INPATIENT REHABILITATION FOR A PATIENT WITH CHRONIC OBSTRUCTIVE PULMONARY DISORDER FOLLOWING HOSPITALIZATION DUE TO BACTERIAL PNEUMONIA

A Doctoral Project
A Comprehensive Case Analysis

Presented to the faculty of the Department of Physical Therapy
California State University, Sacramento

Submitted in partial satisfaction of the requirements for the degree of DOCTOR OF PHYSICAL THERAPY

by
Bipan Atwal
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Department of Physical Therapy
Abstract

INPATIENT REHABILITATION FOR A PATIENT WITH CHRONIC OBSTRUCTIVE PULMONARY DISORDER FOLLOWING HOSPITALIZATION DUE TO BACTERIAL PNEUMONIA

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Bipan Atwal

A patient with chronic obstructive pulmonary disorder was seen for physical therapy treatment for 10 sessions from 7/9/15 to 7/20/15 at a skilled nursing facility. Treatment was provided by a student physical therapist under the supervision of a licensed physical therapist.

The patient was evaluated at the initial encounter with Manual Muscle Testing, Functional Independence Measure, Berg Balance Scale, and 2 Minute Walk and a plan of care was established. Main goals for the patient were to improve strength, functional independence, static and dynamic balance, and gait endurance. Main interventions used were gait training with a front-wheeled walker, therapeutic exercise and activities, balance training, task-specific training, and breathing strategies for symptom management.
The patient improved strength, functional independence, balance, and gait endurance. The patient was discharged home to the care of her daughter and her daughter’s family with a home exercise program.

_____________________________________, Committee Chair
Bradley Stockert, PT, PhD

______________________________
Date
ACKNOWLEDGEMENTS

I acknowledge Kindred Transitional Care and Rehabilitation for allowing me to use a patient from the skilled nursing facility for my case study and for teaching me how to treat patients with cardiopulmonary disorders.
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Chapter 1

General Background

Chronic obstructive pulmonary disease (COPD) is an umbrella term for a number of progressive, usually irreversible diseases characterized by airflow limitations in the lungs and inflammatory responses to noxious stimuli.\textsuperscript{1} In the United States alone, COPD affects over 24 million people and is the third leading cause of death.\textsuperscript{2,3} The most common forms of COPD are chronic bronchitis, emphysema, and asthma.\textsuperscript{1} Non-modifiable risk factors for COPD include: age over 40, exposure to air pollution or environmental irritants, family history, and alpha-1 antitrypsin deficiency, a genetic condition. The primary modifiable risk factor is smoking. Most people with COPD smoke, smoked previously, or were exposed to secondhand smoke. Approximately 80\% of deaths due to COPD are attributed to smoking, making smoking cessation a vital component in treatment strategies for people with COPD.\textsuperscript{4-6}

Patients with COPD present with different signs and symptoms depending on the specific underlying disease diagnosed. Symptoms of COPD can include breathlessness or dyspnea, chronic cough, sputum production, wheezing, shallow and rapid breathing, abnormal chest sounds on auscultation, and a barrel-chested appearance due to hyperinflation.\textsuperscript{1,7,8} The most debilitating symptom is dyspnea because it interferes with patients’ abilities to walk, exercise, and perform activities of daily living. Due to the impact of COPD on lifestyle, patients may develop anxiety and/or depression.\textsuperscript{4}
Pulmonary function tests are used in the diagnosis of COPD. These tests give information about: 1) total lung capacity and residual volume (RV), which are typically higher with COPD; and 2) forced vital capacity (FVC) and forced expiratory volume in one second (FEV\textsubscript{1}), which are typically lower with COPD.\textsuperscript{7} A normal ratio for FEV\textsubscript{1}/FVC is over 80%. Airflow obstruction in COPD is defined as a ratio lower than 70%.\textsuperscript{1} A ratio between 70-80\% of the predicted value is considered a mild impairment; a ratio between 50-70\% of the predicted value is considered a moderate impairment; a ratio below 50\% of the predicted value is considered a severe impairment to ventilation.\textsuperscript{7}

