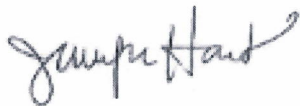Decreasing Preventable Emergency Department Visits

Using the Patient Activation Measure

By Molly E. Dale
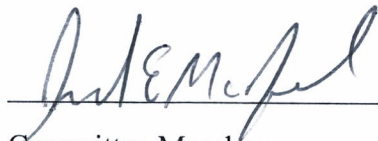
APPROVED BY:

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08/18/2021

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Ann E. McIntyre   8/20/21

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08/18/2021

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Graduate Program Chair   Date

Decreasing Preventable Emergency Department Visits Using the Patient Activation
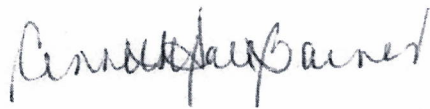
Measure

By

Molly E. Dale

DNP Project submitted to the School of Nursing

of Salisbury University in partial fulfillment of the requirements

for the degree of

Doctor of Nursing Practice

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DECREASING PREVENTABLE EMERGENCY DEPARTMENT VISITS

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Abstract

Problem: Chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are chronic conditions and common causes of death and disability in the United States that lead to emergency department (ED) overutilization. In individuals with these conditions, unnecessary use of the ED can adversely affect health outcomes, significantly increase healthcare expenditures, and result in poor quality of care (Soril et al., 2015). Emergency Department overutilization occurs for a variety of reasons, however, poor education on disease self-management is a major contributor (Cerisier, 2019). **Purpose:** This project sought to determine if administering the short-form Patient Activation Measure (PAM-13) survey in the ED and providing additional educational resources decreases unnecessary 30-day ED return visits among patients with COPD and CHF who score an activation level of 2 or less, when compared to the standard care. **Methods**: A hospital-based, quality improvement project was implemented using a convenience sample of patients ≥ 18 years old presenting to the ED with a chief complaint related to their diagnosis. The PAM-13 survey was used to determine each participant's level of activation in their own healthcare prior to the educational intervention. **Results:** The average PAM-13 score indicated a need for improvement in disease self-management among this population. A significant difference was found in the number of 30-day return visits among participants that received the educational intervention. No correlation was found between low PAM-13 scores and frequent ED visits among the participants. **Significance:** This project supports the need for improved education in the ED for COPD and CHF patients to improve self-disease management, thus decreasing unnecessary ED visits and poor outcomes.

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Introduction

Background

Higher life expectancy in the United States has led to higher rates of chronic illnesses and comorbid conditions within the population. The current data from the Centers for Disease Control and Prevention (2019) indicates that six in every ten Americans is living with at least one chronic condition. Chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are chronic conditions and common causes of death and disability in the United States that lead to emergency department (ED) overutilization. Unnecessary use of the ED can adversely affect health outcomes, significantly increase healthcare expenditures, and result in poor quality of care in individuals with these chronic conditions (Soril et al., 2015). Overutilization of the ED occurs in this population for a variety of reasons, however, poor education on disease self-management is a major contributor (Cerisier, 2019). Inadequate medical care and ED discharge processes leads to poor self-care at home causing more frequent exacerbations of symptoms and increasing unnecessary use of the ED.

The short-form Patient Activation Measure (PAM-13) is a questionnaire that is used to determine a patient's level of activation, or ability and confidence in managing their own condition (Chew et al., 2018). The movement toward patient-centered care in recent years requires patients to have the "skills, knowledge, and motivation to participate as effective members" (Hibbard et al., 2004, p. 1006) of their own healthcare team. Patients who are activated can make informed choices regarding their care and typically have better health outcomes (McCabe et al., 2018; Hibbard et al., 2004). Conversely, those with low activation are more likely to have frequent hospitalization and ED visits due to poor

disease self-management, and the PAM-13 survey allows healthcare providers to identify

these patients (Kinney et al., 2015). Using the PAM-13 to assess the level of activation in

those with chronic conditions can also be useful in planning interventions that will

improve patient activation (McCabe et al., 2018).

Problem Statement

Emergency department over-utilization is a major contributor to ED

overcrowding resulting in poor health outcomes and discontinuity in care. Patients with

chronic conditions, such as COPD and CHF, use hospitals and EDs at a much higher rate

than the general population (Kinney et al., 2015). The PAM-13 survey can be used to

identify patients with low activation who require further intervention to improve their

ability and confidence in disease self-management, thus decreasing unnecessary ED visits

and improving health outcomes.

Purpose of Project

The purpose of this hospital-based quality improvement project is to assess if

implementing the PAM-13 survey in the ED can decrease unnecessary 30-day ED return

visits among patients with COPD and CHF who score an activation Level of 2 or less at

the hospital in Delaware. Using the PAM-13 to screen patients for their level of

activation could assist in identifying those individuals who are the most at risk for ED

over-utilization and thus good candidates for increased educational interventions that

enhance confidence and promote healthy self-care behaviors.

PICOT Question

The research question that this project will address is: Can administering the

PAM-13 survey in the ED and providing additional educational resources decrease

unnecessary 30-day ED return visits among patients with COPD and CHF who score an activation Level of 2 or less, when compared to the standard care. Another question this project aims to answer is: Is there a correlation between PAM scores of Level 2 or less and multiple ED visits within the last three months.

Synthesis of Supporting Literature

PRISMA Statement

The EBSCOhost search platform was used to search CINAHL Plus, Health Source, and MEDLINE databases all at once. The search term "patient activation" with limitations to articles published between 2015 and 2020 in peer reviewed journals produced 1,223 results. Adding the term 'chronic illness' narrowed these results down to 168, which is illustrated in the PRISMA diagram (Appendix A). After duplicate articles were removed, there were 120 studies to review from this search. Approximately 80 abstracts were reviewed for relevance to the current project. Sixteen full text studies were reviewed, and eight were excluded, leaving eight studies to be included in the synthesis of literature. Articles were excluded if the purpose was to develop a patient activation scale or to adapt and translate PAM into another language. Articles in a language other than English and studies pertaining to mental health were also excluded. Research exclusively studying the pediatric population were not included. One study from the UK included patients that were 16 years old or older, this study was kept because it was not specifically observing the pediatric population. This project will focus on individuals with COPD and CHF, but two studies were included since their research on patient activation in individuals with other chronic illnesses is pertinent to the aim of this project.

<div align="center">**Themes**</div>

Barriers to Self-Management

Patient activation can be defined as a patient's ability to self-manage their chronic medical condition (Gao, Arden, Hoo, & Wildman, 2019). Low patient activation may be due to a patient's lack of knowledge, resources, or confidence in their ability to self-manage their condition. McCabe et al. (2018) aimed to identify factors associated with patient activation in those with atrial fibrillation; the authors found that unemployment and lower levels of education were correlated with lower levels of patient activation. Similarly, Schmaderer et al. (2016) examined activation in patients with multiple chronic conditions and found that education level and income were correlated with activation level. Conversely, Korpershoek et al. (2016), report that education and financial status were not found to be determinants of patient activation in their research, yet anxiety and disease severity were found to be key determinants of disease self-management (Korpershoek et al., 2016).

Acute Care Utilization

Kinney et al. (2015) studied the association between PAM scores and ED use and hospitalizations in chronically ill patients. The authors found inverse relationships between PAM scores and both hospitalizations and ED visits; in other words, those with lower PAM scores tend to have greater ED and hospital utilization (Kinney et al., 2015). Similarly, Schmanderer et al. (2016) demonstrated that chronically ill individuals with low patient activation utilize healthcare facilities more frequently than those with high activation. For this same reason, Schumacher et al. (2017) designed a mixed methods study to assess patient engagement and explore care-seeking decisions among elderly,

chronically ill patients. After implementing an ED-initiated coaching intervention that involved education and assistance with follow-up visits, the authors found higher PAM scores in patients who received the intervention than in those who received the usual care (Schumacher et al., 2017).

Healthcare Costs

Treating chronic conditions can be very costly, and poor self-management can drive the cost up even higher due to hospitalizations and ED visits. Hibbard et al. (2015) found that patient activation tends to increase with time and that a high level of activation will endure for years. This demonstrates that investing in methods to improve patient activation and self-management practices can reduce overall healthcare costs in the long run. Enhancing chronic disease management will increase patient activation, thus enhancing patients' ability to minimize modifiable risk factors (i.e. BMI, blood glucose, physical activity, etc.) which is also associated with decreased expenditure (McCabe et al., 2018).

Improved Patient Activation & Outcomes

Tecson et al. (2016) compared the PAM levels of patients with heart failure who received an intervention to those that did not; the authors found that those who were chosen to participate in the heart failure therapy, which included cardiac rehab, education, and diet and lifestyle changes, had higher levels of activation and subsequently had better health outcomes. In a four-year study by Hibbard et al. (2015), researchers found that increased patient activation over time was associated with better medication compliance, increased self-management knowledge, improved health behaviors, and decreased number of ED visits. Hibbard et al. (2015) were able to conclude that these

results yielded improved long-term health outcomes, but they were unable to determine if there is a threshold for increased activation that has to be reached to produce improved health outcomes.

