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Effect of Provider Education on Pulmonary Rehabilitation Referrals and Discussions with Patients

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Table of Contents

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a chronic and debilitating disease from which 9% of the population suffers (CDC, 2013). Pulmonary rehabilitation (PR) is a well-documented evidence-based intervention for patients with chronic respiratory diseases, leading to better health outcomes for patients; however, PR is grossly underutilized in primary care (Rochester et al., 2015). Providers face many barriers which cause this gap between the evidence and clinical practice, such as a lack of understanding of the rehabilitation program and insurance coverage (Rochester et al., 2015).

Purpose: The aim of this Doctor of Nursing Practice (DNP) project was to launch a quality improvement (QI) initiative to improve discussions and referral rates of patients with COPD to pulmonary rehabilitation.

Methods: This project was influenced by Kurt Lewin's theory on organizational change. The design used Lewin's unfreezing, moving, and refreezing to change the care of COPD patients. This project used a provider focus group, a provider educational session, and reminder systems to track pulmonary rehabilitation discussions and referrals at a primary care office in Athol, Massachusetts over four months.

Results: Prior to this intervention, the providers had not discussed pulmonary rehabilitation or placed any referrals to in the previous two years. After the educational session, providers had 20 discussions with patients about pulmonary rehabilitation, which lead to four referrals.

Conclusion: This DNP project improved provider's knowledge and understanding of pulmonary rehabilitation and was associated with an increase in the number of discussions about and referrals to pulmonary rehabilitation.

Keywords: pulmonary rehabilitation, COPD, provider education, quality improvement

Introduction and Background

Chronic obstructive pulmonary disease (COPD) affects 9% of the United States population over 45 years of age, and in Massachusetts, 54.6% of those with COPD report limited activity (CDC, 2013). COPD is the progressive limitation of airflow throughout the lungs. Those with COPD often suffer from the triad of symptoms related to chronic bronchitis, emphysema, and asthma. Deepak et al. (2014) reports that COPD causes people to feel breathless and therefore are more likely to become sedentary. In addition, those with COPD have decreased global muscle tone, diminished ability to participate in daily activities, and lower quality of life (Deepak et al., 2014). In Massachusetts, COPD patients were more likely to describe financial concerns, have poor or fair health status, have 14 or more poor mental health days in the last 30 days, and not exercise in the past month (CDC, 2011). Pulmonary rehabilitation (PR) is an evidence-based intervention for those with COPD to improve exercise tolerance, mental health, quality of life, and self-efficacy; however, it is grossly underutilized (Rochester et al., 2015).

Many studies have shown that PR has a positive effect on exercise capacity, quality of life, dyspnea, emotional function, motivation, and coping skills for patients with COPD (Bentsen, Wentzel-Larsen, Henriksen, Rokne, & Wahl, 2012; Deepak, Mohapatra, Janmeja, Sood, & Gupta, 2014; Jancome & Marques, 2014; Meis et al., 2014; Roman et al., 2013). An evidence-based guideline on the use of pulmonary rehabilitation in adults was made by the British Thoracic Society in 2013 (Bolton et al., 2013). This guideline recommends that PR be offered to patients with COPD in order to increase exercise capacity, improve dyspnea, increase muscle tone, and improve psychological well-being. A referral to PR can be placed by the patient's primary care provider or specialist.

According to the CDC (2011), 57.5% of patients with COPD in MA reported shortness of breath affecting their quality of life, yet very few of these patients are being referred to PR programs. Johnston, Young, Grimmer, Antic, and Frith (2013) reported 10 out of 12 providers interviewed had never placed a referral to a PR program, and some providers admitted they were not aware of any PR programs. Johnston and Grimmer-Somers (2010) report similarly poor referral rates in Canada, the United States, Germany, and Malaysia. A 52% referral rate was reported in a study in Dublin, however, poor patient completion rates were also shown (Condon, C., Moloney, E., Lane, S., & Stokes, E., 2015). In a London hospital, Jones and colleges (2014) found that only 32% of COPD patients who met referral criteria were actually referred to PR after an acute exacerbation.

Providers are confronted with many barriers to PR referrals as outlined in the literature (Johnston and Grimmer-Somers, 2010; Johnston et al, 2013; Yawn & Wollan, 2008). Johnston and Grimmer-Somers (2010) stated that only 3% of provider respondents in the US thought PR was helpful in COPD management and in Canada, just 9% of patients with moderate/severe COPD were referred to PR. Yawn and Wollan (2008) found similar results that merely 3% of family physicians thought PR was useful for COPD patients, and another 16% were neutral about PR's benefits. In addition, healthcare providers explained that a lack of knowledge on PR, its benefits, the referral process, and the existence of local PR centers (Johnston et al., 2013). Studies by Johnston et al. (2013) and Johnston and Grimmer-Somers (2010) support the claim that healthcare providers lack an adequate understanding of PR and consequently are not referring appropriate patients to this extremely beneficial and necessary intervention. The barriers which providers face are multi-factorial, including knowledge, patient access, and reimbursement changes (Hummel, 2012). Rochester et al. (2015) summarizes the problem well

by stating there is a significant gap between the scientific knowledge of PR benefits and the number of patients that attend PR programs. Healthcare providers require more knowledge and understanding about PR to increase referral rates and therefore attendance.

Problem Statement

Patients with COPD have poor access to PR due to inadequate provider knowledge surrounding PR programs, their benefits, and how to place a referral, as evidenced by a lack of provider referrals (Johnson & Grimmer-Somers, 2010; Johnson, Young, Grimmer, Antic, & Frith, 2013; Rochester et al., 2015). In order to increase access to PR, barriers need to be deconstructed through provider education about PR benefits, referrals, and insurance reimbursement. Additionally, reminder systems need to be used throughout the office to support these interventions; this necessary change is required in individual primary care settings to achieve sustainability.

Organizational "Gap" Analysis of Project Site

North Quabbin Family Physicians (NQFP) is a family practice in Athol, Massachusetts where 221 patients currently hold the diagnosis of COPD. Among the three physicians and three nurse practitioners at this practice, there were no referrals to PR made in the 2 years prior to this project. This practice faces similar barriers to those seen in the articles reviewed, such as a lack of understanding on PR's benefits and on the referral process (Johnson & Grimmer-Somers, 2010; Johnson et al., 2013; Rochester et al., 2015).

Review of the Literature

A comprehensive search of PR access and education was completed using the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Web of Science, and Academic Search Premier. The Medical Subject Headings (MeSH) used were "pulmonary

rehabilitation" and "access," or "provider education" and "COPD." These searches yielded 43 results. The results were then narrowed to articles published between 2006 and 2016 in academic journals, full text available, and written in English. This resulted in 30 articles, including eight articles on the topics of PR access and barriers, and two articles discussing interventions. Due to the small number of publications on this topic, more generalized and separate searches were completed using MeSH terms of "guideline adherence" and "intervention." Over 1,500 articles resulted and were narrowed using the same limiters to yield 1,163 articles. The MeSH term "provider education" was then added, further reducing the search to 8 articles. The title and abstract of each article was then reviewed. Articles were included if they were investigating referrals and access of COPD patients to PR, or interventions aiming to improve provider adherence to a guideline for a chronic condition with similar barriers. A total of five research studies were found using this criterion. The studies were then scrutinized using the Johns Hopkins Nursing Evidence-based Practice Rating Scale.

