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Chronic Obstructive Pulmonary Disease Action Plan: A Self-Management Tool

April B. Kim

University of Hawai'i, Mānoa

Chen-Yen Wang, Project Chair

Dedication

I dedicate this work to my husband Paul Jee Kim, who has been my support and constant drive to pursue the highest level of education within my nursing career.

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Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a complex progressive respiratory condition that eventually deprives the body of airflow and ultimately leads to complex exacerbation scenarios that can lead to death. In order to better manage exacerbation, an evidence-based project was produced that implemented a self-management tool in a form of a written COPD action plan used at a private pulmonary clinic in Oahu, Hawai'i. The goal was to implement a COPD action plan for patients in order for them to better manage and control symptoms and prevent further progression of exacerbations. The purpose of the project is to manage COPD exacerbations in the outpatient setting to decrease use of urgent care services including emergency department and hospitalizations. The setting of the implementation was at a private pulmonary clinic located at Pali Momi Medical Offices with a sample of 22 participants diagnosed with COPD. Data collection procedures included patient data collection from the clinic's electronic health records (EHR), a pre-survey, and a post-survey.

Keywords: Chronic Obstructive Pulmonary Disease, COPD, COPD action plan, selfmanagement, pulmonary, respiratory, outpatient Chronic Obstructive Pulmonary Disease Action Plan: A Self-Management Tool

Chronic Obstructive Pulmonary Disease (COPD) is an overwhelming condition that has multiple-dimensions. Patients with COPD often have poor health-related quality of life, report lack of social support, and dissatisfaction with life, and experience frequent mental and physical distress (National Heart, Lung, and Blood Institute (NHLBI), 2017). Because COPD is almost always experienced with comorbidities such as cardiovascular disease, diabetes, metabolic syndrome, and pneumonias, complications lead to frequent hospitalizations and emergency visits. COPD can limit a person's ability to breathe normally, leading to long-term disability and can dramatically affect one's quality of life (QoL) (NHLBI, 2017). Thus, in 2017, a national action plan goal was initiated by the National Heart, Lung, and Blood Institute (2017) to prevent long-term disability and increase QoL. One goal that is addressed in the national action plan is to decrease unnecessary hospitalizations and emergency visits by using better self-management strategies including a written action plan (NHLBI, 2017). The written action plan has the potential for improving the ability of patients to recognize COPD exacerbations and receive timely and appropriate treatment in order to reduce complications.

Background/Problem

A private pulmonary outpatient clinic at Pali Momi Medical Center in Aiea, Hawai'i, estimates approximately 290 patients are diagnosed with COPD, resulting in a large portion of the clinic's resources supporting COPD patients' healthcare needs. Using data obtained from the clinic's electronic health record (EHR), preventable readmission to the hospital or excessive urgent care visits were noted. The problem the project targeted was complications of COPD and symptom management by the patient. The problem is a priority of the pulmonary clinic since a large population of the patients are diagnosed with COPD. Therefore, proper management of this patient population will improve quality of care and reduce costs because much of the resources and time allocated to patients involve COPD patient needs. By decreasing time spent managing exacerbations, the clinic may be positively affected in a variety of facets including workflow, team work, patient education, phone calls, physical encounters, and overall customer service.

Literature Review

Search Strategy

A literature search was conducted using PubMed, CINAHL, Cochrane Databases, and the National Guideline Clearinghouse. Key words and MESH terms were strategically selected to identify search items for each aspect of the PICO statement. Terms included "Chronic Obstructive Pulmonary Disease AND Pulmonary Disease, Chronic Obstructive," "COPD action plan," "COPD self-management," "COPD exacerbation," and "COPD prevention." A total of 27 publications from 2000-2017 were reviewed and critiqued and 17 were selected based on relevance to the project.

Melnyk and Fineout-Overholt's model for level of evidence was adapted for assigning the literatures into the correct grade. The model categorizes into 7 levels, where Level I is the highest grade and Level VII is the lowest grade, shown in Figure 1. The total publications used for this project were then categorized into the correlating level and organized into a chart, shown in Figure 2.