Variations in Concept Definition or Populations

All studies that were included in the synthesis of literature had similar populations as only studies pertaining to chronically ill adults were included, however the demographics of the sample could skew the results. The sample used by McCabe et al. (2018) was 99% white and 66% male, but the sample used by Hibbard et al. (2015) was 68% women and 65% white. The data from these studies may not be generalizable to the population of chronically ill adults that are of interest in this project. Schumacher et al. (2017) used the term patient engagement rather than patient activation, but the authors describe an engaged patient as one that makes informed decisions about their care and avoids symptoms exacerbation through good self-management. Although the terminology differed, this description is the same as that of a patient who is activated in their own care.

Variations in Methods Quality

Most of the studies discussed in this synthesis of literature used the survey method of descriptive research, and large sample sizes were used in these studies to improve the strength of the evidence. Two studies utilized mixed methods designs that included surveys and qualitative interviews (Gao et al., 2019; Schumacher 2017). The one systematic review used in this synthesis of descriptive research supports much of the evidence from the other descriptive studies included. The randomized control trial in patients with cystic fibrosis which was piloted by Gao et al. (2019) has the highest

evidence of the nine studies discussed, and it was included due to its relevance and explanation of the PAM-13 and patient activation. While descriptive research is not very strong evidence, "the PAM-13 is a reliable and valid measure" (Prey et al., 2016, p. 2026) to predict patient activation, and this is the survey utilized in most of the studies discussed. Overall, the level of the evidence in this literature review has a Moderate impact on the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) scale. There is, however, a gap in the research on the utilization of the PAM-13 in ED. The current project aims to demonstrate its effects on ED care for chronically ill patients.

Conclusion of Synthesis of Literature

The four themes identified through this synthesis of literature, barriers to self-management, acute care utilization, healthcare costs, and improved patient activation and outcomes, are also the main themes in this DNP project. McCabe et al. (2018) and Korpershoek et al. (2016) reported that knowledge deficit is a major barrier to disease self-management that also decreases patient activation, thus supporting the need for the educational intervention that will be implemented during this project. The literature supports the use of PAM in the ED to "[identify] those individuals who are the most at risk for hospitalization and/or emergency room utilization" (Kinney et al., 2015, p. 50). Early identification of individuals with low PAM scores allows for intervention to improve patient activation and decrease ED utilization.

Conceptual Framework

The Theory of Self-Efficacy

The Theory of Self-Efficacy was developed by psychologist Albert Bandura in the 1970's to complete what he thought was missing from the Social Learning Theory (Resnick, 2018). Bandura's theory is based on the assumption that interventions aimed at improving self-efficacy can cause positive behavioral changes (Resnick, 2018). With this theory, Bandura sought to explain the reciprocal relationships between a person, their behavior, and the environment (Resnick, 2018). In nursing, the theory of self-efficacy is often applied to chronic disease management due to the level of patient involvement required to self-manage these conditions (Resnick, 2018). Self- efficacy is defined as one's "belief in their own ability to organize their behavior for the purpose of achieving the desired outcome" (Farazian et al., 2019, p. 45), and applying the theory of self-efficacy has demonstrated that self-care could be improved through a self-efficacy training program (Farazian et al., 2019). Similarly, patient activation can be defined as "having the knowledge, skill, and confidence to manage one's health" (Hibbard et al., 2015, p. 325). The theory of self-efficacy will serve as a framework for this project, as an educational intervention was implemented in those with low activation with the goal of seeing a positive behavior change to improve disease self-management. Enhancing the education in patients with COPD and CHF can improve self-efficacy and activation thus improving involvement in their own care and disease management.

EBP/QI Model

Promoting Action on Research Implementation in Health Services

The Promoting Action on Research Implementation in Health Services (PARiHS) model will be used to organize this DNP project. According to Melnyk and Fineout-Overholt (2019), this model combines multiple elements in order to successfully achieve the planned behavior change. The three key elements at the center of the PARIHS model used to implement research into practice are: evidence, context, and facilitation (Kitson, 2017). Evidence refers to both clinical research as well as clinical experience. As noted earlier, literature supports the use of PAM-13 in identifying patients at highest risk of ED overutilization as well as the need for increased educational resources in individuals with low patient activation scores. Context is the culture and leadership that are in place in an organization that are conducive to evidence-based change (Melnyk & Fineout- Overholt, 2019). The culture of the hospital system is to provide clinically advanced care to the community, which supports implementing changes that have proved to improve outcomes. Lastly, facilitation refers to the measures that can be taken to easily implement a change into practice (Melnyk & Fineout, 2019). The goal of the current project was to identify an intervention that can be continued after the project ends. If this project is successful in decreasing utilization in the target population, it should serve as a pilot to facilitate implementation of the PAM survey into the routine care provided in the ED.

Project Design

Methodology

This is hospital-based quality improvement project that was piloted in the ED of a rural hospital system. The PAM survey was administered to eligible patients with COPD and/CHF at this ED between January 25, 2021 and April 30, 2021 to identify those patients with activation levels of two or less. Educational opportunities and resources were provided to improve disease self-management and reduce unnecessary ED utilization. The surveys were scored based on the response to each item, and the participants were classified into one of four levels of activation. Patients scoring at level two or less tend to give responsibility for their health to others and lack knowledge and motivation to properly self-manage their condition and require additional educational interventions to engage them in proper self-care. Additional educational resources (Appendix E) were provided for these patients, in addition to the standard ED discharge instructions, in an effort to improve their activation level. The information gathered from this project can be used to determine if the PAM is an appropriate tool to utilize in the ED on patients with chronic conditions to identify their ability to effectively self-manage their condition at home.

Tool

The PAM-13 questionnaire (Appendix B) is a thirteen question, Guttman-style survey, which has proven to be both reliable and valid, and it is widely used in clinical practice (Insignia Health, 2018). The survey requires participants to respond to each item with one of the following options: 'strongly disagree', 'disagree', 'agree', 'strongly agree', or 'N/A'; it uses the scored items to classify individuals into levels of activation through

questions regarding the patient's knowledge of their condition and involvement in their

own self-care. An individual scoring Level 1 is considered to be "disengaged and

overwhelmed" by managing their condition, but someone who scores at a Level 4 is

"maintaining behaviors and pushing forward" in their disease self-management (Insignia

Health, 2018, p. 1). For this reason, enhanced education was provided to those patients

whose scores classify them in Levels 1 and 2 of activation in an effort to increase their

activation, improve their self-management, and reduce ED overuse.

Setting

This project was conducted at a rural hospital in Delaware which is part of a

larger medical system serving many counties in both Delaware and Maryland. This ED

is a 23-bed unit that is designated as a level III trauma center by the American College of

Surgeons.

Participants

The target population of this project was English-speaking patients admitted to

the ED that were 18 years of age or older and presented for a complaint related to COPD

and/or CHF. Participants were excluded if they were not able to cognitively participate in

the survey due to the severity of their current condition or another disease process, as

well as those who were unable to manage their own self-care, including patients living in

a skilled nursing facility, those receiving 24-hour home care, or those who rely on a

family member or friend to act as their primary caretaker. Patients had to have an existing

diagnosis of COPD and/or CHF to participate.

Participant Protection & Data Storage

Approval for this project was obtained from Institutional Review Board (IRB) at Salisbury University.

Informed consent was obtained from each participant using the consent form found in Appendix D. The medical record number (MRN) of each consented participant was recorded and stored in a secure excel document on a hospital computer. Only the student investigator had access to this information for the purpose of obtaining follow-up data about ED visits. The password protected excel file containing MRNs will no longer be needed after follow-up data is obtained and will be permanently deleted following the project. All other data was stored on the student investigators computer, which is password and fingerprint protected, in a password protected excel file. This data will remain until the final write-up for the project is completed. It will then be permanently deleted from the computer. Data that is shared with the public will protect the anonymity of the participants by avoiding the use of any information that could be linked back to a specific participant.

The risk to participants of this project was minimal; however, discussing self-management of a chronic disease is a sensitive topic to some participants. Participants were made aware that they can exit the project at any point if they wish. To minimize any emotional response that this subject could cause, the student investigator utilized neutral verbal and nonverbal communication during the interaction with each participant.

Intervention

The PAM- 13 questionnaire has been proven to effectively measure patient activation, and participants who score activation Levels of 1 and 2 are known to have a poor understanding of disease self-management (Insignia Health, 2018). Patients scoring at level two or less were provided with enhanced education on disease self-management of COPD and/or CHF. The educational resources that were utilized (**Appendix E**) are from the American Lung Association and the American Heart Association; these resources include background information on COPD and CHF as well as an action plan for the patient to follow each day. The action plans direct the patient to continue healthy lifestyle habits, take medications as prescribed, and monitor for worsening symptoms. This will allow the patient to improve disease self-management as well as catch early symptoms of exacerbation before they require emergency treatment.