Results of Literature Review

Pulmonary rehabilitation has been shown to be effective in many different dimensions of the COPD patient's life, yet there continues to be a gap in the provider's understanding of PR (Birnbaum, 2011; Desveaux, Janaudis-Ferreira, Goldstein, & Brooks, 2015; Johnson & Grimmer-Somers, 2010; Rochester, et al., 2015). Healthcare providers consistently report low referral rates to PR due to insufficient knowledge on the referral process. Twelve general practitioners discussed their perceived barriers and facilitators to PR in a qualitative study completed in Australia by Johnston, Young, Grimmer, Antic, and Frith (2013). This article is rated IIIB according to the Johns Hopkins scale due to it being a qualitative design. The major barriers surrounded a lack of knowledge about PR and how to refer. A major facilitator to the

referral of PR was demonstrated to be provider awareness of the benefit. The practitioners who were interviewed that had placed referrals to PR did so because they understood the benefits of the program. There is a positive relationship between PR knowledge and PR referrals. Amount of knowledge is a theme that providers continually express in regards to PR referrals. Provider education and training is a widely used intervention aimed at presenting information to healthcare providers on a necessary topic.

Although there is dearth of studies specifically about interventions to improve the referral rate of COPD patients to PR, one important study was published on this topic (Ulrik et al., 2010). The effect of provider education on adherence to COPD guidelines was examined by Ulrik and her colleagues in Denmark using a cross-sectional survey design. The intervention in this study was an educational program for general practitioners. The program consisted of meeting with a Global Initiative for Obstructive Lung Disease (GOLD) guidelines expert, discussing the guidelines and PR, interpreting spirometry, and methods for teaching inhaler technique. After the education and training were completed, researchers noted a significant increase in documentation of spirometry results, smoking status, inhaler techniques, and dyspnea scores. During this time, 124 general practitioners from all over Denmark reported an improvement in PR referral rates from 12% to 16%. Although this advancement was small, it was not the primary focus of the education and training sessions; the authors admit that their foremost goal was to increase spirometry use. This study showed that provider education increases the rate of adherence to COPD guidelines. The assumption in this project was that a greater concentration on PR would similarly improve PR referral rates.

The scarcity of interventional studies specifically about COPD and provider referrals to PR, as discussed by Overington and his colleagues (2014), led this DNP student to search the

literature concerning other chronic conditions where providers face similar barriers adhering to highly-effective interventions. The absence of published studies on this topic reinforces the importance of completing and analyzing interventional projects to increase PR referrals. Provider education and referral rates have been reviewed among other chronic conditions such as asthma and obesity, where practitioners also report the common theme of a lack of knowledge on the guideline (Okelo et al., 2013; Barnes, Theeke, & Mallow, 2015). Due to the common barriers providers face among chronic conditions, this DNP project assumes the interventions used in certain studies may be extrapolated to the goal of increasing PR referrals.

Okelo and associates (2013) describe interventions to increase adherence to asthma guidelines. Asthma is a different respiratory disease that has similar symptoms to COPD. Patients with these chronic respiratory conditions all suffer from dyspnea, wheezing, and cough. According to Okelo and colleagues (2013), highly-rated evidence shows improvement of asthma symptoms and better management by following published guidelines, however, similar to PR referrals, providers do not routinely follow these guidelines. A meta-analysis was completed to understand what types of interventions improve provider adherence to asthma guidelines by Okelo and her partners (2013). The investigators cited multiple explanations to this deficient adherence, including a lack of knowledge, hesitation on its effectiveness, as well as a lack of confidence in the process. These barriers parallel those providers face with PR referrals. The authors found that education alone exhibited a small to moderate benefit on patient outcomes and asthma action plans. Multi-component, decision support, and organizational change interventions showed moderate benefits. Benefits were also seen with the interventions of education only and feedback and audit, but they were of low significance. This meta-analysis demonstrates a further need for multi-component interventions, including provider education and

feedback to amplify adherence to guidelines. It is noteworthy that researchers see the need for improved care among other respiratory conditions, although the necessity of studies in this area continues.

Comparable obstacles in following a well documented intervention have been reported among providers in the management of obesity, including a lack of knowledge about the effectiveness of an intervention, lack of confidence in the intervention, and anticipated patient problems (Barnes, Theeke, & Mallow, 2015). Barnes, Theeke, and Mallow (2015) implemented provider education, along with a reminder system and appropriate patient resources as a project to improve clinical care. The provider educational session was implemented to target the barriers with a focus on the lack of knowledge of the written guideline. Providers were informed that their documentation would be audited based on guideline recommendations for the project. The reminder system consisted of helpful postings in care areas, such as a body mass index (BMI) chart and a treatment algorithm. This analysis revealed a significant increase in the documentation of a patient's BMI; however, other improvements were minimal. The researchers suggest that future interventions place a greater focus on creating a culture that encourages change. This evaluation reveals the need for interventions with a group focus to create this culture of change.

Pulmonary rehabilitation has similar benefits to those of cardiac rehabilitation for cardiac diseases/procedures and is also underutilized due, in part, to a lack of provider knowledge on the intervention (Dahhan et al., 2015). When compared to Barnes, Theeke, and Mallow's (2015) improved documentation with obese patients, an analogous increase in referral rates was seen among cardiac rehabilitation after provider education. Dahhan et al. (2015) implemented a formal cardiac rehabilitation referral system along with education to providers. This formal

referral system required providers to document the reason that any patient was not referred after undergoing percutaneous coronary intervention. A lecture was created on the benefits of cardiac rehabilitation and how to place a referral. The examiners observed the referral rate increase from 17.6% to 88.96% in six months in 375 eligible patients. With adequate knowledge on the intervention and referral methods, this investigation shows drastic increases in referral rates to a rehabilitation program.

Although these studies were completed to increase use of, and adherence to, other chronic disease guidelines, their results may be extrapolated to COPD patients and PR referrals. Provider education, along with reminder systems, is an effective intervention supported by multiple studies that has initiated an increased referral rate and adherence to guidelines among many chronic diseases. When used in the context of PR, provider education and reminder systems are expected to show similar results.

Discussion of Literature Review

A lack of knowledge and understanding of PR has hindered many providers from placing referrals to PR and following similarly highly-ranked guidelines to other chronic diseases. The previous investigators have agreed that referrals will increase by more provider knowledge. Provider awareness of PR's benefit was found to be a major facilitator in referral placement. Practitioners require more information and training on the services provided by PR and referral placement (Johnston, Young, Grimmer, Antic, & Frith, 2013). Ulrik et al. (2010) was the only study reviewed that highlights provider education about COPD guidelines. Although just a small improvement in PR referrals was noted in the study, it is most likely due to a broad focus of COPD instead of concentrating on PR. This improvement may be enhanced by giving adequate attention to PR and the referral process.

