

Winter 12-5-2016

An APN-led COPD Discharge Education Program to Decrease 30-day Readmission Rates

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By

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Submitted in partial fulfillment of the Requirements for the degree of

Doctor of Nursing Practice

Seton Hall University

2016

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Dedication

This doctoral project is dedicated to my husband, Mark, and my four wonderful boys, Connor, Liam, James, and Brendan. My husband and children have been a remarkable support to me during the lengthy hours at the computer and their assistance has been instrumental to me. These men have motivated me to complete my doctoral degree and DNP project so that all patients with chronic obstructive pulmonary disease can breathe a little easier. I also dedicate this work to my wonderful parents, Thomas and Jacqueline Walsh, who are both a perpetual support to me in my life. They have always encouraged their children to “be smart”, achieve the finest from our education and to make our marks on the world. They are the most magnificent and compassionate parents that children can hope to have in their lives. Special thanks are in order for my siblings, Catherine, John, Thomas, Regina, Kevin, Lisa, Brian, and Judi, and Sean, for supporting and guiding me along my journey. Your invaluable assistance in the revision and layout of this paper has been irreplaceable. Your whole-hearted support gave energy to every minute of this work and as always, I love you all.

Acknowledgement

It has taken me four years to complete this doctoral initiative, and during that time, Dr. Mary Ellen Roberts, has offered me everything from academic advice, unwavering support, and mobilization towards global thinking. She has encouraged me to develop this initiative so that it could impact an entire healthcare system rather than just one clinical unit in just one hospital. She has inspired me to design and uphold this project in a manner which is seemly for academic work and one which has been molded based on the mission statement of Seton Hall University, one which is focused on servant leadership. It has been through her profusion of scholarship which has supported and assisted me to define this doctoral project and make it a reality on the pulmonary floor at Overlook Medical Center and I am eternally grateful.

I would like to thank all of the pulmonologists at Pulmonary & Allergy Associates, who have graciously and patiently supported my doctoral work over the past four years. Without their support for my initiative none of this was possible. These physicians endorsed this project from the start by introducing it at pulmonary section meetings, on the pulmonary floors within Atlantic Health Systems and with each patient who suffers with COPD. This stupendous group of academic and clinical physicians have constantly collaborated on my behalf to make this initiative a reality and for this, I am infinitely thankful.

Dr. Chirag Shah has been my clinical mentor for the last four years, and I cannot thank him enough for teaching me about patient care, clinical aspects of COPD, and the importance of clinical investigation as a fundamental part of my professional and academic development. He is a constant source of pulmonary knowledge and an inspiration to me and without his generous feedback, expert reviews, humor, and scholarly input this project would not have been a reality. His immediate encouragement, patience and clinical counsel have developed this project into a much broader success at Overlook Medical Center and for this, I am in his debt. Dr. Shah has taught me what a true mentor is and his unending support for my DNP project has been unwavering and I thank him for his guidance.

I would like to recognize Atlantic Health Systems, for making this doctoral work possible on the pulmonary floor at Overlook Medical Center. I want to express my gratitude to the following nursing leaders: Tina Maund, Corneila Gilbin, Laura Labrozzi, Nowai Keleekai, and Mary Pat Sullivan who offered guidance and coordination in all aspects of this project. I am so very thankful to Yi Zhou, the medical librarian, at Morristown Medical Center because without her expertise I would never have been able to implement this doctoral initiative. To close, I want to thank Monica Gilles, who continually informed, inspired, challenged, and sustained me about everything pulmonary rehabilitation. She is a devoted expert on providing evidence-based pulmonary rehabilitation to all patients and willing shared her expertise with me and for this, I thank her. To my dear friends, Michele Corcione and Victoria O'Donnell, I thank you for your faith and encouragement for everything pulmonary and pushing me forward with all my ideas. You are both inspirational pillars of strength to me because you have supported and pressed me continually onward, and for this, I thank you but most importantly, I thank you for your friendship. Where would we be without our friends?

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Abstract

The purpose of this project was to implement an APN-led COPD discharge education program to decrease 30-day readmission rates. This Doctorate of Nursing (DNP) project combined strategies obtained in the literature search and blended these into a cutting-edge and state-of-the-art discharge education program at a major medical center. The significance of chronic obstructive pulmonary disease (COPD) readmission rates include financial implications, a large number of Medicare patients who return to the hospital within 30 days, poor quality of patient care, and poorly coordinated discharge processes. An APN-led transitional care COPD education discharge plan was implemented on the pulmonary floor at a major medical center in New Jersey. Consented patients admitted to OMC pulmonary floor and who received their pulmonary care from Pulmonary & Allergy Associates (PAA) were asked to participate in this quality initiative. This quality initiative was conducted on 18 patients with COPD from October 2015 to January 2016. Patients included in this quality initiative received 1-hour; face-to-face visits by me, three days a week during the 12-week program and totaled 15 hours per week. The primary project outcomes were decreased 30-day readmission rates during the 12-week program.

Secondary project outcomes were the implementation of patient discharge education including the following: 7-day pulmonary follow-up; signs and symptoms which require an emergency pulmonary visit; importance of influenza and pneumococcal vaccination; proper inhaler technique utilizing the 10-second breath hold with “teach back” method; importance of physical activity and pulmonary rehabilitation (PR); home oxygen needs; home nebulizer needs; importance of proper nutrition; assessment of anxiety, depression, and gastrointestinal reflux (GERD); and assessment for the safest discharge location based on the patient’s risk for readmission. The clinical significance of this initiative is a suitable approach to decrease 30-day readmission rates resulting in improved quality of care, a multidisciplinary transition of care

approach to the patient with COPD, decreased financial burdens for this medical center, and implementation of pulmonary evidence based guidelines.

Background

This is a continuous performance improvement project aimed at decreasing 30-day hospital readmission rates at a major medical center in New Jersey for patients who suffer from COPD. This DNP initiative is directed at creating a system-level discharge practice transformation for patients who receive their pulmonary care at a large medical center in New Jersey. This initiative is a culmination of a carefully designed initiative which unfolded into a new program implementation requiring expert pulmonary teaching directed at patients, their families, and pulmonary clinicians. The initiative emphasized the need for practice change and quality improvement by implementing evidence-based practice and a theoretical framework which was guided by Mishel's work and implemented by the APN leader. The APN leader built professional relationships on the pulmonary floor, in pulmonary rehabilitation and in the surrounding hospital's community. This DNP project is practice-oriented and directed at both hospital stakeholders and community stakeholders. It is based on transparency and collaboration between the APN, patients, families, and clinicians. The DNP project incorporates several of the competencies which are required of all DNP leaders and these include the following: organizational and systems leadership for quality improvement and systems thinking; clinical scholarship and analytic methods for evidence-based practice; interprofessional collaboration for improving patient and population health outcomes; and clinical prevention and population health for improving the nation's health (Pritham & White, 2016). This is a timely performance improvement project for this medical center because

In 2012, the Centers for Medicare and Medicaid Services started to reduce Medicare payments to hospitals with high readmission rates for patients admitted with

CHF (congestive heart failure), myocardial infarction, and pneumonia. Starting from fiscal year 2015, this list will also include (COPD). COPD is the third most common cause of hospital readmission among Medicare beneficiaries. Almost one in four (22.6%) Medicare beneficiaries, (4) and 1 in 12 younger adults (40-64 yr. old) (10) hospitalized for COPD, were readmitted to the hospital within 30 days of discharge. (Sharif, 2014, pp. 685-686)

Reducing COPD hospital readmission rates poses a unique opportunity because to address rising costs and quality concerns, the Hospital Readmissions Reduction Program (HRRP) was enacted, targeting inpatient discharges in the Medicare fee-for-service population for congestive heart failure (CHF), acute myocardial infarction (AMI), and pneumonia. The HRRP mandates up to a 3% reduction in all Medicare reimbursements should hospitals fail to stay below their expected readmission rates. In October 2014, the HRRP was expanded to include COPD. (Shah, 2015, pp. 1220)

COPD readmissions are a common problem at this hospital, and deserve intense scrutiny since

Readmission following hospital admission for acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is common, occurring at least once in 60% of patients within 1-year of discharge. Furthermore, rapid readmission within 3-months of discharge affect 30% of patients with AECOPD, and underscores the fact that approximately one third of exacerbations are recurrent events occurring within 8 weeks of an initial exacerbation. (Coventry, 2011, pp.1)

This practice problem is important and requires attention immediately by increasing efficiency, value and care coordination because

Readmissions occur early, with one-half occurring within 2 weeks of discharge,

confirming what others have seen. Thus, in planning a discharge strategy, arranging to see a patient 2 weeks post discharge may fail by missing those most at risk. Decreasing rehospitalizations among patients discharged after a COPD hospitalization is a worthy goal that could both improve the health of the patients and save resources. (Mannino, 2015, pp. 1-2)

Understanding when COPD readmissions occur after discharge is an important part of this initiative and a large national study was conducted and found that

The highest percentage of readmissions occurred on day 1 (6.0%) after discharge and decreased to approximately 2% on day 30 after discharge. Almost one-third (95% CI, 31.7% to 32.1%) of readmissions occurred by day 7, and 60.6% of readmissions occurred by day 15 (95% CI, 60.4% to 60.8%; median time to readmission, 12 days [interquartile range, 6-12 days]). (Shah, 2015, pp.1220)

This initiative may reduce the financial burden that COPD readmissions will place on this hospital and a randomized controlled trial found

Acute exacerbations of COPD (AECOPDs) account for a large proportion of health-care expenditures owing to the number of hospitalizations and ED visits. The 30-day all-cause readmission rate for patients with COPD exacerbations was 20.5% in 2008, with a mean adjusted cost for admission of \$11,100. Hospital readmissions for COPD add to the health-care cost burden and have been identified as the fourth most costly, potentially preventable readmission. Thus, innovative methods to reduce readmissions comprise an important goal for health-care institutions. (Jennings, 2015, pp.1228)

Additional practice problems are seen during the transition of care from the hospital to the home environment due to poor communication between the patient and the healthcare provider (Miller and Schaper, 2015). Problems which occur during the discharge process are numerous including that