Data Collection

Survey and demographic data were collected from January 25, 2021 until April 30, 2021, and data collection from the electronic health record (EHR) continued for 30 days following the last participant survey date. The student investigator was responsible for all data collection. After receiving informed consent (**Appendix D**), the patient was given the PAM-13 survey to complete; if the participant had difficulty reading the survey, then it was administered verbally as written by the student investigator. Demographic data that was collected from the EHR included the patients' chief complaint, medical diagnosis, gender, ethnicity, age, and MRN. The EHR was also used to retroactively assess the number of ED visits within the last three months for each patient. This

information and the patient's survey answers were assigned the same random one to

three-digit number; the MRN and survey were not directly linked together or to

participants' names or other identifying information. Medical record numbers were stored

in a password protected document on a hospital computer to assess for 30-day return ED

visits after the survey was administered.

Data Analysis

Descriptive statistics were used to describe the demographic characteristics of the

sample. Measures of frequency and central tendency were also used to compare this

sample to the demographics of the population of individuals with chronic condition in the

U.S. Additionally, descriptive statistics were used to analyze the mean PAM-13 score of

the sample as well as the frequency of ED visits both before and after the educational

intervention. The Pearson chi-square test was used to compare 30-day return visits of

participants that received the educational intervention to those participants that did not.

This test was chosen to determine if there was a difference between the frequency data of

these two groups. A chi-square test was also used to analyze for a relationship between a

low PAM-13 score and multiple ED visits. Due to the small sample size, the Wilcoxon

signed rank test was chosen to assess for a difference in ED visits 30 days before and

after the educational intervention.

Organizational System Analysis

Strengths

This project is in line with the mission and vision of this hospital system to improve the health of the community and provide clinically advanced care. Because the ED is a Level III trauma center, the nursing staff is highly skilled and trained to care for patient's presenting with a variety of conditions. The ED has a social worker that acts as a care coordinator in the ED to address the needs of those who frequently visit the ED. This hospital system completes a community needs assessment every three years; the most recent edition was published in 2019. The organization has many resources that are beneficial to the target population of this project, such as a heart and vascular institute, support groups for individuals with heart disease that meets four times per year as well as for those with COPD that meets every month. There are also nursing led outpatient educational programs available for patients with COPD and CHF who have recently been discharged from the hospital inpatient setting.

Weakness

Despite having an Implementation Strategy for Community Health Improvement from 2019-2021 based on the community needs assessment, there is no plan to improve care specifically for COPD or CHF patients. Due to the nature of the ED, nursing staff and care coordinators have a limited amount of time with patients prior to discharge to perform the necessary education. There is also a high volume of patients with COPD and CHF that could make this intervention burdensome.

Opportunities

This health system has little competition in the area for most of the population to choose a different facility, so they have the opportunity to reach a large portion of those with COPD and CHF. This project could increase the opportunity for Medicare reimbursement and decrease the financial and safety burden of ED overcrowding. Since 84% of the local population has a PCP, the new education should be reinforced during outpatient appointments (Creating Health Communities, 2017).

Threats

Competing priorities within the organization due to a recent health system merger pose a threat to the longevity of this intervention. The low level of education among the local population could threaten the effects of this project.

Implementation Timeline

Initial demographic and survey data was collected from January 25, 2021 until April 30, 2021. Thirty days after data collection had ended, the MRNs were used to assess for return visits in each participant in order to answer the primary research question. This took place from May 1, 2021 until May 30, 2021.

IRB and Agency Approval

The project proposal was first submitted and approved by the Salisbury University Institutional Review Board (IRB). The project was then presented to members of the health systems Research Review Committee (RRC), and a formal application for IRB approval with the agency was filed. An amendment was filed to change the site of data collection after IRB approval and was subsequently approved by both agencies.

After formal approval from all agencies was obtained, the implementation phase of this

project was able to begin on January 25, 2021.

Project Implementation

Prior to the start of data collection, the student investigator met with the manager

of the clinical site to discuss the plan for data collection and the educational intervention

to minimize disruption to patient care within the department. Nursing staff was then made

aware of the purpose of the student investigator's presence, and they were educated on

the inclusion and exclusion criteria for participation. The purpose of this was for nursing

staff to identify potential participants while the student investigator was conducting data

collection. However, the nursing staff was not asked to participate in data collection; the

student investigator acted as the sole data collector. The student investigator also used the

EHR to identify potential participants. The nursing staff was made aware of the

educational intervention that would be implemented with certain participants, but they

were not involved in the implementation. The student investigator was also responsible

for implementing the appropriate education to participants based on their diagnosis and

PAM-13 survey score. The educational materials that were utilized from the American

Lung Association and the American Heart Association can be found in **Appendix E**.

Barriers and Facilitators

Throughout the data collection process, the main barrier faced by the student

investigator was low enrollment. The contributing factors to the low enrollment of this

project include the limited amount of time each week that the student investigator was

present to collect data as well as the restrictions and changes in the ED census that

occurred due to the coronavirus (COVID-19) pandemic. The student investigator spent a

total of 100 hours in data collection from January 25- April 30, 2021 at the clinical site

which limited the number of potential participants to the census in the department during

those hours of data collection.

The COVID-19 pandemic brought many changes to the field of healthcare. One

of the changes seen in hospitals all over the world was how people utilize the ED. A

study of 28 North American EDs showed a 48% decrease in ED visits from 2019 to 2020

(Keyes et al. 2021). This research also suggests that this decrease was largely due to the

fear of the general public that they may contract the virus if they visit the ED (Keyes et

al., 2021). However, for a person with COPD and CHF, delaying care for their symptoms

has the "potential of worsening health outcomes" (Keyes et al., 2021, p. 5). This decline

in ED visits continued through the pandemic into 2021; visits in early 2021 when data

collection took place continued to be 25% lower than the average (Adjemian et al., 2021).

At the start of data collection, the hospital was experiencing a shortage of rapid

COVID-19 testing materials. This was a barrier in data collection for a short period of

time since most patients who were eligible to be discharged home with COVID-like

symptoms would have to wait a few days to receive their results. If a patient, for

example, presented with a cough and had the diagnosis of COPD the student investigator

could not approach this patient as a potential participant unless COVID-19 was ruled out

during their ED visit. However, during the months when data collection took place there

was an influx of rapid COVID-19 testing materials that allowed for rapid testing of every

patient who presented with COVID-19 symptoms. These resources acted as a facilitator

in improving enrollment numbers during the last few months of data collection.

Summative Evaluation of Implementation Process

The outcomes to be measured by the data collected during implementation include: Can administering the PAM-13 survey in the ED and providing additional educational resources decrease unnecessary 30-day ED return visits among patients with COPD and CHF who score an activation level of 2 or less, when compared to the standard care. Is there a correlation between PAM scores of Level 2 or less and multiple ED visits within the last three months? The goal of the project was to enhance confidence and promote healthy self-care behaviors in patients with COPD and CHF through increased education about their disease process and proper self-management. The appropriate data was collected on each patient throughout the implementation process and the intervention was implemented in a way that allowed for the planned outcomes, objectives, and goals to be measured. However, low enrollment could impact the results of the data analysis.

As will be discussed in the data analysis, the average PAM survey score among all participants is a Level 2. Since individuals who score in Level 2 are defined by Insignia Health as "becoming aware but still struggling" (2018, para. 2) with their self-care, regardless of the outcomes the educational intervention was helpful to the patient population. There was an overall positive response from participants to the educational intervention, and a majority of the participants did verbalize that they felt the education will be helpful to them in managing their condition at home on a daily basis.

This project had a very low risk for negative effects; the student investigator did not recognize any negative effects on the participants throughout the data collection period. The main concern for any research project is the possible negative effects on the

participants, but there was also concern for any impact the project could have on the

department that was used for the setting of the project. Prior to entering the setting, the

project was presented to the department directors to ensure that workflow was not

interrupted. The student investigator was able to avoid disruption or interference with

patient care throughout the data collection process by coordination and communication

with nursing staff. The exclusion criteria were also designed to prevent any interference

in the care of a patient that may be critically ill.

   Each patient who came into the ED with symptoms related to their COPD and

CHF during times of data collection was evaluated to determine if they met the inclusion

criteria that was predetermined in the project proposal. Having the criteria established

prior to implementation allowed for an impartial selection of participants. It could be

argued that the population was not affected fairly since the educational intervention was

only performed on those who scored a one or two on the PAM survey, but those with

higher scores are said to have a good understanding of disease self-management.

   The problem addressed by this project is preventing unnecessary use of the ED in

patients with COPD and CHF. There are many contributors to this problem which include

medical insurance, finances, education level, access to care, and severity of disease. It is

not plausible that one project or one intervention will completely alleviate this problem.

However, education is a great place to start addressing this problem. All of the aspects

mentioned above are important to managing a chronic condition, but education is the

foundation for disease self-management. Addressing the educational needs of this

population can then set the patient up to utilize their PCP for the other issues that may

interfere with chronic disease self-management.