Airway obstruction occurs due to damage to lung tissue which may include the bronchi, bronchioles, and/or alveoli. Chronic inflammation leads to functional narrowing and remodeling of the airways and an increase in mucus-secreting glands. These changes are irreversible and lead to a loss of elasticity in lung tissue, air trapping, hyperinflation, reduced lung function and an increased risk of infections.\textsuperscript{8} Since COPD is progressive, early diagnosis is important to optimize the prognosis. Early treatment and learning how to manage the disease and behavior will likely result in a more favorable outcome.\textsuperscript{4}

Supplemental oxygen use is a significant prognostic factor. Pulse oximetry is used to determine a patient’s blood oxygen saturation, or amount of oxygen attached to hemoglobin molecules.\textsuperscript{7} Oximetry can be used to assess the impact of supplemental oxygen on oxygenation at rest or with activity. Normal values for saturation are above 95\%. Patients with COPD often receive supplemental oxygen when their resting
saturation level is between 88-92%. Lower saturation levels are associated acutely with symptoms of hypoxemia; e.g. dizziness, light-headedness, and severe dyspnea; while chronic hypoxemia results in the onset of pulmonary hypertension and cor pulmonale. Supplemental oxygen, therefore, is associated with a poorer prognosis.
Chapter 2

Case Background Data

Examination – History

The patient was a 68-year-old female admitted to the hospital for severe shortness of breath (SOB) and rapid breathing with a medical diagnosis of bacterial pneumonia secondary to COPD. The patient had a positive medical history for irritable bowel syndrome, recurrent deep vein thrombosis, hereditary spherocytosis, depression, anxiety, and chronic hypoxemic respiratory failure. The patient stayed at the hospital for three days. She was transferred to a transitional care and rehabilitation facility to continue her therapy. She was not ambulatory while in the acute setting.

The patient was evaluated by physical therapy at the rehabilitation facility. Her chief complaints included SOB, weakness, extreme fatigue, and fear of falling during ambulation. She was using supplemental oxygen via a nasal cannula at 3 liters per minute (LPM) and had a resting SO$_2$ of 94% at rest. She required minimal assistance with bed mobility and all transfers. Her static sitting balance was fair; i.e. she was able to maintain balance without upper extremity (UE) support. Her static standing balance was below fair; i.e. she was able to maintain balance with handhold support of a front wheeled walker (FWW) and constant minimal assistance.

Prior to the hospitalization, she lived with her husband in a second-story apartment that required ascending 17 stairs to get into the home. She was functionally independent and used a cane to ambulate outside of her home. The patient’s plan upon discharge was to live with her daughter, son-in-law, and grandchildren while her
husband looked for alternate housing options without stairs. The husband and
daughter’s family were both willing and able to provide assistance upon discharge.

The patient’s goals were to improve her ability to ambulate without feeling
SOB, be independent in bed mobility and transfers, and be able to navigate stairs in
order to be more independent and able to return home with her husband.