Many patients do not receive even the most basic planning and instruction for successful discharge and return to the hospital with complications that, with adequate discharge preparation, were potentially preventable. In a study by Makaryus and Friedman, less than half of patients evaluated were able to name their diagnosis or recall names of medications, reason for use, or their side effects. Ability to comply with the treatment plan could be significantly altered by this type of knowledge deficit. In a study by Jencks et al, half of the Medicare patients readmitted within 30 days of leaving the hospital did not have a follow-up appointment between discharge and readmission. Poorly executed transitions of care leading to avoidable readmissions cause negative consequences for patients and families and are financially taxing for the health care system. The vulnerable interval between discharge and follow-up leaves an opportunity for exploring ways to support patients as they transition from the acute care setting to the home environment. (Miller, 2015, pp. 64)

This initiative addresses the tremendous financial burden which results from COPD readmissions because

In the United States, COPD is responsible for more than 1.5 million emergency room visits and 725,000 hospitalizations annually, with resulting healthcare costs approaching \$60 billion. Among patients hospitalized for AECOPD, 34 to 40% do not receive recommended therapies, whereas nearly half receive at least one inappropriate or potentially harmful therapy. Approximately 22.6% of patients discharged after AECOPD have an all-cause 30-day readmission, highlighting the significant impact to

patients, payers, and healthcare systems. (Feemster, 2015, pp. 636)

This clinical practice problem is concerning for this hospital because readmissions indicate poor care quality and

The pervasiveness of readmissions is concerning because some readmissions can be an indicator of poor care quality. In 2010, the Advisory Board surveyed clinical executives on their key motivations for reducing readmissions. Not surprisingly, the survey data demonstrates that clinical administrators' primary motivation for reducing readmissions is to improve care quality. (Virkstis, 2011, pp. 3)

This initiative will focus on quality improvements efforts directed at unplanned COPD readmission since

Kaiser Permanente of Southern California studied unplanned readmissions at two facilities and found that only 25 percent of unplanned readmissions resulted from patient noncompliance. The remaining 75 percent were attributed to "system issues," which leaders at Kaiser perceived as directly within a hospital's control. (Virkstis, 2011, pp. 6)

Unplanned readmissions will be closely examined during this initiative and this can provide improved quality of care and financial savings due to the fact that

Planned readmissions represent good care and are typically part of the planned treatment course. Conversely, unplanned readmissions occur for reasons that include poorly coordinated care among multiple settings, misdiagnosis at initial hospitalization, premature discharge from the hospital, and inadequate discharge planning. The best opportunity for quality improvement and financial savings at hospitals comes from reducing those readmissions within the hospital's control: readmissions that are preventable (unplanned) and predictable (related to the initial hospitalization). Thus, hospitals and health systems should focus on potentially preventable readmissions that the hospital may predict. (Joshi, 2014, pp. 545)

This initiative has adopted the transition to population health which is beneficial for COPD patients at this hospital because as

The evolving healthcare environment requires providers to adopt a population health approach, one that manages health outcomes for a defined group of people rather than just an individual patient. The traditional health management model focuses on patients who are active seekers of healthcare services. However, this model will not be sustainable in the future. The delivery system will require a proactive approach to identifying, engaging, and addressing the needs of not only a growing number of healthcare users but also patients with increasingly complex health needs. Thus, shifting to a population health model that aims to improve the health of individual patients as well as larger communities is critical. One of the major forces driving the shift to a population health focus is the transition from volume-based care to value-based care. (Joshi, 2014, pp. 54)

In addition, this initiative incorporates the concept of value-based purchasing which began from attempting to get managed care organizations to compete for patients by delivering superior value, to attempting to convince members to engage in improved personal healthcare consumption habits, to trying to affect provider behavior (Joshi, et al., 2014). This concept of value-based purchasing will create a new payment model that would aptly and fairly move the financial risk to all hospitals, making this medical center responsible for the cost and quality of care delivered to patients with COPD (Joshi, et al., 2014). This initiative will reduce the pulmonary defects and waste by limiting the probability that COPD readmissions will occur by restructuring the entire admission, discharge and outpatient process (Joshi, et al., 2014).

Description of the Project

This continuous performance improvement project is aimed at all patients with COPD, a respiratory disorder characterized by airflow inflammation that has become the third-ranked cause of death in the world (Parikh, Shah, and Tandon, 2016). COPD is a chronic and progressive respiratory condition associated with unremitting breathlessness which leads to inactivity (Walmsley, 2014). Inactivity causes deterioration in the muscles of the patient with COPD and leads to a cycle downward of breathlessness and more inactivity which can lead patients to become housebound and ultimately living in social isolation (Walmsley, 2014). An acute exacerbation of COPD is described as a change in the patient's baseline respiratory status and development of respiratory symptoms that generally requires a modification in the patient's fixed medication schedule (Parikh et al., 2016). All the patients were diagnosed with COPD by their pulmonologists and attained spirometry results with the presence of a post-bronchodilator $FEV1/FVC < 0.70$ which confirmed the presence of persistent airflow limitation and therefore of COPD (GOLD, 2015). In addition to these spirometry results, the patients complained of the COPD key indicators of dyspnea, chronic cough, chronic sputum production, and history of exposure to risk factors such as tobacco smoke (GOLD, 2015). A COPD readmission is defined as "any repeat admission within 30 days after being discharged alive from an index hospital stay divided by the total number of index admissions". (Elixhauser, 2011, pp. 1-2)

This initiative addresses several ongoing clinical problems which are addressed in a prospective analysis of patients admitted with a COPD exacerbation and are the following:

Health care costs attributed to COPD continue to escalate because of increasing length of stay and readmission rates. Length-of-stay rates for acute COPD exacerbation range from 4.5 to 8.8 days. Meanwhile, COPD is now the fourth leading cause of 30-day readmissions. In fact, COPD readmissions, along with cardiac disease, cause the largest number of readmissions globally. Factors associated with increased readmission rates in

COPD patients have been studied, and attempts to establish risk predictors have been made. In particular, variables for increased readmission rates include longer length of stay during initial hospitalization, COPD severity as defined by Global initiative for chronic Obstructive Lung Disease criteria, comorbidities, and age of patients.

Subsequently, these same factors have shown to play a direct role in increasing hospital costs of COPD patients and increase health care resource utilization. (Parikh, 2016, pp. 578).

Purpose of the Project

The projected outcomes of this project are optimization of care for patients with COPD during hospitalization; improvement in the continuum of care upon discharge; decreased morbidity; and reduced monetary costs as a result of reduced 30-day readmission rate. The principal objective of this DNP initiative is to specifically decrease 30-day COPD readmission rates at this healthcare institution by improving patient noncompliance issues and the system issues which are directly in control by the hospital (Virkstis, et al., 2011). There were a myriad of steps which were implemented in the 12-week period which was delivered over a 3-day period consisting of 15- hour sessions per week and these encompassed the following: assessment of current COPD management plan and discharge process; targeted APN-led pulmonary education directed at all patients with COPD on the pulmonary floor of this medical center and who receive their care from Pulmonary & Allergy Associates (PAA), defining the existing root causes of patient readmissions; implementation of evidence-based education aimed at the patient, family, and all pulmonary clinicians; outline the education process on the physician progress notes daily (see Appendix A for the COPD Care Bundle used in the daily progress notes); collaborate with the social workers and care managers to strengthen care coordination across the discharge continuum; and communicate the pulmonary plans with the pulmonologist, hospitalists and primary care provider. COPD specific discharge education was implemented starting on the day of admission and extended to the days leading up to discharge for patients and their families

which included the following: importance of pulmonary rehabilitation; need for home oxygen; adequate nutritional intake; smoking cessation; importance of influenza and pneumococcal vaccinations; home nebulizers; proper inhaler use utilizing the “teach back” method; arranging pulmonary follow-up in 7 days from hospital discharge; signs and symptoms requiring an emergency pulmonary visit; clearly written post- discharge pulmonary instructions; and inclusion and importance of all prescriptions for breathlessness, anxiety, depression and GERD. In addition, the APN-leader rounded every day in pulmonary rehabilitation and repeated the entire pulmonary education process directed at these out-patients patients in order to prevent a readmission to the hospital. The program emphasized an early 7- day follow-up visit with the pulmonologist (or primary care physician) because these providers may identify early threatening signs of acute clinical decline, respond, and intervene with pulmonary actions which can decrease hospital readmissions within 30 days of discharge (Spiva, Hand, VanBrackle & McVay, 2015).

Significance of the Project to Nursing

The significance of this initiative to both nursing and healthcare is to improve the multidisciplinary approach and the transitions of care for the patient with COPD. This initiative will result in the improvement in the quality of care for the patient due to the implementation of evidence-based pulmonary care across the continuum of care, decrease 30-day readmission rates, improve the discharge process by identifying the appropriate location of discharge; and finally reduced spending for the COPD population at this medical center. This project has assisted the hospital to recognize opportunities for improvements in the discharge process and for better preparation of patients for self-management at home. Additional implications for nursing include earlier assessment and coordinated discharge planning for patient’s needs such as proper inhaler use and the importance of timely pulmonary follow-up as an affordable way to offer support during transitions of care.

This project demonstrates that an APN-led COPD discharge plan may decrease

readmission rates by implementing the many factors presented in this paper including a follow-up phone call, pulmonary education, and assessment of safe discharge location based on an individualized discharge process. Individualized and holistic care for patients with chronic conditions can have a huge impact to both the hospital and the patient because it can empower patients towards a self-management plan. This program was successful in its attempt to empower patients to manage their COPD and patients felt much more prepared for discharge having the pulmonary education and support which was provided. This program is unique because it incorporates a holistic approach and includes the assessment not only of pulmonary and exercise problems but psychological disorders such as depression and anxiety which can significantly impact the patient. The program impacts nurses because it increases their awareness of individual patient care, population health, and the significance of improving the healthcare delivery system. The program impacts nurses and this hospital because it generates the needed changes to transform the discharge process and improve healthcare quality. Additional significant factors include decreased variability in the management of COPD, implementation of evidence-based pulmonary guidelines, and this program is replicable in other healthcare institutions and may be applicable to other chronic conditions.