Data Analysis

Demographic Data

A total of twenty-seven individuals with COPD or CHF presented to the ED during the periods of data collection with complaints related to one of these diagnoses. Of these patients, five were eliminated due to ineligibility to participate. Twenty-two patients were approached by the student investigator and reviewed the informed consent (**Appendix D**). Seventeen of these patients (n=17) consented to participate while five declined. All seventeen participants completed each item of the PAM-13 survey, and the ten participants that qualified for the educational intervention were active participants in this activity.

The EHR was utilized to gather demographic data on each of the participants. The participants consisted of eight females (47.1%) and nine males (52.9%) ranging in age from 53-86 (mean age 69.9 years ± standard deviation 10.3). Of the participants, 41.2% were between the ages of 53-64, 29.4% were between 65-74, and 29.4% were 75 years or older. There was a total of six African American (35.3%) participants, ten (58.8%) Caucasian participants, and one (5.9%) Hispanic participant. Over half (64.7%) had a diagnosis of COPD and 29.4% had been diagnosed with CHF. See **Table 1** for demographic data of the consented participants.

PAM-13 Scores

The Insignia Health Excel spreadsheet was used to enter PAM-13 survey answers and calculate a total activation score and level for each participant. The scores range from 42.2 to 60.6 (mean score of 52.72 ± standard deviation 6.3). The participants were divided into two groups based on their activation level; those who scored into Levels 1

and 2 received the educational intervention and those in Levels 3 and 4 did not receive

the educational intervention. Of the participants, 58.8% scored into Levels 1 and 2,

41.2% scored in Level 3, and none of the participants scored a Level 4 based on their

answers to the PAM-13 survey. A total of ten participants scored into Levels 1 and 2,

thus receiving the additional education; this group will be referred to as the intervention

group. Seven participants scored a Level 3 on the PAM-13 survey, so these participants

did not receive the educational intervention.

30-day Return Visits

There was a total of six 30-day return ED visits among all participants; three of

these visits were from participants in the intervention group (50%) while three were from

the participants who did not receive the educational intervention (42.6%). The average

number of ED visits 30 days prior to data collection was 0.59 ($\pm$ standard deviation of

1.00) visits per participant, and the average number of ED visits 30 days after data

collection was 0.35 ($\pm$ standard deviation of 0.49) visits per participant. To compare the

frequency of ED visits between the intervention group to those that did not receive

additional education, a Pearson chi-square test was performed. A significant difference

($X^2(1) = 3.938$, $p = 0.047$) was found in the rate of 30-day returns to the ED between

those that received additional education and those that did not; this indicated that the

participants who scored in Level 3 and did not receive the additional education more

frequently used the ED than the intervention group.

Compared to the three 30-day return visits among the intervention group, there

was a total of five ED visits between the ten participants in the intervention group in the

30 days prior to implementation of the intervention. A Wilcoxon test examined the results

of the ED visits 30-days prior to the intervention and 30-days following the intervention.

No significant difference was found in the results (Z= -0.378; $p > 0.05$). The number of

ED visits 30-days prior to the intervention in this group was not significantly different

from the 30-day ED return visits following the educational intervention.

In the three months leading up to this project there were a total of seventeen ED

visits among all of the participants. Eight of these visits were from the group of

participants who scored in PAM-13 Levels 1 and 2, and nine of the visits were by

participants who scored in PAM Level 3 and did not receive the educational intervention

during the project. The maximum number of visits of any participant in the three months

prior to the project was three. Nine of the visits (52.9%) occurred in the 30-day period

prior to data collection. A chi-square test of independence was performed to assess for a

correlation between PAM-13 level and number of ED visits in the three months prior to

data collection among participants in the intervention group. No significant relationship

was found to correlate a PAM level of 1 or 2 with multiple ED visits among this group

($X^2(1) = 4.133$, p > 0.05).

Discussion of Findings

The goal of this project was to identify individuals with COPD and CHF who

could benefit from assessment of their disease management activation level and increased

education about their chronic condition(s). The purpose of implementation in the ED was

to identify and intervene with these patients while in the department in order to prevent

future unnecessary ED visits related to their chronic condition; the long-term goal is to

decrease one contributor to ED overcrowding by improving the outcomes of COPD and

CHF patients. Unfortunately, low enrollment limits the amount of information that can be drawn from the current project. Low enrollment in this project was largely due to having the student investigator as the only data collector. This decision was made to avoid an additional burden on nursing staff in the ED during the COVID-19 pandemic. Low enrollment can also be attributed to lower ED census since the start of the COVID-19 pandemic at the research setting. Despite this barrier, it can be inferred from this data that there is a need for improved education among many patients with a diagnosis of COPD and CHF in this setting.

The main research question that this project sought to address was if an educational intervention could decrease the number of ED visits in COPD and CHF patients with low activation scores. There was no statistically significant difference between the number of ED visits 30 days prior to and 30 days after the educational intervention among the ten participants with PAM-13 scores $\leq$ Level 2. However, there were fewer ED visits recorded among these ten participants after receiving the educational intervention, so a larger sample size would more accurately reflect the effect of the education compared to the standard of care.

The secondary research question this project addressed was the correlation between activation score $\leq$ Level 2 and a high number of ED visits. Half of the participants who scored Level 1 or 2 and 85.7% who scored Level 3 had one or more ED visits in the three months leading up to the data collection period, respectively. Since no participants scored in Level 4 of activation there is no data to compare individuals in Level 4 to those in Levels 1, 2, and 3. Insignia Health (2018) reports individuals in Level 4 are maintaining a healthy lifestyle and know how to advocate for their own health.

Whereas individuals in Level 3 are still building on their self-management skills (Insignia Health, 2018). Based on this information and the project data, future implementation should include an educational intervention for all individuals who score in Levels 1, 2, and 3 on the PAM-13 survey.

The CDC reports that chronic conditions in America are more prevalent in women, Caucasians, and those who are over the age of 65 (Boersma, 2018). The sample used in this project was slightly different than these national averages that were reported in 2018 due to a higher number of males than females; the participants consisted of more males, 52.9%, males and 47.1% females. Similar to the data reported by Boersma (2018), the majority (58.8%) of this sample was 65 years of age or older with a mean age of 69.9 (± standard deviation 10.3). Lastly, there were three races reported based on information obtained from the EHRs of each participant, and the most commonly reported was non-Hispanic, white (58.8%). It can be concluded that the demographics of this sample are a similar representation of individuals with chronic conditions in the U.S.

In regard to participant response, most were interested and eager to learn more about how to manage their condition despite their PAM-13 score. The student investigator found that the majority of individuals that were approached for participation responded positively to both the survey questions and the educational intervention. The "stoplight" approach to symptoms management used by both the American Lung Association and the American Heart Association was new to many of participants, but it was noted that this system would be helpful when utilized consistently at home. Copies of the educational materials were provided for each patient that received the educational intervention so that the materials could be referenced at home as well; this has the

potential to help minimize any confusion that may have come from the overstimulating

environment of the ED and the amount of new information the patient may be receiving.

Many of these patients had family members in the room who participated in receiving the

additional education. Lee et al. (2017) reports that 41% of family members felt that they

had insufficient knowledge on the patient's condition or treatment regimen. The

participants of this study did not require a family or professional caregiver, but family

members who are involved in the patient's healthcare should have enough information to

provide support for the patient at home. It was observed that some patients seemed more

at ease in this high stress environment with receiving the education when a family

member was present.

Recommendations

Economic Considerations

The implementation of the PAM-13 survey and/or an educational intervention for

patients with COPD and CHF is much less costly than the price of multiple ED visits and

hospital admissions caused by poorly control symptoms that results from a lack of

understanding of disease self-management. Urbich et al. (2020) reports that the average

ED visit related to CHF is between $1441 and $1900, and an ED visit related to a COPD

exacerbation is reported to have costed, on average, $2812 in 2012 (Singh & Yu, 2016).

It was found that there was a mean of 0.59 30-day visits among all seventeen participants

prior to data collection. This is a cost of approximately $850.19- $1669.08 per person

over a 30-day period. Since this was a quality improvement project, the educational

resources utilized were evidence-based and readily available at no cost to healthcare

workers and the general public. It is the role of the nursing staff to provide patients with

their discharge instructions prior to leaving the ED. The educational resources utilized in

this project are more detailed than the standard instructions utilized currently, but the

small amount of additional time spent on education with each COPD and CHF patient is

still more cost effective than having undereducated patients who are unable to adequately

manage their condition. The PAM-13 survey is not a standard evaluation performed by

case management staff at this facility, but the survey can be easily incorporated into the

workflow with ED patients. The only additional cost to the healthcare organization would

be that of the PAM-13 survey; a license to use PAM-13 at this particular hospital would

be $4500 per year based on the number of patients seen annually. However, this is

comparable to the cost of ED visits for approximately three to five patients with COPD or

CHF. Overall, the implementation of this project design into the workflow in the ED

would be a fraction of the cost that is spent each year on care of patients with poorly

managed COPD and CHF. Spending money on education to prevent unnecessary ED

visits and hospital admissions not only saves the healthcare organization money in the

long run, but it will also improve the outcomes of these patients to have longer, healthier

lives.

