Spring 4-4-2022

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DOI: https://doi.org/10.46409/sr.UGVN8784

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This Manuscript Partially Fulfills the Requirements for the

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Approved: April 4, 2022

Abstract

Practice Problem: Chronic obstructive pulmonary disease (COPD) readmissions severely impact patients' health, mortality, and quality of life and increase unnecessary healthcare use and spending. Utilization of a protocol and discharge care bundle to reduce the readmission rate for COPD patients is critical to combat the problem.

PICOT: The PICOT question that guided this project was in adult patients 65 years or older admitted to a hospital acute care unit for acute exacerbation of COPD (P), does a protocol and discharge care bundle (I) compared to no protocol and no discharge care bundle (C) reduce the 30-day hospital COPD readmission rate (O) within 10 weeks (T)?

Evidence: A review of the evidence supported the implementation of a discharge care bundle to reduce the COPD readmission rate for this project.

Intervention: The evidence-based intervention utilized the implementation of a protocol and discharge care bundle. The bundle included COPD education, action plan, inhaler technique, referral to smoking cessation or pulmonary rehabilitation programs, and a follow-up visit.

Outcome: Results showed an 18.2% readmission rate for the pre-intervention group and a 16.7% readmission rate for the post-intervention group; both were lower than the national average of 19.6%. However, data analysis using a two-tailed paired samples t-test found the findings were not statistically significant.

Conclusion: The project achieved a COPD readmission rate less than the national average, but the results were not statistically significant. However, the project demonstrated clinical significance in providing a foundation to improve the clinical care process for COPD patients.

Discharge Care Bundle to Reduce COPD 30-Day Readmission Rates in a Hospital Acute Care Unit

COPD is "a common, preventable, and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities" (Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2021, p. 4). In the United States, COPD is the fourth leading cause of death; an estimated 30 million Americans are living with the disease (Tiep & Carlin, 2017). According to Njoku et al. (2020), acute exacerbation of COPD (AECOPD) is one of the main reasons for hospitalization and readmission, which severely impact both the patient and the healthcare system. Researchers have found that, with the implementation of a discharge care bundle, healthcare organizations can decrease AECOPD and significantly reduce hospital readmissions (Laverty et al., 2015; Parikh et al., 2016; Press et al., 2021).

Significance of the Practice Problem

COPD is a significant burden on the healthcare system and can significantly impact patients' health status and quality of life (Ospina et al., 2017; Parikh et al., 2016). The World Health Organization (WHO, 2017) estimated there were more than 3.17 million deaths from the disease in 2015 and over 251 million cases of COPD globally in 2016. In the United States, AECOPD accounts for approximately 700,000 hospitalizations with an estimated annual economic impact of $18 billion (Myers et al., 2020). According to Jacobs et al. (2018), almost "…one-fifth of patients with AECOPD will be readmitted within 30 days, with approximately one-third occurring within one week and the highest daily rates of readmission (4.2–5.5%) within the first 72 hours" (p. 837). Some of these readmissions are considered preventable.

Decreased readmission can lead to improvements in patients' health status and quality of life while reducing unnecessary healthcare use and spending (Myers et al., 2020).

Patients readmitted to the hospital have a higher mortality rate, shorter long-term survival period, poorer quality of life, longer hospital stay, and increased recurrence of readmission (Njoku et al., 2020). Patients 65 years or older were at higher risk for death and rehospitalization after admission for AECOPD (Genao et al., 2015). The mortality risks for this group within 30 days was 4.6%, and the estimated 30-day all-cause rehospitalization rate was between 20 to 23% (Genao et al., 2015). Moreover, about 15% of these patients were readmitted within 28 days (Vernon et al., 2019).

The Hospital Readmissions Reduction Program (HRRP) was established to address the problems of hospital readmission and the rising cost of care in the Medicare population (Ohar et al., 2018; Zafar et al., 2017). The HRRP was designed to encourage hospitals to reduce readmissions. Hospitals can be penalized up to three percent of their total Medicare reimbursement for all discharges if they fail to stay below their expected readmission rates (Jacobs et al., 2018).

The hospital chosen for this project did not utilize care bundle interventions for patient care post-hospitalization. Instead, nurses or respiratory therapists provided patient education and review care plans for active and home care. This process, however, had been inconsistently applied; therefore, its impact on readmissions had been subpar.

The hospital's COPD readmission rate for 2016-2019 was 24.3%, which was higher than the national rate of 19.6% (Centers for Medicare & Medicaid Services [CMS], 2021). As a result, the hospital was penalized $280,865 for the overall total 30-day hospital readmission (including COPD readmissions) from July 1, 2016 through June 30, 2019, and the hospital was

expected to receive a similar penalty for 2021. The average COPD readmission rate for May 2020 through April of 2021 was 23.5%, with a rate of 50% for the month of April 2021 due to the low number of patients (n = 6) discharged and a high number of readmissions (n = 3).

Reducing AECOPD readmissions was a high priority for the hospital because patients' health, mortality, and quality of life were severely impacted. The problem of hospital readmissions increases the cost of medical care. The significant loss of CMS reimbursement from readmissions can lead to revenue losses for the organization and increase the cost of healthcare services. Implementing a protocol and discharge care bundle was intended to help reduce the readmission rate for COPD patients.

PICOT Question

In adult patients 65 years or older admitted to a hospital acute care unit for acute exacerbation of COPD (P), does a protocol and discharge care bundle (I) compared to no protocol and no discharge care bundle (C) reduce the 30-day hospital COPD readmission rate (O) within 10 weeks (T)?

Population

The population for this project included all adults ages 65 years or older admitted to the hospital acute care unit for AECOPD.

Intervention

The intervention for this project was implementation of a protocol and discharge care bundle for adult patients 65 years or older admitted to a hospital acute care unit for AECOPD. COPD discharge care bundles can significantly reduce hospital COPD readmissions (Ospina et al., 2017; Michas et al., 2020; Parikh et al., 2016).

Comparison

As of 2021, the organization did not utilize a standard discharge care bundle for AECOPD patients. Patients were discharged with standard general instructions or specific care recommendations depending upon the hospitalist or intensivist. Discharge instructions varied greatly and may or may not have included new medication, current medication, COPD education, inhaler education, smoking cessation, pulmonary rehabilitation program, or follow-up visits. Pre-intervention data were collected and compared to post-intervention data.

Outcome

The primary outcome was a reduction in the 30-day COPD readmission rate. The 30-day readmission rate was identified as the percentage of 30-day readmissions occurring each day (days 1–30) after discharge (Jacobs et al., 2018). In addition, only the first rehospitalization within 30 days of the discharge were counted as a 30-day readmission (Jacobs et al., 2018). Secondary outcomes included: 1) increased utilization of smoking cessation and pulmonary rehabilitation programs; and 2) improved patient education and inhaler technique.

Time

The timeline for implementation of this project was 10 weeks. Pre-intervention data were collected to establish a baseline for the 30-day COPD readmission rate. Participants were then followed for 30 days post-discharge for 10 weeks to collect data for post-intervention and outcome measurement comparison.

Evidence-Based Practice Framework and Change Theory

The Johns Hopkins Evidence-Based Practice (JHNEBP) Model was the framework for this project (Dang & Dearholt, 2017). Its three-step process of practice question, evidence, and translation (PET) provided an established approach to evidence-based practice (EBP) change. In the first step, the organizational problem was determined, the practice question was identified,

and the project team was formed. During the second step, a thorough literature search was performed to find the best evidence to answer the question. Internal and external sources of evidence were searched, appraised, and synthesized using some of the JHNEBP tools (i.e., evidence level and quality guide, research evidence appraisal tool, individual evidence summary tool, and synthesis process and recommendations tool). Permission to use the JHNEBP tools can be seen in Appendix A. After the literature review was the third and last step, which was translating the evidence into practice. This included creating and implementing an action plan, evaluating outcomes, and disseminating the findings.

Kotter's 8-step Change Model was helpful to guide successful management of change (Baloh et al., 2018). The first step of Kotter's model was to create a sense of urgency, which was accomplished by sharing the scope of the problem and the plan for change. During step two, build a guiding coalition, key stakeholders were identified and the project team was formed. Next, the project plan, mission, and objective were communicated to the key stakeholders and project team. In steps four and five, engagement of key stakeholders, including staff and organizational leaders, was necessary to encourage buy-in and preparation of the organization for change. After implementing the intervention, weekly reports regarding the project and milestone achievements were communicated via email to key stakeholders to generate short-term wins and to address care gaps. Continual engagement of stakeholders occurred throughout the change project and dissemination to maintain their support. Finally, the discharge care bundle was incorporated into the organization's care pathway and policy for COPD patients to sustain the change.

Evidence Search Strategy

A comprehensive review of the literature was conducted to address the PICOT question: In adult patients 65 years or older admitted to a hospital acute care unit for acute exacerbation of COPD, does a protocol and discharge care bundle compared to no protocol and no care bundle reduce the 30-day hospital readmission rate within ten weeks? Scholarly databases used include Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and Ovid Emcare. Keywords used were: "readmission or rehospitalization," "care bundle," and "COPD or chronic obstructive pulmonary disease." This search yielded 1,667 articles.

To further narrow the findings, parameters were added to the search: peer reviewed, in English, and published between the years 2016 and 2020. The Boolean Operator "AND" was also added to the following search words: "readmission or rehospitalization" and "care bundle." This reduced the number of articles to 246. Inclusion and exclusion criteria were then applied to narrow down the search results. Inclusion criteria were articles that utilized a care bundle intervention to reduce readmission. The exclusion criteria removed articles that did not correlate to the intervention, did not include COPD, did not show evidence of a reduction in readmission, or were duplicates. In addition, titles, abstracts, and full texts of the articles were manually reviewed for relevance to the PICOT question. A total of 238 articles were discarded to yield eight articles. Hand-searches of reference lists generated three additional articles, which brought the total to 11 articles used as evidence for the literature review.

Evidence Search Results

The comprehensive search strategy above utilized the CINAHL database, PubMed database, and Ovid Emcare database for the major elements of the PICOT question. The search results yielded 11 articles that were included in this project. Details of the process are presented in the Preferred Reporting Items for Systemic Reviews and Meta-Analysis (PRISMA) Flow

Diagram (see Figure 1). In addition, details of the articles are presented in a primary research evidence table (see Appendix B) and a summary of systematic review table (see Appendix C).