Theoretical Framework

The model of uncertainty in acute illness was selected as a theoretical framework and was merged into this COPD quality improvement initiative because it is the uncertainty during a COPD exacerbation which holds the highest and single most psychological stressor for the patient at a hospital (Mishel, 1981). The uncertainty which occurs during a hospitalization for a patient experiencing a COPD exacerbation will result in a stress response (Mishel, 1981). The obvious uncertainty is a judgment from the patient about the COPD event, which requires hospitalization, a variety of medications, and interactions with healthcare professionals which result in additional uncertainty because the patient often lacks the ability to label the COPD event due to the lack of knowledge of important physical signs (Mischel, 1981). Patients with COPD

experience uncertainty during hospitalization because they experience symptoms during an exacerbation of COPD, which are often vague and unclear, such as dyspnea, decreased mobility, and increased sputum production. Uncertainty persists during the diagnosis, treatment, and lack of provider information about their AECOPD and their progression towards a return to their previous level of pulmonary health (Mishel, 1981). The model of uncertainty was incorporated into this initiative in order to decrease the high degree of uncertainty which occurs during the hospitalization of a patient with AECOPD by educating both the patient and family. This initiative was based on Mischel's theoretical framework which transformed the care of the patients with COPD by decreasing the discomfort, helplessness, and poor quality of life which impacted their lives. The uncertainty in acute illness framework was instituted and directed towards COPD patients, so that relationships between the patient and medical providers could be developed and maintained in order to decrease uncertainty. This multidisciplinary initiative recognized the importance of the following findings on the patient's uncertainty and these include that:

No matter the source, when an event is judged uncertain, it will contain one or more of the following eight dimensions: (1) vagueness; (2) lack of clarity; (3) ambiguity; (4) unpredictability; (5) inconsistency; (6) probability; (7) multiple meanings; (8) lack of information. (Mishel, 1981, pp. 259)

This quality improvement initiative effectively employed this framework by developing a new role for the pulmonary APN, who implemented a multitude of strategies which were aimed at the needs of patients with COPD so that uncertainty was effectively decreased. This resulted in improved quality of life and psychosocial adjustment during the entire transition of care including the hospitalization, discharge process, and the post discharge period. The program decreased the vagueness and lack of clarity about the AECOPD by implementing an APN-led COPD discharge education project which decreased the inconsistency and lack of information

during the hospitalization, the discharge process, and during the post-hospital period.

Literature Review

Several studies have revealed the importance of decreasing 30-day COPD readmission rates because these readmissions occur with high frequency. The literature demonstrates that COPD is currently the fourth leading cause of 30-day readmissions (Parikh, Shah, & Tandon, 2016). This problem is concerning to all health care clinicians because COPD readmissions along with cardiac disease result in the largest number of readmissions worldwide (Parikh et al., 2016). Readmissions which happen early following hospitalization for COPD arises in nearly one in five discharges among older adults (Singh, Zhang, Kuo, & Sharma, 2016). The literature reveals that approximately 20% of patients who are hospitalized with a COPD exacerbation in the United States are readmitted within 30 days of discharge and the Centers for Medicare and Medicaid Services can sanction up to a 3% reduction in all Medicare reimbursements (Raghavan, Bartter, & Joshi, 2016). A 2015 article in CHEST reveals that COPD readmissions happen quickly, with one-half happening within 2 weeks of discharge which is an important statistic for hospital programs wishing to implement an initiative aimed at decreasing readmission rate (Mannino & Thomashow, 2015). In addition, the literature discusses the Hospital Readmissions Reduction Program (HRRP) which was assembled to address the growing costs and quality concerns and surveyed inpatient discharges in Medicare fee-for-service populations for congestive heart failure (CHF), acute myocardial infarction (AMI), pneumonia and which has now been stretched to include COPD (Shah, Churpek, Perrailon, & Kontzka, 2015) The obligation to improve readmission rates is amplified in the literature because global health care costs for COPD exacerbations have increased and cumulative costs in the United States are \$4 billion (Parikh et al., 2016). In addition to the frequency and financial burden of COPD readmissions is the importance of improving quality of life issues. An acute

exacerbation hastens the progression of the disease, reduces the quality of life, diminishes activity tolerance and increases mortality (Lin et al., 2014).

The literature on COPD examines the capability of hospitals to impede readmission rates by implementing programs which support susceptible patients during the high-risk period after a hospital discharge (Kind et al., 2014). APN-led (Advanced Practice Nurse) transitional home care models aimed at patients with COPD have been studied in the literature and revealed that the patients cared for by an APN-led visit team at home had fewer nursing visits, rehospitalizations, and acute care visits (Felber, Madigan, & Narsavage, 2003). Transitional Care Models led by APNs caring for COPD patients can be used in the post discharge setting to decrease 30-day readmission rates. The literature discloses that COPD patients should be assessed, treated and prepared for discharge by professionals with specialty in respiratory knowledge to prevent readmission and improve the management of this chronic disease (Cope, Fowler & Pogson, 2015). Hospitals must implement personalized care plans for patients with COPD and develop shared decision making between the pulmonologist and the COPD patient by adapting the philosophy of “no decision about me without me” (Cope et al., 2015). The engagement of the patient with chronic diseases such as COPD is a crucial step because they understand the treatment and can alter his or her pulmonary behavior and lifestyle to the consequences of the disease (Cope et al., 2015). It is essential that initiatives such as this one include the patient and their care givers into the pulmonary professional support, education and expertise to achieve the goal of effective self-management (Cope et al., 2015). The literature supports multidisciplinary programs aimed at COPD and these are referred to as integrated disease management (IDM) programs and these programs are most proficient on improving quality of life and exercise tolerance when they last at least 3 months in length and extend until

12 months of follow-up (Kruis et al., 2014). The 12 month follow-up recommendation is supported in the literature because up to 65% of the COPD patients who were hospitalized for AECOPD had an increased risk for readmission to the hospital in the year following an admission (Jennings et al., 2015). The IDM COPD programs were shown to reduce respiratory related hospital admission and hospital days (Kruis et al., 2014). The literature demonstrates the importance of hospital initiatives which examine readmissions which are potentially preventable. Kaiser Permanente of Southern California studied unplanned readmissions and discovered that only 25 percent of unplanned readmissions resulted from patient noncompliance and the residual 75 percent were due to “systems issues” which are directly within a hospital’s control (Virkstis et al., 2011). Multidisciplinary readmission prevention strategies which are state-of-the-art are supported in the pulmonary literature and must become important aims for health-care institutions (Jennings et al., 2015). Multidisciplinary discharge processes coupled with post discharge care which have been aimed at CHF patients have considerably reduced readmission rates and improved survival and quality of life (Jennings et al., 2015). One randomized controlled trial implemented a pre-discharge bundle for patients with AECOPD to reduce readmissions and Emergency Department (ED) visits but did not sufficiently reduce the 30-day risk of either (Jennings et al., 2015). However, Koehler et al found that 30-day readmission and ED visit rates were decreased with the use of a targeted care bundle (Jennings et al., 2015).

The literature displays one COPD in-reach service which was successfully implemented and was proven to be a great benefit both financially and in associations of patient experience. This program was led by a respiratory clinical nurse specialist who recognized all patients with an AECOPD (Cope et al., 2015). This nurse assessed, treated, referred to a pulmonologist and discharged into the community under the care of a community-led early assisted discharge

service (Cope et al., 2015). This service was similar to the initiative implemented at OMC and was aimed at education for inhaler technique and proper 10-second breath hold with “teach back” method, pulmonary rehabilitation assessment, smoking status, nutritional status, vaccination status, written self-management plan, 7-day pulmonary follow-up appointment, signs & symptoms which require an emergency pulmonary visit, home oxygen needs, home nebulizer needs, and social issue needs, and finally assessment for anxiety, depression, and GERD (Cope et al., 2015). Encouragement of self-management is a key factor in the success of this initiative because the literature supports encouraging patients to respond to their symptoms of an AECOPD which will help them seek early access to treatment and may lead to decrease readmissions (Cope et al., 2015). This APN-led program individualized the self-management program for each patient and this is supported in the literature to improve adherence to pulmonary medications, reduce the risk of death, and admission to a hospital due to an AECOPD (Cope et al., 2015).

This program provided prescriptions for pulmonary rehabilitation (PR) to all patients visited by the pulmonary APN because the literature demonstrates the effectiveness of this treatment modality by improving health-related quality of life, reduces the number of hospitalizations, reduces the days in the hospital, improves exercise capacity, reduces the perceived intensity of breathlessness, reduces anxiety and depression associated with COPD, improves arm strength, improves survival, benefits respiratory muscle training, improves recovery after a hospitalization for an AECOPD, and enhances the effect of long-acting bronchodilators (GOLD, 2015). Additional statements by the American Thoracic Society (ATS) and the European Respiratory Society (ERS) support the effectiveness of PR because it has been shown to reduce dyspnea, increase exercise capacity, and improve quality of life in individuals

with COPD (Spruit et al., 2013). ATS and ERS literature support the use of PR because it is effective when started at the time or shortly after a hospitalization for AECOPD (Spruit et al., 2013). PR is viewed as an integral part of the concept of self-management of this chronic disease (Spruit et al., 2013). The literature demonstrates that the costs of PR comparing costs per session revealed higher costs per session of a community-based PR program compared to a hospital-based PR and there are no studies showing the costs of home PR (Spruit et al., 2013). The literature shows that PR can significantly reduce ED visits, physician visits, reduce hospitalizations, hospital days and primary care home visits (Spruit et al., 2013). The literature by Goldstein and colleagues reported the cost-effectiveness of an 8-week inpatient rehabilitation program followed by 16 weeks of outpatient training and Griffiths showed the cost-effectiveness of a 6-week outpatient rehabilitation program (Spruit et al., 2013). One journal article discusses PR as a cost effective treatment in COPD and leads to a reduction in hospital admissions and readmissions, with a Number Needed to Treat (NNT) of only 4 to prevent an admission (Walmsley, 2014). PR is ranked as one of the most economical interventions, subsequent only to flu immunization and smoking cessation support plus pharmacotherapy by the London Respiratory Team (LRT) (Walmsley, 2014). One retrospective cohort study discovered the significance of physical activity such as moderate to vigorous physical activity was related with a considerably lower risk of all-cause 30-day readmission in a large group of patients with COPD (Nguyen et al., 2014).