<div align="center">**Process and Outcome Recommendations**</div>

The outcomes of this project and the barriers that were identified have many

implications for future research in this area. Future projects should expand on this data

through larger scale implementation in the ED. Now that preliminary data has shown

some insight into this population, there is a higher likelihood of buy-in from nursing staff

to take the time to participate in data collection. A larger sample would yield more

accurate results regarding the impact on 30-day return visits after an educational

intervention. Based on the data that was obtained, the educational intervention should be provided to any patient scoring in PAM-13 Levels 1, 2, and 3. Emergency department visit data should also be examined to compare these patients to those who score a Level 4 of self-activation since this project was unable to assess any individuals in this category.

Pétré et al. (2020) recognizes an ED visit by a patient with a chronic condition as an opportunity to educate patients who otherwise would not receive the information that they need to understand their condition and comply with their treatment regimen. The results from the PAM-13 survey, whether implemented in the ED or outpatient setting, can be used to improve a patient's care in an area where they need the most assistance. If a patient answers most questions with responses that indicates they are highly activated in their own care but one response indicates that they do not understand their medications, the healthcare team can take that opportunity to provide better education on the patients medication regimen. Further follow-up with patients to reassess PAM-13 level after the educational intervention would also be beneficial in evaluating the effectiveness of the intervention.

The overutilization of the ED by those with chronic conditions is also heavily influenced by factors other patient activation and education level. Other factors that should be considered as contributors to this problem include poor access to transportation, lack of insurance, loss to follow-up with PCP or specialist, or inadequate access to their physician; access to one's primary care provider could further be impacted by the number of PCPs or specialists in the area. The scope of this project does not address factors unrelated to patient activation and education, but it is worth noting that the results of the PAM-13 survey can also be used to open up a dialogue with patients

about their needs regarding self-care. Education is a necessity in disease self-management, but an individual with a chronic condition who is consistently using the ED for care should be assessed for needs in the areas of transportation, insurance, and access to care as well. This is why the importance of a multidisciplinary, patient-centered approach should be utilized in the ED just as it is in other healthcare settings.

DNP Role as a Leader/Innovator

The Doctor of Nursing Practice (DNP) degree prepares graduates for a variety of roles in the healthcare field. Some graduates will go on to be professors, researchers, clinicians, or hospital administrators, but regardless of the professional role that the DNP may take on after they complete their degree, they will be prepared to be leaders and innovators in their field. The objectives for the courses that are required for this degree are all focused on helping the student to meet the essentials and competencies that have been established by various regulatory agencies such as the American Association of Colleges of Nursing (AACN), National Organization of Nurse Practitioner Faculties (NONPF), and the American Organization of Nurse Executives (AONE). One requirement for graduation from a DNP program is the completion of the DNP project. As described by the American Sentinel College of Nursing and Health Sciences (2019) the goal of the DNP project is to evaluate a problem in practice and improve quality of practice whereas a traditional dissertation creates new knowledge through research. This project is focused on providing the student the opportunity to utilize and demonstrate the eight DNP essentials from the AACN (n.d.).

The goals and outcome measured in this project are directly in line with the objective of the DNP project to "promote research-based interventions to optimize patient

healthcare outcomes" (Thomas, 2020, p. 2). There are also various aspects of the process

of developing and implementing this project that utilize and demonstrate many of the

eight DNP essentials for advanced practice nursing. Doctor of nursing practice Essential I

is "scientific underpinnings for practice" (AACN, 2006, p. 8); utilizing the scientific

foundation of nursing within the DNP project demonstrates the advanced practice nurse's

ability to translate this knowledge into actual practice to benefit the health of patients

(AACN, 2006). The theory used to develop this project is the Theory of Self-Efficacy and

the evidence-based practice (EBP) framework is based on the Promoting Action on

Research Implementation in Health Services (PARiHS) model. Bandura's theory of self-

efficacy was developed to explain the relationships between an individual, their

environment, and their behavior (Resnick, 2018). The theory of self-efficacy was used in

the development of this project in order to develop an intervention that can be applied to

this population to improve activation and disease self-management. The PARiHS model

was applied to this project through the utilization of the model's three key elements,

evidence, context, and facilitation, to develop a successful project (Kitson, 2017).

  The second DNP essential developed by the AACN is "organizational and

systems leadership for quality improvement and systems thinking" (2006, p. 10). As

previously discussed, the entire DNP project process is focused on the student's ability to

apply quality improvement strategies in practice whether clinical or non-clinical. The

AACN states that in order to meet this essential the student must demonstrate that they

are "proficient in quality improvement strategies and in creating and sustaining changes

at the organizational and policy levels" (2006, p. 10). This essential is demonstrated

throughout the project through the recognition of a problem in clinical practice and the

development of a feasible intervention to improve patient outcomes within the

organization (Roush & Tesoro, 2017). This clinical problem was recognized by the

student researcher through the application of her experience as an ED nurse to the

knowledge of EBP and quality improvement (QI) from coursework in her DNP program.

Essential VI of the AACN's DNP essentials is "interprofessional collaboration for

improving patient and population health outcomes" (2006, p. 14). Effective

interprofessional collaboration is a skill that the DNP will utilize in practice no matter

what specialty or role they pursue. This project is heavily based on the need for better

resources and access to care for patients with chronic disease outside of the hospital, and

this problem links with the work of many social workers and case managers. The

resource person for this project at the research site is a social worker who works in the

ED. Her position includes figuring out why a patient is having frequent ED visits and

connecting them with resources to avoid future unnecessary ED visits and improve their

health outcomes. The student researcher has been able to use this social worker as a

resource for her experience and expertise in the implementation of this project, which has

allowed the student researcher to demonstrate effective interprofessional collaboration.

The last DNP essential to discuss in the setting of this project is DNP essential

VII, "clinical prevention and population health for improving the nation's health"

(AACN, 2006, p. 15). The field of population health includes the community and

socioeconomic dimensions of health (AACN, 2006). Within the goal of this project is to

improve the health of those with chronic conditions within the community. Every person

in the community, regardless of education level, deserves the opportunity to improve

their health, and this project focuses on educating those with a low level of knowledge

about their own conditions in order to achieve the project goals that were previously discussed.

Through the use of the skills developed through the coursework of this DNP program, such as quality improvement, interprofessional collaboration, scientific and nursing theory, and clinical prevention and health promotion, this project exhibits many of the eight DNP essentials that are a necessity in the role of an advanced practice nurse as a clinician and leader. The project is also a great display of the competencies met by the student investigator that will be utilized in future practice regardless of the role that they should choose.

Dissemination

The project design and outcomes will be locally disseminated to the medical and department directors of this health systems EDs as well as the population health team. The goal of this project is to decrease the burden of chronic conditions on the ED while improving the care of the patients living with COPD and CHF. The investigator will also offer dissemination through the presentation of project design and outcomes to department staff and health system administration. Though the data from this project is limited, it can serve as preliminary data on how to effectively implement the PAM-13 in the ED as well as to identify the appropriate patients requiring educational intervention. Pétré et al. (2020) identifies patient education as the "core dimension" (p. 512) of patient-centered and patient-empowered care. It is the hope of the investigators that there will be an improvement in the process of providing ED discharge education that is tailored to the needs of the individual after this data is shared with the health system.

Additionally, a manuscript of this project will be submitted for review to the peer-reviewed journal *Research in Nursing & Health* (RINAH). This journal is aimed at publishing the work of nurses and other members of the multidisciplinary team in a wide range of health settings (Wiley Online Library, n.d.). RINAH welcomes submissions in the category of health and self-care findings in the practice setting; it is also required that submissions focus on methods that are not already available in the literature (Wiley Online Library, n.d.). This project focuses on the implementation of the PAM-13 survey in the ED, which is a method that has little to no published information available. The multidisciplinary, indirect care focus of this project is a good fit for their goal of advancing knowledge of nursing and other healthcare disciplines (Wiley Online Library, n.d.).

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Table 1.

Table of Evidence

Citation	Purpose	Conceptual Framework	Sample/ Setting	Design	Major Variables	Measurement of Variables	Data Analysis	Study Findings
Cerisier, K. (2019). Connecting chronically ill, uninsured Patients who use the emergency department as a medical home: A process improvement project. *Journal of Emergency Nursing*, *45*(3), 249–253. doi 10.1016/j.jen.2018.08.011	Connecting uninsured patients with chronic conditions in the ED to care coordinators in order to improve health outcomes and decrease ED overuse.	No framework identified by the author	n= 13 residents of Palm Beach County, uninsured, and have at least 1 chronic health problem; 27-bed ED in a West Palm Beach hospital	Quasi-experimental process improvement project	DV: ED use, rate of insurance, connection with PCP/medical home IV: care coordination in the ED	Not discussed by author	Not discussed by author	The use of a patient navigator or care coordinator in the ED can help to connect uninsured patients with community resources.
Chew, S., Brewster, L., Tarrant, C., Martin, G., & Armstrong, N. (2018). Fidelity or flexibility: An ethnographic study of the implementation and use of the Patient Activation Measure. *Patient Education and Counseling, 101*(5), 932-937. doi 10.1016/j.pec.2017.12.012	This study evaluated the effect of implementing the use of PAM in the English National Health service.	Theory of Change	n= 112 interviews with staff members of the organizations within the English National Health service	Qualitative/ Ethnographic study	NA (qualitative study)	Measured how staff utilized the PAM survey and the interventions they implemented after the results through observations, interviews, and documentary analysis	Constant comparative approach	PAM survey is successful in quantifying the qualitative construct of patient activation but required flexibility during administration due to level of patient understanding which may impact the reliability of results.