Themes

self-management. Specific literature on the effectiveness of an action plan for COPD patients was limited. Instead, much of the systematic reviews on COPD management and prevention referred to an idea of self-management (SM) as a significant factor in both chronic

COPD day-to-day management and the decrease in hospital and emergency department (ED) visits (Clari, Matarese, Ivziku, & De Marinis, 2017, Level I; Jonkman et al., 2016, Level I). Therefore, the term *self-management* was added to the search terms. Due to the complexity of the term *self-management*. Effing et al. (2016) described an international (North America, Europe, and Australia) consensus for the final definition of self-management: "A COPD selfmanagement intervention is structured but personalized and often-multi component with goals of motivating, engaging supporting the patients to positively adapt their health behavior(s) and develop skills to better manage their disease" (Effing et al., 2016, p.50). SM entails various components that collectively provide best practices. COPD SM is key to decreasing hospitalizations and urgent care visits while decreasing complications of COPD exacerbations and preventing breathlessness (Newman et al., 2017, Level I; Sánchez-Nieto et al., 2016, Level II). In addition, SM consistently revealed significant improvement in quality of life by empowering patients with COPD through education, better preparing patients to recognize their own signs and symptoms of early exacerbations, thereby preventing the symptoms from worsening (Murphy, Harrington, Taylor, Teljeur, Smith, Pinnock, & Ryan, 2017, Level I; Newham et al., 2017, Level I; Wang, Tan, Xiao, & Deng, 2017, Level I).

clinical practice guidelines. Clinical practice guidelines (CPGs) for COPD include the Global Initiative for Chronic Obstructive Lung Disease (GOLD)'s *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease* (2018), and the *COPD National Action Plan* (2017), which was only recently launched by the National Heart, Lung, and Blood Institute (NHLBI). Both CPGs stress the importance of empowering patients through written and verbal education from healthcare providers, in order to recognize escalation of symptoms and seek necessary treatment in a timely manner. The guidelines encourage use of a COPD exacerbation action plan with an education component in conjunction with consistent ongoing support from healthcare providers (GOLD, 2018; NIH, 2017).

copd action plan. Within the concept of SM is the COPD action plan, which serves to educate patients and caregivers about changes in symptoms and condition level. The plan is a COPD management guide and tool that helps the patient or their caregiver to recognize the changes in their symptoms and aid the patient to the best action that they should take at that time. Literature reveals that using an action plan or SM programs that include action plans significantly reduced hospital admissions and decreased exacerbations from worsening (Howcroft, Walters, Wood-Baker, & Walters, 2016, Level I; Bourbeau, & Saad, 2013, Level I)

Conceptual Model

The Iowa Model of EBP was used as the framework for this project. The model promotes quality care through research utilization and provide guidance for nursing in making decisions about practice (Lee, Martinez, Earl, Florio, & Rasmussen, 2013). The steps of the model included (1) problem identification, (2) forming a team, (3) critique of the relevant literature, (4) implementing practice change, and (5) dissemination of findings (Titler et al., 2001). All steps were demonstrated and actualized throughout the course of the project. First, the problem was identified in Chronic Obstructive Pulmonary Disease (COPD) patients who experienced exacerbations that required urgent care visits. The problem was identified as the lack of understanding the COPD action plan on the patient's part due to absent or misunderstood education. The second step was the involvement of gathering information and ideas between providers (Dr. Pollard and nurse practitioner), staff (administrative, nursing), and the student executing the project. Step three was the research process and literature analysis to determine the best method of COPD education. The fourth step actualized the intervention by producing

the material and implementing the change within the clinic. Finally, the project applied step five, which was composed of analysis of results and actual outcome of the intervention and determined the sustainability of the potential benefit. Appendix A is a simple algorithm that explains the practical steps of the Iowa Model. Intervention of a COPD action plan was an appropriate intervention for my project as literature supported the intervention and indicated positive outcomes.