A variety of issues are linked with readmissions and the literature demonstrates these to be the following: age; being unpartnered; living alone; having a history of any hospitalization in the previous year; new oxygen prescription at discharge; use of systemic steroids; presence of anemia at admission; pulmonary hypertension; hypertension; having more comorbidities; having

a visit to the ED or an observational stay within 30 days of discharge that occurred before the readmission and length of stay longer than 3 days (Nguyen et al., 2014). Additional difficulties are social issues such as poor patients with Medicaid are more likely to be rehospitalized (Mannino & Thomashow, 2015). The literature reflects that patients without a partner have a trend toward a greater risk for readmission, owing in part, to scarce social support for commitment to self-management (Nguyen et al., 2014). This same study revealed that approximately 45% of the readmissions were related with a primary discharge diagnosis of COPD, trailed by respiratory/ventilator conditions, pneumonia, gastrointestinal disorders, pneumonia, sepsis/shock, heart failure, arrhythmias/conduction illnesses, renal illnesses, acute myocardial infarction, electrolyte inequalities, and nourishment problems (Nguyen et al., 2014). The literature explains additional factors which lead to rehospitalizations and these include the following: the severity of principal disease, poor observance to pharmacologic guidelines for therapy (by either providers or patients), poor observance to nonpharmacological guidelines (smoking, vaccinations, rehabilitation, and nutrition), comorbidities, social issues and posthospital syndrome (Mannino & Thomashow, 2015). Further risk factors for readmission are related to the occurrence of acute exacerbations in the preceding year, FEV1%, low body mass index, PaCO₂, chronic cor pulmonale, short length of hospitalization, pneumonia, and hyperglycemia (Lin et al., 2014). One study demonstrated noteworthy prognosticators for hospital readmissions also included gender, age, comorbidity, malnutrition, respiratory acidosis, treatment with NIPPV and discharge to health and social institutions (De Miguel-Diez et al., 2016).

The literature discloses one randomized trial in the United States completed by the Veterans Administration, which reported that a comprehensive care management program for

COPD, which included patient education and planned proactive calls, resulted in greater COPD-related hospitalizations and mortality for patients in the intervention group (Mannino & Thomashow, 2015). There is no perfect statistics on what actually prevents rehospitalizations following an AECOPD discharge and there is lack of studies dedicated to 30-day readmissions (Mannino & Thomashow, 2015). The literature suggests that prevention of 30-day readmissions may center on altering the hospitalization progression itself by employing early rehabilitation, added patient-friendly medication strategies, better-quality nutrition and safeguard of the most vulnerable patients (Mannino & Thomashow, 2015). This journal article also supports the fact that readmissions transpire early, with one-half taking place within 2 weeks of discharge and so initiatives in hospitals should promote pulmonary discharge follow-up at day 7 post hospital release (Mannino & Thomashow, 2015). One study revealed that almost one third of readmissions occurred by day 15, and the median time to readmission was 12 days (De Miguel-Diez et al., 2016). One study demonstrated that by day 15 post discharge, 61% of all readmissions had already occurred (compared with 61% for CHF and 68% for AMI) (Shah, Churpek, Perrailon, & Konetzka, 2015).

The literature review supports that patients with COPD who had an early follow-up with their Primary Care Physician (PCP) or pulmonologist after a hospitalization had lower probabilities of a 30-day ED visit or hospital readmission when compared to patients who did not have this follow-up (Sharma, Kuo, Freeman, Zhang, & Goodwin, 2010). This study revealed that a follow-up visit within 30 days from discharge resulted in 14% fewer ED visits and 9% fewer readmission 30 days after discharge and follow-up with a PCP or pulmonologist is a potentially adjustable issue (Sharma et al., 2010).

System issues which can result in a COPD readmission have been established in the literature and these include the following: hospitals which function in a disorderly and poorly coordinated manner leaves the patient and family uneducated, disorganized and not prepared for the crucial self-management of COPD in order to avoid upcoming adverse happenings (Hamar et al., 2016). Inadequate hand-off of patient organization among health care clinicians, poorly synchronized hospital discharge practices, discharge instructions for the patient which lacks evidence-based teaching and correct discharge follow-up, and absence of medication reconciliation before and after a hospitalization are system issues which may culminate in a readmission (Hamar et al., 2016). The 30-day readmission risk was reduced by 25% when a care transition method was used for prompt identification of patients at high risk of readmission together with a post discharge pulmonary phone call (Hamar et al., 2016).

Post discharge care is critical in this initiative and the literature supports implementation of an APN-directed transitional home care model and one study demonstrated that there were fewer nursing visits, rehospitalizations, and acute care visits for COPD patients cared for by this team at home (Neff et al., 2003). This study shows that the strength of the services provided by the APN-directed and-supervised pulmonary disease management team, including RN, LPN, and home care aide visits, may have assisted in pinpointing patient problems, diminishing emergent care use, and averting rehospitalizations (Neff et al., 2003). A 2014 Danish nationwide cohort study revealed that when there is a moderate general practitioner tendency to conduct home visits then there is a relationship to the lowest 30-day risk of COPD readmission or death but this should not be used as the sole indicator (Lykkegaard, Larsen, Paulsen & Sondergaard, 2014). One important national study showed that patients who were discharged home without home care were more likely to be readmitted for COPD than patients who were discharged to a post-

acute care (PAC) (Shah et al., 2015) Readmitted beneficiaries were more likely to be dually enrolled in Medicare and Medicaid with a longer median length of stay and have more comorbidities (Shah et al., 2015). The literature supports concerns about readmission initiatives increasing inequalities in care by increasing already unequal penalties for safety net hospitals (Shah et al., 2015). Patients who are enrolled in both Medicare and Medicaid, who are poorer, sicker, and have less education than the usual beneficiary, may have singular challenges, which lie beyond the authority of hospitals and independently escalate the chance of readmission (Shah et al., 2015). Socioeconomic factors such as limited social support and financial difficulties make it problematic for hospital care energies in the discharge period (Shah et al., 2015).

Discharging patients to the appropriate location is important to discerning beneficiaries readmitted for COPD, and one study revealed a larger ratio of readmissions from home than from a skilled nursing facility due to COPD (Shah et al., 2015). Skilled nursing facilities correct the physical and cognitive patient-related obstacles for areas such as proper inhaler use which could not be improved at home (Shah et al., 2015). The literature further addresses patients of low socioeconomic status struggle with social and financial difficulties in addition to the known cause of readmissions (Balaban et al., 2015). These patients have a predisposition to be non-English speakers, have an inferior health literacy which hinders efforts towards self-management, increased rates of mental health and substance abuse disorders, greater susceptibility to social stressors, and are more at risk to experience hospital readmissions (Balaban et al., 2015). One randomized controlled trial utilized an intervention which was managed by a community health worker or patient navigator in order to decrease readmissions in the high risk patients in a safety-net hospital (Balaban et al., 2015). This particular study demonstrated that a patient navigator intervention among high risk, safety net patients decreased

readmission rates among older patients (were older than 60), but increased readmissions in the younger patients (younger than 60 years) (Balaban et al., 2015). This study showed that patient navigators implemented transitional care needs of the patients and completed hospital rounds on 97% of elderly patients which permitted the navigator to measure the personalized understanding of patients' transitional necessities (Balaban et al., 2015). The navigator performed three or more postdischarge phone call to help patients with medication management, symptom control, outpatient follow-up, and self-care (Balaban et al., 2015). The navigator formed relationships with patients and they were empathetic, caring, and able to obtain 7-day PCP follow-up and more outpatient appointments within 30 days which could prevent readmission (Balaban et al., 2015). This study questions the need about younger patients requiring possibly more rigorous community-based care (Balaban et al., 2015).

A descriptive report in the literature supports hospital systems participation in shared events which include the following: complete implementation of interdisciplinary rounding, post-discharge telephone call, teach-back, implementation in process of high-quality transition records, improved discharge reviews and timely follow-up appointments which decreased all-cause readmission for acute myocardial infarction, heart failure, and COPD (Axon et al., 2016). The report highlights that hospital discharge designates a period of increased risk for new or worsening symptoms, adverse happenings, and hospital readmission (Axon et al., 2016). This article describes the design and initial effect of statewide quality improvement learning collaborative which aimed its energies at preventing readmissions in South Carolina (Axon et al., 2016). This program created multidisciplinary teams, examined the existing hospital discharge process, conducted root cause analyses, implemented transitional records, patient education, improved the discharge process to be more well-timed and include improved quality content and

guarantee post-discharge phone call and follow-up appointments (Axon et al., 2016). This program encompassed key stakeholder statewide who worked in partnership to reduce readmissions and improve hospital care transitions by copying theories from the Institute for Healthcare Improvement (IHI) STAAR program (State Action on Avoidable Rehospitalizations) including: enhancement in transitions of care by supporting a cross-continuum learning collaborative, and engage state-level leadership to understand and alleviate systemic hindrances to change (Axon et al., 2016).

The literature support the framework for “Ideal” Care Transition from hospital to the community setting which has been suggested by Burke and Colleagues and is delineated as the following:

Predischarge planning: involvement of multidisciplinary teams collaborating with PCP, timely outpatient appointments arranged that account for patient/caregiver needs and preferences. **Communication of information** pertaining to recent admission to outpatient providers: details about hospital course and functional status at discharge, subspecialty clinician recommendations, abnormal test results that need follow-up; pending tests, follow-up appointments arranged or need to be scheduled, etc.

Information relayed is timely, organized, and easily accessible: use of structured templates for discharge summaries, verbal communication with outpatient providers.

Medication safety: accurate medication history obtained, reconciliation with preadmission medications performed at discharge; changes clarified. **Patient education to promote self-management:** targeted discharge counseling, consistent education by staff using “teach-back” methods, written instructions, use of transition coaches for “high-risk” patients. **Engaging community support:** home services, caregivers.