Farazian, F., Moghadam, Z. E., Nabavi, F. H., & Vashani, H. B. (2019). Effect of self-care education designed based on bandura's self-efficacy model on patients with hypertension: A randomized clinical trial. *Evidence Based Care Journal, 9*(2), 44-52. doi 10.22038/EBCJ.2019.36466.1944	Examine the effect of self-care education on patients with chronic hypertension.	Bandura's self-efficacy model	n= 60 between ages 40-70, HTN diagnosis for >1 year, no cognitive impairment, and no participation in other educational programs for self-care within 6 months; randomly selected group of health centers in Iran	Randomized control clinical trial	DV: adherence to medication, engagement in physical activity, adherence to weight management goals, eating a low-salt diet, and non-smoking and use of alcohol IV: self-care training	Self-care questionnaire administered before the intervention, immediately after the intervention, and then again one month later	Repeated ANOVA on SPSS software	Self-care training sessions based on Bandura's theory of self-efficacy are beneficial to patients with hypertension especially in terms of medication adherence, engagement in physical activity, and engagement in weight management goals.
Gao, J., Arden, M., Hoo, Z. H. & Wildman, M. (2019). Understanding patient activation and adherence to nebulizer treatment in adults with cystic fibrosis: responses to the UK version of PAM-13 and a think aloud study. *BMC*	Explore how adults with cystic fibrosis interpret and respond to the PAM-13 as well as investigate the relationship between the	None identified	n = 57; 16 years or older and English speaking Convenience sampling at the Cystic Fibrosis Center in England	Mixed Methods: Pilot randomized control trial and think aloud interviews	DV: medication adherence IV: patient activation	PAM- 13 survey Interviews	PAM scores calculated using Insignia scoring algorithm. Interviews coded using priori coding framework	Participants reported that the UK version of PAM-13 was difficult to use. Scores were not significantly correlated with medication adherence

Health Services Research, 19(420), doi.org/10.1186/s12913-019-4260-5	PAM-13 and nebulizer adherence							
Hibbard, J. H., Stockard, J., Mahoney, E. R., & Tusler, M. (2004). Development of patient activation measure (PAM): Conceptualizing and measuring activation in patients and consumers. *Health Services Research, 39*(4), 1005-1026.	Describe patient activation and develop a process to measure patient activation	None identified	Pilot study: n=100 (no description or criteria listed for the pilot sample) recruited through newspaper advertisement Stage 3 testing: n=486 cardiac rehab patients and large health system employees Stage 4: n=1515, National probability sample	Mixed methods: multiple stages of testing in order to develop the PAM questionnaire to appropriately assess activation	NA Study is developing a tool to measure patient activation	Expert consensus panel Focus group	Rasch analysis- "used to create interval-level, unidimensional, probabilistic Guttman-like scales from ordinal data such as rating scale responses to survey questions" (p. 1011)	The Patient Activation Measure (PAM) survey that was developed proved to be a reliable and valid measure of activation among the study population.

Hibbard, J. H., Greene, J., Shi, Y., Mittler, J., & Scanlon, D. (2015). Taking the long view: How well do patient activation scores predict outcomes four years later? Medical Care Research and Review, 72(3), 324-337. doi: 10.1177/1077558715573871	Examine if baseline patient activation predicts outcomes four years later. Do changes in activation scores change disease outcomes?	"Once people gain knowledge, skill, and confidence they will retain those assets and use them to meet the different challenges that emerge over time" (p. 326)	n = 4, 865 with chronic conditions Sampling not discussed	Panel survey	DV: healthcare outcomes IV: patient activation	PAM Medication Adherence Index Self-Management Knowledge Index Recommended Diabetes Care Index Health Behaviors Index Functional Health Index	Bivariate analyses examining the relationship between PAM level and the nine outcomes Multivariate regression models for each of the outcomes on PAM Bivariate correlations for change in PAM and change in outcomes	Less activated individuals had significantly worse levels of medication adherence, self-management knowledge, getting recommended diabetes care, health behaviors, functional health, emergency department use, and hospitalizations 4 years later Increases in patient activation scores over 4 years were correlated with improvement in medication adherence, self-management knowledge, health behaviors, functional health, and number of emergency department visits

Kinney, R. L., Lemon, S. C., Person, S. D., Pagoto, S. L., & Saczynski, J. S. (2015). The association between patient activation and medication adherence, hospitalization, and emergency room utilization in patients with chronic illnesses: A systematic review. Patient Education and Counseling, 98(5), 545–552. https://doi-org.proxy-su.researchport.umd.edu/10.1016/j.pec.2015.02.005	Find the association between PAM and rates of hospitalization, ER use, and medication adherence in chronically ill patients	None identified	10 studies	Systematic Review	DV: hospitalization, emergency room use, and medication adherence IV: PAM score	NA	Study data were abstracted utilizing a standardized form	Five studies found that higher activation was related to lower rates of hospitalization Three studies found that patients with lower activation scores were more likely to utilize the ED There was an inconclusive relationship between PAM scores and medication adherence based on the results of all studies used
Korpershoek, Y., Bos-Touwen, I. D., de Man-van Ginkel, J. M., Lammers, J.-W., Schuurmans, M. J., & Trappenburg, J. (2016). Determinants of activation for self-management in patients with COPD. International Journal of Chronic Obstructive Pulmonary Disease,	Identify key patient and disease characteristics of activation of self-management	None identified	n = 290; adults with mild to severe COPD Convenience sampling from primary care offices	Explorative cross-sectional study	DV: Patient activation IV: sociodemographic variables, self-reported health status, depression, anxiety, illness	PAM-13	Univariate linear regression analysis was used to analyze the association between single determinants and activation for self-management	Anxiety, BMI, illness perception, age, disease severity, and comorbidities are key determinants of activation

11, 1757–1766. https://doi-org.proxy-su.researchport.umd.edu/10.2147/COPD.S109016					perception, social support, disease severity, and comorbidities		stepwise backward multiple linear regression analysis was performed in order to identify explanatory variables of activation	
McCabe, P. J., Stuart-Mullen, L. G., McLeod, C. J., O Byrne, T., Schmidt, M. M., Branda, M. E., & Griffin, J. M. (2018). Patient activation for self-management is associated with health status in patients with atrial fibrillation. Patient preference and adherence, 12, 1907–1916. https://doi.org/10.2147/PPA.S172970	Identify patient activation levels and factors associated with activation in patients with atrial fibrillation	None identified	n = 123; 18 years or older with atrial fibrillation and being evaluated for an ablation Convenience sampling at an arrythmia clinic in midwestern academic medical center	Retrospective cross-sectional	DV: Patient activation IV: symptom burden, anxiety, depression, knowledge about AF, self-reported physical activity, and patient satisfaction	PAM- 13	Associations between PAM levels and independent variables were examined with Fisher's exact tests for categorical variables and Kruskal–Wallis tests for continuous variables	Higher levels of activation were found in those with more positive health status and higher educational attainment Participants in Level 1 had a higher average BMI No difference in BP readings between the 4 levels Symptom burden was highest among patients in Level 1

