stride time (p <.001), stance phase time (p <.001), double support time (p <.003), muscle tone (p <.02), and peak dorsiflexion angle during midstance (p <.004); improvements not maintained at 3 weeks	4 (Case series) 6 children with CP
Gibson et al. (2009)	Standing frame, 1 hour/day, 6 weeks: significant improvements in hamstring length and possibly increased ease of performance of ADLs; trend for hamstrings to shorten during non-standing phases	4 (Case series) 5 children with CP
Singer et al. (2003)	Tilt table, 30 minutes, with serial casting and Botox injections: improved equinovarus position	4 (Case series) 88 adults with traumatic brain

		injury (TBI)
Tsai et al. (2001)	Tilt table, one 30-minute session: improved ankle dorsiflexion (statistically significant) but increased tibialis anterior spasticity	4 (Case series) 17 adults with stroke
Bohannon & Larkin (1985)	Tilt table, 5-22 sessions, 2-6x/week, 30 minutes/session: 3-17 -increase in dorsiflexion (average gain of 1 /day)	4 (Case series) 20 adults with stroke
Macias (2005)	Standing program in 55-70 of hip abduction for 45 minutes/day: no loss in ROM of adductor muscles	5 (Presentation) 14 children with CP, 14-17 months old; compared to normal children at age 5

Clinical strategies based on the evidence:

Duration: 30 minutes

Frequency: 5x/week

Table 2: Oxford Centre for Evidence-based Medicine Levels of Evidence (updated March 2009)

<http://www.cebm.net/index.aspx?o=1025>

Level	Therapy/Prevention, Etiology/Harm	Prognosis	Diagnosis	Differential diagnosis/symptom prevalence study	Economic and decision analyses
1a	SR (with homogeneity*) of RCTs	SR (with homogeneity*) of inception cohort studies; CDR† validated in different populations	SR (with homogeneity*) of Level 1 diagnostic studies; CDR† with 1b studies from different clinical centers	SR (with homogeneity*) of prospective cohort studies	SR (with homogeneity*) of Level 1 economic studies
1b	Individual RCT (with narrow Confidence Interval‡)	Individual inception cohort study with > 80% follow-up; CDR† validated in a single population	Validating** cohort study with good††† reference standards; or CDR† tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	All or none§	All or none case-series	Absolute SpPins and SnNouts††	All or none case-series	Absolute better-value or worse-value analyses ††††
2a	SR (with homogeneity*) of cohort studies	SR (with homogeneity*) of either retrospective cohort studies or untreated control groups in RCTs	SR (with homogeneity*) of Level >2 diagnostic studies	SR (with homogeneity*) of 2b and better studies	SR (with homogeneity*) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control individuals in an RCT; Derivation of CDR† or validated on split-sample§§§ only	Exploratory** cohort study with good††† reference standards; CDR† after derivation, or validated only on split-sample§§§ or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses
2c	"Outcomes" Research; Ecological studies	"Outcomes" Research		Ecological studies	Audit or outcomes research

3a	SR (with homogeneity*) of case-control studies		SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies
3b	Individual Case-Control Study		Non-consecutive study; or without consistently applied reference standards	Non-consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality estimates of data, but including sensitivity analyses incorporating clinically sensible variations.
4	Case-series (and poor quality cohort and case-control studies§§)	Case-series (and poor quality prognostic cohort studies***)	Case-control study, poor or non-independent reference standard	Case-series or superseded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on economic theory or "first principles"

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Updated by Jeremy Howick March 2009. <http://www.cebm.net/index.aspx?o=1025>