Due to the significance of this problem and lack of directly related literature, the DNP student expanded the review of literature to research beyond PR referrals alone, to other highly-ranked studies regarding adherence to guidelines, including asthma, obesity, and cardiac rehabilitation. The multi-component and education only interventions studied by Okelo and partners (2013) were found to have significant improvements in the asthma outcomes measured. The interventions described for the successful use of asthma guidelines can be extrapolated and used in a quality improvement project to increase provider access and referrals to PR. Similarly, provider education specific to known barriers, a reminder system, and patient resources significantly increased the documentation of a patient's BMI among obese patients in a primary care setting. Although this study was completed to increase adherence to the national obesity practice guideline, its interventions may be applied to PR referrals because of a similar lack of understanding providers have acknowledged (Barnes, Theeke, & Mallow, 2015). Finally, an educational lecture and formal referral system were implemented by Dahhan and colleagues (2015) which initiated a significant improvement in referrals to cardiac rehabilitation in six months. Provider education and training has been shown to make practitioners more cognizant of the problem and rethink their solutions.

Theoretical Framework

Kurt Lewin, a psychologist, developed several organizational change theories that influenced this project, with the three-step change model having the greatest impact. Lewin is most known for field theory, group dynamics, and the three-step model of change, as discussed in his seminal work (1947). While the three-step change model is usually the sole focus of change theory, Batras, Duff, and Smith (2014) argue that one must recognize all three of Lewin's theories in order to fully understand and produce change in an organization. Lewin (1947)

asserts that in order to bring about a change, the entire subject needs to be examined. In this DNP project, the subjects of provider barriers, and adherence to PR interventions were scrutinized.

Lewin's field theory is slightly more abstract than his other theories, however, Batras, Duff, and Smith (2014) analyze Lewin's theories according to health care in an accessible approach. They explain that field theory studies group behavior and suggest that the entire field, or setting and behaviors, of the group is to be outlined. Mapping the field allows the change agent to fully understand how the group interacts with members, what influences behaviors, and the complexity between these factors. Field mapping is meant to determine what factors trigger behavior changes in the field being studied. Studying these factors will help the change agent understand the group's behaviors and establish what factors need to be adjusted to make change happen. The goal is to reorganize these factors to sustain a change. Lewin's studies on group dynamics led to his theory that individuals are persuaded by group norms and feel pressure to conform to these norms (Batras, Duff, & Smith, 2014). The greater social value held for these group norms create a greater resistance to change. He stated that instead of changing individuals, the objective should be to change group behavior and decision-making in order to sustain a behavioral change instead of individual changes (Lewin, 1947).

Lewin's knowledge in field theory and group dynamics guided him to the three-step model of change (Lewin, 1947; Batras, Duff, & Smith, 2014). This involves researching the current methods of the organization and identifying the best change solution for a problem. The group/organization needs to want a change. Permanency of this change needs to be a target in the plan. All changes ought to be made at the group level, as is the target with group dynamics. The three-step model was made to guide change agents through the process for sustainable

transformation. The steps are: *unfreezing*, *moving*, and *refreezing* (see Figure A1). Unfreezing involves making the problems of the current state known to the group and realizing that the benefits of the change outweigh the negatives. This process creates the need for change among group members and relates to Lewin's theory on group dynamics because unfreezing should be done as a group to make social change. Moving entails research, learning, and implementation. A plan for change is initiated and tested. Members should be encouraged to support the change while in the moving step. Once the group standards are changed, the new *force field*, or the state where positive forces and factors counteract the negative, will help transform individual behavior to the new group level (see Figure A2). Refreezing occurs when the individuals in the organization accept the changed process and it becomes the new group norm. The goal is to prevent a return to previous practices to maintain permanency of the change. Lewin believes that individuals' decision to make a change and commit to the group aids sustainability (Batras, Duff, & Smith, 2014; Lewin, 1947; Mitchell, 2013). Lewin's change theory influenced each step of this implementation process by highlighting group behaviors and sustaining change.

Project Design

A quality improvement project design focusing on provider education and reminder systems was completed in order to increase the referral of COPD patients to PR. This was developed by using W. Edwards Deming's (1993) Plan-Do-Study-Act (PDSA) cycle framework (see Appendix B). Deming developed the PDSA cycle in 1950 from the Shewhart cycle for scientific method (Deming, 1950). Originally designed for selling products, Deming's wheel (see Figure 1) in 1950 consisted of designing the product, developing the product, selling the product, and testing the product. This wheel was modified into the PDSA cycle in 1993 (Deming, 1993). According to Deming, a plan is made for the established goals, the plan is

carried out, the results are studied, and the leader acts to ensure sustainability (Donnelly & Kirk, 2015). Methods for this DNP project included a qualitative focus group assessment, analyzing pre- and post-educational session questionnaires, comparing quantitative pre- and post-intervention referrals, and final interviews discussing remaining barriers.

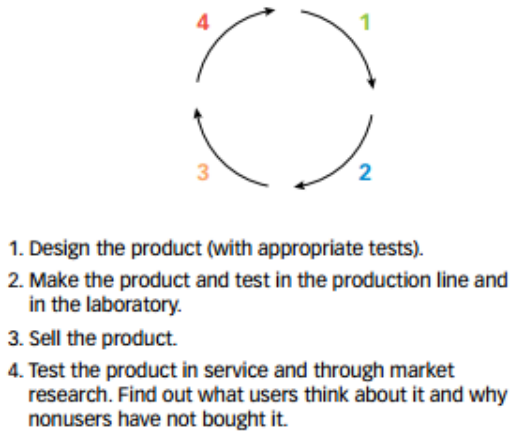

Figure 1. Deming's wheel.

Project Site and Sample

North Quabbin Family Physicians is a family practice that offers primary care for all ages in Athol, MA. With three physicians and three nurse practitioners, NQFP offers a full range of services at this site, including lab draws, Department of Transportation physical exams, dual-energy x-ray absorptiometry scans, spirometry testing, vision and hearing exams, and primary care throughout the lifespan. The office is fully staffed with at least one medical assistant per provider, and many ancillary staff members obtaining insurance authorization for testing, billing, check-in and check-out, as well as triage nurses. A PR program is located about 16 miles from Athol at a hospital in the neighboring town Gardner, MA. During implementation of this project, the DNP student interacted with providers. The DNP student held a focus group with providers

to determine the needs specific to this practice, followed by a provider educational session during one of their weekly meetings. The DNP student interacted with the staff members obtaining insurance authorization to monitor PR referrals and had no patient interaction during this implementation project.

Description of the Community. Athol is a rural community in north central Massachusetts. It received its name of *Tool Town* because of two large tool-producing mill companies that employ a large portion of the community. Today Athol has a population of almost 12,000. The median household income is about $47,000 and 15.8% are living below poverty in the town (Athol Town Hall, 2015).