The 11 articles included: one systematic review, two randomized control trials (RCTs), two pre-post studies, two quasi-experimental studies, one prospective study, and three retrospective studies. The JHNEBP level and quality grade tool were used to determine each article's strength (Dang & Dearholt, 2017). Evidence can be categorized into five levels, from Level I to Level V; the quality of the evidence can be rated as A for high-quality, B for good-quality, or C for low-quality. Of the 11 articles, five were graded a Level I, with three having qualities of an A (high-quality) and two with qualities of a B (good-quality). The remaining six articles were graded Levels II and III, with qualities of at least a B. These articles were used to support the implementation of a discharge care bundle for patients admitted for AECOPD with the goal of reducing the 30-day readmission rate. Results and evaluations of the articles are included in Appendices B and C.

Themes with Practice Recommendations

A thorough synthesis of the literature found common themes that supported the use of COPD care bundles to reduce the 30-day readmission rate for AECOPD patients discharged from a hospital. The first theme from the literature suggested that inadequate patient education was one of the main reasons for AECOPD readmission after discharge (Jennings et al., 2015; Laverty et al., 2015; Matthews et al., 2013; Shorofsky et al., 2015; Zafar et al., 2017). The second theme was the significant impact the discharge care bundle had on the 30-day COPD readmission rate (Gentene et al., 2021; Matthews et al., 2013; Ohar et al., 2018). The third theme was the most common interventions utilized in the discharge care bundles (Ospina et al., 2017; Zafar et al., 2017).

Inadequate Patient Education

According to Ospina et al. (2017) and Parikh et al. (2016), COPD patients were predisposed to exacerbations due to the disease's progressive nature, which resulted in frequent healthcare encounters, emergency department visits, and hospital admissions. Two of the common reasons AECOPD patients were readmitted after being discharged were poor or inconsistent patient education at discharge (Jennings et al., 2015; Laverty et al., 2015; Matthews et al., 2013; Shorofsky et al., 2015; Zafar et al., 2017). According to Zafar et al. (2017), COPD patients were often confused about the different inhaler types, colors, and usage techniques. Another reason for readmission was COPD patients were unable to identify or understand baseline symptoms, signs of deteriorations, or their action plan (Shorofsky et al., 2015). Therefore, the use of a standardized patient education process that included these components could improve patient and outcomes for these patients.

Discharge Care Bundle to Reduce Readmission

The 30-day readmission rate was the preferred outcome measure used to determine healthcare organizations' performance and quality of care efficiency (Gentene et al., 2021; Jennings et al., 2015; Laverty et al., 2015; Matthews et al., 2013; Ohar et al., 2018; Shorofsky et al., 2015; Zafar et al., 2017). Most of the articles revealed that a discharge care bundle could reduce 30-day readmissions for patients admitted for AECOPD. For example, Ohar et al. (2018) lowered the 30-day all-cause readmission rate by 16% with a discharge care bundle, while Matthews et al. (2013) reduced the 30-day readmission rate by 23.4% over 12 months, and Gentene et al. (2021) reduced the all-cause 30-day readmissions by 35%. In contrast, Jennings et al. (2015) also showed a reduction in its 30-day readmission rate (22.78% for the control group and 19.35% for the bundle group), but the authors determined the results were not significant.

Care Bundle Interventions

Care bundles are a set of evidence-based interventions performed collectively and reliably to improve the quality of care (Ospina et al., 2017). All 10 articles utilized discharge care bundles to improve patient outcomes. However, the interventions included in the bundles varied. According to Ospina et al. (2017), there are 26 distinct elements of care packaged in discharge bundles with various interventions; there can be anywhere from two to 12 elements per bundle. Further, both Ospina et al. (2017) and Zafar et al. (2017) argued a care bundle would be more effective if it incorporated a small number of individualized interventions to ensure that evidence-based care was delivered consistently and reliably (Ospina et al., 2017; Zafar et al., 2017). Five of the most common and essential interventions from the literature synthesis included: (1) demonstration of adequate inhaler technique, (2) self-management education on disease process and action plan, (3) referral for pulmonary rehabilitation, (4) referral to smoking cessation program, and (5) a follow up appointment (see Appendix B).

Practice Recommendations

Reportedly, COPD rehospitalization is the fourth most costly and potentially preventable readmission (Jennings et al., 2015). As of 2021, the hospital was failing to meet the benchmark measure set by CMS and falls above the national average for COPD 30-day readmissions. Supported by a comprehensive review of the literature, the PICOT question was answered. The articles were rated mostly I or II with a graded of B or higher (Dang & Dearholt, 2017). In summary, the strength and quality of the evidence supported the use of a discharge care bundle for AECOPD patients to reduce 30-day COPD readmissions. Therefore, the implementation of a discharge care bundle was recommended for the facility, which in turn positively impacted this measure and increased the efficiency of care provided to its patients.

Based upon the evidence, utilization of a small set of evidence-based interventions may be more effective and efficient than employing a large number of techniques (Gentene et al., 2021; Laverty et al., 2015; Zafar et al., 2017). The core set of interventions included inhaler technique, education, action plan, pulmonary rehabilitation, smoking cessation, and a follow-up visit (Ospina et al., 2017). First, a correct inhaler technique allowed patients to appropriately use their inhaler, which can help avoid future readmission for worsening COPD (Parikh et al., 2016). Second, self-management education and an action plan were critical for preventing rehospitalization by assisting patients in understanding the COPD disease process and identifying baseline symptoms and signs of deterioration (Shorofsky et al., 2015). Third, referral to a pulmonary rehabilitation program allowed for appropriate medication adjustments to prevent readmission (Matthews et al., 2013). Fourth, smoking was the most common factor for COPD patients, and a referral to a smoking cessation program was the single most effective and cost-effective way to prevent COPD exacerbations and readmissions (Jennings et al., 2015). Lastly, an early post-discharge follow-up visit provided opportunities for health status reassessment, medication management, and continuum of care (Gentene et al., 2021; Jennings et al., 2015).

Setting, Stakeholders, and Systems Change

The project setting was at a Southern California hospital that was part of an integrated regional health care delivery system that included several acute-care and specialty hospitals, medical groups, and a full spectrum of other facilities and services. The hospital had 449-beds, employed over 450 physicians, nearly 2,000 employees, and more than 90,000 patients annually.

Mission and Values

The organization’s mission was to improve health by offering quality care and programs (Sharp, n.d.). The vision was “to transform the health care experience through a culture of caring,

quality, safety, service, innovation, and excellence" (Sharp, n.d., para. 2). The organization also strived to be the best place to work, practice medicine, and receive care (Sharp, n.d.).

Key Stakeholders

The project aim was to reduce the 30-day hospital readmission rate for AECOPD patients by implementing a protocol and discharge care bundle that created practice change. Organizational support was established by addressing leadership's need to reduce the hospital's 30-day COPD readmissions and through discussion with key stakeholders, including the Chief Nursing Officer (CNO), clinical nurse specialists (CNS), clinical respiratory leads, and COPD navigators. Other stakeholders included patients, providers, nurses, respiratory therapists (RTs), pharmacists, case managers (CMs), the project manager's (PM) mentor, and the PM.

Interprofessional Collaboration

According to Amalakuhan and Adams (2015), interprofessional collaboration was a critical factor for the success of implementing the discharge care bundle. Thus, it was important to coordinate a cohesive team to achieve the project goals and objectives. The team included leadership, COPD navigators, providers, nurses, RTs, CMs, the PM's mentor, and PM. The interprofessional collaboration process is illustrated in the COPD clinical pathway in Figure 2.

Organizational Analysis

The Improvement Capability Self-Assessment Tool and the Checklist to Assess Readiness for Implementation (CARI) were used to determine organizational readiness for practice change (Barwicjk, 2011; Institute for Healthcare Improvement [IHI], n.d.). Based upon the assessment, the hospital was ready for change. The top category for IHI tool was "improvement knowledge and competence," while the top category for the CARI tool was "organizational capacity." These two categories scored high because the organization was

Magnet and Planetree designated and known for being invested in and supportive of practice change. Thus, the organizational culture had a strong foundation for process improvement, which provided excellent support for the EBP project.

A strengths, weaknesses, opportunities, and threats (SWOT) analysis of the organization was performed (Good, 2020). See Appendix D for results. Strengths were leadership and interdisciplinary team support, EBP and patient-centered culture, and organizational readiness for change. Weaknesses were lack of consistency in COPD patient discharge and follow-up, and staff resistance to change. Opportunities included improving patient satisfaction and outcomes, relationships with non-affiliated medical providers, and reducing cost and penalties. Threats were changes in regulatory requirements, decrease reimbursement, and cost effectiveness.

Systems Change

The DNP project goal was to make positive changes at the micro-level (Fulop & Robert, 2013) of the organization by implementing a protocol and COPD discharge care bundle. The intervention improved the quality of care and outcomes for AECOPD patients by standardizing the care process from admission to discharge. An interdisciplinary team was formed to identify the gaps in care and to develop the protocol and care bundle. The PM has gained support from the organization and leadership through engagement and communication about the project. Metrics, such as the percentage of care bundle adherence and staff overtime pay, were included in the evaluation of the project to determine the effectiveness and sustainability of the intervention.

Implementation Plan with Timeline and Budget

The mission of the project was to reduce all unnecessary hospital readmissions within 30 days of discharge for patients admitted for AECOPD. The vision of the project was to improve

patient care through patient education, utilization of smoking cessation and pulmonary rehabilitation programs, and continuum of care. These care elements were aligned with the organization's mission to deliver high quality care and to improve the health of those served.

The JHNEBP 3-step process model and Kotter's 8-step Change Model was used to guide and implement this EBP project (Baloh et al., 2018; Dang & Dearholt, 2017). Kotter's model has been successfully used to implement and institutionalize changes in diverse healthcare settings (Baloh et al., 2018). Kotter and Cohen (2002) further suggested that these eight steps can be divided into three phases: Phase I (Steps 1-3) create a climate for change; Phase II (Steps 4-6) engage and enable the organization; and Phase III (Steps 7-8) implement and sustain change.