Schmaderer, M. S., Zimmerman, L., Hertzog, M., Pozehl, B., & Paulman, A. (2016). Correlates of patient activation and acute care utilization among multimorbid patients. Western Journal of Nursing Research, 38(10), 1335–1353. https://doi-org.proxy-su.researchport.umd.edu/10.1177/0193945916651264	Identify factors that predict patient activation in multimorbid hospitalized patients	None identified	n = 200; 19 years or older, speak English, and have 3 or more chronic conditions Convenience sampling at a Midwestern hospital	Descriptive cross-sectional Inpatient-midwestern hospital	DV: patient activation IV: demographic, clinical, and psychosocial factors	PAM-13 Patient Reported Outcomes Measurement Information System–29 Charleston Comorbidity Index S-TOFHLA and the Single Item Literacy Screener EuroQol five-dimension questionnaire PACIC	Standard multiple regression was used to identify correlates of patient activation	Lower activation scores related to more acute care utilization and higher rates of readmission. Health literacy, satisfaction, & involvement in care predict activation.
Schumacher, J. R., Lutz, B. J., Hall, A. G., Pines, J. M., Jones, A. L., Hendryl, P., Kalynych, C. & Carden, D. L. (2017). Feasibility of an ED-to-home intervention to engage patients: A mixed-methods investigation. Westermn Journal of Emergency Medicine, 18(4), 743-751. doi: 10.5811/westjem.2017.2.32570	Test the impact of ED- initiated coaching on patient engagement and follow-up doctor visits. Explore patient care seeking decisions. Coaching involved help with	None identified	n = 69; older, chronically ill Convenience sampling at two EDs in northern Florida	Mixed Methods	DV: Patient activation IV: ED education	PAM Interviews	Qualitative data was coded using thematic and constant comparative analysis. Between-group comparisons in sociodemographic, socioeconomic, health status and doctor	"Intervention" participants were more likely to report a follow-up within four weeks of ED visit Higher PAM scores were found in the intervention group after the ED visit

	scheduling follow-up doctor visits, recognize disease Worsening, reconcile medications, and communication with providers						visits using chi-square and analysis of variance for categorical and continuous measures	
Tecson, K. M., Bass, K., Felius, J., Hall, S. A., Jamil, A. K., & Carey, S. A. (2019). Patient "Activation" of patients referred for advanced heart failure therapy. The American Journal of Cardiology, 123(4), 627–631. https://doi-org.proxy-su.researchport.umd.edu/10.1016/j.amjcard.2018.11.013	Compare patient activation, anxiety, and depression between patients in advanced heart failure therapy to those that are not receiving therapy. Heart failure therapy included cardiovascular rehab and educational interventions	None identified	n = 133 Convenience sampling at Baylor University Medical Center for Advanced Heart and Lung Disease	Prospective	DV: activation, anxiety, and depression IV: HF therapy	PAM-10 Hospital Anxiety and Depression Scale	Differences were compared in patient characteristics between those selected vs those not selected for advanced HF therapy using two-sample t tests, Wilcoxon Rank Sum tests, Chi-square tests, and Fisher's Exact tests	Those not in the heart failure therapy were about four times more likely to have lower activation scores

Table 2.

Demographic characteristics of the participants

	n=17	%
Gender		
Female	8	47.1
Male	9	52.9
Age		
53-64	7	41.2
65-74	5	29.4
≥75	5	29.4
Race		
Black	6	35.3
Caucasian	10	58.8
Hispanic	1	5.9
Diagnosis		
COPD	11	64.7
CHF	5	29.4
COPD & CHF	1	5.9

Table 3.

PAM-13 Scores

	n=17	%
Level 1	5	29.4
Level 2	5	29.4
Level 3	7	41.2
Level 4	0	0

Appendices

Appendix A

PPRISMA Flow Diagram

Identification	Records identified Databases searched: Medline, Health Source, CINAHL Plus (n = 168)	Additional records identified through other sources (n = 0)

Records after duplicates removed
(n = 120)

Screening	Records screened: title and abstract (n = 80)	Records excluded (n = 64)

Eligibility	Full-text articles assessed for eligibility (n = 16)	Full-text articles excluded (n = 8) Reasons for exclusion: • Not in English • Studies related to mental health conditions • Studies done to translate and adapt PAM into a new language • Studies not directly looking at patient activation

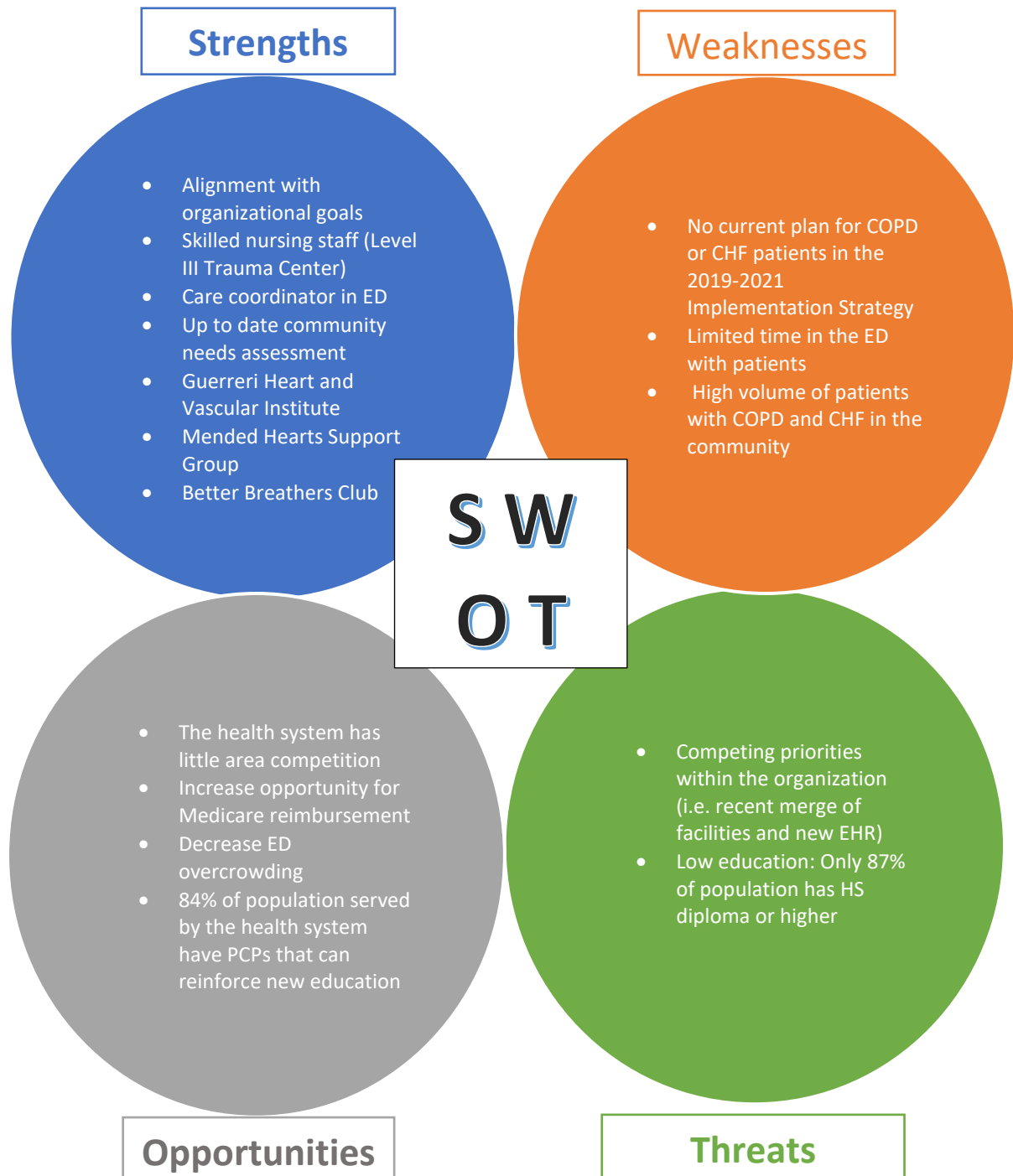|	
Included	Studies included in synthesis of literature (n =8)

Appendix B

Below are some statements that people sometimes make when they talk about their health. Please indicate how much you agree or disagree with each statement as it applies to you personally by circling your answer. Your answers should be what is true for you and not just what you think others want you to say.

If the statement does not apply to you, circle N/A.

1.	When all is said and done, I am the person who is responsible for taking care of my health	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
2.	Taking an active role in my own health care is the most important thing that affects my health	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
3.	I am confident I can help prevent or reduce problems associated with my health	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
4.	I know what each of my prescribed medications do	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
5.	I am confident that I can tell whether I need to go to the doctor or whether I can take care of a health problem myself	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
6.	I am confident that I can tell a doctor concerns I have even when he or she does not ask	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
7.	I am confident that I can follow through on medical treatments I may need to do at home	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
8.	I understand my health problems and what causes them	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
9.	I know what treatments are available for my health problems	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
10.	I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
11.	I know how to prevent problems with my health	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
12.	I am confident I can figure out solutions when new problems arise with my health	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A
13.	I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress	Disagree Strongly	Disagree	Agree	Agree Strongly	N/A

Appendix C

SWOT Analysis

Strengths

- Alignment with organizational goals
- Skilled nursing staff (Level III Trauma Center)
- Care coordinator in ED
- Up to date community needs assessment
- Guerreri Heart and Vascular Institute
- Mended Hearts Support Group
- Better Breathers Club

Weaknesses

- No current plan for COPD or CHF patients in the 2019-2021 Implementation Strategy
- Limited time in the ED with patients
- High volume of patients with COPD and CHF in the community

S W O T

Opportunities

- The health system has little area competition
- Increase opportunity for Medicare reimbursement
- Decrease ED overcrowding
- 84% of population served by the health system have PCPs that can reinforce new education

Threats

- Competing priorities within the organization (i.e. recent merge of facilities and new EHR)
- Low education: Only 87% of population has HS diploma or higher

Appendix D

ANONYMOUS SURVEY INFORMED CONSENT

Decreasing Preventable Emergency Department Visits Using the Patient Activation Measure

Molly Dale, Doctor of Nursing Practice student at Salisbury University, is conducting a research project to test the Patient Activation Measure survey in the emergency department. You are being asked to complete this survey because of your experience managing your congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD). Participation is voluntary and will not negatively impact the medical treatment that you receive.

