



HOME HEALTH SECTION

AMERICAN PHYSICAL THERAPY ASSOCIATION

The Quarterly Report

Bundling Care: Making Sense of it All

by Ellen R. Strunk, PT, MS, GCS, CEEAA, CHC

It seems as though every few months, another “innovative” model of care is being announced, tested or touted as the “newest way to help save Medicare dollars.” One thing all these models have in common is that they were developed with one goal in mind: to insure that patients, especially the chronically ill, get the right care at the right time and while they do, avoid unnecessary costs, medical errors and duplication of services. Many practices report seeing fewer and fewer patients in the traditional fee-for-service model, and instead are

trying to understand the nuances of providing care in these new models. If you find yourself getting confused about how they are defined or how they differ from each other, you are not alone! This article is meant to help you begin to make sense of it all, and understand how they may impact your patient care practices.

The Centers for Medicare and Medicaid Innovation (CMMI) was established by the Affordable Care Act for the purpose of testing “innovative payment and ser-

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Patient and Caregiver Training for an 84-Year Old Man with Facioscapulohumeral Muscular Dystrophy (FSHD) Following a Tibial/Fibular Fracture: A Case Report

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Abstract

Background and Purpose: Facioscapulohumeral muscular dystrophy (FSHD) typically results in progressive weakness of the facial, scapular, and proximal humeral muscles. As those with FSHD age, their risk for falls increases. A fall can accelerate the disablement process and result in increased caregiving needs. This can be physically and emotionally taxing for their caregivers. In the home health setting, health care providers need to develop effective strategies to meet the needs of both patients and their caregivers. The purpose of this case report is to describe the impact of patient and caregiver training provided by a home health physical therapist for an 84 year old male patient with FSHD who sustained a new tibial/fibular fracture following a fall in his home.

Case description: The patient was an 84 year old male with FSHD who sustained a fall during a transfer, resulting in a tibial/fibular fracture. After his fall, the patient had a decline in functional mobility and an in-

crease in caregiving needs. The patient's caregiver was unable to independently and safely mobilize him, which impacted his quality of life. The patient was seen for seven home health physical therapy visits over a 30-day period with a focus on patient and caregiver training.

Outcomes: At the 30-day reassessment, strength and functional mobility had improved. The patient's caregiver was able to independently and safely mobilize him, which improved his quality of life. Cost-effective equipment such as the Sally Slide[®] and a gait belt provided meaningful benefit to both the patient and the caregiver.

Discussion: This case report demonstrates that patient and caregiver training were effective in addressing the mobility and safety concerns of both a patient and his caregiver. In the home health setting, cost effective equipment can increase caregiver independence with mobility, which can in turn improve patient quality of life.

Introduction

Muscular dystrophy consists of greater than thirty types of genetic diseases that result in progressive muscular weakness. While there is no cure, therapies and medical treatments can benefit those diagnosed with muscular dystrophy.¹

Facioscapulohumeral disease (FSHD) is the third most common type of muscular dystrophy, typically resulting in progressive weakness of the scapular, facial, and proximal humeral muscles. The majority of people with FSHD are unable to raise their upper extremities above shoulder height, which makes many upper extremity activities of daily living (ADLs) more difficult and time consuming.² Those with FSHD may also experience weakness in the abdominal muscles, hips and lower extremities.³ It is estimated that 80% of those with FSHD have weakness in the peroneal muscles and 20% experience weakness in the pelvic girdle.⁴ Muscular pain, fatigue, and respiratory insufficiency can also result.³

Approximately 870,000 adults are thought to have FSHD, but the FSHD Society estimates that the numbers are likely higher due to cases that have not been diagnosed.³ The disease process is typically slow, and the weakness that results is highly variable.² Onset of symptoms can begin at any point in a person's life, but typically are evident by young adulthood (ages 20-30's).³ As weakness increases, those with FSHD frequently experience impairments in functional mobility and ADLs. Nearly 25% of adults with FSHD over age 50 require a wheelchair for mobility.³

Falls in the older adult population are a growing and serious concern, with 1/3 of community dwelling adults over the age of 65 sustaining a fall every year.⁵ Once a person falls, his/her risk of additional falls is believed to double.⁵ Falls not only cost the health care system billions of dollars, but they can result in serious consequences for the older adult population. The Centers for Disease Control (CDC) estimates that 20% of falls result in a severe injury, such as a fracture or a head in-

jury.⁵ In addition to traumatic injuries, those who fall may experience a decline in functional mobility and independence, deconditioning, and an increased fear of additional falls.⁵

Less is known about the incidence of falls in the older adult disabled population, including those with neuromuscular diseases such as FSHD. This author's review of the literature included full text articles available in the English language in the past ten years in PubMed, PEDro, and CINAHL; as well as Centers for Disease Control, caregiving, and Muscular Dystrophy website searches. This author was able to identify limited studies addressing falls in those with neuromuscular diseases.