In the first phase of Kotter's Model, the organizational problem was determined, the project team was formed, and the project mission and vision were shared with stakeholders to prepare for organizational change (Baloh et al., 2018). In Phase II, the best evidence from the literature review was identified and findings were communicated to ensure engagement and buy-in from stakeholders, including staff and organizational leaders. Discharge care bundle implementation also occurred during this phase, with bi-weekly project updates of achieved milestones to generate short-term wins. In the last phase, the project outcomes and findings were evaluated, disseminated, and incorporated into the organization's guidelines and policies (Baloh et al., 2018).

Objectives

This project aim was to implement a protocol and discharge care bundle to reduce the organization's 30-day hospital readmission rate for COPD patients. The short-term objectives included completion of discharge care bundle training by at least 90% of the staff before the implementation start date (see Appendix E); identification of at least 90% of AECOPD patients

between 24-48 hours after hospital admission; at least 90% adherence rate with the discharge care bundle 24 hours before discharge; and at least 90% documentation of data collection sheet before discharge. The long-term goal was to achieve a reduction in the baseline COPD readmission rate to less than that of the national rate of 19.6% by the end of the 10 weeks.

Protocol

Upon admission to the hospital acute care units, all patients with respiratory symptoms were screened by project team members for signs of possible AECOPD. Admission ICD-CM-10 Codes were also used to identify patients (see Table 1). Once identified, initiation of the discharge care bundle took place no later than 48 hours following admission. Care bundle interventions were completed before patient discharge. The COPD Safe Discharge Checklist ensured all interventions were completed per protocol (see Figure 3). See Figure 2 for the clinical pathway for AECOPD patients and Appendix F for the discharge care bundle protocol.

Care Bundle Interventions

Interventions in the discharge care bundle used evidence-based methods proven to improve the quality of care (Ospina et al., 2017). These interventions included COPD education, action plan, inhaler technique, referral to smoking cessation or pulmonary rehabilitation programs, and a follow-up visit. First, patients received a Krames COPD pamphlet (see Appendix G) and a personalized action plan (see Appendix H) from the nurse or COPD navigator. Permissions for use of the pamphlet and action plan are documented in Appendices I and J. Nurses or RTs then assessed the patients for smoking cessation and pulmonary rehabilitation; if needed, orders were placed by the attending medical providers for referral to a program. Next, the RT or COPD navigator performed inhaler teaching with teach back to ensure appropriate inhaler technique. Lastly, CMs assisted patients with a follow-up visit.

Timeline

The timeline for project implementation was 10 weeks. Before implementation, approvals were obtained from the Evidence-Based Practice Review Council (EPRC) from the University of St. Augustine for Health Sciences (USAHS), organization, and Institutional Review Board (IRB). A detailed project timeline is presented in Appendix K.

Budget

There was a cost to implement this EBP change project. The estimated budget for 10 weeks was $3,000. Most of the expenses incurred were staff wages. Cost-effectiveness was a concern; however, since the national cost for one COPD readmission was between $9,000 and $12,000 (Walker, 2018), the prevention of just one readmission will offset the project cost. The hospital was also expected to lose an estimated $280,865 in 2021 due to CMS penalties because of hospital readmissions. A proposed detailed budget is included in Table 2.

Role of the Project Manager

According to French-Bravo and Crow (2015), it was imperative for staff and leaders to buy-in on the planned change to ensure the change project succeeded. Essential steps included active engagement and development of trust, personal connections, and relationships. The Doctor of Nursing Practice (DNP) student was the PM responsible for most of the EBP project tasks from beginning to end. The role and responsibilities of the PM were to supervise, collaborate, make decisions, problem-solve, motivate, schedule, assign tasks, and set goals. The PM also ensured efficient and effective communication between team members throughout the project.

Results

The main objective of the EBP project was to achieve a 30-day COPD readmission rate that was less than the national benchmark rate of 19.6% at the end of 10 weeks by comparing the

pre- and post-intervention data. The premise of the project was that COPD readmissions could be reduced with the implementation of a protocol and discharge care bundle.

Selection of Participants

Patients admitted to the hospital acute care units for respiratory symptoms were screened for inclusion. Inclusion criteria consisted of diagnosis for AECOPD, the patient's age at admission greater than or equal to 65 years old, and admission for more than one day. Patients were excluded if they had been admitted for coronavirus disease 2019 (COVID-19), asthma, interstitial lung disease, or bronchitis. They were also excluded if they presented with active substance abuse, neuromuscular disorders affecting the respiratory system, lung cancer, or airway hardware.

Data Collection

A paper document tool was used for data collection (see Appendix M). This tool was created solely for this project; therefore, no permission was needed for use. The project team was responsible for data collection. Once data was transferred to an Excel spreadsheet, the PM checked for data accuracy and for identifiable patient information. Any disagreements were discussed by the project team and mutually resolved. In addition, to ensure data integrity and that there were no missing data, the PM performed weekly validation of the data against participants through the organization’s electronic health record (EHR) system.

Data were also collected to evaluate the project outcome, process, balancing, financial, and sustainability measures (see Appendix L). 30-day readmission rates were collected at 30 days, 60 days, and at the end of the 10 weeks for the outcome measure. Process data were collected weekly; they included the percentage of completed training by the project team members, AECOPD patients identified, data collection sheet completed, follow-up visits, and

discharge care bundle adherence. Data for staff overtime pay used for balancing and financial measurements were collected biweekly. Finally, 30-day readmissions and discharge care bundle adherence data were also collected and used for sustainability measures.

Evaluation Tool

The evaluation tool was a paper document Excel spreadsheet with 12 data points (see Appendix M). The first three columns collected demographic data, including age, gender, and smoking status. The following eight columns collected intervention data: identification of AECOPD patients, implementation of the care bundle, and the utilization of the care bundle elements. Lastly, 30-day readmission occurrences were collected in the final column.

According to McLeod (2013), a tool has face validity if it measures what it was designed to measure. The data evaluation tool was shared with the team members prior to project implementation to determine face validity. The results from the assessment showed that the tool appeared suitable for the purpose of collecting and evaluating data for this project. Data integrity was ensured through validation of data reports against the electronic health record (EHR) system.

Protection of Human Rights

Project implementation and data collection began only after receiving approval from both the USAHS EPRC Committee and the organization's IRB committee. Project team members adhered to strict federal, state, and organizational protected health information (PHI) compliance rules enforced by the Health Insurance Portability & Accountability Act (HIPAA) regulations. In addition, documents and hard copies with data were kept within a locked office cabinet, and electronic data was stored on an Excel spreadsheet; both the office cabinet and spreadsheet were accessible only with the PM's permission.

Data Analysis

There was a total of 22 participants for the pre-intervention group (n = 22) and 18 participants for the post-intervention (n = 18). Four participants in the pre-intervention group were readmitted within 30 days (18.2% readmission rate), and three participants were readmitted in the post-intervention group (16.7% readmission rate). See Table 3 for the number of participants and readmission rates. The COPD readmission data for pre-and post-intervention were analyzed using a two-tailed paired samples t-test (Intellectus Statistics, 2019). The result was found not to be statistically significant based on an alpha value of 0.05, $t(17) = 0.37$, $p = 0.717$, indicating the null hypothesis could not be rejected (see Table 4).

Descriptive statistics were used to analyze demographic data (see Table 5). The findings revealed that most post-intervention patients were female (55.6%) and non-smoking (66.7%), with a mean age of 78 years old. Other categories of measures were also evaluated (see Appendix L). Process and sustainability measures indicated that the 30-day readmission rate remained below the national average rate throughout the project. A surprising find was that the percentage of AECOPD patients identified was less than 40% after being admitted onto the acute care units. This low percentage was most likely due to the COVID-19 surge. However, when patients were identified, they received the discharge care bundle 100% of the time. Lastly, no overtime pay was documented for the financial measure.

Clinical Significance

According to Ranganathan et al. (2015), although statistical significance was important when evaluating outcomes identified in the PICOT question, the clinical significance was more critical in EBP project findings because of the impacts the intervention had on patient care and outcomes. The project achieved a COPD readmission rate of 16.7%, which was lower than the national rate of 19.6%, but the results were found not to be statistically significant. However, the

project demonstrated clinical significance through the development of a reliable clinical care process the aligns with the organization's goals and values.

Impact

Implementing the protocol and COPD discharge care bundle positively impacted the quality of care of those patients identified. Before implementation of the EBP change, patient education, inhaler technique, and review care plans for active and home care for COPD patients were used inconsistently. In addition, resources for smoking cessation and pulmonary rehabilitation programs were often missed or not offered at all. However, during the 10-week implementation period, all identified patients received the interventions and were provided or offered additional resources. None of the patients who were given the intervention were readmitted to the hospital within 30 days after being discharged. Although the findings were not statistically significant, the project provided the foundation to improve quality of care and outcomes for COPD patients.

To ensure the sustainability of the EBP change, the project team will continue with implementation and evaluation. Future plans will be to include COPD patients of all ages in the clinical care process. The COPD navigator will be the project champion. The COPD navigator's job will be to improve the identification of COPD patients and the utilization of the discharge care bundle. The clinical RT lead will be responsible for staff education and training and for monitoring intervention adherence and outcomes. The organization's COPD 30-day readmission rate will be compared to the national benchmark monthly to ensure the goal is being met. In addition, the project team will continue to refine and improve the care process for this population.

Several limitations were found during project implementation. One limitation was the small sample size (n = 18). The power generated from a small sample was not enough to reflect the potential impact of the EBP change (Parikh et al., 2016). A second limitation was the length of the implementation phase. Ten weeks were not sufficient to demonstrate the potential benefits of the intervention. In Shorofsky et al. (2015), the impact of the discharge care bundle became more apparent over a longer period of time because some elements of the discharge care bundle (i.e., smoking cessation and pulmonary rehabilitation) can have a delayed effect. Lastly, a third limitation was the COVID-19 pandemic. The surge in COVID-19 infections greatly affected the consistency of implementing the intervention due to inadequate staffing. Staff were either assigned to other departments to assist with the influx of patients or were directly affected by the COVID-19 virus and unable to work.