PICO

The PICO question is: In adult COPD patients at a private outpatient clinic (P), how does implementing a COPD action plan (I) affect COPD symptom management and quality of life(O)?

Purpose & Goals

The purpose of this DNP project was to decrease COPD exacerbations by utilizing a COPD action plan (written form) in COPD patients 18 years of age and older, which would prevent further complications leading to use of urgent care services outside of the clinic. Urgent care services included urgent care visits, ED visits, and hospitalizations. A short-term goal was to produce a knowledge among stakeholders (Dr. Pollard and nursing staff) that an education intervention was needed to change patient behaviors. The medium-term goal was for the providers to use the COPD action plan during the patient's visit and for patients to continue to use the information on action plan at home. Finally, the long-term goal is for the clinic to continue using the COPD action plan for educating patients within their individual plan of care to further prevent exacerbations in the future. This would decrease overall mortality rates, reduce financial costs within the clinic, and increase quality of life for individual patients. The project is a patient-focused approach with an overall objective goal to reduce urgent care visits,

hospitalizations, and increase management of COPD symptoms prior to exacerbations. Furthermore, the components of the objectives will result in patients experiencing less exacerbation episodes, increased correct use of medications, report of higher quality of life, and decreased need for urgent care services by the patients.

Methods and Procedures

Project Design

The project was an evidence-based practice (EBP) implementation, which Dr. Sackett, the pioneer of evidence-based medicine, defines as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p.71). Evidence alone does not dictate decision. The EBP includes best research evidence as well as clinical expertise and patient values and preferences. Main concepts from literature review and national clinical guidelines steered the project towards the recommendation that a SM tool or program with support is a necessary and appropriate intervention for the management and prevention of COPD exacerbation. Therefore, SM can then be further translated into a COPD action plan, which individualizes the plan of action for each patient and follows specific steps for management. The intervention of the COPD action plan can further advise patient instructions, considering the level of patient complexity (GOLD, 2018; COPD National Action Plan, 2017). A basic sample of the action plan is provided (see Appendix B). The project was implemented using pre-and post-surveys for outcome analysis. The questionnaire was developed by the student and approved by the content expert.

Human Subjects Consideration

The DNP project did not require an institutional review board (IRB). An IRB is needed for projects that meet the definition of research, involve human subjects, and include any interaction or intervention with human subjects or involve access to identifiable private information. Although, the project involved the latter two, it does not meet the definition of research (Boston University, n.d.). The project was an evidenced based quality improvement project. Informed consent was obtained prior to giving the pre-and post-survey as well as prior to giving education on the COPD action plan during the patient's regular visit with a provider. The project protected participants' rights because all information was confidential with only the student having access to the data. In addition, all information containing any patient information was destroyed by shredding once data was collected and analyzed. Due to the low risk of providing education and improving awareness, there was very low risk involved.

Sampling Plan

The project setting was at Dr. Thomas Pollard's private pulmonary clinic located in the Pali Momi medical offices. The sample size was 22. The sampling procedure was purposive and convenience as the sample is a specific population and was not chosen in advance. The sample was randomly chosen throughout the day as COPD patients came in through the clinic for their already scheduled visits. Inclusion criteria included patients who were 18 years or older diagnosed with COPD, who regularly came to Dr. Pollard's private clinic (regular meaning comes to see the provider at least three times a year). Exclusion criteria included those unable to read or speak English as the COPD action plan was only in English. Marketing the project was through the nursing staff when they asked participants for informed consent in their rooms while waiting to be seen by the provider. Most of the participants were existing patients and were reminded participation was not required. Nursing staff and providers encouraged patients to

participate as it was part of their existing visit and gave additional education regarding their current COPD condition.