One study estimated that adults aged 65 and older with a physical disability may have twice the risk of falls compared to their community-dwelling peers.⁶ In another study, 65% of participants with FSHD sustained at least one fall per year, while 30% sustained at least one fall per month.⁴ This study also found that those with FSHD had an increased likelihood of sustaining multiple and more severe injuries after a fall compared to the control group. In this study, most falls tended to occur at home, and those who fell frequently demonstrated lower extremity weakness.⁴ Those with FSHD often have many of the known risk factors for falls, including lower extremity weakness, decreased balance, and difficulty walking.

Those with FSHD often require increased assistance from caregivers as their disease progresses coupled with the normal aging process. As a person with FSHD becomes more disabled, he/she may need assistance with dressing, bathing, transferring, toileting, and other self-care tasks.² Unfortunately, a fall can accelerate the disablement process and result in increased caregiving needs.⁶ As the need for additional care grows, the burden and strain on caregivers increases.

According to a 2015 report issued by the National Alliance for Caregiving, an estimated 34.2 million people in the United States provided care for adults aged 50 and older.⁷ As the baby boomer population continues to age, it is expected that there will be an increasing number of older adults with physical disabilities and chronic medical issues who will require caregiving.⁶ As the lengths of stay in hospitals decrease, caregivers are often taking on more duties in the home that were previously addressed in the hospital by health care providers.⁸ These caregivers frequently do not receive sufficient training to ensure that they are confident and able to perform the tasks safely and effectively.⁹ Those who live with the person requiring care often provide nearly forty hours per week of unpaid care.⁹

Caregiving is often physically and emotionally taxing for the caregiver. In fact, those who provide unpaid care for a spouse have been found to have increased risk for heart disease, depression, and even death.⁹ In a study on caregiving burden in muscular dystrophy, it was found that caregivers frequently experience anxiety, difficulty coping as the disease progresses, and stress related to a change in social and familial relationships.¹⁰ Caregivers frequently experience musculoskeletal pain resulting from tasks such as transfers and positioning.⁹ In one recent study, it was found that 94% of caregivers experienced musculoskeletal pain, with 79% of participants reporting that caregiving tasks either exacerbated or caused their pain.⁹

According to a 2012 Family Caregiver Alliance report on caregiver assessment measures, it was noted that there is a shortage of valid and reliable instruments to measure caregiver confidence.¹¹ In addition, there are not adequate measures to assess caregiver ability to perform specific health care tasks, particularly after training by a health care provider.¹¹ The development of valid and reliable tools to measure these areas will provide valuable information to health care providers as they develop care plans to address the needs of both the patient and caregiver.

In the home health setting, health care providers need to develop effective strategies to meet the needs of both patients and their caregivers in order to have the most successful outcomes possible. Health care providers need to be mindful of the physical and emotional toll that caregiving takes on both the patient and their caregiver. Physical therapists in the home health setting play an important role in patient and caregiver training after an injury such as a fall, educating caregivers how to independently and safely mobilize their loved ones. This includes educating caregivers regarding durable medical equipment (DME) that can make their caregiving tasks safer and less taxing.

The purpose of this case study is to describe the impact of patient and caregiver training provided by a home health physical therapist for an 84 year old male patient with Facioscapulohumeral muscular dystrophy (FSHD) who sustained a new tibial/fibular fracture following a fall in his home.

Case Description

The Rehabilitation Manager for Home Care Services approved the completion of this case report. The Institutional Review Board at the university health system did not require approval for this case report. The patient participating in this case report signed a consent form. Access to this patient's medical record was available

through the health system's electronic medical record. This patient was selected due to the author's interest in the patient's complex medical history and increase in caregiving needs following a fall. The patient also had a supportive and engaged caregiver, who was interested and willing to participate in this case report.

The patient was an 84 year-old male with a long standing diagnosis of FSHD at the time of this case report. He sustained a fall while transferring from a power wheelchair to his vehicle, stating that he lost grip on the door handle. The fall resulted in right comminuted distal tibial and fibular shaft fractures. The distal tibial fracture extended into the tibial metaphysis. The patient was found to have osteopenia as well as a Vitamin D deficiency. It was recommended that the patient schedule a DEXA (bone mineral density test) when possible. In the acute care setting, the orthopedic surgeon determined that the patient did not require surgical intervention. The patient was placed in a short leg cast and was instructed by the physician to remain non-weight bearing on the right lower extremity until cleared by orthopedics.