Advance care planning: goals of care discussion identify surrogate decision maker, palliative care and hospice consultation as appropriate. **Care coordination between**

inpatient and outpatient providers: formal handoffs, communication with all team members (nurses, clinicians, etc.). **Symptom treatment and assessment after discharge:** post discharge phone calls, home visits, and clinic visits, hotline for patients. **Outpatient follow-up:** shortly after discharge with PCP and specialists as needed and incorporation of multidisciplinary teams. (Feemster & Au, 2014, pp. 637)

Additional frameworks include theories of healthcare policy, patient interaction to inpatient and outpatient care, and patient health and socioeconomic standing (Feemster & Au, 2014). The emphasis should include investment in populations to assist the socioeconomic confines and increase patients entrance to quality care which is in association with the ACA, and sustained by the 5-year, \$500 million CMS “Community-based Care Transition Program” developed under a provision of the ACA (Feemster & Au, 2014). It is therefore opportune for OMC to focus efforts in promoting networks with care providers in the community in order to prevent hospital readmissions (Feemster & Au., 2014).

The literature supports the detailed steps which were taken in this initiative by the APN and this begins with the use of the post-discharge follow-up phone call. The literature demonstrates that the risk for rehospitalization is highest in the days following the discharge and this emphasizes the importance of implementation of a follow-up phone call to provide support to the patient and the family during the transition period from hospital to home (Miller & Schaper, 2015). A master’s-prepared nurse may be best suited to conduct the phone call within 24-72 hours of discharge using a structured telephone questionnaire addressing medication, nutrition, pain, bowel activity, mobility, follow-up visits, and signs and symptoms of imminent problems (Miller & Schaper, 2015).

The nurse who conducted the follow-up phone call made three attempts to reach patients in the out-patient settings and utilized questions from the Transitional Care Post Discharge Assessment Tool (Miller & Schaper, 2015). This tool provided individualized care which

allowed the nurse to assess the need for further interventions and then an algorithm was designed to assist the caller to determine the appropriate physician to contact and if an additional phone call was required for the high risk patient based on the LACE tool (Miller & Schaper, 2015). As LACE scores escalate, the number of unplanned readmissions also escalates, and COPD specific interventions can be offered at home (Miller & Schaper, 2015).

The literature soundly supports all efforts from healthcare organizations directed at smoking cessation which include offering interventions for smoking cessation such as: Ask (about smoking at every opportunity), Advise (all smokers to stop), Assess the willingness to quit, Assist (the smoker to stop), and Arrange (follow up) (GOLD, 2016). Present nicotine replacement therapy, determine a date to stop smoking, appraise efforts which helped or hindered smoking cessation in the past, review expected problems and plans to manage them, educate family and friends to gain their support, devise a plan about alcohol cessation, and discuss a specialist smoking cessation treatment strategy with patients who are heavy smokers (GOLD, 2016).

This APN initiative educated COPD patients with efforts that have been established in the literature and implemented on the day of admission and extended into the discharge period. These efforts which are referred to as the COPD education and include the following: 7-day pulmonary follow-up appointment; ability of patients to state the names of their pulmonary inhalers and medications; proper nutrition and avoidance of unintentional weight loss; the warning signs associated with an AECOPD; the awareness of their COPD symptoms; the importance of exercise and pulmonary rehabilitation; smoking cessation; home nebulizer machines; handouts for “Quit Smoking” support group; handouts for pulmonary rehabilitation at OMC and prescriptions for PR; self-management skills; vaccination with influenza and pneumococcal vaccine; presence of depression/anxiety/GERD; proper use of inhalers, post-discharge phone calls; proper discharge location such as home vs. skilled nursing facility; and

written discharge pulmonary sets (White & Hill, 2014). Patients may be discharged to home with their hospital inhalers based on the direction of the pharmacist because this has been shown to decrease 30-and 60-day readmissions (Blee et al., 2015)

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Methodology. Implementation of this initiative began with the academic approval from the Director of the Doctor of Nursing Practice Program, Dr. Mary Ellen Roberts, at Seton Hall University. The initiative was presented to Dr. Roberts which included the multifactorial steps which would be implemented at this medical center starting in October 2015 and extending to January 2016. Dr. Roberts supported this initiative because she felt that it had the ability to successfully impact the entire Health Care System rather than impacting one hospital and one clinical unit. The next step was to set up meetings at the hospital with the Director of Quality Improvement, and explain the extensive steps of the initiative. This Director gave her full support of the DNP initiative but requested that I present this project to a multidisciplinary team of nursing leaders within the hospital. This team consisted of the Nurse Manager, who is in direct charge of the pulmonary unit, Director of Social Work, Chief Nursing Officer, PhD Research Nurse and the pulmonary RN educator. After three meetings with this group of extraordinary leaders, the APN-leader was given approval to implement the program on the pulmonary floor and in Pulmonary Rehabilitation. Simultaneously to achieving approval from this group, the Director of Pulmonary Medicine, presented the initiative at the monthly pulmonary section meeting and it was approved. The one stipulation for the initiative was that the APN-leader only implement the program to patients who receive their pulmonary care from

Pulmonary and Allergy Associates. In order to avoid political upheaval, the APN was instructed to avoid COPD patients who received their care from competing pulmonary practices.

The physician mentor, gave approval for the implementation of the project immediately. This physician is uniquely qualified to function as the DNP mentor because he is board certified in pulmonary and critical care medicine and understands the importance of this initiative both clinically and financially. This clinician understands the prevalence and impact of the physical, psychological, and financial consequences of 30-day readmission rates and was in complete support of the initiative. This pulmonologist comprehends that this APN-led initiative was a timely project because of the 3% reductions in all Medicare reimbursements for 30-day readmissions. In addition, he commands a high regard for implementing evidence-based pulmonary care for every patient at hospitals and he believed in the science behind this project. The project was presented to him and his thoughtful clinical decision was to support the project because it was an innovative intervention which utilized cutting-edge evidence to drive down readmission rates. Dr. Mary Ellen Roberts supported the project because she believed this evidence-based project could be implemented and have a positive impact on care in the clinical setting. Dr. Roberts supported the APN leader because she functions in the clinical realm and had a unique opportunity to guide this hospital's pulmonary practice and transform the delivery of care in order to achieve the best patient outcomes. Dr. Roberts encouraged the APN to function independently to implement this comprehensive initiative for a 12-week period and it was successful. The DNP leader understands exactly how a DNP student, can utilize evidence-based practice in the hospital setting, provide leadership and role modeling to positively improve patient care. The risks of this program included lack of buy-in from the pulmonary nurses, lack of physician support, and lack of support from the ancillary staff such as the respiratory and physical therapists. Additional risks were that this program would be ineffective in decreasing 30-day readmission rates; lacked collaboration on the pulmonary floor; created a resistance in changing the current discharge process; lacked the ability to communicate the

importance of the visionary towards the future; and resistance to evidence-based practice change. Benefits of the program included movement towards DNP leadership changes and collaboration to create transformational changes in the COPD discharge process at this hospital. Additional benefits included a DNP role model who was successful at changing the discharge process of a hospital by interacting with colleagues to improve health care delivery by functioning as a mentor, teacher, and clinical leader.

Phases of the Project

Phase I. Needs Assessment. The current discharge process was evaluated which demonstrated a lack of evidence-based care during the discharge process with a wide variation in the treatment plans. The current discharge process lacked the use of a protocol-based care bundle for patients with COPD so that there was lack of standardized practice in the treatment of patients. In addition to the above, there was a lack of the needs of the patient in the post-hospital setting, lack of a 3-day follow-up phone call to assess the patient and family needs during this vulnerable time, lack of effective teaching to facilitate self-management of COPD, lack of post-hospital follow-up care with social services, and lack of clear medication lists, lack of clear discharge directions, and lack of pulmonary 7-day follow-up appointments.

Phase II. Obtaining Support from Stakeholders Process. This initiative included the implementation of the 4-step SWOT (strengths, weaknesses, opportunities and threats) analysis to identify the strengths, weaknesses, opportunities, and threats to a comprehensive COPD discharge education plan (Pearce, 2007). The key stakeholders were presented the SWOT analysis of this initiative and understood and supported the analysis. Conducting an analysis using the SWOT framework identified that the current discharge process was not working well, revealed opportunities for discharge improvement, and targeted areas with perceived or real threats to the pulmonary department, the pulmonary profession, the entire hospital system, and the COPD community (Brandt, Reed, Sullivan, Zehler, and Grinder, 2009). The SWOT analysis was utilized by the APN during the change management processes of discharging patients with

COPD by incorporating evidence-based practices into the discharge planning at this hospital.

This analysis will identify strengths, flexibility of the stakeholders, education of patients and their families, as well as utilize a multidisciplinary team and advanced technology into the discharge process (Brandt et al., 2009). This change will also include the importance of including additional resources such as pulmonary rehabilitation, which is supported in the *Global Initiative for Chronic Obstructive Lung Disease Guidelines* (GOLD, 2016). The COPD discharge education plan will identify additional resources which are instrumental in the project and will include key decision makers such as the Pulmonary APN, Director of Pulmonary Medicine, Primary Care Physicians, Director of the Intensive Care Unit, Director of Quality Improvement, Director of Social Work, Pulmonary Nurse Manager, Chief Nursing Officer, Director of Respiratory Therapy, Nurse Educators, Director Of Palliative Care, dieticians, physical therapists, care managers, and research nurses. In addition, this project is in direct alignment with the Health System mission and vision statement, which supports the delivery of high quality, safe, affordable patient care within a healing culture that educates and engages all human resources through innovative leadership.