Chronological Order of Data Collection

The project implementation began in August 2018 and ended January 2019. A Gantt chart is provided as a visual overview of the project timeline (see Appendix C). The data collection process was as follows in chronological order: (1) The project was explained to the COPD patient and the patient signed a consent form to participate. (2) The patient completed the pre-survey prior to implementation of the SM intervention (Appendix D). (3) Implementation of the COPD action plan was completed during the office visit by the provider or student. (4) The COPD action plan was used to educate patients and was specific to their level of COPD condition. Education included medication overview and important recommendations to each individual patient. (5) The patient went home and used the COPD action plan as a visual reminder and source of guidance. (6) The patient completed the post-survey (Appendix E). (7) The student gathered all results of the pre- and post-surveys and analyzed the overall outcome producing trends.

Results

Objectives

The overall underlining objective to this evidence-based practice initiative was to promote awareness and understanding of COPD, especially among patients and their caregivers in order to decrease COPD exacerbations and increase the quality of life among the COPD population. Using the COPD action plan as an SM tool was the major piece of this initiative as it educated and empowered patients and their caregivers to recognize and reduce the burden of COPD by giving informative and constructive instructions for each individual.

Sample Description

22 patients participated in the COPD action plan project. All patients were diagnosed with ICD code J44.9 chronic obstructive pulmonary disease within the clinic's EHR program Advanced MD. Through the Advanced MD application, information including patient diagnosis/problem history, medication list, immunization record, past encounters, and demographics were obtained. All patients were 18 years of age or older and were regular patients at the clinic, as evidenced by being seen at least three times a year. Most patients were between the ages of 40s and 60s. 82% of patients were Asian or Pacific Island. Asians mainly included Filipino and Japanese descent. This was mostly likely due to the implementation location (Oahu, Hawai'i) rather than disease prevalence indication. Gender was almost equally divided, with 54% male and 46% female.

Trend Analysis

This project was a quality improvement analysis with data conveying trends and patterns that would determine significance in order to make projections. Hence, statistical data and randomization were not used in this project. A change or tendency was materialized using simple data from the pre- and post-surveys with a minimum of a three-month gap after the intervention was implemented; gaps ranged from three months to five months. All pre-surveys were completed between August 2018 to October 2018 and included the COPD action plan education during that same visit. All post-surveys were completed by end of January 2019. Both pre- and post-surveys had three identical questions: (1) In the past 6 months, how many times have you used urgent care services due to complications of COPD? Here, urgent care was defined for them as including "urgent care clinics, emergency department visits, and hospitalizations." (2) In the past month, how many times a week have you used your rescue

inhaler? (3) How would you rate your quality of life? The operational variables were number scales for all three questions. The post survey had one additional question: (4) Did you feel that the COPD action plan aided you in better managing your COPD symptoms than before? The operational variables were yes, no, made no difference, and the last variable was added to the survey (can't remember). This was not expected, but as patients were asked months later to recall, four participants could not recollect the COPD action plan. These patients were suffering from either a mild case of dementia or admitted they truly had a hard time remembering months prior to the post-survey.

urgent care services. A positive result expected by the intervention of the COPD action plan was to see a decrease in the use of urgent care services as a measurable outcome. A simple bar graph was created to compare the pre- and post-survey from question one. The x-axis represents the four answers offered in the survey and shows the number of times a patient had to use urgent care services due to a COPD complication. The y-axis represents the number of participants. Overall, less urgent care services were used after implementing the COPD action plan. The number of participants answering that they had never used the urgent care services in the past six month increased by 22.7%. Taking a closer look at the raw data, 100% of participants who answered 0 to the pre-survey also answered 0 to the post-survey, meaning all those patients were able to continue to manage their symptoms without having episodes, in addition five participants changed their answers from 1 to 0, meaning they were better managing their COPD symptoms after the intervention (see *Figure 1*).