In addition, the patient was found to have skin excoriations in the gluteal crevice and was determined to be at mild risk for additional skin breakdown based on the Braden Scale for Pressure Sore Risk (score of 16/23). The Braden Scale has been found to be a valid and reliable measure for pressure score risk.¹²

The patient was seen by physical and occupational therapy in acute care. He was determined to be a good candidate for an intensive inpatient rehabilitation program due to his functional decline from baseline, and because the patient's spouse was unable to mobilize him independently and safely. After a two week inpatient rehabilitation program with physical and occupational therapy, the patient was discharged home. The patient was opened to home health services by skilled nursing and was then evaluated by this physical therapist.

The patient's past medical history was reviewed in the electronic medical record and is described below. The patient's cardiac diagnoses included ischemic cardiomyopathy status post pacemaker implant, congestive heart failure with an ejection fraction of 25%, coronary artery disease, myocardial infarction, peripheral vascular disease status post left lower extremity shunt, and hypertension. Prior to the fall, the patient had not started previously prescribed Coreg and Lisinopril, pending a cardiology consultation. The patient was also identified as having restrictive lung disease and was at risk for hypoventilation, which is common in those with FSHD.

It was recommended that the patient have follow-up pulmonary function tests at the university neuromuscular clinic as soon as feasible for him. The patient was found to be anemic in the hospital, with a hemoglobin value of 9.6 g/dl (normal range in men 13.5-17.5).¹³

Additional co-morbidities included the following: esophageal disorder, osteoarthritis at multiple sites, diabetes mellitus with no report of neuropathy, chronic low back pain, and an old T-6 compression fracture.

The patient retired from his job as a construction worker in 2009 and began using a single point cane for gait due to progressive weakness. By 2012, he required a four wheel walker for gait. Review of the patient's medical history revealed that he sustained three falls that did not result in serious injury between 2012-2015. He began using a power wheelchair and a power scooter in 2013 due to increasing fatigue and weakness. The patient was able to take a few steps with a walker with assistance until approximately 3-4 months prior to his fracture. Since that time, the spouse reported that the patient was non-ambulatory, but was able to perform stand pivot transfers in/out of bed, and in/out of his power chair with stand by assistance. He was also able to perform all bed mobility independently, including scooting up in bed, rolling, and transitioning supine to/from sit.

When the patient was discharged from inpatient rehabilitation, his spouse was identified to be the primary caregiver with support from the patient's son on evenings and weekends. The spouse was a retired registered nurse. The patient's durable medical equipment included a partially electric hospital bed (required hand crank to raise/lower height of bed), an extra-wide drop-arm commode, a transfer board, a manual wheelchair (with removable armrests), and a shower chair. A Hoyer lift was delivered by the equipment company, but the patient and his spouse declined it. The patient had a two-story house, but his living space was on the first floor. He had an accessible shower that allowed a shower chair to be rolled in/out. The toilet in his bathroom was not accessible, as the space was too small to accommodate a wheelchair that would allow for transfers onto the toilet.

At the initial home health physical therapy evaluation, the primary concern of the patient's spouse was that she was unable to safely and independently transfer the patient from his bed to/from the wheelchair. The patient's spouse was unable to get the patient out of bed to his wheelchair unless her son was off work and home to assist. In addition, the spouse was unable to independently reposition the patient in bed for com-

fort and pressure relief. She was also concerned that the patient was not able to follow the non-weight bearing precautions during bed mobility. At the initial evaluation, the patient's spouse indicated that she was completely overwhelmed with her husband's care since his discharge home from the hospital.

The patient indicated that his primary concern was difficulty having a bowel movement on the bedpan when his son was not home to assist with transfers to the commode. The patient's primary goal was to get up to the commode for all toileting. In addition, his goal was to transfer into his wheelchair daily in order to go out to enjoy his backyard. The patient indicated that his long term goal when healed from the fracture was to return to independent bed mobility and transfers if possible.

Tests and Measures at Initial Evaluation

1. *Pain:* A visual analog pain scale from 0-10¹⁴ was used with this patient, with 0 indicating no pain and 10 indicating that the pain was severe enough to need the emergency room. The patient reported his pain level to be 5/10 and described the pain as "sharp and burning". The patient experienced an exacerbation of pain >5/10 when his right lower extremity was in the dependent position for greater than 5 minutes.
2. *Range of motion:* The patient had limited active range of motion of bilateral shoulders. He was able to bring his hands to his mouth, but was unable to actively raise his arms above his head or reach forward. Passive flexion and abduction range of motion of the shoulders were limited to 90 degrees on the right, 100 degrees on the left. Range of motion in the wrists and elbows were within normal limits. Hip and knee range of motion were within normal limits bilaterally. Left ankle dorsiflexion range of motion was limited to 0 deg (neutral) but was otherwise within normal limits. The patient's right ankle was casted.
3. *Strength:* Strength was assessed by manual muscle testing with a 5-point scale, which is a common method of assessing strength in physical therapy.¹⁵ In *The Guide to Physical Therapist Practice*, manual muscle testing is identified as a tool for assessing muscle performance.¹⁶ The patient had limited ability to actively flex and abduct bilateral shoulders related to weakness associated with FSHD, which made assessing shoulder strength difficult to quantify. Elbow flexion: 3+/5 bilaterally. Elbow extension: right=3/5, left=2+/5. Hip flexor strength: left=3+/5, right=3/5; bilateral hip abduction=2+/5,