**Examination - Medications**

Table 1

Medications

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>DOSAGE</th>
<th>REASON</th>
<th>SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>325 milligram (mg) Every 4 hours</td>
<td>Pain</td>
<td>Blistering skin, rash, hives, itching, swelling, hoarseness, difficulty breathing or swallowing</td>
</tr>
<tr>
<td>Alprazolam</td>
<td>0.25 mg Every 8 hours</td>
<td>Anxiety</td>
<td>Drowsiness, light-headedness, headache, irritability, nausea, constipation, joint pain</td>
</tr>
<tr>
<td>Atropine</td>
<td>0.025 mg Every 6 hours</td>
<td>Pain</td>
<td>Eye irritation, sensitivity to bright light, dry mouth,</td>
</tr>
<tr>
<td>Coumadin</td>
<td>2.5 mg Once daily (bedtime)</td>
<td>Blood clots</td>
<td>Abdominal pain, hair loss, chills, fatigue</td>
</tr>
<tr>
<td>Enoxaparin</td>
<td>60 mg/0.6 milliliter(mL) injectable solution Twice daily</td>
<td>Blood clots</td>
<td>Upset stomach, fever, irritation of injection site</td>
</tr>
<tr>
<td>Morphine</td>
<td>60 mg Every 8 hours</td>
<td>Moderate to severe pain</td>
<td>Dizziness, drowsiness, nausea, diarrhea, weakness, headache, mood changes</td>
</tr>
<tr>
<td>Protonix</td>
<td>40 mg Once daily</td>
<td>Gastroesophageal reflux disease</td>
<td>Headache, nausea, joint pain, constipation</td>
</tr>
<tr>
<td>Wellbutrin</td>
<td>150 mg Once daily</td>
<td>Depression</td>
<td>Drowsiness, anxiety, excitement, headache, uncontrollable shaking, weight loss</td>
</tr>
<tr>
<td>Zofran</td>
<td>8 mg Twice daily</td>
<td>Nausea and vomiting</td>
<td>Headache, constipation, weakness, fatigue, chills, drowsiness</td>
</tr>
</tbody>
</table>
**Systems Review**

The patient’s cardiopulmonary system was impaired: resting heart rate was 80 beats per minute, resting blood pressure was 130/82 mmHg, SO₂ at rest was 94% while receiving supplemental oxygen at 3 LPM and dropped to 88% with ambulation. The musculoskeletal system was impaired: strength in LE bilaterally was grossly 3-/5. The neuromuscular system was impaired; the patient required assistance for transfers and gait and was unsteady with balance. The integumentary system was not impaired based on observation and patient report. The patient’s cognition was not impaired based on observation and patient was oriented to person, place, and time. However, her affect was impaired; the patient’s history is positive for depression and anxiety and both appeared to impact the patient during the initial examination.
Chapter 3

Examination – Tests and Measures

The patient’s impairments were categorized using the International Classification of Functioning, Disability and Health (ICF) Model. Manual muscle testing (MMT) was used to assess strength, a body structure and function impairment. Other body structure and function impairments included frailty, poor posture as observed by the patient’s rounded back and SOB. The Berg Balance Scale (BBS) was used to assess balance and fall risk, an activity impairment. The 2 Minute Walk Test (2MWT) was used to assess gait endurance, an activity limitation. Other activity limitations included need for assistance with functional transfers and inability to ascend stairs. Patient report was used to assess the patient’s participation restrictions prior to hospitalization.

The MMT is a measure of the body structure and function level of the ICF used to assess strength. Muscular performance is scored on a scale of 0 to 5 based on the strength of contraction against resistance. There are no values established for minimal detectable change (MDC) or minimally clinical important difference (MCID). However, MMT has excellent interrater reliability (r) with an r value of 0.94. In addition, MMT has a strong correlation to myometry testing with correlation values ranging from 0.59 to 0.94 making it a valid exam item to utilize in the clinical setting.

The BBS is a measure of the activity level of the ICF used to assess functional balance in adults. The scale consists of 14 items and each item can be scored between 0 and 4 points for a total possible score of 56. Higher scores indicate better balance and
decreased risk of falls. For elderly adults living in long-term care facilities, the MDC at 95% confidence (MDC\(_{95}\)) is 6.3 points for patients who scored between 25 and 34 points.\(^{15}\) This MDC\(_{95}\) indicated that with a change in score greater than 6 points, one can be 95% confident that a real change in performance occurred as opposed to a change in score due to measurement error. An MCID has not been established.