rescue inhaler. Adherence to both maintenance and rescue inhalers are the cornerstone of managing COPD (Tashkin, 2016). Most patients are routinely using their maintenance inhalers, however rescue inhalers are used to relieve sudden respiratory symptoms and provides quick relief. The frequency of using the rescue inhaler was a measurable variable and was thought to be a good indicator for better managing symptoms for patients. As part of the COPD action plan, education was given on how and when to use the rescue inhaler. Another pre- and post-survey comparison graph was created. Similar to the first question, the x-axis represents the five answers offered in the survey and shows number of times the patient had to use their rescue inhaler in a week. The y-axis represents the number of participants. 68% of participants responded that they use their rescue inhaler four or more times a week (highest on the survey

scale) and this number did not significantly decrease. However, an overall change did occur. Five out of the 22 participants decreased the amount of rescue inhaler use from one level to the next. (see *Figure 2*). Still, it cannot be determined if the intervention was the direct cause for change or if the patient decided not to be compliant to their medication as rescue inhalers can be underused.





quality of life. Quality of life (QoL) is almost always impaired with patients diagnosed with COPD and deteriorates as the disease progresses in time (Jones, 2016). A QoL question was asked to assess if the COPD action plan could've had any impact to the patient's QoL. The patient was asked to rate their QoL from a scale of 0 to 10, where 10 was the highest and 0 was lowest. QoL was not defined, but left interpreted by the patients. The data was divided into four different ranges. Pie charts were created for both pre- and post-surveys to compare percentage outcomes. For the pre-survey, 41% of participants answered that they would rate their QoL 9-10, while another 41% of participants answered that they would rate their QoL 6-8. Then 14% of

participants answered 3-5, and finally 4% of participants answered 0-2. Overall, there was a significant improved shown from the post-survey as 75% of participants rated QoL 9-10 and 23% of participants rated QoL 6-8. Then 4% of participants responded QoL 3-5, then)% of participants rated 0-2. When investigating closer, 50% of participants increased their rate answers by at mean of at least one point. Meanwhile, 22.7% of participants did not change their answer. 27.3% of participants decreased their answers by an mean of 2.2 points (see *Figure 3a* and *3b*).





Figure 3a. Question #3 Pre-Survey: How would you rate your quality of life? This figure demonstrates responses prior to the COPD action plan. intervention.

Figure 3b. Question #3 Post-Survey: How would you rate your quality of life? This figure demonstrates responses after the implementation of the COPD action plan. participant's opinions on copd action plan. Finally, participants were asked exclusively within the Post-Survey if they felt that the COPD action plan aided the participants in better managing their COPD symptoms. A simple bar graph was created to demonstrate outcomes. The x-axis represents the number of participants and the y-axis represents the four answers of yes, no, made no difference, and can't remember. 59% of participants felt that the COPD action plan did help them in managing their symptoms better while 0% of participants did not say the action plan was not helpful. However, 22.7% of participants felt the action plan made no difference, while 18% of participants could not recollect the COPD action plan itself (see *Figure 4*).



Figure 4. Question #4 Post-Survey: Did you feel that the COPD action plan aided you in better managing your COPD symptoms than before? This figure shows the responses of the participants post implementation in four answer categories: yes, no, made no different, or can't remember.

Discussion

The expected outcomes for this project was to determine if an implementation of a written SM tool (COPD action plan) would better manage COPD symptoms and prevent exacerbations such as respiratory distress that would require urgent care services. The goal was to promote education and self-management to patients and their caregivers (if present during implementation) to increase awareness of COPD and empower patients to initiate specific steps in order to stop COPD episodes from escalating to a complication that could potential lead to urgent care scenarios like hospitalizations. The expected outcome was to establish a positive impact a simple SM intervention could have on the COPD patient population.

Interpretation of Findings

All findings for this EBP project were based on patterns, trends, and percent comparisons because the project aimed to improve quality by implementing an established EBP standard from available literature. The comprehensive result is that COPD action plan had a positive impact on patient symptom management as the intervention did decrease urgent care services in the span of three to six months revealed through the first question of the surveys. Some factors may have included, the patient being reminded of using their medication correctly and reinstruction of adhering to their regimen consistently, all of which were part of the COPD action plan. Additional patient education in regards to recognizing exacerbation symptoms and preventing worsening of shortness of breath by using their rescue inhaler may have prevented flaring episodes.