bilateral hip adduction=2-/5. Hamstrings: left=3+/5, right=2/5. Quadriceps=left=3+/5, right=3/5. Left dorsiflexion/plantarflexion 3+/5. This therapist was unable to assess right ankle strength as he was casted due to the fracture.

4. *Sensation:* Sensation was intact to light touch¹⁷ in bilateral upper extremities and left lower extremity. Light touch was intact in the patient's right toes, but unable to assess from foot up to knee due to the patient's cast.
5. *Gastrointestinal:* The patient reported constipation, with difficulty having a bowel movement on the bedpan. The patient's spouse was unable to transfer him independently to the commode.
6. *Vital signs:* Blood pressure in the right upper extremity was 114/68 mmHg in sitting position, heart rate was 67 beats per minute, pulse oximetry 99%, and temperature 97.5 deg Fahrenheit.
7. *Cognition:* The patient was alert and oriented with no reported memory loss.
8. *Sitting tolerance:* The patient was able to tolerate 5 minutes sitting at the edge of the bed with stand by assistance¹⁸ and reported pain of 5/10 in the right lower extremity before requesting supine due to increase in pain level.
9. *Sitting balance:* The patient was able to sit at the edge of the bed with stand by assistance and was able to resist slight balance perturbations within his base of support in all directions.
10. Levels of assistance for bed mobility and transfers at the initial evaluation are reported in Table 1 and are adapted from the Fairchild textbook.¹⁸ Although the scale used is open to some subjectivity on the part of the physical therapist, it was the most feasible measure for evaluating this patient's functional ability.
11. The patient's medication list at the time of the initial physical therapy evaluation can be found in Table 2. The patient did not start previously ordered Coreg and Lisinopril pending cardiology consultation.

Initial physical therapy goals addressed patient mobility, patient and caregiver safety, pressure relief, pain relief, strengthening, and breathing exercises. Details regarding initial physical therapy goals can be found in Table 3.

Intervention

The patient received a total of seven home health physical therapy visits (twice per week for two weeks, followed by once per week for three weeks). After the seventh visit, the majority of the initial goals were met

**Table 1. Levels of Bed Mobility and Transfers at Initial Evaluation and at 30-Day Reassessment
Bed Mobility (In hospital bed with half-rails up)**

Movement	Level of assistance Required at Initial Evaluation	Level of Assistance Required at 30-Day Reassessment
Rolling to the left or right	Maximal assistance with verbal cues for non-weight bearing on right lower extremity	Minimal assistance for reaching to half-rail
Supine to/from sit	Maximal assistance with verbal cues for body mechanics	Supine to sit-Minimal assist Sit to supine-Stand by assist
Scooting up in bed (in supine)	Dependent	Maximal assist, spouse report that patient able to provide increased assistance
Scooting toward head of bed (sitting)	Maximal assistance with cues for non-weight bearing on right lower extremity	Continued to require maximal assist

Transfers

Movement	Level of Assistance Required at Initial Evaluation	Level of Assistance Required at 30-Day Reassessment
Hospital bed to/from wheelchair (transfer board)	Dependent with two person assist	Maximal assist-spouse able to perform independently
Hospital bed to/from drop arm commode (transfer board)	Spouse too fearful to attempt	Maximal assist-spouse able to perform independently *Spouse decided to purchase a combination rolling shower chair/commode, which she found much easier to use than the drop arm commode.

Scale adapted from Fairchild textbook¹⁸

Dependent: Patient requires complete physical assistance from one or more people

Maximal assist: Patient performs 25-49% of the effort required to complete the task

Moderate assist: Patient performs 50-74% of the effort required to complete the task

Minimal assist: Patient performs >75% of the effort required to complete the task

Contact guard assist: Patient requires physical contact for safety, but no assistance

Stand by assistance: Patient requires someone to stand close by for safety, but no physical contact is needed.