Evidence of Stakeholder Support. The nurse practitioners and physicians at NQFP expressed a desire to refer patients to PR after adequate education about the PR program and insurance process. The providers and office manager at North Quabbin Family Physicians have shown commitment to this DNP project and to placing referrals to PR when necessary. Please see letter of agreement in Appendix C.

Facilitators and Barriers. There are several facilitators and barriers to implementation of this project. A major facilitator was the great deal of evidence on the benefits of PR. This information was easily translated to the providers. Previously the NQFP providers had expressed an interest and need to increase referrals to PR, but lacked an understanding of which patients would benefit from the program, as well as which patients qualify for the program. The educational session was made to embrace these topics. The educational session was scheduled during meeting time already scheduled and addressed a topic of which the providers have a known interest.

There were two major barriers to this implementation project: changing a provider's usual practice and lack of time. This DNP student hoped to overcome the difficulty of changing a provider's usual practice because it is the provider's decision whether or not to make a PR referral during a patient visit. This DNP student attempted to change the way providers look at COPD patients and make PR a valid and important intervention to the provider, which was difficult. It can be difficult to break the current treatment habits of providers. Provides are not currently referring to PR because they do not consider it beneficial to the patient. Lastly, discussing PR with patients adds an additional topic to cover during a short visit; providers are already pressed for time during each visit and may not want to start another new conversation when time is already so limited.

Goals and Objectives

Table 1
Goals and Objectives

	Goals	Objectives
1	Increase providers' knowledge on PR, referrals, and insurance reimbursement.	Providers will be educated about PR, referrals, and insurance coverage via a presentation and demonstrate increased knowledge through pre- and post-education questionnaires.
2	Remind providers to educate patients about PR and make appropriate referrals during the patient visit.	Poster reminder systems will be used throughout the office in provider areas to trigger conversations about PR with patients. Providers will report the reminders increased the number of PR conversations.
3	Increase referrals to PR for COPD patients.	Referrals to PR will be tracked for four months after the provider education session and number of referrals will significantly increase during this time.
4	Increase discussions about PR between the provider and the patient.	Provider-reported discussions about PR will be tracked and significantly increase after the provider education session.

Methods

This DNP project was designed on the principles of Lewin's change theory and using the PDSA method. Consistent with Lewin's theory of group dynamics, this DNP student aims to change group thinking of PR to make PR referrals the new group norm for COPD patients. It was completed over the course of two semesters, from September 2016 to February 2017. At the outset of the project, the current state of the PR referrals was obtained by locating the total number of PR referrals at NQFP for the two prior years. A focus group was then held with the providers to better understand their current barriers to placing PR referrals. A PowerPoint presentation was created with a focus on the known barriers at NQFP found during the focus group. Providers were encouraged to ask questions during the presentation to better their understanding.

The PowerPoint presentation educated providers about the evidence supporting PR, what a PR program entails, known barriers to PR, what types of patients qualify for PR, how to place a referral, and a PR referral site in the area. This presentation was tailored to the needs of the NQFP providers based on the results of the focus group. This educational session took place during a weekly provider meeting already outlined in the NQFP schedule. The goals of this educational session were to increase provider knowledge of the benefits of PR, preparedness in discussing PR with patients, and confidence in placing referrals.

A reminder system consisting of provider-focused posters, key insurance information, and patient education handouts were dispersed throughout the office to trigger providers to discuss PR with appropriate patients. Reminder posters were positioned in the two care stations frequented by providers that listed the PR policies. A provider resource was made into a convenient binder with key insurance information from the most used agencies. Two patient education handouts were made available for providers to give to patients at their discretion.

These handouts were aids in the discussion of PR with the patient. Execution of these interventions completed the unfreezing period as described by Lewin.

During Lewin's moving period, provider discussions about PR with patients and if a referral was placed were tracked over four months. Providers were given monthly updates on referrals to increase adherence. Throughout the four months of this evaluation period, adjustments were made according to feedback from providers in order to improve work flow and continually increase PR referrals. Additional reminders were used throughout this period, such as candy with a label attached that stated "Thanks for referring to pulmonary rehab!" These practices were used to promote the best process for providers at the office and support Lewin's refreezing. Refreezing was evaluated during a one-month follow-up assessment. Providers then expressed their continued barriers to PR referrals in interviews.

Measurement Instruments

In order to measure the outcomes of this DNP project, pre- and post-questionnaires were created for use before and after the provider educations session (see Appendix D). The questionnaire had both 5-point Likert scale and "yes/no" questions to measure the providers' knowledge surrounding the topic of PR.

Data Collection Procedures

Pulmonary rehabilitation referral numbers prior to the start of the project were obtained from the office manager. Data was collected during the focus groups and interviews by this DNP student taking notes during conversations with providers. PR discussions and referrals were tracked via a simple checklist for providers at the care stations (see Appendix E).

Data Analysis

This DNP student transcribed barriers during the focus group and completed basic content analysis to recognize themes. The data from questionnaires and the discussion and referral checklist were analyzed using basic statistical methods, such as frequency, mean, and median. Due to the provider sample size of five, normal distribution cannot be assumed as this group does not represent the population.

Cost-Benefit Analysis

The cost of this quality improvement project was compared to the usual care of COPD patients. This project has costs to the change agent of time to plan and creation of the PowerPoint presentation. The cost to NQFP was one 10-minute focus group meeting, and one 30-45-minute provider education session. NQFP holds a provider meeting every Tuesday during providers' lunch break to discuss pertinent information about the practice. The educational session cost NQFP one of its lunch meetings. There was a small cost of time with a new work flow in discussing PR with patients during their regularly scheduled visits. The practice already had a staff member who works closely with insurance companies to obtain proper referrals for patients. Long-term goals were to improve patient quality of life, which would likely translate into less frequent episodic and urgent office visits and decreased cost to the patient after completion of a PR program. The cost of usual care without improving the process of PR referrals includes regular visits with COPD patients, as well as episodic and urgent visits when deemed necessary by the patient.

Timeline

The implementation of this DNP project took place from October 2016 to April 2017.

Ethics and Human Subjects Protection

This project was submitted to the Human Research Protection Office and was determined not to be research under the human subject regulations. Therefore, this project did not require review and approval from the Institutional Review Board (IRB). During the completion of this quality improvement project, all participants were protected by the Health Insurance Portability and Accountability Act (HIPAA) of 1996. HIPAA is a federal law that guards the confidentiality of patient health information (U.S. Department of Health and Human Services Office for Civil Rights, 2013). All data collected by the DNP student and mentor during this DNP capstone project lacked any patient identifiers in concordance with HIPAA laws and the *Standards of Care* in the primary care office. Data and project analyses were saved using a secure BOX storage account, a HIPPA compliant online storage vendor. Data collected during this project was secured and accessible to only the DNP student and committee. There was no record of patient identifiers and solely data collected on the discussion of PR. Deidentified provider information was also stored via BOX and data collected. Patients faced no additional risk compared to usual COPD care as providers placed clinically appropriate referrals to pulmonary rehabilitation

Results

This DNP project had multiple steps, for which the results will be reviewed in the follow sections. These steps included: provider focus group to discuss barriers to PR, PowerPoint provider educational session specific to their stated barriers, PR discussion and referral tracking, bi-weekly reminders, analysis of continued barriers, and a 1 month post-tracking follow-up. The proposed timeline unfolded without modifications. Three physicians and three nurse practitioners took part in this quality improvement project. All providers were considered expert

clinicians according to Patricia Benner's theory (Benner, Tanner, & Chelsea, 2009), having been a provider for over 5 years.