The BBS can also be used as a prognostic indicator for fall risk in adults.\(^{15}\) Using 45 points as a cut-off score to identify adults at risk for falls, sensitivity is calculated at 64% and specificity is calculated at 90%. Sensitivity indicates how often the BBS scores the subject as a risk for falls when they truly are a risk. Specificity indicates how often the BBS scores the subject as not a risk for falls when they truly are not at risk.\(^{16}\) The positive likelihood ratio (LR+) is 6.4, indicating a moderate increase in posttest probability of the subject being at risk for falls if they score less than 45 points. The negative likelihood ratio (LR-) is 0.4, indicating a small decrease in posttest probability of the subject being at risk for falls.\(^{16}\)

The 2MWT is a measure of the activity level of the ICF used to assess gait endurance. This test is scored by the total distance covered at the end of two minutes. There are no MDC or MCID values established for patients with COPD. However, the 2MWT does have very good correlation to the 6 Minute Walk Test (6MWT) with a Pearson r value of 0.95.\(^{17}\) The 2MWT also has a very strong construct validity with the 6MWT of r = 0.93, indicating both measures assess the same construct. The MDC\(_{95}\) and MCID\(_{95}\) for the 6MWT in patients with COPD are both 177 feet.\(^{18,19}\) Based on these psychometric properties, the 2MWT can be used in lieu of the 6MWT with an
estimated MDC$_{95}$ of 59 feet for patients who have severely poor activity tolerance and endurance.

The Functional Independence Measure (FIM) is used to measure the level of a patient’s disability and to test how much assistance is necessary in order to complete activities of daily living. The FIM is used to test at both the motor and cognitive level. There are no MDC or MCID values established for patients with COPD. However, the FIM has excellent internal consistency in the general rehab setting with a Cronbach’s alpha value of 0.93 as well as excellent test-retest reliability with an intraclass correlation coefficient value of 0.90.$^{20,21}$

The Wells’ Criteria for DVT (deep vein thrombosis) is used to determine risk and help diagnose patients having a DVT. Patients are identified at being high, intermediate, or low risk based on the following clinical criteria: being bedridden for 3 or more days, calf swelling, presence of superficial veins, swollen leg, localized tenderness, pitting edema, immobilization, previous DVT, and likely alternative diagnosis.$^{22}$ If a patient if identified as low risk, the LR- is 0.25, indicating a small decrease in the likelihood of having a DVT. If a patient is identified as high risk, the LR+ is 5.2, indicating a moderate increase in the likelihood of having a DVT.$^{22}$
Table 2

Examination Data

<table>
<thead>
<tr>
<th>Measurement Category</th>
<th>Test/Measure Used</th>
<th>Test/Measure Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strength</td>
<td>Manual Muscle Testing</td>
<td>Right lower extremity: 3-5/5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Left lower extremity: 3-5/5</td>
</tr>
<tr>
<td></td>
<td>Gait endurance</td>
<td>2 Minute Walk Test</td>
</tr>
<tr>
<td></td>
<td>Functional balance</td>
<td>Berg Balance Scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28/56</td>
</tr>
<tr>
<td></td>
<td>Functional Independence</td>
<td>FIM score: 4</td>
</tr>
<tr>
<td></td>
<td>Measure</td>
<td>Minimal assistance required to complete functional transfers – bed to chair – safely</td>
</tr>
<tr>
<td></td>
<td>Category</td>
<td>using stand and step transfer</td>
</tr>
<tr>
<td>Limited social life</td>
<td>Patient report of stair</td>
<td>Patient reports she is unable to participate in</td>
</tr>
<tr>
<td>and independence</td>
<td>climbing: patient</td>
<td>social activities or run errands due to inability to enter or leave home independently</td>
</tr>
<tr>
<td>due to inability to</td>
<td>uncomfortable</td>
<td>Patient unwilling to attempt stair climbing during examination</td>
</tr>
<tr>
<td>ascend/descend stairs</td>
<td>climbing stairs during</td>
<td></td>
</tr>
<tr>
<td>to enter second story</td>
<td>examination</td>
<td></td>
</tr>
<tr>
<td>apartment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 4

Evaluation

Evaluation Summary

The patient was a 68-year-old female referred for SOB and poor activity tolerance secondary to COPD. The patient was independent in her prior level of function (PLOF) but required assistance for transfers and ambulation upon initial evaluation. Physical therapy was needed for the patient to improve mobility, manage breathing, and decrease the burden of care in order to return home safely. The patient was found to have LE muscle weakness and impaired dynamic standing balance that resulted in decreased functional mobility and difficulty with gait relative to her PLOF.