Table 2. Home Health Medication List

Allergies: Atorvastatin

Reaction: Weakness, vision issues

Medication	Directions	Purpose	Comment
• Calcium Carbonate (OS-CAL) 500 mg calcium (1,250 mg) Tablet	Take 1 tablet by mouth every day.	Bone health	
• Cholecalciferol (VITAMIN D3) 1,000 unit Tablet	Take 2 tablets by mouth every morning.	Bone health	
• Enoxaparin (LOVENOX) 40 mg/0.4 mL Syringe	Inject 40 mg(1 syringe) subcutaneously every 24 hours.	Blood thinner	Watch for bleeding/bruising
• Hydrocodone 5 mg/Acetaminophen 325 mg (NORCO 5) 5-325 mg per tablet	Take 1-2 tablets by mouth every 4 hours if needed for pain.	Reduces moderate pain	Watch for constipation
• Nystatin (MYCOSTATIN) 100,000 unit/gram Cream	Apply to the affected area two times daily if needed.	Fungal rash management	
• Pantoprazole (PROTONIX) 40 mg Delayed Release Tablet	Take 1 tablet by mouth every day.	Reduces acid in stomach-reduces heartburn	
• Tamsulosin (FLOMAX) 0.4 mg Capsule	Take 1 capsule by mouth every day at bedtime. (urine)	Aids in voiding	
• Zinc oxide 6 % Cream	Apply to the affected area if needed. Apply to affected areas to protect from urine	Protects and heals rash	

Table 3. Initial Physical Therapy Goals and Outcomes at 30-Day Reassessment

Initial Physical Therapy Goals	Status at 30-Day Reassessment
1. Caregiver will be independent with assisting patient for bed mobility, including rolling, scooting up in bed, supine to/from sit, and scooting toward head of bed in sitting position by end of plan of care.	Goal Met-Week Three
2. Caregiver will be independent with use of transfer board w/c to/from bed, and w/c to/from commode to allow patient to go outside in his wheelchair daily by end of plan of care.	Goal Met-Week Three
3. Caregiver will demonstrate good body mechanics and safety while assisting the patient with bed mobility and transfers by week two to decrease risk of caregiver injury and low back pain.	Goal Met by Reassessment
4. Patient will be independent and compliant with use of incentive spirometer at least three times per day, ten breaths per time by week one due to exacerbation of congestive heart failure.	Goal Met by Reassessment
5. Patient will require minimal assist for rolling in bed to improve his ability to perform pressure relief and repositioning by end of plan of care.	Goal Met by Reassessment
6. Patient will require minimal assist for scooting up in bed by end of plan of care to decrease caregiver strain.	Goal Not Met, but spouse noted that patient providing increased assistance
7. Patient will perform supine to/from sit with minimal assist and fair safety by end of plan of care to decrease caregiver strain.	Goal Met by Reassessment
8. Patient/caregiver will be independent with home exercise program for range of motion and strength and patient will tolerate greater than 15 minutes of exercise per session to improve patient's strength for functional mobility by end of plan of care.	Goal Met by Reassessment
9. Patient/caregiver will demonstrate proper use of positioning and elevation to decrease right lower extremity pain by week one.	Goal Met-Week One
10. Patient/caregiver will be independent and compliant with pressure relief to decrease risk for skin breakdown by week one.	Goal Partially Met by Reassessment Independent, but decreased compliance with pressure relief
11. Caregiver will demonstrate independent and safe use of DME, including Sally Slide, transfer board, gait belt, commode, wheelchair, and hospital bed by end of plan of care.	Goal Met by Reassessment
12. Patient will propel himself independently with the wheelchair in the home in order to improve his upper extremity strength for functional mobility by the end of plan of care.	Goal Met by Reassessment