Focus Group

Three physicians and two nurse practitioners were present for the focus group. The group was asked one question: "What do you feel is your greatest barrier to referring patients to pulmonary rehabilitation?" The five providers discussed their greatest barriers were difficulties with coverage by insurance and unaware of the location of a PR facility. The providers were also unsure about benefits to PR and concerned about the patient's lack of transportation.

Provider Educational Session

A PowerPoint presentation was created to educate the providers at NQFP about PR with a focus on their previously stated barriers to referral. Three physicians and two nurse practitioners were present for the educational session and completed pre- and post-questionnaires. Research studies were presented to exhibit the known benefits of PR on the health and quality of life of COPD patients. Insurance coverage was first outlined regarding essential patient qualities, such as a diagnosis of moderate COPD instead of mild. Several different types of policies and nuances were then discussed. Two different PR facilities were presented, one local in-patient rehabilitation program, and one out-patient program at a hospital. The outpatient program was highlighted with information on their treatment program, number of sessions, class size, contact person, and patient requirements. One key patient requirement was not actively smoking at the time of referral. To assist with transportation issues, phone numbers were also presented to providers to the local Counsel of Aging which sometimes could provide rides to patients. This included a state website to help elderly patients find rides to appointments in their area.

Providers rated their current knowledge about PR on a Likert scale from 1, no knowledge, through 5, very knowledgeable both before and after the educational session. Prior to the educational session, the mean response was 2.8 and median was 3. After the educational session, the mean response was 4.2 and median was 4. Providers then rated their knowledge about PR insurance coverage on the same Likert scale. The mean response after the educational session increased to 4.2 from 1.8 and median increased to 4 from 2 (see Figure 2). The providers were then asked if they felt prepared to place a PR referral. Prior to the intervention, four providers answered that they were not ready and one provider did feel ready. After the intervention, all five providers answered they were prepared to place a PR referral (see Figure 3). Lastly, the providers were asked if they were prepared to discuss PR with patients. All five providers were prepared for this discussion after the educational session, compared to only two providers prior to the session (see Figure 4).

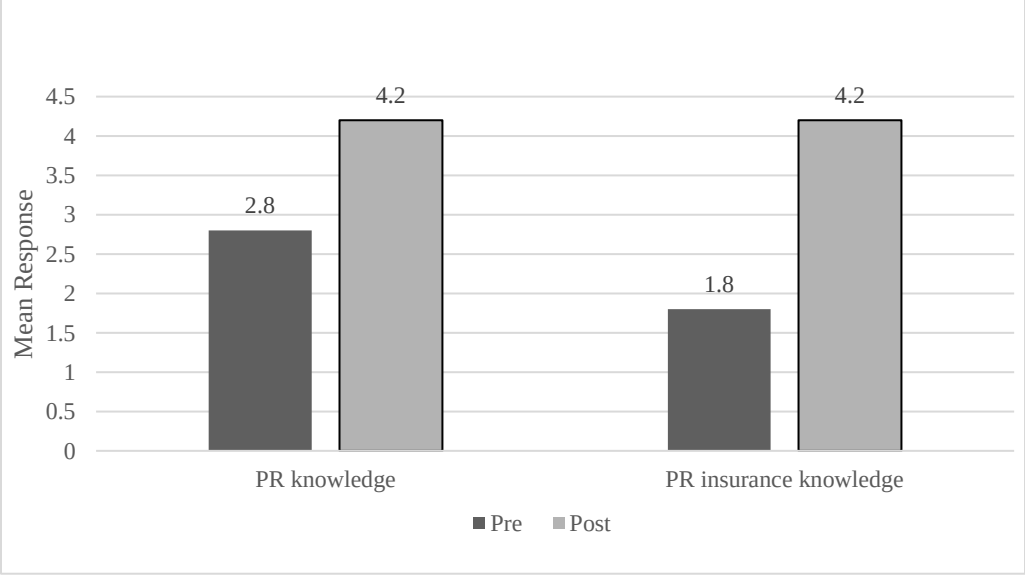

Figure 2. Comparison of the pre- and post-educational session provider knowledge of PR and insurance coverage.

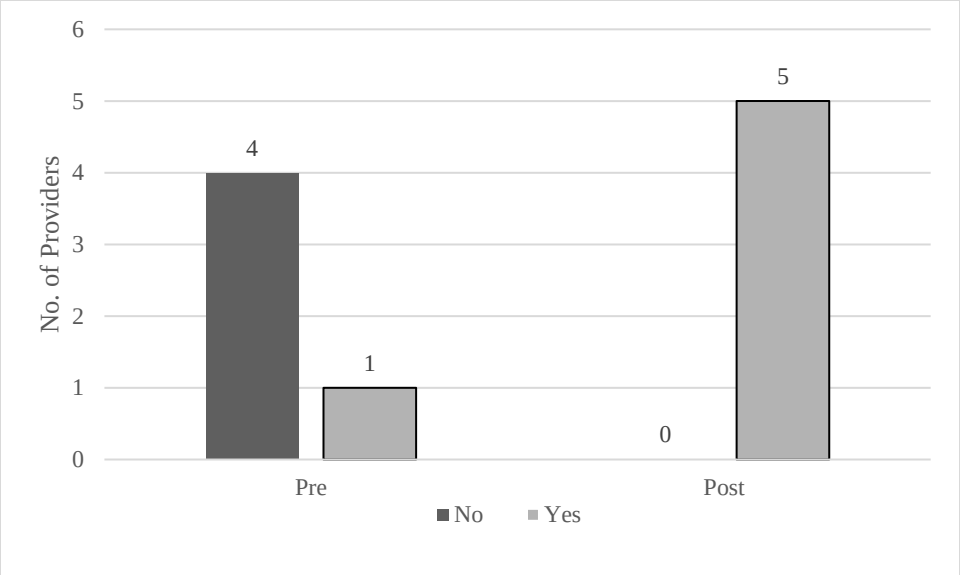

Figure 3. Comparison of pre- and post-educational session preparedness of providers to place a PR referral.