Diagnostic Impression

The patient’s presentation was consistent with the medical diagnosis of COPD, which resulted in problems at the body structure and function, activity, and participation levels of the ICF model. The patient’s LE weakness contributed to activity limitations in balance, transfers and gait. The patient’s participation was restricted by her activity limitations, especially her inability to ascend and descend the stairs needed to enter her home.

Prognostic Statement

The patient’s positive prognostic indicators included: independent in PLOF, motivation to return home to husband, availability of daughter’s family for assistance and support, and willingness to quit smoking.
The patient’s negative prognostic indicators included: need for supplemental oxygen, a 40 year pack history of smoking, anxiety, dependence for assistance with transfers and gait. The patient was expected to return to PLOF; i.e., the patient was expected to be independent with transfers but still require a front-wheeled walker to ambulate longer distances with standby assist. Improvement in participation during this course of therapy was not expected due to patient’s inability and fear of climbing stairs.

**G-Codes**

*Current with modifier: G8978CK based on the BBS*

*Goal with modifier: G8979CJ based on the BBS*

**Discharge Plan**

The patient was to be discharged to the care of her daughter and her daughter’s family in their single story home while the patient’s husband looked for new housing options without stairs.
Table 3

Evaluation and Plan of Care

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PLAN OF CARE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short Term Goals (2 weeks)</td>
</tr>
<tr>
<td>LE weakness</td>
<td>The patient will increase strength in lower extremities to 3/5, bilaterally.</td>
</tr>
</tbody>
</table>

Body Function or Structure Impairments

Chapter 5

Plan of Care Goals and Interventions
<table>
<thead>
<tr>
<th>Activity Limitations</th>
<th>Decreased functional balance</th>
<th>Limited gait endurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance Training</td>
<td>Balance training will be performed first with hand hold for support and awareness of body position increasing to no support. Exercises will include single limb balance, narrow base of support increasing to tandem stance balance, functional reach, and stair climbing (at first with use of rails increasing to no support). Balance exercises can be progressed to uneven surfaces if appropriate; i.e. foam pad. (C) Physical therapy will coordinate treatment for balance with occupational therapy in order to maximize functional balance while performing activities of daily living. Balance exercises can be done with other cognitive and/or motor tasks.</td>
<td>Gait Training with front-wheeled walker (FWW). Patient will increase distance ambulated prior to stopping for rest each time. At evaluation, patient ambulated 35 feet prior to stopping for rest. This distance will increase each time the patient works on gait. Oxygen saturation will be monitored to control symptoms. After patient is able to ambulate longer distances, patient will be trained to manage curbs, doorways, etc. with FWW in order to improve mobility. Endurance training can be combined with strength training using interval training in order to maximize time in clinic and benefits from exercise. (E) Patient will be educated on pursed lip breathing strategies in order to manage symptoms of dyspnea. Patient will be able to use pursed lip breathing during exertional efforts.</td>
</tr>
<tr>
<td>Functional Balance</td>
<td>The patient will improve functional balance as demonstrated by a score a 34/56 of on the Berg Balance Scale.</td>
<td>The patient will improve gait endurance as demonstrated by an increase in the 2 Minute Walk Test to 100 feet with a front wheeled walker.</td>
</tr>
</tbody>
</table>
### Dependence in functional transfers

<table>
<thead>
<tr>
<th>The patient will be able to perform bed mobility and functional transfers with stand by assist.</th>
<th>The patient will be able to perform bed mobility and functional transfers independently.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strength training as described above. Patient will perform repeated transfers from bed to chair getting into and out of both sides of bed and chair. Oxygen saturation will be monitored to control symptoms during change in orientation prior to continuing activity.</td>
<td></td>
</tr>
</tbody>
</table>

(E) Care giver instructed how patient should be performing bed mobility and transfers in order to preserve energy.