The second question in regards to the use of the rescue inhaler showed some positive changes, but may not have been significant enough to show a great deal of benefit. Much of the data did not change drastically, as many participants seemed to have used the rescue inhaler more

or less the same. Moreover, many of the participants are using the rescue inhaler in adjunct to their maintenance inhaler routinely, so it was difficult to conclude that the correlation to the COPD action plan and the decreasing use of the rescue inhaler was in fact a direct relationship.

Amongst the outcomes, the third question in regards to QoL may have been the most evident to a significant impact as 72.7% of participants either stayed the same or improved the QoL post intervention. This may have been due to better understanding of their condition or feeling more comfortable about their medications or symptom management. It may also have been related to the improvement of properly using their inhalers as specific steps were shown at the clinic.

Lastly, the results showed that 59% of participants appreciated the COPD action plan because it did aid them in better managing their COPD symptoms. Many of these participants stated that the COPD action plan was a great visual to use at home and appreciated the education and time given to teach about the importance of correctly taking medication and knowing the difference between maintenance and rescue inhalers. Others appreciated the education time related to understanding symptoms and tips to prevent exacerbations. Those who responded that the COPD action plan made no difference stated that they already felt that the provider was implementing all the objectives the COPD action plan included, so they were not sure if the COPD action plan improved their current condition or significantly added to their presently existing plan of care. In addition, some argued that their current state would never improve, but only get worse. Interestingly, a few did not remember the education given through the COPD action plan because they were simply unable to recall that far into the past. If more time was permitted for this project, it would have been worthwhile to implement the intervention every month for six months. This might have solved the problem for those participants unable to recall and made a more pronounced outcome.

Limitations

There were many limitations realized from initial project development, within the various process points, as well as during implementation and data collecting of the project. Each limitation had its own barriers and differing factors, most of which could not be changed. Time was one limiting factor as the project had a specific time frame for implementation period. Because the measuring outcome needed more time for the intervention to be substantially actualized, the resulting data was limited. If more time was available, the intervention could have been repeated another time to see if the COPD action plan made a stronger impact. In addition, because the measuring factor was to see if exacerbations were managed, more time would've permitted opportunities for patient responses to these scenarios, since not every patient would experience exacerbations regularly nor frequently. Another limitation was related to the workflow and limited? amount of staff to implement the COPD action plan, but due to newly hired staff and limited staff availability, the student had to substitute frequently for the project.

Demonstration of DNP Essentials

The DNP Essentials outline eight foundations of the DNP degree, which has been demonstrated and integrated throughout this project (AACN, 2006). The project has implications for each of the foundations and has realized the essential standards for doctoral education for advanced nursing practice.

essential i: scientific underpinnings for practice.

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Scientific foundations are the basis from which best practices are generated. The project was built on scientific foundations involving natural and social sciences including human biology, physiology, and psychology that enabled the systematic inquiry and evaluation of the highest level of nursing practice into problems associated with illness, health, and care.

essential ii: organizational and system leadership for quality improvement & economics.

The project developed and evaluated care delivery approaches that met a specific patient population's need based on scientific nursing findings in order to increase quality improvement within the organizational, political, and economical domain of the involved setting. Understanding principles of business, finance, economic, and health policy during the project development brought comprehensive analysis of cost effectiveness of practice initiative accounting for risk and improvement of health care outcomes.

essentials iii: evidence-based practice/translation science.

Scholarship and research characterized by discovering new phenomena and applying new ideas to improve complex practice situations are the hallmarks components of doctoral education. Literature review analysis and applying relevant evidence-based interventions for positive patient outcome were basic goals and the fundamental framework of this project.

essentials iv: information systems/technology.

Information systems or technology and patient care technology for the improvement and transformation of health care is demonstrated throughout various stages of this project as collecting, analyzing, calculating, and producing meaningful information through technology became an absolute requirement evaluate interventions outcomes. Various technology

applications were applied throughout the course of the project for design, selection, use, and evaluation.

essential v: health care policy & ethics.

The project had the capacity to engage proactively in the development and implementation of health policy at various levels including institutional, local, state, regional, federal, and international levels. By choosing a patient population representing almost every level to influence, the project is able to illuminate the importance of leadership role in the community.

essential vi: inter-professional collaboration.