Table 4. Caregiver/Patient Training Topics

Caregiver/ Patient training topic	Rationale	Specific education
Bed mobility	<ul style="list-style-type: none"> Spouse unable to scoot patient up in bed or reposition for pressure relief Patient unable to independently perform supine to/from sit, spouse reporting that she is “doing all of the work” Patient unable to scoot in sitting position toward head of bed Patient prior level for bed mobility was stand by assistance 	<ul style="list-style-type: none"> Friction reducing transfer sheet (Sally Slide®) for scooting up in bed, for rolling/ repositioning Body mechanics and half-rail for supine to/from sit Body mechanics, half-rail and gait belt for scooting toward head of bed while seated
Transfers	<ul style="list-style-type: none"> Spouse unable to independently transfer patient between hospital bed and wheelchair or commode. Patient unable to be up in wheelchair or on commode unless second person to assist. Reported constipation and difficulty using bedpan for toileting. Patient prior level with stand pivot transfers was stand by assistance, allowing him to use power wheelchair for household and outdoor activities. 	<ul style="list-style-type: none"> Body mechanics Positioning of patient’s body and feet Placement of transfer board Downhill angle Use of gait belt Safety/fall prevention Instruction with new rolling combination commode/ shower chair that spouse decided to purchase
Posture/body mechanics of spouse	<ul style="list-style-type: none"> Spouse reported low back pain and fatigue resulting from increased lifting, pulling, as well as bending over to operate hand crank on hospital bed 	<ul style="list-style-type: none"> Equipment to decrease strain: Sally Slide®, transfer board, and gait belt Neutral spine and avoid reaching/ twisting Elevate bed to hip height and lower side rails Body mechanics for operation of hand crank on bed
Pain management	<ul style="list-style-type: none"> Patient report of 5/10 pain with exacerbation when right lower extremity in dependent position 	<ul style="list-style-type: none"> Pre-medication for mobility and exercise Elevation of right lower extremity Position changes every two hours Education for non-weight bearing precaution
Home exercise program	<ul style="list-style-type: none"> Spouse reporting decline in strength and mobility from baseline Deconditioning following increased time spent in bed since fracture Left ankle limited to neutral dorsiflexion and at risk for contracture due to prolonged time in bed 	<ul style="list-style-type: none"> Active, active assisted range of motion, and passive stretching Theraband® for strengthening upper extremities as well as the left lower extremity Wheelchair mobility (propelling for strength) Incentive spirometry (Breathing)
Pressure ulcer prevention	<ul style="list-style-type: none"> Skin excoriations in gluteal crevice and found to be a mild pressure ulcer risk on Braden Scale 	<ul style="list-style-type: none"> Position changes every two hours, including side lying Use of wheelchair cushion Gel mattress overlay (unable to tolerate Ehob® air mattress)

and both patient and caregiver reported that their needs were met. The patient was then placed on hold for physical therapy as the orthopedist indicated that the patient would need to remain casted and non-weight bearing for approximately six more weeks.

Patient and caregiver training were selected as the primary interventions for this patient due to increased caregiving needs resulting from the fall, decline in functional mobility, non-weight bearing status on the right lower extremity, and risk for pressure ulcers. In addition, the patient's primary caregiver (spouse) demonstrated poor body mechanics and safety during mobility. She also expressed that she was overwhelmed by the care required for the patient upon his discharge home from inpatient rehabilitation. In addition, she did not feel confident in her ability to transfer and position the patient safely and independently. The patient's spouse reported low back pain resulting from the increased caregiving needs. The specific caregiver and patient training topics addressed during this physical therapy plan of care are described in Table 4.

In the home health setting, there are several cost-effective pieces of equipment that can be very beneficial to both the patient and the caregiver. A gait belt is a simple tool that can be provided to assist caregivers with scooting at the edge of the bed and for transfer and gait safety. Theraband[®] is also a cost-effective item that can be very beneficial for a patient who is ready to advance a home exercise program to include resistance strengthening.

A SallyTube[®] (friction reducing transfer sheet) is a convenient, easy to use, and inexpensive piece of equipment that can reduce the risk for injury by decreasing caregiver hand force and time of muscular contraction required for repositioning a patient in bed.¹⁹ In 2015, the UC Davis Home Health/Hospice Department began providing SallyTubes[®] when appropriate to caregivers to assist with positioning and bed mobility. At the time of the writing of this case report, our departmental cost was approximately \$5 per transfer sheet and could be used 50-60 times before requiring replacement. Directions for correct use can be found in the Tollos product video.²⁰ Images of the SallyTube can be found in Figure 1.

At the initial physical therapy visit, the patient and caregiver were provided with a SallyTube[®], a gait belt, and a piece of Theraband[®] (red-medium resistance). The patient had been provided with the transfer board when he was discharged from acute rehabilitation. The caregiver was instructed in correct use of the SallyTube[®] for helping the patient reposition in bed. She was also

instructed how to use the gait belt correctly and safely for performing transfers with the transfer board. Exercises for active and active assisted range of motion and for strengthening with Theraband[®] were instructed. Specific Theraband[®] exercises included seated left hamstring curls and hip abduction; and bicep/tricep curls for the upper extremities. In addition, the spouse was educated how to perform passive left ankle dorsiflexion range of motion to prevent further loss of movement resulting from immobility and not standing for transfers. At the initial visit, the patient was able to tolerate five repetitions of each exercise due to fatigue. The patient was encouraged to propel his manual wheelchair when out of bed to assist with upper extremity strengthening.

Proper body mechanics for the caregiver were emphasized at the initial visit and throughout the physical therapy plan of care to decrease her risk for further injury and pain. Compliance with non-weight bearing precautions for the right lower extremity were also

Figure 1. Example of SallyTube[®]



*Printed from Tollos.com website with permission.
<http://www.tollos.com/products/safe-patient-handling/lateral-transfer-devices/sallytube>*

emphasized throughout the plan of care as the patient required frequent verbal cues to follow his precautions during bed mobility and transfers. Education on pain management and pressure ulcer prevention were also addressed throughout the plan of care. The patient was educated on the use of the incentive spirometer and was encouraged to use it daily.