(E) Patient and care giver are aware of safety precautions when going from supine to sit and sit to stand. Patient will utilize pursed-lip breathing and wait for symptoms to relieve before continuing activity in new position.

### PARTICIPATION RESTRICTIONS

<table>
<thead>
<tr>
<th>Limited social life and independence due to inability to ascend/descend stairs to enter/leave house</th>
<th>No change expected</th>
<th>Patient will be able to ascend/descend flight of stairs leading into her home in order to return to living in second story apartment, participate in social activities, and run errands on her own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gait and endurance training as described above in order to improve level of independence in community.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stair training in order to be able to enter second story apartment home. Patient will be trained to use two hand hold support with rails to ascend and descend stairs increasing to one hand hold support and eventually no hand hold support, if appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient will be referred for outpatient pulmonary rehabilitation program to improve strength and endurance in order to maintain gains made during treatment in clinic.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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26, 27
Plan of Care – Interventions

See Table 3.

Overall Approach

Task-specific training was used as the overall approach for this course of care. With this method, the patient focused on functional movements directly related to her impairments in order to improve performance. Using the overload principle, the patient pushed herself to the limit of her abilities in order to adapt the cardiovascular and pulmonary systems to demands. By incrementally increasing the distance she ambulated, the patient was able to improve her musculoskeletal and respiratory endurance. By decreasing her base of support and ambulating on uneven surfaces, the patient was able to improve her functional balance in order to decrease her risk of falls.

PICO question

For an elderly woman with COPD (P), what direct and/or educational interventions (I) are useful in order to reduce dyspnea (O) and improve function?

Article 1: A systematic review on the use of pursed-lip breathing in subjects with COPD (level of evidence: 1a).28 The purpose of this systematic review was to determine the evidence available for teaching pursed lip breathing strategies to treat breathlessness in patients with COPD. This systematic review looked at 11 studies involving over 200 subjects with COPD. The authors found moderate quality research indicating that pursed lip breathing strategies can help patients with COPD increase oxygenation, lower respiratory rate by nearly seven breaths per minute, improve oxygenation by approximately 2.5%, and improve symptoms; i.e. dyspnea. There
weren’t any high quality studies included in the systematic review. Furthermore, additional research needs to be done looking into long-term effects on function and quality of life. Nonetheless, pursed lip breathing has been shown to improve symptoms associated with COPD in short-term studies and should be used to help patients manage breathing. Therefore, pursed-lip breathing was included in the plan of care for this patient.

Article 2: A systematic review and meta-analysis on resistance training combined with endurance training in subjects with COPD (level of evidence: 1a). The purpose of this meta-analysis was to determine if there were any differences between resistance training alone compared to non-exercise controls or combined resistance training with endurance training compared to endurance training alone on dyspnea, quality of life, and exercise capacity in patients with COPD. The authors looked at 18 studies involving 750 subjects with COPD. The studies included were all randomized control trials that looked at treatment for at least four weeks, which was the time frame for this patient. The authors found that there were no significant differences between the resistance training group and the combined resistance training and endurance training group in: 6MWT, maximum exercise load, and maximum oxygen consumption. No adverse effects were reported with combined training. Therefore, resistance training was still a part of the plan of care for this patient in order to achieve other goals related to strength, balance, and ability to perform safe transfers independently.
Table 4