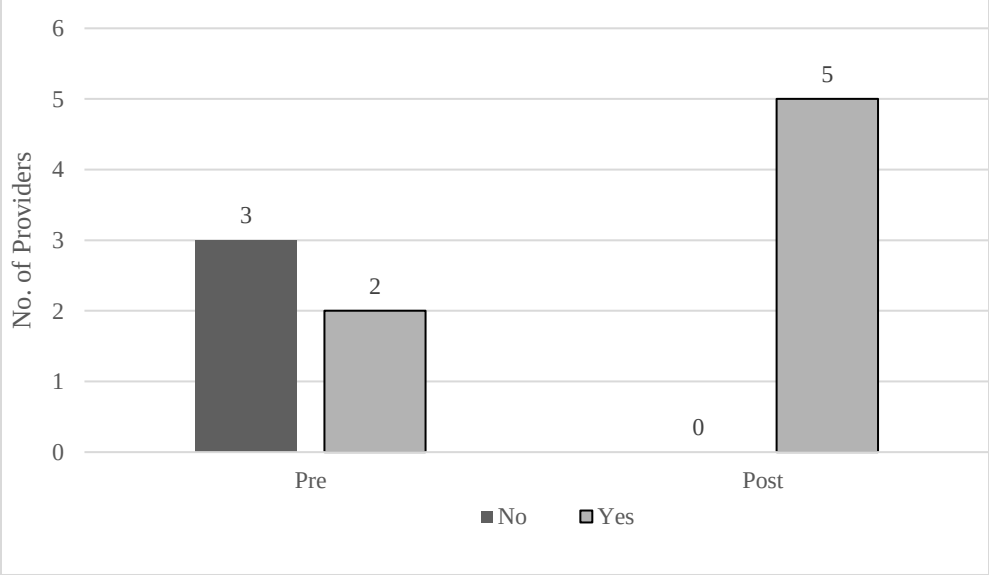

Figure 4. Comparison of pre- and post-educational session preparedness of providers to discuss PR with patients.

Pulmonary Rehabilitation Discussion and Referrals

In the two years prior to this implementation project, the providers at NQFP had not referred any patients to PR or had any discussions about PR with patients. Some providers stated

they had discussed PR with pulmonology specialists when it was recommended for a patient, however, the discussion with patients was completed by the pulmonologist.

Throughout the four months of this project, providers had discussions about PR with 20 patients and placed PR referrals for 4 patients (see Figures F1 and F2). This DNP student monitored the PR discussion and referral list completed by providers bi-weekly. This entailed speaking with providers on-site about any difficulties in the process and updating the record if any discussions or referrals were not written down according to the providers. This served as a frequent reminder to discuss PR with patients.

One month after the reminders and tracking were finished, a follow-up assessment was completed. In the month following this project, providers continued to have three new discussions about PR with patients and one of those patients was referred to PR.

Continued Barriers to Pulmonary Rehabilitation

Interviews were conducted with individual providers that were available on their remaining barriers to PR referrals and discussions after the intervention. Several themes of continued barriers emerged: patient smoking, lack of transportation, lack of motivation by patients, and provider assumption that the patient would not attend. The PR facility does not accept patients who smoke, which was shown to be a large barrier in PR referrals. Many patients with COPD smoke, and despite smoking cessation counseling, some have no desire to quit. Transportation was a known provider barrier prior to the intervention and an effective solution to this barrier was not found despite resources offered in provider education. Therefore, it continues to be a major reason why a patient was not referred to PR. PR also requires a commitment of time and monetary resources for the patient as sessions are three days per week for six weeks, with co-payments due at each visit. Finally, the providers at NQFP have known

many of the COPD patients in the area for numerous years and may not discuss PR with patients who the providers assume will not quit smoking or have the transportation.

Discussion

This DNP project produced numerous patient discussions about PR and several patient referrals, which is expected to improve the patient's quality of life and medical outcomes. The results of this project are similar to a quality improvement project completed by Reville, Reifsnyder, McGuire, Kaiser, and Santana (2013). Reville et al. (2013) educated oncology providers to increase referrals to palliative care. The intervention consisted of a presentation to providers about referrals, cancer types, patient demographics and reasons to refer. This project also showed significant results post-intervention with a referral rate of 31.5%, compared to 24.9% pre-intervention. Provider education is an important intervention to highlight evidence-based treatments that are currently underused. This DNP student and Reville et al. (2013) conducted quality improvement projects that significantly improved the care of patients through educating providers.

In the two years prior to this quality improvement project, providers at NQFP had not discussed or referred any patients to PR due to multiple barriers, but this project increased these numbers significantly. The educational session increased provider knowledge about PR and led to 100% of providers reporting they were prepared to discuss PR with patients and place referrals. Throughout the tracking period of this DNP project, providers had discussions about PR with 20 patients and made four referrals to PR. The root of these discussions and referrals is the education presented to providers throughout this DNP project. Providers were able to look at the current care they were offering and attempt to modify it to create improved care for the patient during the unfreezing period. The DNP student spoke with providers about their progress

in PR discussions and referrals bi-weekly. During this moving process, these check-ins, along with candy as a motivator, offered another reminder to providers about patients who would benefit, which lead to a spike in PR discussions during weeks five and six (as seen in Figure 5) when the providers thought of more patients that may benefit from PR. Learning how the group is best motivated to change greatly affected their progress. In addition, the one month follow-up revealed three more patient discussions and one more PR referral, demonstrating that this change to practice is sustainable without frequent reminders from this DNP student.

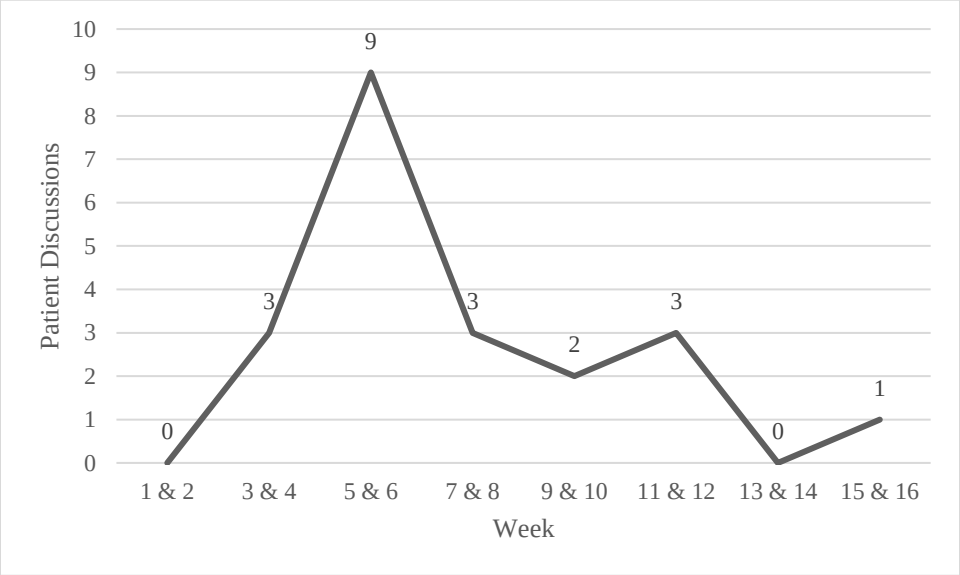

Figure 5. Number of PR discussions with patients over the 16-week intervention.