Dissemination

According to Astroth and Hain (2019), the dissemination of the knowledge obtained was equally as important as the processes of developing and conducting the EBP project. After data collection and analysis, dissemination of the project commenced as outlined in the project schedule (see Appendix K). Internally, the project findings were shared with the project team, key stakeholders, and organizational leaders using a PowerPoint presentation. All team members also received a copy of the presentation via email. The project was then shared at a Collaborative Governance Steering Council and New Knowledge and Innovation Council meeting. A poster presentation will then be presented at the organization's Healthcare Innovations Conference in September 2022.

Externally, this evidence-based project will be submitted to the Scholarship and Open Access Repository website at the USAHS (SOAR@USA) for student and faculty access. The

PM also plans to share the EBP project as a virtual oral poster presentation at the Inaugural Alpha Alpha Alpha Chapter Sigma at USAHS DNP Scholarly Project Symposium in April of 2022. In addition, an article submission to the American Journal of Nursing (AJN) will also be considered. According to Dadich and Hosseinzadeh (2016), when EBP is communicated via sources that are deemed to be credible, such as professional journals such as the AJN, healthcare professionals are more engaged with and more likely to use the information.

Conclusion

COPD readmissions place a heavy burden on healthcare systems and significantly impact patients' health status and quality of life (Ospina et al., 2017). In addition, the CMS penalty for excess readmission after hospitalization causes further negative financial impacts on organizations with high readmissions (Ohar et al., 2018). The purpose of this project was to implement a protocol and discharge care bundle to reduce the organization’s COPD readmission rate to less than the national average. Data analysis demonstrated that even though the goal was achieved, the findings were not statistically significant. However, the project did show clinical significance because it provided a foundation to improve the clinical care process for COPD patients. By implementing the protocol and COPD discharge care bundle, the quality of care of those patients identified was consistent and improved.

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Table 1

AECOPD ICD-10-CM Codes

ICD-10-CM	Code Description
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation
J44.0	Chronic obstructive pulmonary disease with (acute) lower respiratory infection
J43.9	Emphysema, unspecified
J44.9	Chronic obstructive pulmonary disease, unspecified

Table 2

Budget

Proposed Budget	
Expenses	
Staff Wages (Meeting, Education & Training)	$ 2,800.00
Clinical Lead	
COPD Navigator	
RTs	
Administration	
Nurses	
Supplies	$ 100.00
MISC	$ 100.00
Total Expenses	**$ 3,000.00**

Table 3

Frequency for 30-day Readmission

Variable	Pre_Intervention	%	Post_Intervention	%
Readmission_within_30_days				
Yes	4	18.2	3	16.7
No	18	81.8	15	83.3
Missing	0	0	0	0

Note. Due to rounding errors, percentages may not equal 100%.

Table 4

Two-Tailed Paired Samples t-Test for the Difference Between Pre_Intervention and Post_Intervention COPD Readmissions

Pre_Intervention		Post_Intervention				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
0.22	0.43	0.17	0.38	0.37	.717	0.09

Note. N = 18. Degrees of Freedom for the *t*-statistic = 17. *d* represents Cohen's *d.*

Table 5

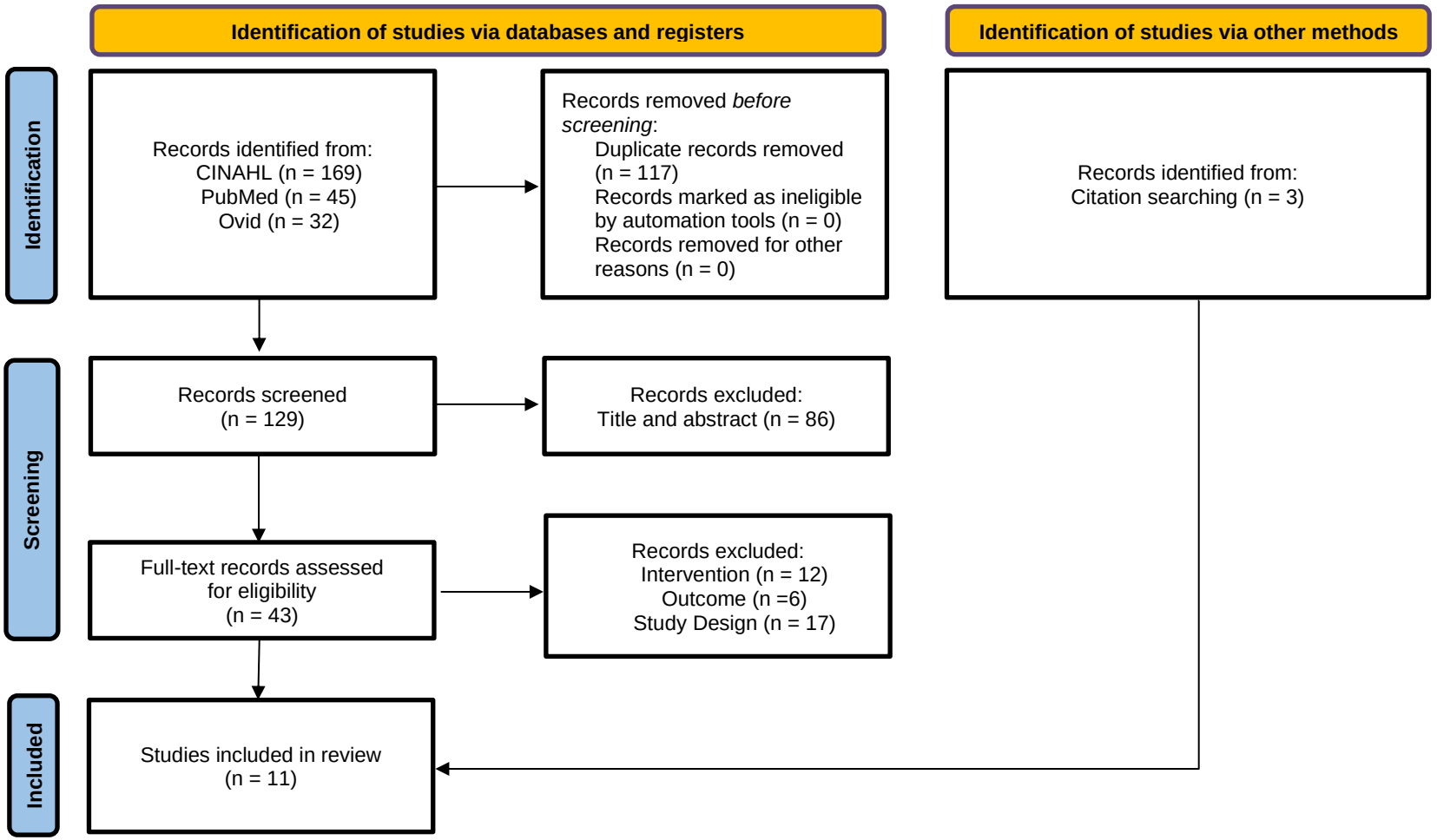
Frequency Table for Demographic Variables

Variable	Pre-Intervention	n	%	Post-Intervention	n	%
Gender						
Male		12	54.6		10	55.6
Female		10	45.5		8	44.4
Missing		0	0		0	0
Smoker						
Yes		11	50		12	66.7
No		11	50		6	33.3
Missing		0	0		0	0
Age Range						
65-69 years		8	36.4		3	16.7
70-74 years		6	27.3		4	22.2
75-79 years		1	4.5		4	22.2
80-84 years		1	4.5		3	16.7
> 85 years		6	27.3		4	22.2
Missing		0	0		0	0

Note. Due to rounding errors, percentages may not equal 100%.

Figure 1

PRISMA Flow Diagram



Note. Prisma flow diagram from "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews" by Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D, 2021, *Journal of Clinical Epidemiology*, *134*, 103-112 (https://doi.org/10.1136/bmj.n71). Copyright 2021 by BMJ Publishing Group Ltd.