The first step in the SWOT analysis identified several weaknesses in the COPD discharge education plan and after an environmental assessment was conducted on the pulmonary unit by the APN-leader. Weaknesses are internal factors which the APN reflects on and considers from different points of view to then develop an evidence-based action plan with a multidisciplinary pulmonary team (Pearce, 2007). The APN performed a review of medical records of all patients hospitalized on the pulmonary floor with an acute exacerbation of COPD and of those charts; there was a lack of evidence-based COPD discharge education plans written in the patient's chart. An important theme was a lack of a disease-specific (COPD) team preparing the patient for discharge. Discharge information which was lacking included smoking cessation counseling; the importance of medication adherence to inhalers; vaccination status; need for oxygen therapy; importance of one-week pulmonary follow-up; 24-hours post-discharge phone call; signs and

symptoms, which establish the need for an emergency pulmonary visit; prevention of nutritional deficiency, including the importance of oral nutritional supplementation; prescriptions for physical therapy during hospitalization and pulmonary rehabilitation in the out-patient setting. Additional chart reviews by the APN revealed a weakness in promoting self-management in the patients who were hospitalized with COPD and difficulty obtaining transitional care appointments (Duncan, 2015). Self-management is an important skill because

Self-management is associated with a reduction in exacerbation recovery time when coupled with an action plan such as identifying an individual's needs, education ability and capabilities. (Duncan, 2015, pp. 493)

A noteworthy weakness which was identified was a lack of time for both the nurses and physicians to provide evidence-based COPD discharge instructions. In addition, nurses and physicians lacked the pulmonary resources, such as the availability of demonstration inhalers which could be utilized on the pulmonary floor to increase patient's adherence to their daily inhalers. An environmental weakness included lack of physician and nursing knowledge regarding the implementation of the *GOLD 2016 Guidelines* during the discharge process. These guidelines assist clinicians in diagnosing, managing, and preventing COPD, as well as providing evidence-based practices aimed at relieving and reducing symptoms and reducing the risk of adverse health events that impact patients living with COPD (GOLD, 2016).

Additional weaknesses that were identified during the SWOT analysis, included lack of pulmonary rehabilitation prescriptions at the time of discharge; lack of self-treatment of exacerbations; lack of understanding of the importance of pulmonary 7-day post-discharge follow-up, lack of understanding of the signs and symptoms requiring an emergency pulmonary office visit; lack of effective communication between the pulmonary floor and the patient post- discharge; and lack of proper use of inhalers (Yip et al., 2010). Weaknesses included a deficient pulmonary department structure in staffing sufficient amount of

respiratory therapists who were staffed specifically for the pulmonary floor and pulmonary rehabilitation. This is identified as a weakness because PR was offered only three times per week by one respiratory therapist who was trained in PR. Patients with COPD had difficulty obtaining transitional care appointments, were lacking continuity of care from a dedicated COPD discharge APN, and were lacking evidence-based protocols on the pulmonary floor. There was also a lack of a standardized care bundle, standardized readmission patient interview form and telephone interview form. Lastly, there was deficient care coordination to determine the safest discharge location for the patient with COPD.

Strengths are internal factors which the APN capitalized on and used to build a successful COPD discharge plan. Strengths of the APN conducting this discharge plan include expertise in providing evidence-based COPD diagnosis, management, and prevention strategies. Additional strengths include the APN's knowledge that readmissions occur frequently after a patient is hospitalized with an AECOPD because

At least once, in 60% of patients within 1-year of discharge. Furthermore, rapid readmission within 3-months of discharge affect 30% of patients with AEOPD and underscores the fact that approximately one third of exacerbations are recurrent events occurring within 8 weeks of an initial exacerbation. (Coventry, 2011, pp.1)

The APN's financial commitment is a strength which arises from the knowledge of the following statistics which state:

That each year exacerbations of COPD leads to about 800,000 hospitalizations with about 20% of patients needing to be rehospitalized within 30 days of discharge and accounts for about \$325 million per year in healthcare expenditures for the U.S. Centers for Medicare and Medicaid Services (CMS). (Krishnan, 2014, pp. 797)

The APN-led discharge project is timely, and this is an additional strength because

CMS has begun in October 2014, to impose financial penalties to hospitals with higher than expected all-cause 30-day hospital rehospitalization rates after an index hospitalization for COPD exacerbation. (Krishnan, 2014, pp. 797)

The changes are brought about because rehospitalizations in patients with COPD exacerbations

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These statistics illustrate the importance of remaining cognizant of reforms in health care systems and government policies and social patterns which directly impact the management of COPD. Further opportunities included improving patient and family discharge education and transition to home; educating the pulmonary nurses on evidence-based guidelines; increase awareness of the importance of PR; implementing a clinical pathway to improve COPD care; instituting a multidisciplinary team, including case managers and social workers to determine the safest discharge location; and expanding the Pulmonary Center of Excellence by decreasing 30-day readmission rates. These opportunities may provide higher quality of care for patients who are hospitalized with COPD by improving the health of this population.

The threats to this project are external factors and include incurring Medicare 30-day readmission penalties dealing with an increasing uninsured COPD population, competing health care systems, providing evidence-based COPD discharge programs, lacking adequate capital funding, having low literacy of COPD patients, homeless patients, and increasing COPD mortality and morbidity (White, 2014). Threats must be aggressively acknowledged, and steps must be taken to eliminate them, such as patient focused COPD education for discharge, assistance in obtaining pulmonary appointments 7-days post-discharge, telephone call back within one week of discharge, proper inhaler technique, and increased use of pulmonary rehabilitation in all patients with COPD.

Phase III. Initial Implementation Steps. This education initiative began when the patient with COPD was admitted with an AECOPD and transitioned into the discharge period. The discharge period included the patient's home or a subacute facility. This initiative is not simply a hospital-based initiative but rather an initiative in effective COPD transition of care which began on the day of admission to the pulmonary floor and extended to a safe COPD transition to the home or the subacute rehabilitation center. Education is initially directed at the proper use of pulmonary inhalers because patient adherence to medication for COPD is poor compared with other long-term conditions and

Only 1 in 10 patients with a metered dose inhaler use the correct technique—helping people to understand how to use their inhaler, and how it works, will improve medication adherence. Inhaler technique should be covered at annual reviews.

(Duncan, 2015, pp. 494)

There are many additional reasons patients with COPD do not adhere to their inhalers, and such reasons include the following: lack of patient awareness about COPD; concern over the inhaler's side effects; lack of understanding concerning the relationship between using the inhaler and enhanced quality of life; side effects; concern, or anxiety of what other people may think of them because smoking is the cause of their COPD; and social stigmatization related to taking the inhaler (Duncan, 2015). The APN education plan incorporated the above reasons which results in poor metered dose inhalers (MDI) compliance and began to educate the patient and the family on the correct inhaler technique which included the 10-second breath hold and possible side effects of the medication. The APN efforts also included prescribing once daily inhalers and providing prescriptions for inhaler use at home with explicit written instructions. Additional education included elimination of multiple dosing inhaler usage, which

is complex to use, and began to prescribe once-daily dosing and combination medication in one inhaler (Duncan, 2015). The APN implemented self-management educational strategies to assist patients to manage their COPD and achieve improved health outcomes. Bandura's social-cognitive self-efficacy model reinforced the importance of patient's ability to change their behaviors (Wu & Chang, 2014). Incorporating self-efficacy into this program allowed the patients to achieve the preferred pulmonary result and improves self-management behaviors (Wu & Chang, 2014).

Applying Bandura's four information sources of mastery, vicarious experience, verbal persuasion and self-appraisal for delivering the pulmonary material allowed patients to accept self-efficacy in the self-management of their chronic illness (Wu & Chang, 2014). Promoting mastery of proper inhaler use, participation in PR, obtaining timely pulmonary follow-up visits, and recognizing the symptoms of pulmonary deterioration was an attainable goal. When patients were encouraged to visit PR prior to starting the program themselves, allowed them to understand that this was an attainable goal for people with similar levels of dyspnea (Wu & Chang, 2014). The APN provided encouragement and positive feedback which assisted patients to become aware of their physical and emotional responses towards attempting self-management. This program is an example of a theory-based nursing intervention which can assist patients with COPD to modify their behavior for positive outcomes (Wu & Chang, 2014).

This implementation of process redesigns throughout the pulmonary floor was achieved by incorporating evidence-based guidelines from the *GOLD Guidelines 2016*. The *American College of Chest Physicians and American Association of Cardiovascular and Pulmonary Rehabilitation Statement (ACCP/AACVPRP)* was also included as evidence-based

guidelines to direct me in prescribing PR for patients (ACCP/AACVPR, 2013). The APN-pulmonary education included a 1 hour bedside education session directed at the patient and the family, which included the following: explanation of COPD to each patient and family member; proper inhaler use; vaccination status; importance of a 7-day pulmonary follow-up appointment; signs and symptoms which require an emergent pulmonary visit; nutrition; physical activity and the importance of PR in the out-patient setting; screening for depression/anxiety and GERD; adequate understanding of the discharge instructions, smoking cessation including nicotine replacement and support groups; home oxygen needs, home nebulizer needs, and safest discharge location. Previous studies supported my educational efforts since the

Risk of readmission for AECOPD is related to factors including the frequency of acute exacerbations in the previous year, FEV1 percentage, low body mass index, PaCO₂, chronic cor pulmonale, short duration of hospitalization, and hyperglycemia. (Lin, 2014, pp. 318)

Patients were educated from the day of admission and extended into the discharge period of the signs and symptoms which require an emergency pulmonary visit and these included: increased cough, dyspnea, fatigue, activity limitation, and fever chills (GOLD, 2016). Patients also had the ability to call the APN leader with worsening symptoms and she assessed the pulmonary problems and made *GOLD Guideline 2016* interventions. For many patients this included the telephone prescription of short-acting beta 2 agonists with or without short-acting anticholinergics via a home nebulizer or MDI; nebulized budesonide 0.5 mg BID and systemic corticosteroids, such as prednisone 40 mg per day for five days to shorten the time to recovery, improve lung function, and improve arterial hypoxemia (GOLD,

2016). Antibiotic therapy was prescribed via phone if the patient complained of signs of a bacterial infection, such as increase in sputum purulence, cough, and dyspnea for a length of 5-10 days with a macrolide, tetracycline, or aminopenicillin with or without clavulanic acid (GOLD, 2016).