The most significant result shown by this DNP project is its impact on the providers at NQFP, and therefore the patient population. NQFP providers now appreciate PR as a valid intervention for their patients with COPD and are discussing its benefits with patients. This impact will increase even more as providers speak to their patients after completion of a PR program. The provider's understanding of PR greatly influences patient referrals. Due to this

DNP project, current and future NQFP patients with COPD have access to PR as an important aspect of their treatment and working towards better outcomes. This easily reproducible intervention can also be modified for use in other primary care offices where PR understanding and referrals are lacking.

Limitations

The major limitation to this project is that it is not generalizable. The focus was on a small primary care practice in an under-served area in Massachusetts with five providers. The sample size is too small to conduct higher testing to analyze the statistical significance of the results. This project relied on provider self-report to track their own PR discussions and referrals throughout the day. Providers may become too busy or distracted during their office hours to track each discussion. This DNP student attempted to minimize this limitation by asking each provider if he or she had any discussions or referrals to track during bi-weekly in person visits. These reminders helped providers to remember their PR discussions and also think of more patients who may qualify for PR. The final limitation is the short time frame of this project. A longer follow-up period may have been beneficial to further understand the sustainability of this change; however, providers may not have remembered their discussions with patients over a longer period.

Conclusion

This DNP project focused on provider education and a reminder system to successfully increase referrals to PR for COPD patients in a small family practice in New England. PR is an incredibly important intervention for patients with COPD as it has been shown to greatly improve the quality of life of these patients (Bentsen, Wentzel-Larsen, Henriksen, Rokne, & Wahl, 2012; Deepak, Mohapatra, Janmeja, Sood, & Gupta, 2014; Jancome & Marques, 2014;

Meis et al., 2014; Roman et al., 2013). Patients continue to suffer from poor access to PR due to lack of provider referrals (Johnson & Grimmer-Somers, 2010; Johnson, Young, Grimmer, Antic, & Frith, 2013; Rochester et al., 2015). This implementation project demonstrated a feasible pathway to enhance provider's knowledge about PR and the referral process with the intention of improving patient access to PR; ultimately the hope is to improve long-term quality of life and health outcomes for persons with COPD. Through provider education, this project increased provider discussions about PR with patients, as well as PR referrals. The success of this project has led to five patients being referred to PR, and the potential for many more patient referrals in the future at NQFP. This implementation project has caused a sustainable change to the usual care at NQFP and improved the quality of lives of many patients.

This quality improvement project has potentially extensive implications for practice. By understanding provider barriers to PR, this DNP student created an educational session for providers that led to a sustainable increase in PR discussions and referrals. The providers at NQFP now have the knowledge to continue this process independently. This project also leads to questions for future exploration. Ways to motivate patients to better their health and quality of life would be a factor to examine given that providers found that some patients who qualified for PR were not motivated to attend. Another possible future study would be if adding a smoking cessation intervention would improve referral rates. A similar project may show greater results if connected to a hospital and their providers. Translating the information that was learned here into a presentation for a larger health system may have a broader effect on more patients in the area and lead to more patients attending PR. This DNP project produced results that are expected to significantly improve the quality of life of COPD patients.

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Appendix A

Kurt Lewin's Change Theory

Figure A1
Lewin's three-step model of change

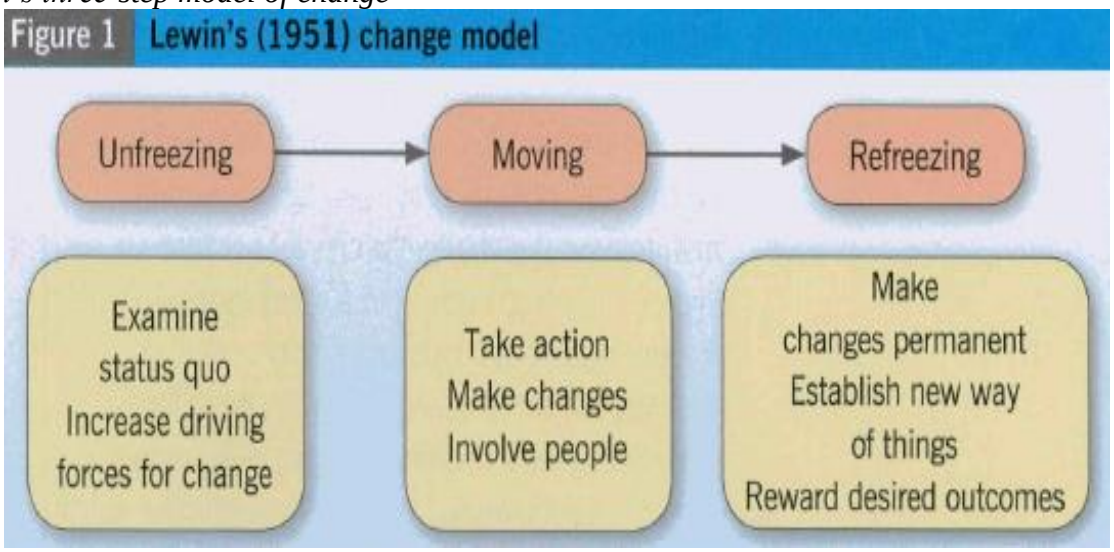
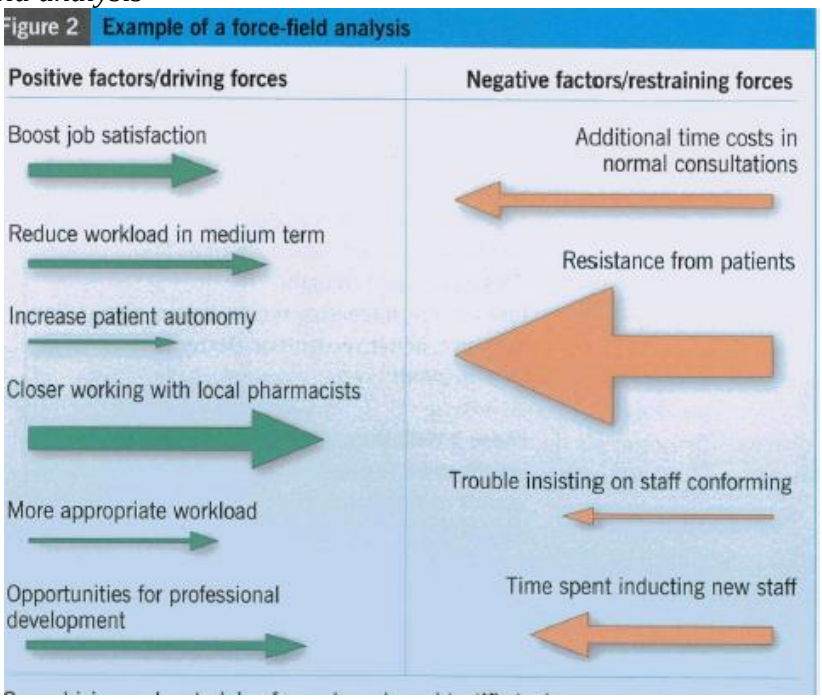