Figure 2

COPD Clinical Pathway

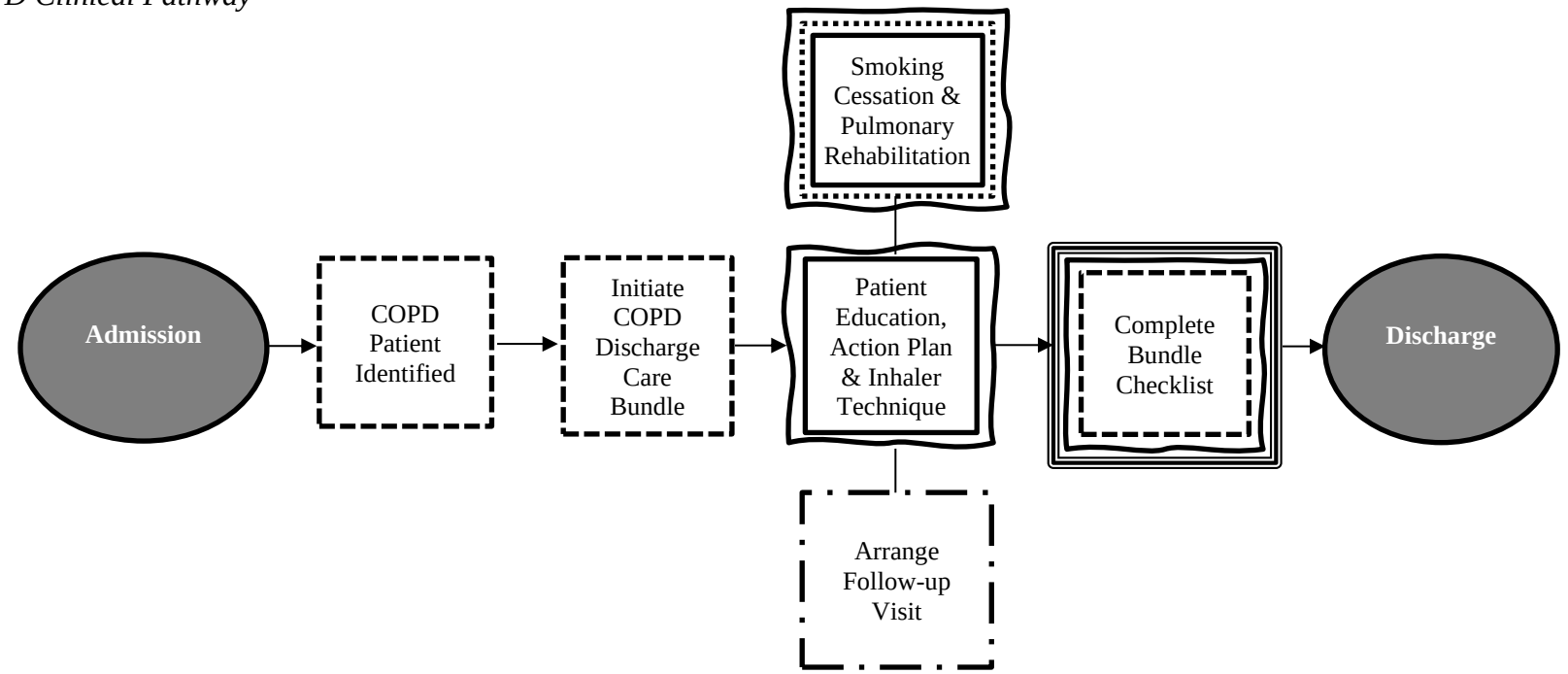
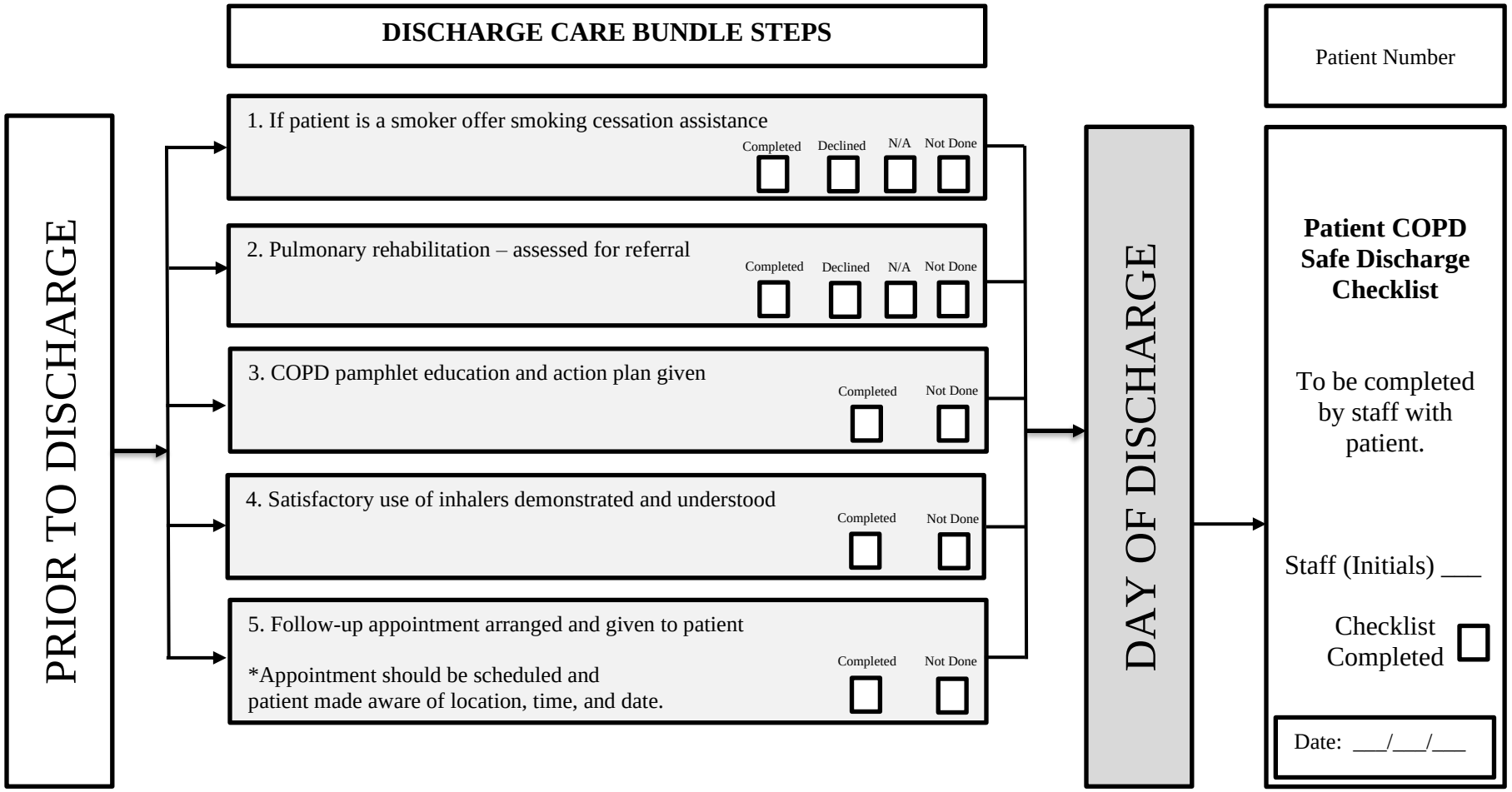


Figure 3

COPD Safe Discharge Checklist

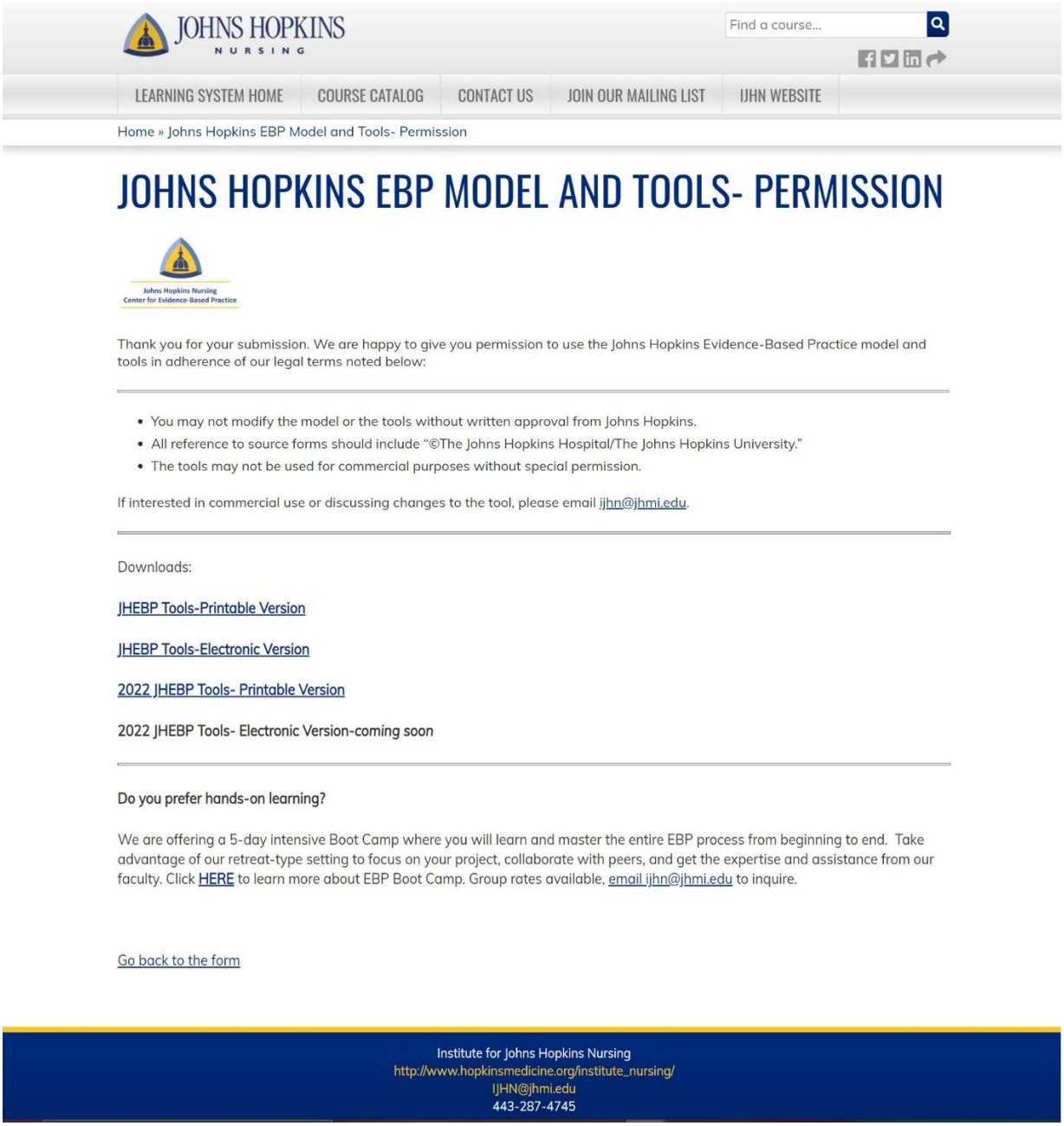
Inform the COPD Navigator or Clinical RT Lead of all COPD patients within **24 hours of arrival** including patient discharge.



***Note*.** The COPD discharge care bundle adapted from "Designing and implementing a COPD discharge care bundle," by N.S. Hopkinson, C. Englebretsen, N. Cooley, K. Kennie, M. Lim, T. Woodcock, . . . D. Lai, 2012, *Thorax*, *67*(1), 90-92 (https://doi.org/10.1136/thoraxjnl-2011-200233).