The evidence-based pulmonary guidelines state the following:

Smoking cessation should be considered the most important intervention for all COPD patients who smoke regardless of the level of disease severity. (GOLD, 2016, pp. 34)

This initiative implemented the “5-As” as a behavioral counseling framework during the patients hospitalization at OMC because this is an effective intervention to assist patients who continued to smoke (GOLD, 2016). This framework involves a multidisciplinary team approach directed at smoking cessation, which includes the following questions:

ASK about tobacco use at every visit. **ADVISE** to quit. **ASSESS** willingness to quit. **ASSIST** to quit. **ARRANGE** follow-up and support. (GOLD, 2016)

For the patients with COPD who were actively smoking, the APN prescribed pharmacological interventions which included nicotine-replacement therapies: transdermal patches, gum, nasal spray, and lozenges (GOLD, 2016). During the discharge transition period, active smokers were encouraged to attend the smoking cessation support group which is offered to patients at OMC and is a free service. The APN leader wrote a pulmonary progress note every day which clearly itemized the pulmonary transition of care and this included what was discussed with the patient and family so that the entire healthcare team would have access to the pulmonary plan of care. The various social factors were addressed because various studies have

found that patients who live alone and are unmarried are associated with a higher risk of COPD hospitalization and there is a decreased commitment from family members and home-care personnel in taking care of the patient which leads to readmissions (Lykkegaard, Larsen, Paulsen, & Sondergaard, 2014). The APN leader interacted with social workers and case managers in order to identify the high-risk COPD patients and this included those who live alone should be discharged with home-care services or be discharged to a subacute facility; receive transportation services to pulmonary follow-up visits; and attend PR as an out-patient due to

A larger percentage of readmissions from home than from a skilled nursing facility were due to COPD. These finding could be explained by high-quality skilled nursing facility care that overcomes the physical and cognitive patient-related barriers for proper inhaler use that could not be remedied at home. (Shah, 2015, pp. 1224)

Social workers, case managers, and pulmonary APNs are in a unique position at the time of discharge to appropriately decide the type of skilled nursing facility that will have the greatest ability to care for the patient with COPD and ultimately decrease 30-day readmission rates because

Dually eligible beneficiaries, who are poorer, sicker, and less educated than the average beneficiary, may have unique challenges beyond the control of hospitals and independently increase the likelihood of readmission. For example, 85% of patients with COPD misuse metered-dose inhalers, which are related to poor health literacy. Because bronchodilators are a treatment cornerstone, it may be more difficult to improve health and avoid readmission in a dually eligible beneficiaries admitted for COPD than in those admitted for CHF, AMI, or pneumonia. Socioeconomic characteristics, including limited social support and financial hardship, could further

impede hospital care efforts post discharge. (Shah, 2015, pp. 1224)

When patients were identified as dual beneficiaries, the APN leader immediately consulted the care manager and social worker to determine the safest discharge location. One randomized controlled trial provided evidence that relying on social workers for post-discharge care transition can affect hospital costs and improve quality of life because more patients are capable of remaining in their own homes after a hospitalization (Bronstein, Gould, Berkowitz, James, & Marks, 2015).

This initiative improved the pulmonary support the patient receives in the post-discharge period and included the implementation of a 1-day post-discharge phone call. The post-discharge phone call utilized a standardized questionnaire which assessed the following: date of the pulmonary follow-up, signs and symptoms of dyspnea, presence of purulent sputum, decreased exercise tolerance, and fever and chills. If the patients were complaining of these symptoms I intervened and prescribed steroid, inhalers and antibiotics as necessary. The timing of my post-discharge phone call and occurred on day 1 post discharge because

The highest percentage of readmissions occurred on day 1 (6.0%) after discharge and decreased to approximately 2% on day 30 after discharge. Almost one-third (95% CI, 31.7% to 32.1%) of readmissions occurred by day 7, and 60.6% of readmissions occurred by day 15 (95% CI, 60.4% to 60.8%; median time to readmission, 12 days [interquartile range, 6-12 days]). (Shah, 2015, pp. 1221)

A major focus of this initiative was on the level of activity of each patient and the increased use of PR in the post-discharge period. The literature review reports the following on the importance of assessing inactivity because

Our results thus support our primary hypothesis that physical inactivity is an important factor related to hospital readmissions after the exacerbation, thereby broadening the range of negative outcomes associated with impairment in this measure of functional limitation. Interestingly, those patients who by self-report did not leave the house in the week preceding the initial hospitalization—another marker of reduced functional status-- were also at increased risk for hospital readmission. (Chawla, 2014, pp. 1206)

The APN prescribed physical therapy consults for all the patients in addition to providing a PR prescription because evidence-based guidelines state

The principle goals of pulmonary rehabilitation are to reduce symptoms, improve quality of life, and increase physical and emotional participation in everyday activities. To accomplish these goals, pulmonary rehabilitation covers a range on non-pulmonary problems that may not be adequately addressed by medical therapy for COPD, including exercise de-conditioning, relative social isolation, altered mood states (especially depression), muscle wasting, and weight loss. (GOLD, 2016, pp. 26)

Phase IV. Ongoing Implementation Process. The recent research from 2014-2016 which has been included in this paper, support an APN-led COPD discharge education plan at OMC. The logic model was implemented to facilitate the designing and interpretation of the outputs and outcomes of this program. The logic model depicted the resources and activities of the APN-led discharge education plan as a means of communication between the key stakeholders and the program's intended outcomes of decreased 30-day readmission rates (Kenyon, Palakshappa, & Feudtner, 2015). The logic model allowed the stakeholders to

understand the entire program; the required resources; and the short, intermediate, and long-term outcomes required to meet the goals of the program. The client-focused outcomes include increased self-management of a chronic illness which will lead to an improved quality of life. The community outcomes include a healthcare facility which provides state-of-the-art PR which can decrease readmission rates.

Systemic outcomes include improved pulmonary discharge delivery service based on evidence-based guidelines and functions in a coordinated manner. Organizational outcomes include a more efficient discharge program, which is efficient, based on evidence-based guidelines, and decreased financial costs related to 30-day readmission rates for COPD patients.

The logic model will provide a framework for change which will explicitly represent the COPD discharge plan at this hospital and result in improved discharge strategies, which will provide the foundation for this program's development and evaluation. This framework will involve a pulmonary cycle of assessment examining the community's needs, the health care needs of the hospital, and the patient's needs over a 12-week timeframe. The logic plan will improve the current discharge education plan involving specific planning, including short-term, intermediate, and long-term outcomes. The first short-term outcome was to include key stakeholders in the early planning phases and these stakeholders included the Director of Pulmonary Medicine, Chief Nursing Officer, Director of Quality Improvement, Director of MMC ICU, Pulmonary Nurse Manager, Director of Respiratory Therapy, Director of Social Work, case managers, Director of Palliative Care, physical therapists, dieticians, and pulmonary staff nurses. Additional short-term outcomes were to involve all these key stakeholders in the new pulmonary discharge program and remain in alignment with the

Health System's mission statement which is to offer the public a state-of-the-art Pulmonary Center of Excellence. This center offers the public organization-wide pulmonary improvement that impacts the surrounding community by improving the entire COPD discharge process resulting in decreased 30-day readmission rates.

An intermediate-outcome is that this education plan will efficiently connect the plan's goals, progress, and outcomes by incorporating evidence-based pulmonary guidelines into the discharge process. The APN will direct education to patients with an AECOPD which includes the improvement of inhaler technique; 7-day pulmonary follow-up visits; signs and symptoms that indicate the need for an emergency visit; adherence to immunizations; adequate nutrition; prescriptions for PR; smoking cessation; home oxygen needs; home nebulizer needs; 1-day phone call follow-up, and screening for depression, anxiety, and GERD. The discharge education plan will be implemented, and the APN used the logic model to determine the effective interventions for the patient with COPD. The weak and ineffective discharge steps were improved upon by implementing the logic model. This model will support the entire planning process of the discharge interventions and prepare the APN for disparities in COPD readmission risk factors, values, and various environmental interactions (Kenyon et al., 2015).

Additional intermediate outcomes are the detailed education steps, which will be incorporated into the pulmonary discharge and placed into the physician's progress notes. The identification of patients in this program includes the patients diagnosed with COPD and who receive their care from Pulmonary & Allergy Associates (PAA). Intermediate outcomes include increasing the number of patients who receive this education at the time of admission and extending to the time of discharge and into the post-discharge period. Long-term outcomes will include decreasing 30-day readmission rates of the patients by 7% who have received the APN-

led discharge education. The logic model will support this entire cycle of short, intermediate, and long-term outcomes by scrutinizing the pulmonary inputs of the plan and this includes the physical, financial, and human resources (Kenyon et al., 2015). The APN is the primary human resource involved in the plan but also included the pulmonary nursing staff, respiratory therapists, nutritionists, physical therapists, physicians, and case managers. Financial resources include the salary of the APN and brochures required to educate patients at the time of discharge. The resources of space and technology include the pulmonary unit, PR, computers, fax machines, printers, and the exercise equipment. Additional resources include brochures to display literature on PR, smoking cessation, smoking support groups, and clinician's business cards.

The logic model was implemented to improve the entire discharge process at this hospital and is based on W. K. Kellogg's *Logical Model Development Guide* to link patient care processes to outcomes by using a process map (Schmitz & Parsons, 1999). The logic model will identify key pulmonary interventions which are rigorous and based on *The GOLD Guidelines*. The entire process reveals how each step of the initiative are related to each other and shows weaknesses in the execution of the discharge interventions. Finally, analysis of the entire plan was completed and it was determined that this initiative was feasible on the pulmonary floor, and it was successful (Kenyon et al., 2015). The situation was related to this hospital and the readmitted COPD patients within 30-days from the initial hospitalization which resulted in a financial penalty. Fragile discharge processes were currently in place for COPD patients and these lacked evidence-based input. These weak discharge processes decrease the quality of care and increase the rate of 30-day readmission rate.