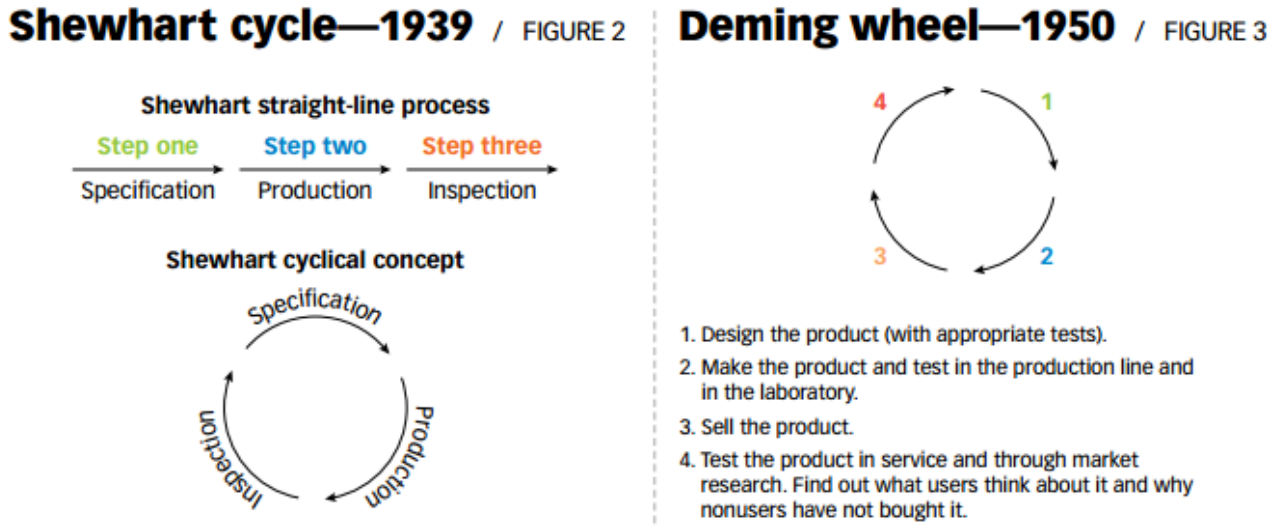
Figure A2
Lewin's force-field analysis

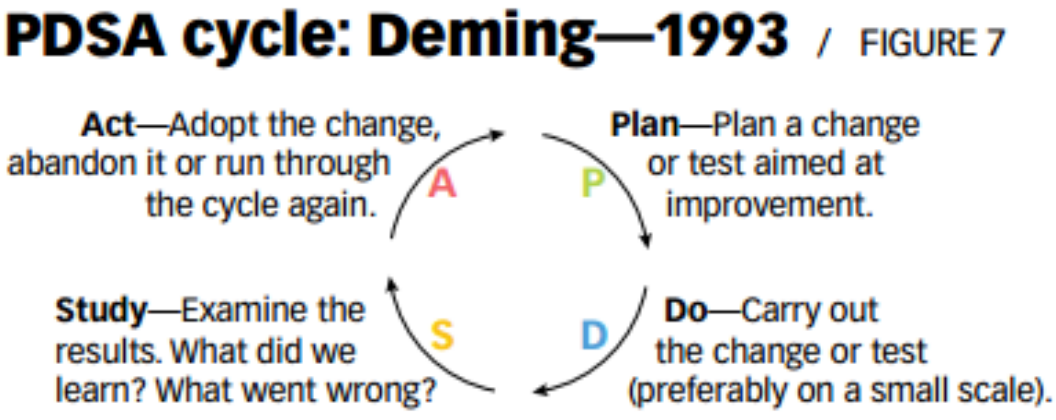


(Mitchell, 2013)

Appendix B

Deming's Plan-Do-Study-Act Cycle





(Moen & Norman, 2010)

Appendix C

Key Stakeholder Agreement

UNIVERSITY OF MASSACHUSETTS AMHERST **College of Nursing**
Skinner Hall
651 North Pleasant Street
Amherst, MA 01003-9304 **413-545-5089**

[date] 11/9/15

To Whom It May Concern:

I am the Director of the DNP Program at the University of Massachusetts, Amherst, College of Nursing. I am writing this letter on behalf of Shannon Barry, your student preceptee. Your student is planning to complete the pinnacle requirement for the degree, a DNP Capstone Project, in your facility. We appreciate you allowing our DNP student to complete the capstone practicum at your facility.

Your student will be designing, implementing, and evaluating the impact of an evidence based programmatic intervention in your practice or setting. The University considers these projects performance improvement, quality improvement, or program evaluation projects and not research studies. However, all students have completed Collaborative IRB Training on Human Subjects (CITI) and will follow HIPPA guidelines. Additionally, they will be presenting their projects to the Institutional Review Board (IRB) at UMass, Amherst for review of its impact on human subjects. If required by your facility, your student will also present the proposal to your review board before actualizing the project as outlined by the student and approved by the preceptor/s within your facility.

I am using this letter as a "Key Stakeholder" commitment letter for the student to add to the DNP Capstone Project Proposal. A graduate faculty member of the College of Nursing will also be working directly with your student as Chair of the DNP Capstone Project Committee. Thank you in advance for allowing this student to actualize the DNP Capstone Project in your facility. If you have any questions, please call me at 413-545-5089 or email paselton@nursing.umass.edu.

Key Stakeholder Signature: K McCullough FNP **Date:** 11/9/15

Student Signature: Shannon Barry **Date:** 11/9/15

Sincerely,

Pamela Aselton

Pamela Aselton, PhD, FNP-BC
Associate Professor
Director DNP Program

Appendix D

Pre- and Post-Questionnaire*

I am a:	MD	NP	
I have been a provider for:	<2 years	3-4 years	>5 years

Legend: Likert Scale: 1=No knowledge, 2=Not very knowledgeable, 3=Neutral, 4=Somewhat knowledgeable, 5=Very knowledgeable.

Please rate your current knowledge surrounding pulmonary rehabilitation.				
1	2	3	4	5
No knowledge →				Very knowledgeable

Please rate your current knowledge about pulmonary rehabilitation insurance coverage.				
1	2	3	4	5
No knowledge →				Very knowledgeable

Do you feel prepared to place a referral to pulmonary rehabilitation?		
No		Yes

Do you feel prepared to discuss pulmonary rehabilitation with patients?		
No		Yes

*Created by Shannon Barry, DNP student

Appendix E

Pulmonary Rehabilitation Referrals

Date	Provider Initials	Discussion about PR	Referral placed	Referral not placed	Reason not placed