Appendix A

Approval to Use Johns Hopkins Nursing Evidence-Based Practice Model and Tools



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Appendix B

Summary of Primary Research Evidence

Citation	Design, Level Quality Grade	Sample Size Sample Technique Setting	Intervention Comparison (Definitions should include any specific research tools used along with reliability & validity)	Theoretical Foundation	Outcome Definition	Usefulness Results Key Findings
Gentene et al., 2021	Pre- & Post-study Level I Grade B III	Patients admitted for COPD (n = 305) COPD Purposive sampling University of Cincinnati Medical Center, Ohio, USA	Intervention: COPD bundle COPD discharge care bundle (1) selection of appropriate discharge inhalers, (2) bedside delivery of a 30-day discharge supply of insurance-compatible inhalers, (3) personalized inhaler education, (4) scheduling a 15-day discharge follow-up appointment, and (5) provision of standardized discharge instructions. Comparison: no bundle	None	30-day readmission rate	COPD care bundles reduced 30-day COPD readmissions rates The pharmacy components include optimizing the inhaler regimen and providing a 30-day supply of inhalers delivered to the bedside prior to discharge
Jennings et al., 2015	RTC Level I Grade B	Patients admitted for AECOPD (n = 172) Random sampling Henry Ford Hospital, Michigan, USA	Intervention: COPD bundle Bundle: smoking cessation counseling, screening for gastroesophageal reflux disease and depression or anxiety, standardized inhaler education, and a 48-h post-discharge telephone call. Comparison: standard care (no bundle)	None	30-day readmission rate 90-day readmission rate	Early post-discharge follow-up within 30 days was associated with decreased readmissions at 90 days. It is possible that this follow-up provides an opportunity to intervene on risk factors that lead to readmission. Readmissions might have been increased had the intervention extended to more aggressive follow-up.

Ko et al., 2017	RCT Level I Grade A	Patients discharged from the hospital for AECOPD (n = 180) Random sampling Prince of Wales Hospital, Hong Kong	Intervention: comprehensive care plan Care plan education in two 1-hour sessions (individual education sessions including anatomy and physiology of the respiratory system, pathophysiology of COPD, smoking cessation, technique of using medications, dyspnea management, nutrition, self-management, and exacerbation-reduction skills, coping with psychological distress and relaxation techniques, social and community support, and, if appropriate, knowledge on long-term oxygen therapy). Comparison: no care plan (usual care)	None	Hospital readmission QOL Mortality Lung function	A comprehensive COPD program can reduce hospital readmissions for COPD and length of hospital stay, in addition to improving symptoms and quality of life of the patients.
Laverty et al., 2015	Quasi-experimental study Level II Grade B	Patients 45 years and older admitted for AECOPD Purposive sampling Chelsea and Westminster Hospital, UK	Intervention: care bundle Care bundle: smoking cessation, pulmonary rehabilitation program, education, effective inhaler technique, book review Comparison: no care bundle	None	COPD readmissions: readmission for acute exacerbation of COPD within 7, 28 or 90 days of their discharge after an original admission for an acute exacerbation of COPD. Bed days: total number of bed days was calculated by summing the number of nights in hospital for all patients with COPD, whether an original admission or a readmission.	COPD discharge care bundle appeared to be associated with a reduction in readmission rate. The highest value interventions in COPD care are support and medication to stop smoking and pulmonary rehabilitation.
Matthews et al., 2013	Pre- & Post-study Level I	Patients admitted for AECOPD (n = 298)	Intervention: COPD care bundle Care bundles include spirometry results, smoking cessation, pulmonary rehabilitation referral,	None	30-day readmission rate	COPD care bundle shows a reduction in 30-day readmissions on a month-on-month basis and a 12-month average.

	Grade B	Purposive sampling James Paget University Hospital, UK	COPD assessment, COPD education, inhaler techniques, follow-up with consultant. Comparison: no care bundle			
Ohar et al., 2018	Retrospective observational cohort study Level III Grade B	AECOPD admissions (n = 1274) Purposive sampling Wake Forest Baptist Medical Center, North Carolina, USA	Intervention: comprehensive care plan The plan includes transitions of care, diagnosis and treatment of COPD and its common co-morbidities, as well as hospice and palliative services. Comparison: no care plan (usual care)	None	30-day readmission: readmission was defined as an inpatient or observational hospitalization occurring within 30 days of index discharge date. Mortality	Care plan for AECOPD significantly reduced 30-day readmission and mortality. End stage COPD is associated with frequent hospitalizations and increased dependence on mechanical ventilation, but an alarmingly small percentage of these patients have had frank discussions with their providers about prognosis and palliative care.
Parikh et al., 2016	Prospective observational study Level III Grade B	Patients admitted with COPD exacerbation (n = 44) Purposive sampling Rush University Medical Center, Illinois, USA	Intervention: COPD care bundle COPD bundle included standard nursing protocols, patient education regarding appropriate inhaler technique, and medication options. Comparison: no care bundle	None	Length of stay 30- and 60-day readmission rates Hospital costs	Use of the standardized COPD care bundle reduces the length of stay and significantly reduces 30- and 60-day readmission rates. Increase in both COPD inhaler teaching by respiratory therapists and post-discharge pulmonary follow-up are the likely drivers for the decreased readmission rates.
Seymour & Nedelcu, 2014	Retrospective Study Level III Grade B	Patients admitted for COPD (n = 156)	Intervention: discharge bundle Care bundle include pulmonary rehabilitation, smoking cessation, patient education, and inhaler technique.	None	30-day readmission 3-month readmission	Patients completing the discharge bundle had a significantly lower rate of 30-day readmission.

		Purposive sampling Frimley Park Hospital, UK	Comparison: no discharge bundle			
Shorofsky et al., 2015	Retrospective Study Level III Grade B	Patients discharged home with care bundle (n = 405) Purposive sampling McGill University Health Center, Montreal, Canada	Intervention: COPD care bundle Care bundle includes spirometry COPD diagnosis, smoking intervention, education self-management, COPD and medical follow-up referral, pulmonary rehabilitation, and respiratory medication maintenance. Comparison: no care bundle	None	30-day readmission rate 90-days readmission rate One-year readmission rate	The implementation of a COPD discharge care bundle successfully decreases hospital health service utilization and hospital readmissions. The discharge care bundle did not have an effect on the "heaviest users" which were those requiring three or more readmissions.
Zafar et al., 2017	Quasi-experimental study Level II Grade A	COPD index admission (n = 207) Purposive sampling University of Cincinnati Medical Center, Ohio USA	Intervention: COPD care bundle Care bundle includes inhaler regimen, 30-day inhaler supply, inhaler education, discharge education, follow-up within 15 days. Comparison: no care bundle	Model for Improvement	COPD readmission: any unplanned readmission within 30 days of discharge after an index admission for COPD exacerbation. COPD care bundle adherence	COPD care bundle e reduces 30-day COPD readmissions.

Legend: acute exacerbation of chronic obstructive pulmonary disease (AECOPD), chronic obstructive pulmonary disease (COPD), emergency department (ED), quality of life (QOL), randomized control trial (RCT)

Appendix C

Summary of Systematic Reviews (SR)

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
Ospina et al., 2017	Level I Grade A	In adult patients with an exacerbation of COPD (AECOPD), do discharge care bundles reduce readmissions and improve quality of life?	Comprehensive searches of biomedical electronic databases (MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials) and clinical trial registries (Clinicaltrials.org; WHO International Clinical Trials Registry Platform).	Inclusion: randomized controlled trials (RCTs), controlled clinical trials (CCTs), controlled before-and-after (CBA) studies, interrupted time series (ITS) and before-and-after studies (BA) assessing hospital or ED discharge care bundles for patients with AECOPD. Exclusion: not at discharge, no primary research, not on discharge care bundle, no numerical data, not retrieved, or no study design.	Data were extracted from individual studies using a pretested data extraction form and summarized in evidence table. All data were extracted by one reviewer and independently verified for accuracy and completeness by a second reviewer. Discrepancies in data extraction were solved through discussion. Statistical analyses were performed using Review Manager (RevMan) software V.5.3.	Meta-analysis of randomized controlled trial data shows that discharge care bundles for patients following an AECOPD result in fewer hospital readmissions.	Incorporating a small number of individual interventions to ensure that evidence-based care is delivered consistently and reliably. Most care bundle included a set of ‘core’ evidence-based interventions: demonstration of adequate inhaler technique, educational programs on disease management, individually tailored care plans, assessment and referral for pulmonary rehabilitation, outpatient follow-up and referral to smoking cessation programs.

Legend: acute exacerbation of chronic obstructive pulmonary disease (AECOPD), before-and-after studies (BA), chronic obstructive pulmonary disease (COPD), controlled before-and-after (CBA), controlled clinical trials (CCTs), emergency department (ED), emergency department (ED), World Health Organization (WHO)