Phase V. Project Evaluation Process

Summary, Conclusions, and Recommendations. The findings of this quality initiative underscore the importance of healthcare systems implementing an APN-led COPD discharge education plan. The goals of this program were achieved and included the development and implementation of an evidence-based discharge plan at this major medical center in a 12-week time period. During the 12-week period the APN-leader completed pulmonary rounds on 18 patients who received my face-to-face education plan which lasted for 1 hour per patient. During the 12-week initiative, one patient had a 30-day readmission rate due to unsafe transition to her home. The readmission rate for this project was 6% and costs are higher for readmissions than for the initial stay (Elixhauser et al., 2011). Costs for a 30-day readmission for COPD as the principle diagnosis (\$8,400) were 18 percent higher than for the index stay (\$7,100) (Elixhauser et al., 2011). After careful review of this patient's reason for the readmission, it was determined by the interdisciplinary team that the patient required additional skilled nursing care. Due to the patient's age, comorbidities, long length of stay and severity of COPD, the patients safest discharge location should have been to a subacute facility rather than to her home. In a subacute facility she would have continued to receive self-management skills, proper inhaler technique, mobility education, and skilled nursing care for an additional two to three weeks post hospital discharge. This patient was elderly with AECOPD and was therefore a high-risk for a readmission and should have been discharged to a subacute facility in order to prevent a 30-day readmission. At the time of discharge, the daughter told me that she would provide post-discharge care for the patient but at the time of readmission, the APN-leader realized that the daughter worked full-time and was unable to meet the needs of her mother as she recovered from an AECOPD.

Summary

This program is sustainable because this Health Systems is consulting the APN leader regarding implementing this initiative at their five campuses. This health system is now dedicating an enormous amount of time and resources towards implementation of a multi-stakeholder collaborative effort throughout the system because they have identified this project which can improve the systems care transitions for patients with AECOPD while simultaneously decreasing readmission rates. The APN-leader involvement in COPD transitions of care has implemented an interdisciplinary approach to the discharge process for patients with COPD, identified patient problems early, identified the safest discharge location, implemented a 3-day post-discharge phone call to assess the patient's pulmonary status at home and increased the implementation of pulmonary rehabilitation.

Future recommendations are extensive, and include the following: a dedicated transitional COPD home care model in conjunction with a Home Medical Company which provides a pulmonary nurse and a respiratory therapist who visits the patient in their home. The pulmonary nurse and the respiratory therapist work closely with the pulmonologist to provide evidence-based care at home. It has been endorsed that 10-34% of COPD admissions could be circumvented when hospitals implement evidenced-based care (Chalder et al., 2016). Each AHS hospital must partner with a subacute facility who continues to provide seamless pulmonary care for the patient who requires skilled nursing care in the post-discharge period. The pulmonologists from the hospital along with a pulmonary APN round both at the hospital and the subacute facility providing ongoing pulmonary care for an additional 2-3 weeks, until their discharge to home is deemed safe. Development and implementation of a multidisciplinary pulmonary team is a key concept and this comprises a pulmonary physician

champion, APN, and respiratory therapist who round daily in a hospital setting. This team is implemented at the five campuses within this healthcare system and rounds for 1 hour per day on the COPD patient providing evidence-based care which delivers an integrated education program beginning on the day of admission extending up to 2 weeks post discharge. This strategy is effective because

A reduction in 30-day readmission or ED visit rates with a care bundle that integrated an educational program extending up to 1 week postdischarge. A study by Casas et al was limited to inpatient interventions, but the program used a comprehensive patient education program along with an individually tailored plan. Others similarly found a reduction in readmissions but used resource-intensive approaches. Nonetheless, not all programs were effective in reducing readmissions, even with varying levels of resource utilization. (Jennings, 2015, pp. 1231-1232)

Screening patients from low socioeconomic status is an important future consideration because these patients are more often to be non-English speakers, have poorer health literacy which can impede self-management and are more likely to experience hospital readmission (Balaban et al., 2014). Focusing a hospital's efforts towards preventing a 30-day readmission rate for these patients should be a priority and initiatives such as this one should begin to include the Director of Family Medicine at hospitals which is a clinic that provides services to patients of low socioeconomic status. Incorporation of a standardized COPD readmission questionnaire will provide the healthcare system insight into the root causes of a patient's readmission.

No published instrument predicting 0-to7-day readmission could be located in the literature but an important aim for this program is the implementation of the LACE index

tool (Miller & Schaper, 2015). The LACE index tool (length of stay in the hospital [L], acuity of admission [A], comorbidity [C], and emergency department visits in the 6 months before admission [E]), may be used at all hospitals to identify high-risk patients for a readmission (Miller & Schaper, 2015). Research on this tool has found that

The LACE index designed to predict 30-day readmission was empirically derived and tested for validity in a large population base. The LACE scores range from 0 to 19, with higher scores reflecting greater risk for readmission or death in 30 days. Although no optimal cut-off score for defining a high-risk group has been reported, the probability for readmission or death within 30 days increases 2 percentages for every score above 10. Probabilities range from 12% for a LACE score of 10 to 44% for a score of 19. Because the LACE index includes only 4 defining criteria, the index is easy to use in a clinical setting. Patients scoring 10 or higher on the LACE index were considered at high risk for readmission and were slated to receive a follow-up telephone call. (Miller, 2015, pp. 66)

Hospital at Home (HAH) and Early Supported Discharge (ESD) may be an outpatient service which may be implemented at hospitals as a future recommendation in selected patients with AECOPD to reduce length of stay, decrease mortality, costs, and readmission rates (Echevarria et al., 2016). A systematic review and meta-analysis describe a HAH and ESD program in which patients are in their home and receive

Active treatment by health care professionals in the patient's home for a condition that would require acute hospital inpatient care. (Echevarria, 2016, pp. 2)

This systematic review and meta-analysis describe HAH/ESD as a program which can provide a significant quantity of clinical and social backing in the home such as: oxygen and

nebulizer equipment and pulmonary care by a visiting respiratory specialist nurse with medical provider supervision (Echevarria et al., 2016). This specialist nurse stresses the importance of self-management and encourages increased movement and independence (Echevarria et al., 2016). This trial reveals evidence that patients aged 75 and over may be safely enrolled in a HAH/ESD program (Echevarria et al., 2016). This study is significant because most patients in the hospital with AECOPD are elderly and elderly patients are at an increased risk of readmission and death (Echevarria et al., 2016). This trial discusses an important factor that the patient remain fully under the care of the specialist hospital based team and when returning to the hospital during the period of acute care, this may be considered as a transfer to a higher level of care within the same episode, rather than a readmission (Echevarria et al., 2016). This program may be beneficial to hospitals because not defining return to the hospital as a readmission may favor the implementation of HAH/ESD although some authors deliver a cost examination and this program is more costly (Echevarria et al., 2016).

This type of program may reduce COPD rates of readmissions and avoidance of Medicare penalties. A study by Simone Healthcare Consultants profiles five pioneering programs formed by home care agencies to significantly reduce the need for patients to be readmitted for acute treatment (<http://www.hcanys.org/SimioneInnovativeHomeCareReport.pdf>). Simone Healthcare Consultants describe the following cost savings because:

The study, prepared by Simone in partnership with the Home Care Association of New York State (HCA), specifically found that innovative care-transitions programs for a defined group of high-risk patients at just five of the state's approximately 230 Medicare- certified home health agencies saved \$1.2 million in

averted hospital expenses annually by reducing the 30-day readmission rate, a key quality metric in federal health reform efforts. Most of the home care programs studied in the study used home telehealth, an innovative technology that allows for remote monitoring of a patient's health to prevent a health care crisis requiring higher levels of care. More complex types of home telehealth devices have video capabilities that allow for visual contact with the patient and/or remote biometric measurements, such as weight, blood pressure, pulse, temperature, pulse oximetry, electrocardiogram and blood glucose. Other devices can also include medication reminders and motion and position detectors. Devices are linked to home care agency clinical case managers via telephone lines (wired and wireless), satellite, and the internet. (Simione Healthcare Consultants, 2015, pp.1)

Implementation of telehealth is a future recommendation for this program because it can provide vital services to assist the patient to recover from the recent hospitalization and avoid a 30-day readmission. This technology has been described as an effective method to decrease hospital length of stay, avoid readmissions and improve the management of chronic diseases in the outpatient setting (Joshi et al., 2014).

A noteworthy future recommendation is that the program will serve as a role model in the nation as well as internationally. This initiative can be implemented at any hospital in the world because it can achieve positive and evidence-based outcomes. Bandura states that in order to change behavior most efficiently, one must be explicit in the focus of what is to be done (Weinberg, 2001). This interdisciplinary approach is explicit and identified an organization's inaccuracy and planned changes in the system in order to decrease the inaccuracy (Weinberg, 2001). The interventions in this program are effective ways of assisting

patients with COPD, their families, and pulmonary clinicians to develop effective coping skills and educational strategies which are positive approaches towards living with a chronic illness in order to avoid a hospital readmission.

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Appendix A

APN-Led COPD Discharge

Education Care Bundle

This patient and family have been educated in preparation for discharge on the following:

1. Patient will follow-up with Dr. _____ in 7-days from discharge from OMC.
2. Signs and symptoms requiring an emergency pulmonary visit include the following:
 - a) increasing dyspnea
 - b) increasing purulent sputum which is green or yellow
 - c) fever/chills/chest pains
 - d) and decreased exercise tolerance
3. Vaccination status: influenza _____ pneumococcal _____.
4. Mobility—patient provided with a prescription for out-patient pulmonary rehabilitation. Physical therapy consult ordered to increase mobility/OOB to chair/ambulate with assist and oxygen support as needed.
5. Nutrition—proper nutrition and maintenance of adequate BMI. Dietary consult ordered with BOOST pudding or Ensure drinks. Serum nutritional markers ordered: prealbumin, albumin, and vitamin D levels.

6. Serum CRP levels ordered: assess for systemic inflammation.

7. Discharge Location—safest discharge location determined daily: consider home with Visiting Nurse Association (VNA), AtHome Medical COPD Program or CareOne Subacute facility with PAA pulmonary physicians.

8. Screen for Depression

9. Screen for Anxiety

10. Screen for GERD

11. Evaluate for Home Oxygen Needs: evaluate room air saturation at rest and during ambulation. If saturations < 87% the patient is eligible for home oxygen with conserving device.

12. Evaluate for Home nebulizer needs: If patient unable to perform a 10-second breathe hold prescribe a home nebulizer until fully recovered from AECOPD.

13. Proper Inhaler Technique-educate utilizing “Teach Back Method” on the importance of a 10-second breath hold. Educate on the correct oral care after use of an inhaled corticosteroid inhaler to avoid thrush.