In order to accomplish safe, efficient, quality care centered around individual patients, healthcare professionals must function in highly collaborative teams. The project included the input and guidance of diverse healthcare providers including provider specialist, nursing staff, medical support, and administration.

essential vii: prevention and population health.

Clinical prevention and population health was the mainstay of the intervention used in this project as it targeted a specific group sharing in characteristics such as diagnosis, location, and culture. A large portion of the education and implementation of best practices were to promote patient health and quality of life as well as prevent disease progress.

essential viii: advanced nursing practice and education.

By the conclusion of this project the student has refined assessment skills and base practice on the application of biophysical, psychosocial, behavioral, sociopolitical, cultural, economic, and nursing sciences as appropriate in the area of specialization. The initiation, process, and outcomes of project interlaces the foundational essentials crucial to the embodiment of advance nursing practice principles.

Summary

An implementation of an SM tool such as the COPD action plan proved valuable and significant in the symptom management and prevention of COPD exacerbation. In summary, it decreased exacerbations that could have possibly lead to urgent care usage and may have decreased the need for additional rescue inhaler usage. In addition, it increased the quality of life and awareness of the COPD population and their caregivers. Overall, the intervention was received positively by the patient population as appreciation and understanding of disease condition and management were realized. Although there were limitations to time and workflow adaptabilities, it seems likely that a smoother integration of the intervention may result in a more compelling outcome.

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Appendix A

The Iowa Model of EBP Algorithm (Titler et al., 2001).



Note: Used with permission from the University of Iowa Hospitals and Clinics and Marita G. Titler, PhD, RN, FAAN. © 1998. For permission to use or reproduce the model, please contact the University of Iowa Hospitals and Clinics at (319) 384-9098.

Appendix B

COPD Action Plan, front and back (Asthma Foundation NZ, 2017).

COPD Action Plan	Dr. Thomas W. Pollard, FCCP Pulmonary • Critical Care • In Name: Date of plan:	hternal Medicine • Sleep Medicine (Pali Momi Medical Center) / Address : <u>98-1079 Moanalua Rd., Suite 570 Aiea, HI 96701</u> Doctor phone: <u>808}486-0600 Fax: 808}465-1947</u> Email: dr.tpollard@gmail.com
SYMPTOMS		MEDICATIONS
<pre>WHEN I AM WELL I</pre>	Stop smoking and avoid smoky places Exercise every day Always keep enough medicine Vaccines: Flu Years Pneumonia My FEV:L% predicted	Reliever @ puffs as required @ puffs Other @ puffs @ puffs times a day @ times a day
BECOMING UNWELL • More breathless, wheezy or coughing • Change in amount and/or colour of sputum • Tired, not hungry • Not sleeping well • Increase cough	 WHAT TO DO If you have a fever and/or yellow/green sputum start antibiotics and see your doctor Clear sputum with huff and cough techniques Eat little and often Use the breathing tips 	Continue your usual medications, & rescue as needed Start the following medications: times a day
REALLY UNWELL If no better in days	Contact the doctor for an urgent review Daytime tel: 808)486-0600	Continue your usual medications, & rescue as needed Start the following medications: times a day
 EMERGENCY Very short of breath at rest Chest pains A feeling of agitation, fear, High fever drowsiness or confusion 	Dial 911 for an ambulance	Supplies/Oxygen Company Name: Doctor: Dr. Pollard Date plan prepared / Review Date: /