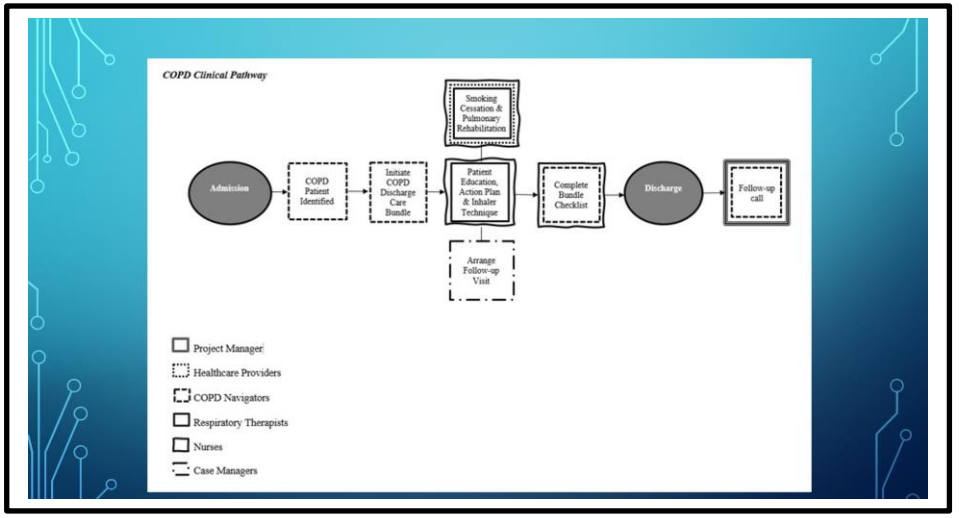
Appendix D

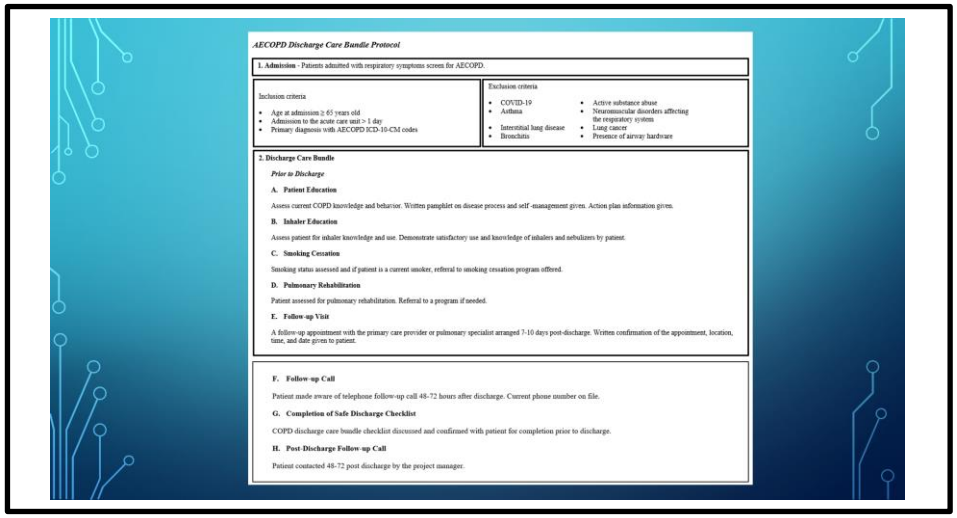
SWOT Analysis

Strengths	Weaknesses
• Leadership support • Interdisciplinary team support • Evidence-based practice culture • Patient-centered care • Organizational readiness for change	• Lack of COPD discharge consistency • Lack of follow up • Staff resistance to change
Opportunities	**Threats**
• Improve patient satisfaction and outcomes • Improve relationship with non-affiliated medical offices and providers • Reduce cost and penalties	• Changes in regulatory requirements • Decrease reimbursement • Cost effectiveness

Appendix E

Staff Education and Training





AECOPD Discharge Care Bundle Protocol

1. Admission - Patients admitted with respiratory symptoms screen for AECOPD.

Inclusion criteria
- Age at admission ≥ 65 years old
- Admission to the acute care unit > 1 day
- Primary diagnosis with AECOPD ICD-10-CM codes

Exclusion criteria
- COVID-19
- Asthma
- Interstitial lung disease
- Bronchitis
- Active substance abuse
- Neuromuscular disorders affecting the respiratory system
- Lung cancer
- Presence of airway hardware

2. Discharge Care Bundle

Prior to Discharge

A. Patient Education

Assess current COPD knowledge and behavior. Written pamphlet on disease process and self -management given. Action plan information given.

B. Inhaler Education

Assess patient for inhaler knowledge and use. Demonstrate satisfactory use and knowledge of inhalers and nebulizers by patient.

C. Smoking Cessation

Smoking status assessed and if patient is a current smoker, referral to smoking cessation program offered.

D. Pulmonary Rehabilitation

Patient assessed for pulmonary rehabilitation. Referral to a program if needed.

E. Follow-up Visit

A follow-up appointment with the primary care provider or pulmonary specialist arranged 7-10 days post-discharge. Written confirmation of the appointment, location, time, and date given to patient.

F. Follow-up Call

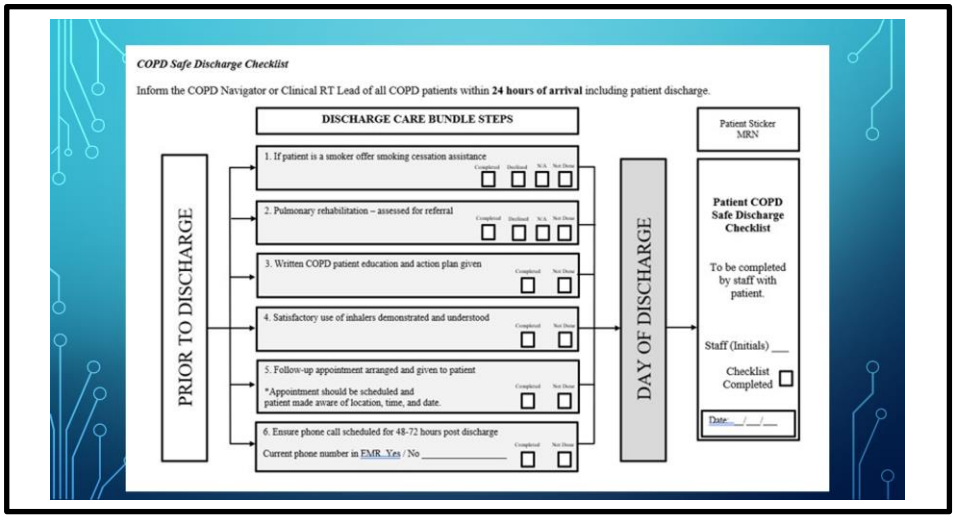
Patient made aware of telephone follow-up call 48-72 hours after discharge. Current phone number on file.

G. Completion of Safe Discharge Checklist

COPD discharge care bundle checklist discussed and confirmed with patient for completion prior to discharge.

H. Post-Discharge Follow-up Call

Patient contacted 48-72 post discharge by the project manager.



COPD Safe Discharge Checklist

Inform the COPD Navigator or Clinical RT Lead of all COPD patients within **24 hours of arrival** including patient discharge.

DISCHARGE CARE BUNDLE STEPS

PRIOR TO DISCHARGE

1. If patient is a smoker offer smoking cessation assistance — Completed / Declined / N/A / Not Done
2. Pulmonary rehabilitation – assessed for referral — Completed / Declined / N/A / Not Done
3. Written COPD patient education and action plan given — Completed / Not Done
4. Satisfactory use of inhalers demonstrated and understood — Completed / Not Done
5. Follow-up appointment arranged and given to patient
   *Appointment should be scheduled and patient made aware of location, time, and date. — Completed / Not Done
6. Ensure phone call scheduled for 48-72 hours post discharge
   Current phone number in EMR. Yes / No _____ — Completed / Not Done

DAY OF DISCHARGE

Patient Sticker MRN

Patient COPD Safe Discharge Checklist

To be completed by staff with patient.

Staff (Initials) ___

Checklist Completed ☐

Date: __/__/__

Appendix F

AECOPD Discharge Care Bundle Protocol

1. Admission - Patients admitted with respiratory symptoms screen for AECOPD.

Inclusion criteria

- Age at admission ≥ 65 years old
- Admission to the acute care unit > 1 day
- Primary diagnosis with AECOPD ICD-10-CM codes

Exclusion criteria

- COVID-19
- Asthma
- Interstitial lung disease
- Bronchitis
- Active substance abuse
- Neuromuscular disorders affecting the respiratory system
- Lung cancer
- Presence of airway hardware

2. Discharge Care Bundle

Prior to Discharge

A. Patient Education

Assess current COPD knowledge and behavior. Written pamphlet on disease process and self -management given.

B. Action Plan

Personalized action plan information given.

C. Inhaler Education

Assess patient for inhaler knowledge and use. Demonstrate satisfactory use and knowledge of inhalers and nebulizers by patient.

D. Smoking Cessation

Smoking status assessed and if patient is a current smoker, referral to smoking cessation program offered.

E. Pulmonary Rehabilitation

Patient assessed for pulmonary rehabilitation. Referral to a program if needed.

F. Follow-up Visit

A follow-up appointment with the primary care provider or pulmonary specialist in 7-10 days post-discharge. Written confirmation of the appointment, location, time, and date given to patient.

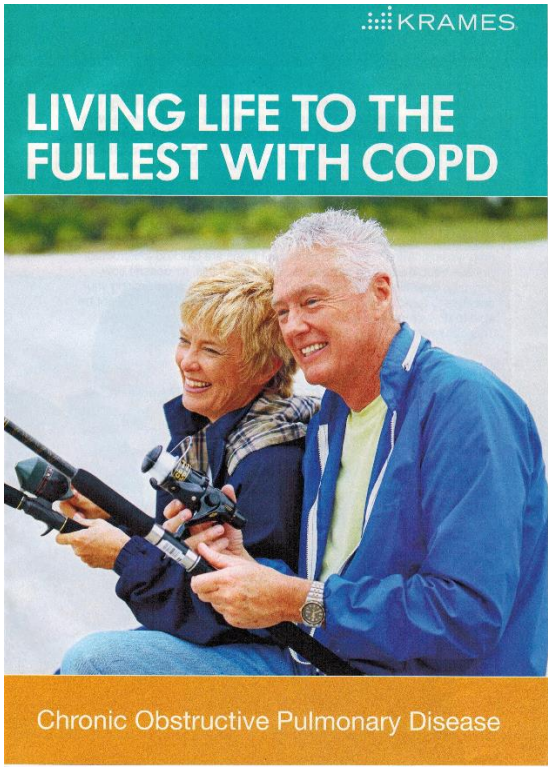
G. Completion of Safe Discharge Checklist

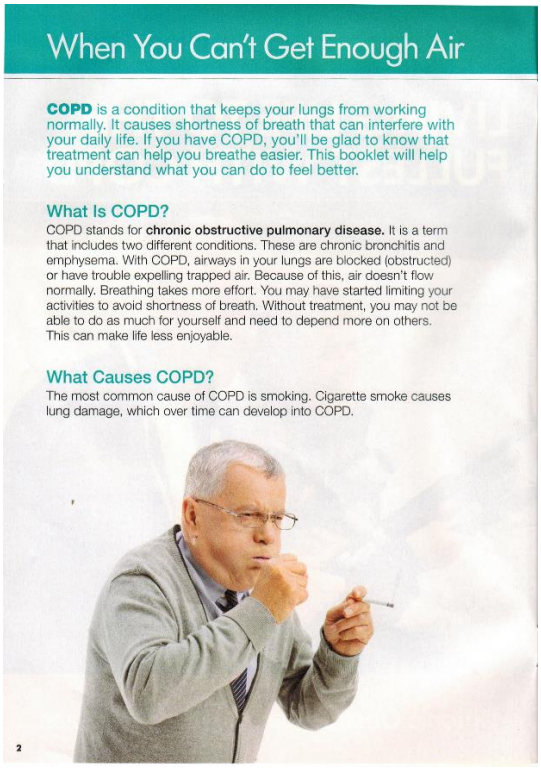
COPD discharge care bundle checklist discussed and confirmed with patient for completion prior to discharge.