Due to the spouse's report of feeling overwhelmed by the patient's care, this physical therapist requested an occupational therapy evaluation to further assess ADLs, a home health aide to assist with bathing twice per week, and a social worker to provide resources and caregiver support.

At the second visit, the caregiver needed extensive body mechanics instruction due to increased low back pain from bending down to hand crank the partially electric hospital bed. Despite this therapist advocating for a fully electric bed to decrease caregiver low back strain, the insurance company denied the request, stating that it was not a covered item. The family was unable to afford the co-payment required for the upgraded hospital bed. The caregiver demonstrated independent and safe use with the SallyTube® by the end of the second physical therapy visit.

By the third visit, the patient and his spouse had become frustrated with attempts to transfer onto his extra-wide commode. They found it difficult to perform the long distance transfer with the transfer board due to the width of the commode. They decided to order a sturdy, rolling combination shower chair and commode which did not arrive until later in the plan of care. At the end of the third visit, the caregiver was able to independently and safely perform bed to wheelchair transfers, but continued to be unable to perform wheelchair back to bed transfers independently. At the third visit, the patient was able to increase to ten repetitions of each exercise without difficulty. In addition, he was able to advance to seated left lower extremity marching, long arc quads, scapular retraction, and shoulder internal/external rotation with the TheraBand®.

Although the caregiver continued to require verbal cues for body mechanics during repositioning and transfers at the fourth visit, she demonstrated improvement in her technique for patient mobility. By the fifth visit, the patient had received his new rolling shower chair/commode. Transfer training between the bed and the new shower chair/commode with the transfer board was very successful, and both patient and caregiver felt confident with their technique by the end of the fifth visit. Once the caregiver was able to independently transfer the patient to/from the commode, he was able

to have regular bowel movements which had been very difficult for him to perform on the bed pan. In addition, the patient's caregiver noted that he was able to provide increased assistance for rolling and repositioning in the bed by the fifth visit, which decreased strain on the caregiver.

This therapist was able to progress the patient's home exercise program each visit. At the initial visit, he was only able to perform five repetitions of a few gentle exercises. By the physical therapy reassessment, he was able to perform 1-2 sets of ten repetitions of upper and lower extremity range of motion as well as strengthening exercises with the TheraBand®.

By the sixth visit, the patient was able to perform sit to supine with stand by assistance with use of the half-rail. Right ankle pain had decreased to 0/10 by the sixth visit which allowed the patient to tolerate sitting up in his wheelchair for 2-3 hours at a time.

Outcomes

The patient was seen for his seventh physical therapy visit which coincided with his Medicare 30-day reassessment. The majority of the patient's initial goals were met by the seventh home health physical therapy visit. The patient was placed on hold for physical therapy after the seventh visit, as the orthopedist ordered him to remain casted and non-weight bearing for at least six more weeks. Skilled nursing, home health aide, social worker, and occupational therapist plans of care were complete by the time of the physical therapy reassessment. The patient's pain level had decreased from 5/10 to 0/10 in the right lower extremity, which allowed him to tolerate 2-3 hours per day sitting up in the wheelchair. Range of motion measurements were unchanged from the physical therapy evaluation. The patient made strength gains in the following muscle groups: Biceps increased from 3+/5 to 4-/5 bilaterally, triceps increased from 2/5 to 3+/5 on the left and from 3/5 to 4/5 on the right, left hip flexor strength increased from 3+/5 to 4-/5, left hamstring strength increased from 3+/5 to 4-/5. Other muscle groups tested at the initial evaluation remained unchanged and/or were not able to be assessed with resistance due to the cast and non-weight bearing status in the right lower extremity.

Outcomes for mobility are described in Table 1. In summary, the patient made gains with rolling, supine to/from sit, and scooting up in bed (in supine). Scooting toward the head of the bed (in sitting) remained very difficult for the patient and he did not make gains in this area. The patient's spouse was able to independently reposition the patient in bed. However, she reported that pressure relief was challenging as the

patient preferred to stay supine in bed for several hours at a time. Despite decreased compliance by the patient with pressure relief, his skin excoriations healed and he did not have any pressure ulcers at the time of the reassessment.

Although the patient required maximal assist with all transfers with the transfer board at the final visit, his caregiver was able to perform them independently and safely. The spouse reported that the transfers continued to remain challenging, but she felt confident in her ability to assist the patient independently. With his caregiver independent with transfers, the patient was able to get up to the commode daily and reported no further problems with constipation. In addition, the patient was able to achieve his initial goal of getting up into the wheelchair daily so that he could go outside to enjoy his backyard. The patient's spouse reported that once she was able to transfer him independently to the wheelchair and the commode, the patient's mood improved. She reported decreased frustration with the patient's care and stated that they were working much better together. Once up in the wheelchair, the patient was able to propel himself indoors independently, but required minimal assistance outdoors on uneven surfaces.