Outcomes

| OUTCOMES |
|------------------------|------------------------|------------------------|------------------------|
| **BODY FUNCTION OR STRUCTURE IMPAIRMENTS** | **Activity Limitations** | **Participation Restrictions** |
| Outcome | Initial | Follow-up (2 weeks) | Change | Goal Met (Y/N) | Outcome | Initial | Follow-up | Change | Goal Met (Y/N) | Outcome | Initial | Follow-up | Change | Goal Met (Y/N) |
| MMT | R LE: 3-/5 | R LE: 3+/5 | + ½ MMT grade | Y | BBS | 28/56 | 43/56 | + 15 points MDC: 6.3 points | Y |
|   | L LE: 3-/5 | L LE: 3+/5 | + ½ MMT grade | Y | FIM | Patient performed bed mobility and functional transfers with minimal assistance. | Patient performed bed mobility and functional transfers independently. | Improvement in ability to perform transfers safely without assistance or supervision | Y |
|   |   |   |   |   | 2MWT | 35 feet | 210 feet | + 175 feet MDC: 59 feet | Y |
| Limited ability to leave house independently | Patient was unable to ascend and descend 5 stairs using one rail for support but is still unable to navigate the 17 stairs required to enter and leave home | Patient was able to ascend and descend 5 stairs using one rail for support | Improvement in ability to ascend and descend 5 stairs using one rail for support | No change expected by 2 weeks; patient was able to improve ability to climb stairs using one rail |

MMT = manual muscle testing; R = right; L = left; LE = lower extremity; Y = yes; N = no; BBS = Berg Balance Scale; FIM = Functional Independence Measure; MDC = minimal detectable change; 2MWT = 2 Minute Walk Test
**Discharge Statement**

The patient attended inpatient physical therapy at a transitional care and rehabilitation facility for treatment of SOB and poor activity tolerance secondary to COPD. The patient was seen for 10 visits over two weeks. The patient received strengthening exercises, balance training, endurance training, gait training with a FWW, transfer training, breathing management training, and a home exercise program. The patient was initially severely limited in her ability to ambulate due to muscle weakness, poor balance, and decreased endurance. Over the course of therapy, the patient achieved goals associated with increased LE strength, functional balance, functional transfers, and gait endurance. The patient did not achieve goals related to ability to ascend and descend stairs, but did show good improvement. The patient was independent with a home exercise program and was discharged to the care of her daughter and her daughter’s family in their single story home while the patient’s husband looked for new housing options without stairs.

**Discharge G-Code:**

Mobility: walking & moving around functional limitation

G8980CJ based on the BBS
Chapter 7

Discussion

All of the patient’s goals at the activity level of the ICF model were met. The patient improved her 2MWT distance, her BBS score, and her ability to perform functional transfers. Improvements can be attributed to the patient’s motivation to return home to her family, her PLOF, improvements in strength and endurance, and the ability to manage her breathing during activity. The plan of care focused on strengthening, balance, gait training with a FWW, transfer training, and patient education and was delivered using task-specific training and the overload principle. The patient did make improvements and achieved her goals for her increased strength for the amount of time she received therapy. The patient’s goals in the participation level of the ICF model were not met, however, the patient did make improvements in ability to ascend and descend stairs in order to increase her level of independence. The episode of care may have been too short for the patient to reach all of her goals. Overall, this course of physical therapy was successful for this patient due to her improvements in gait endurance, functional balance, and level of independence.

When treating similar patients in the future, I will utilize a similar plan of care and similar intervention strategies. However, I will make some changes, as well. When measuring muscle strength, I will measure each muscle group separately rather than generalizing one entire extremity. I will also include oxygen saturation as a body structure and function impairment in order to keep track of the patient’s oxygen levels and their correspondence with symptoms of SOB or dizziness. In addition to making
changes to the problems list, I will focus more on the patient’s needs at home, which in this case was the need to ascend stairs. There was only one small set of stairs available in the clinic but more time could have been spent on stair training. I will also include more patient education for assistive devices other than the FWW used during the course of therapy in case the patient plans to use other equipment in the future.

This patient presented with typical signs and symptoms associated with COPD but also presented with impairments in affect. More evidence on how to effectively address cognitive and behavioral changes in patients with COPD would be helpful in treating similar patients in the future. Overall, however, the plan of care and interventions utilized over the course of treatment are appropriate for other patients with COPD.
References