Allergy	Glance ²⁰¹⁶	M = Maintenan	alers	Altergy & Asthma Network is nonrordk organization dedica medicas deals net suffering outreach, education, advocation Altergy	Learn More at a national test to astrong with research. AsthmaNetwork.org
Short-acting beta_agonist bronches Short-acting beta_agonist bronches Profile Broker Broke	Har Hinde Harden	Xopenex HFA* Invadorent Common	Long-acting beta ₂ -4 Accepta Nachter Instanter Instanter ⁻ Instanter ⁻ Instante	Agonist bronchodilate arevent* liskus* match acceler areas a	800.878.4403
Inhaled corticosteroids Areasy Areasy Total	Acranov [®] HEA Bridge Acranov [®] HEA Construction Acranov	Asmansx* Tvistbalar* 110 mg. 20 mg more and power power power and triangle and triangle and	Vent" Dickus" trag too Insta- mer ser too too too too too too too to	Ag. 200 mtg. horster Storater	Al registration of the second
Combination inhaled corticosteroit	Elips a 20075 mg robustor robusto	Symbicart* (HFA) Bicks, 10043 Construction Antiparticipart	are*Elipa megEn ang abutor and anter are partial are	Sticholinergic and long	Acting betaagonist Utibros 23 ang 15 Anno photosomoute
Anticholinergics Anticholinergics Attrought* HFA Bener Bener Bener Bener B	Hicruse® Elipta® unresolution available IIII @	Val IH and the second s	Tudorza material De Control Co	Combinations of the second sec	on inhated anticholipergic acting betay agonist

Appendix C

Gantt Chart: Timeline for Implementation of DNP Project

Objectives			2018			2018			2018			2018			2019	
A	R&D/Testing Specific Aims	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	AIM 1: Find a problem															
1.1	Interview stakeholder and all involved															
1.2	Literature Review															
2	AIM 2: Produce COPD action plan															
2.1	Gather feedback from stakeholders and gather guidelines															
2.2	Produce physical COPD action plan					_										
3	AIM 3: Implment the COPD action plan															
3.1	Educate nursing staff and providers on using plan															
3.2	Pre-test disbursement															
4	AIM 4: Evaluations															
4.1	Interview stakeholders and nursing staff for outcomes															
4.2	Post-test disbursement															
в	IP/Commercialization Strategy															
1	Goal 1: Get buy in on stakeholders/administrators															
2	Goal 2: Get patients to participate	1.11 1.11														
3	Goal 3: Have COPD action plan on display															
с	Regulatory Strategy															
1	Goal 1: DNP Proposal to stakeholders meeting															
2	Goal 2: Project Chair approvals															
3	Goal 3: DNP project presentation															
D	Follow on Funding Plan															
1	Administrator meeting for finance															
2	Calculate cost for action plan production															
3																
4																

Completed Projected

Appendix D

Pre-Survey

1. In th	he past	6 mon	ths, how	many 1	times h	ave yo	u used	urgent c	are serv	rices due	to
compli	cations	s of CO	PD? (Ci	ircle on	e)						
(Urgen	t care	services	include	e urgent	care c	linics, l	ED visi	ts, and l	nospital	izations)	
0				1				2			3 or more
2. In th	he past	month	, how m	any tim	es a w	eek hav	ve you ı	ised you	ır rescu	e inhaler	? (Circle one)
0			1			2			3		4 or more
3. Hov	v woul	d you r	ate your	quality	of life	e? (Circ	le a nu	mber-10	is the l	nighest)	
0	1	2	3	4	5	6	7	8	9	10	
$\overline{\mathbf{O}}$										\odot	
Please	Please sign and print name below:										
X								Date: _			_

I consent to participate in the study.

Appendix E

Post-Survey

1. In the past 6 months, how many times have you used urgent care services due to										
complications of COPD? (Circle one)										
(Urgent care services include urgent care clinics, ED visits, and hospitalizations)										
0			1				2			3 or more
2. In the p	ast month	n, how i	many tii	mes a w	eek hav	ve you i	used you	ur rescu	e inhaler	? (Circle one)
0		1			2			3		4 or more
3. How w	ould you	rate you	ur quali	ty of life	e? (Ciro	cle a nu	mber-1() is the l	nighest)	
0 1	2	3	4	5	6	7	8	9	10	
$\overline{\otimes}$									\odot	
4. Did you feel that the COPD action plan aided in better managing your COPD symptoms than										
before?										

Yes No Made no difference I can't remember