At the final visit, the patient's caregiver demonstrated good posture and body mechanics during caregiving tasks and mobility, reporting decreased low back discomfort. She was independent with the use of all equipment, including the SallyTube[®], gait belt, transfer board, incentive spirometer, Theraband[®], rolling shower/commode, and the wheelchair. The patient was independent and compliant with use of the incentive spirometer three times per day. The patient and his spouse were independent and compliant with performance of the home exercise program for range of motion and strengthening.

The patient and his spouse reported that they appreciated the practical suggestions for equipment and mobility. Both reported that they were surprised that the SallyTube[®] and the gait belt made such a difference for them with mobility. The caregiver verbalized that the physical toll of caregiving was decreased as a result of physical and occupational therapy training as well as having a home health aide for bathing. She reported that the social worker was able to address the emotional toll of caregiving and offered valuable resources for support. Due to the patient's weakness, non-weight bearing status on the right lower extremity, and fear, this physical therapist was unable to attempt any sit to stand transfers during the patient's plan of care.

Discussion

The purpose of this case report was to describe the impact of patient and caregiver training provided by a home health physical therapist for an 84 year old male patient with FSHD who sustained a new tibial/fibular fracture following a fall in his home. In this case, the patient's fall did accelerate his disablement process and result in increased caregiving needs.

Interventions that focused on caregiver and patient training in this case were effective in addressing the initial mobility concerns of both the patient and his caregiver. Involvement of a dedicated caregiver made a meaningful difference in this patient's care. The findings of this case report are consistent with prior research that indicates that therapy can provide benefits for those diagnosed with muscular dystrophy.¹ In addition, it was found in this case report that several cost-effective pieces of equipment provided meaningful benefit to both the patient and the caregiver. At the time of the writing of this case report, our departmental cost for a SallyTube[®] sheet was \$5, the gait belt was less than \$20, and a four foot length of Theraband[®] was less than \$10. For less than \$50, these items made an impact on the caregiver's independence with bed mobility and transfers. In turn, this independence improved the patient's quality of life while he was recovering from his lower extremity fracture. The patient stated that his ability to get up to have a bowel movement on the commode and go outside in the wheelchair greatly improved his quality of life while he was recovering from the lower extremity fracture.

Both the patient and his caregiver verbalized understanding regarding the progressive nature of the patient's disease and the challenges that would accompany this progression. They recognized the need for additional support when the patient's mobility and strength further declined and were informed regarding local resources available through the Muscular Dystrophy Association. As the patient was no longer able to raise his arms to shoulder height, he verbalized understanding that upper extremity ADLs would continue to be a challenge for him.

One limitation of this case report was that this physical therapist was unable to report on care provided beyond the initial seven visits of physical therapy due to orthopedic precautions remaining in place for another six weeks. Describing the modifications of patient and caregiver training once the weight bearing restrictions were lifted would provide additional information on effectiveness of care in reaching new physical therapy goals.

Another limitation is that there is a lack of a truly objective measure to assess levels of assistance required for mobility. The minimal, moderate, and maximal assistance scale is open to some subjectivity on the assessor's part. In addition, a reliable and valid tool for measuring caregiver confidence on specific caregiving tasks does not exist. It would be very valuable for physical therapists to have valid and reliable measures that can be used in the home health setting to objectively report outcomes. Objective outcome measures are expected to become increasingly important for insurance payers. As the health care environment continues to rapidly change, physical therapists are expected to face increasing pressure to demonstrate both value and skill when providing therapy services.

Due to the patient's weakness and non-weight bearing status on the right lower extremity, this physical therapist was only able to address fall prevention for the patient in the sitting position and during transfers. Although it could not be addressed in this case report, fall prevention education during standing transfers is a very important caregiver/patient training topic when a patient has a history of multiple falls as well as lower extremity weakness.

With the baby boomer population aging quickly, the number of older people with physical disabilities and chronic medical issues continues to increase. More research on falls in the disabled population is needed to prepare our profession to meet these growing needs. As the number of older adults who require caregiving increases, it will be important to further explore the physical and emotional toll on those who provide care.

It will be critical for the physical therapy profession to further explore how caregivers prefer to learn new skills and to be able to provide up to date, comprehensive, and easy to use tools to meet their needs. Some caregivers may learn best with written information (handouts), others with visual information (videos, pictures, etc). Many caregivers require education over the course of several visits in order to become confident with caregiving tasks. This author hopes that the newly launched American Physical Therapy Association (APTA) Rehab Resource Center will be a useful resource for caregiver education tools as this website continues to grow and develop. ■

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