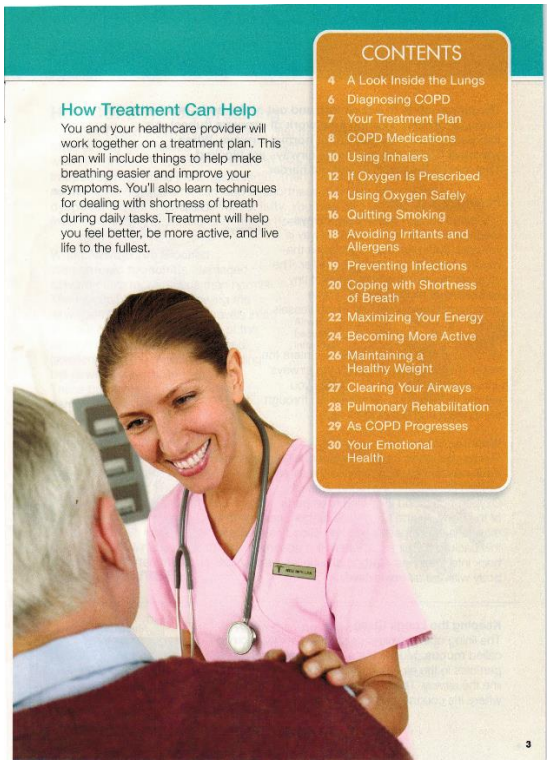
H. Discharge

Appendix G

Krames COPD Pamphlet







Appendix H

COPD Action Plan

My COPD ACTION PLAN

Name _____ Date _____

I am feeling well! (GREEN)

- **I am breathing without shortness of breath**
- Take scheduled medicines
- Practice pursed lip breathing and/or using other devices to manage secretions
- Exercise as directed by my doctor
- Other_____
- Other_____
- I am using aides to help me stop smoking (1-800-no Butts)

I am not feeling well (YELLOW) WARNING

Symptoms have been going on for few days

It is time for me to call my DOCTOR Phone # _____

- **I am more short of breath during the day**
- **I am noticing a change in my sputum color and amount**
- **I am having difficulty doing my daily routine and activities**
- **I am using rescue inhaler or nebulizer more often than usual**
- **Other_____**

I feel I am in real trouble with my breathing (RED) STOP **CALL 911**

- **I am more short of breath, even when I am resting**
- **I have tightness in my chest**
- **I have a fever and chills**
- **My rescue inhaler and nebulizer are not helping my breathing**

Things to talk to your doctor about, during your visit/appointment:

- Bring your "action plan" and medication with you
- Ask your Doctor about getting a flu and/or pneumonia shot
- Talk to your doctor if Pulmonary Rehab is appropriate for you
- If you still smoke, ask about ways to help you quit

We are here to help because we care…COPD NAVIGATOR		
Monday-Friday 8:00-4:30 ***-***-****	**Monday –Friday 8:00-4:30** ***-***-**** ***-***-****	***-***-****

Chronic (kronik) = constantly recurring, long-standing
Obstructive ob –struktiv) = impeding, blockage
Pulmonary (pul –mon- nary) = another word for lungs
Disease ((dis-ease) = illness, sickness

Revised 6/13/18

Appendix I

Permission to Use Krames COPD Pamphlet

From: Kara (Krames) <support@kramesstaywell.zendesk.com>
Sent: Wednesday, September 29, 2021 6:19 AM
To: Dao Vang <D.Vang@usa.edu>
Subject: EXTERNAL: RE: Permission for Use

Kara (Krames)
Sep 29, 2021, 8:19 CDT

Hello Dao,

You can use the booklet for reference only if you mention Krames in your presentation.

Best,

Kara
STAYWELL PATIENT EDUCATION TEAM
P 800.333.3032
F 866.722.4377
kramesstore.com
krames4heart.com
krames4lungs.com
freedomfromsmoking.org
Illuminating The Path To Better Health

Dao Vang
Sep 27, 2021, 15:02 CDT

To whom it may concern:

I am a student at the University of St. Augustine. I am seeking permission to use one of your COPD education pamphlets below in my DNP project. Please let me know how to proceed, and thank you in advance for your time.

Pamphlet: 12003 - Living Life to the Fullest with COPD

Kind Regards,

Dao N. Vang

Dao N. Vang, MBA, MSN, FNP-C
MSN-entry DNP student
University of Saint Augustine for Health Sciences
D.Vang@usa.edu

Appendix J

Permission to Use Sharp COPD Action Plan

EXTERNAL: Re: Permission for Use
Diana Vega <Diana.Vega@sharp.com>
Sat 10/2/2021 1:50 PM
To: Dao Vang <D.Vang@usa.edu>

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hello Dao,

Thank you for your interest in using Sharp's COPD Action form for your project. This email is to allow you permission to use Sharp's COPD Action Plan. Please feel free to contact me if you have any questions or concerns.

Thank You,

Diana Vega
COPD Navigator/Educator

From: Dao Vang <D.Vang@usa.edu>
Sent: Thursday, September 30, 2021 1:37 PM
To: Diana Vega <Diana.Vega@sharp.com>
Subject: Permission for Use

HIGH ALERT! U.S. hospitals are under cyber-attack, so **USE EXTREME CAUTION** clicking on links and attachments. Forward suspicious emails to phishing@sharp.com

Hello, Diana.

I am a DNP student at the University of St. Augustine. I am seeking permission to use Sharp's COPD Action Plan that is attached to this email for my EBP project. Thank you in advance for your time.

Kind Regards,

Dao N. Vang

Dao N. Vang, MBA, MSN, FNP-C
MSN-entry DNP student
University of Saint Augustine for Health Sciences
D.Vang@usa.edu

Appendix K

Project Schedule

	NUR7801								NUR7802								NUR7803							
Activity	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15
Collaborate with preceptor	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Literature review	x	x	x	x																				
Prepare project proposal				x	x	x	x	x																
Collaborate with key stakeholders		x	x		x		x	x	x		x	x		x		x	x		x		x		x	
Prepare project proposal & plan intervention						x	x	x																
Collaborate with project team					x	x	x	x			x			x		x	x	x	x	x				
Create & share project mission and vision							x	x																
Prepare IRB and proposal								x	x	x														
Share proposal with stakeholders										x														
Acquire school, organizational & IRB approval											x	x	x											
Staff education & training											x													
Intervention implementation														x	x	x	x	x						
Biweekly evaluation & feedback														x		x		x						
Mid-evaluation & progress update with key stakeholders																x								

	NUR7801								NUR7802								NUR7803							
Activity	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15
Data collection, analysis, & feedback														x	x	x	x	x						
Project evaluation																x	x	x	x					
Final report																			x	x	x			
Disseminate result																			x	x	x	x	x	

Appendix L

Evaluation Plan

EVALUATION PLAN FOR REDUCING 30-DAY READMISSION AMONG AECOPD PATIENTS BY IMPLEMENTING A PROTOCOL AND DISCHARGE CARE BUNDLE																	
Project Design: Pre-post quantitative study																	
Brief project description: A EBP project to reduce 30-day COPD readmissions after implementation of a protocol and discharge care bundle																	
MEASURES	**CATEGORIES**						**TIME for DATA COLLECTION**					**Criteria**	**Define the**	**BASELINE**	**GOAL**		
Name & Metric (definition)	OUTCOME	PROCESS	BALANCING	FINANCIAL	SUSTAINABILITY	CONTEXT	Baseline	30 days	60 days	unpaired t-test	Other	State the p value or other criteria	Clinically meaningful criteria	Values	30 days	60 days	10 weeks
30-Day Readmission Rate (Denominator is the number discharged. The numerator is the denominator readmitted within 30 days from discharge date)	x				x		x	x	x	x		P < .05	Less than the national COPD readmission rate	< 19.6%	9.1%	12.5%	16.7%
Percentage of Discharge Care Bundle Training Completion (Denominator is the number of staff. The numerator is the number of staff who completed the training)		x			x			x	x		x		> 90% of all staff trained	> 90%	> 90%		

Percentage of AECOPD Patients Identified (Denominator is the number of patients admitted for AECOPD. The numerator is the number of AECOPD patients identified 24-48 hours after admission)		x			x			x	x		x		> 90% of patients admitted for AECOPD within 24-48 hours	> 90%	33.3%	31.3%	38.9%
Discharge Care Bundle Adherence Rate (Denominator is the number of AECOPD patients identified. The numerator is the number of patients who received the intervention)		x			x			x	x		x		> 90% of patients identified and received the intervention	> 90%	100%	100%	100%
Percentage of Data Collection Sheet Documentation (Denominator is the number of participants. The numerator is the number of documented participant data before discharge)		x						x	x		x		> 90% of data collection sheet documented before discharge	> 90%	100%	71%	71%
Follow-up Visit (Denominator is the total participants. The numerator is the number of patients informed to follow-up within 7 days of discharge)		x						x	x		x		> 90% of patients who were instructed to follow up within 7 days	> 90%	> 90%	> 90%	> 90%
Staff Overtime Pay (Denominator is the total number of staff hours worked per week. The numerator is denominator minus non overtime hours)			x	x	x			x	x		x		< 5% of overtime pay per pay period	< 5%	0	0	0

Average Age (Sum of all ages divided by the number of participants)						x		x	x		x				74 yo	80 yo	80 yo
Percentage of Male Participants (Denominator is the total number of participants. The numerator is denominator minus female participants)						x		x	x		x				33.3%	55.6%	55.6%
Percentage of Smokers (Denominator is the number of participants. The numerator is the number of participants who smoke)						x		x	x		x				30%	68.8%	66.7%

Appendix M

Data Collection Tool for Evaluation

Contextual Data					Intervention							Readmission Data
	Age	Gender	Smoker	Patient identified 24-48 hours	Discharge Care Bundle	Inhaler technique	Education pamphlet	Action Plan	Pulmonary rehab referral	Smoking cessation referral	Follow-up visit within 7 days	Readmission within 30 days
			Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												

Age: 1 = 65-69 years old, 2 = 70-74 years old, 3 = 75-79 years old, 4 = 80-84 years old, 5 = >85 years old
Gender: 1 = Male and 2 = Female