This 13-question survey will take about 15-20 minutes to complete. You must be at least 18 years old to take this survey and have a current diagnosis of COPD and/or CHF.

The survey will ask questions related to how you manage your chronic condition at home and your personal feelings towards managing your illness. The benefits of this study include the identification of helpful resources for patients with COPD and CHF and assisting medical providers in helping patients improve the management of their chronic condition. Depending on your survey results, you may be given additional educational information to help you manage your COPD or CHF.

I ask that you try to answer all questions, but if there are any items that make you uncomfortable or that you would prefer to skip, please note that you do not want to give an answer for that question. You may drop out of this project at any point by indicating that you do not wish to continue. Your answers will be stored safely by Ms. Dale in order to maintain your privacy.

The information that you provide will be used to improve the care of patients with chronic conditions both in the emergency department and in the community. The information collected during this project will be kept anonymous, and it will not be linked to your identity in any way.

If you have any questions or concerns, feel free to contact Molly Dale at:
mdale1@gulls.salisbury.edu
If you have any adverse effects or concerns about the research, please contact the primary investigator at mdale1@gulls.salisbury.edu or the Office of Graduate Studies and Research at Salisbury University at 410-548-3549 or toll free 1-888-543-0148. This research is approved by the Salisbury University's IRB under protocol number 37.

If you would prefer not to participate, please do not fill out a survey.
If you consent to participate, please complete the survey.

Appendix E

COPD
LEARN MORE BREATHE BETTER®
A program of the National Institutes of Health.

NOW THAT YOU KNOW IT'S COPD,
HERE'S HOW TO BREATHE BETTER.

You have taken the important step of being aware of your symptoms, and seeing your doctor or health care provider for testing and a diagnosis. While COPD (Chronic Obstructive Pulmonary Disease) is a serious lung disease that worsens over time, your provider can suggest treatment options and ways to help you manage COPD. Here are some things you can do now to breathe better and improve your quality of life.

1) QUIT SMOKING.

If you smoke, quitting is the best thing you can do to prevent more damage to your lungs. Ask your provider about new options for quitting. Many resources to help are available online. Visit **smokefree.gov**; **lungusa.org**; or call **1-800-QUIT NOW** for more information.

2) AVOID EXPOSURE TO POLLUTANTS.

Try to stay away from other things that could irritate your lungs, like dust and strong fumes. Stay indoors when the outside air quality is poor, and avoid places where there might be cigarette smoke.

3) VISIT YOUR PROVIDER REGULARLY.

See your doctor or health care provider on a regular basis. Bring a list of all medications you are taking to each office visit. If your current symptoms worsen, or if you have new ones, be sure to tell your doctor.

IT'S SERIOUS, BUT
YOU'RE NOT ALONE.

COPD—also known as emphysema or chronic bronchitis—is a serious disease that partially blocks the airways, or tubes, that carry air in and out of the lungs. It worsens over time, making it harder to breathe.

COPD is a leading cause of death in the United States. There are currently more than 16 million people who have been diagnosed and several additional millions likely have it, but don't know it.

With proper diagnosis and increasingly better treatments for COPD, there is reason for hope. Be sure to follow your provider's recommendations so you can manage your COPD, breathe better and have a better quality of life.

NIH National Heart, Lung, and Blood Institute

COPD Learn More Breathe Better® is a trademark of HHS.

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Originally printed September 2006
Reprinted April 2018

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Talking with your doctor is good for your breathing.

4) FOLLOW TREATMENT ADVICE.

Take your medications exactly as prescribed. And follow your provider's advice on how to treat your COPD.

5) TAKE PRECAUTIONS AGAINST THE FLU.

It can cause serious problems for people with COPD. So, do your best to avoid crowds during flu season. Consider getting a flu shot every year. And ask your provider about the pneumonia vaccine.

6) SEEK SUPPORT FROM OTHERS WHO HAVE COPD.

See if your local hospital has a COPD support group. You can also find a very active COPD community online. Family members can be supportive, too, as you learn to live with and manage your COPD.

To get the best treatment for your COPD, it's important that you speak honestly with your doctor or health care provider at each visit. Let them know what's really going on with your breathing. Don't hesitate to ask questions about your disease, symptoms and treatment options. Read our *Patient Tips* factsheet for help on getting the most from each visit.

HOW DOES COPD AFFECT BREATHING?

When lungs are healthy, the airways and air sacs have an elastic, flexible quality. They expand to fill with air and then bounce back to their original shape when air is exhaled. This elasticity helps to retain the normal lung structure and also helps the air to move quickly in and out.

In people with COPD, the air sacs no longer bounce back to their original shape, and the airways can become swollen or thicker than normal. COPD can also cause increased mucus production. The airways can become partially blocked, making it even harder to get air in and out of the lungs.

NORMAL LUNG

COPD LUNG

BREATHING BETTER
WITH A COPD DIAGNOSIS

3
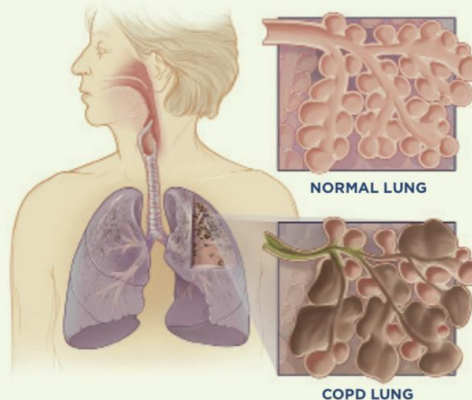
DIAGNOSIS AND TREATMENT OF COPD

IT STARTS WITH A TEST CALLED SPIROMETRY

It's one of the best and most common ways to help diagnose COPD. Using a machine called a spirometer, this noninvasive breathing test measures the amount of air a person can blow out of the lungs (volume) and how fast (flow). The results help your doctor assess how well your lungs are working and the best course of treatment.

Next, your doctor may suggest one of more of these treatment options:

MEDICATIONS

Two of the most common are bronchodilators and inhaled steroids, but your provider may recommend other types of medications for your COPD. Bronchodilators usually come in an inhaler and work to relax and open up the muscles around your airways, making it easier to breathe. Inhaled steroids help prevent the airways from getting inflamed.

PULMONARY REHABILITATION

This is a program that helps you learn to exercise and manage your disease with physical activity and counseling. It can help you stay active and carry out your day-to-day tasks.

PHYSICAL ACTIVITY TRAINING

Your provider, or a pulmonary therapist your doctor recommends, may teach you some activities to help your arms and legs get stronger and/or breathing exercises that strengthen the muscles needed for breathing.

OXYGEN TREATMENT

If your COPD is severe, your doctor might suggest that you breathe oxygen some or all of the time to help with shortness of breath.

SURGERY

In some severe cases of COPD, providers may suggest lung surgery to improve breathing and alleviate some symptoms.

WHAT TO DO IF YOUR SYMPTOMS SUDDENLY WORSEN

Symptoms of COPD can get worse all of a sudden. When this happens, it is much harder to catch your breath. You might also have...

- Chest tightness.
- More coughing.
- A change in your cough (becomes more productive; more mucus is expelled).
- A fever.

There could be many causes for symptoms getting worse, such as a lung infection or heart disease related to severe lung damage. The best thing to do is call your health care provider right away.

BREATHING BETTER
WITH A COPD DIAGNOSIS

4

WHEN TO GET EMERGENCY HELP

Seek emergency help if your usual medications aren't working and:

- It is unusually hard to walk or talk (such as difficulty completing a sentence).
- Your heart is beating very fast or irregularly.
- Your lips or fingernails become gray or blue.
- Your breathing is fast and hard, even when you are using your medication.

BE PREPARED.
HAVE VITAL INFORMATION ON HAND.

Think of everything you or others would need to know in a medical emergency, and have it all together in an easy-to-grab place. Things like:

- A list of all medications you are taking for COPD and other conditions.
- Contact information for your doctor or health care provider, including name, office address, office and emergency phone numbers.
- Directions to the doctor's/provider's office.
- Directions to the nearest hospital.
- People to contact if you are unable to speak or drive yourself there.
- Health insurance card or information.

For more information about diagnosing, treating, managing and living with COPD, visit **COPD.nhlbi.nih.gov** or contact the National Heart, Lung, and Blood Institute at **nhlbi.nih.gov**.

BREATHING BETTER
WITH A COPD DIAGNOSIS

AMERICAN LUNG ASSOCIATION®

MY COPD **ACTION PLAN**

It is recommended that patients and physicians/healthcare providers complete this action plan together. This plan should be discussed at each physician visit and updated as needed.

The green, yellow and red zones show symptoms of COPD. The list of symptoms is not comprehensive, and you may experience other symptoms. In the "Actions" column, your healthcare provider will recommend actions for you to take based on your symptoms by checking the appropriate boxes. Your healthcare provider may write down other actions in addition to those listed here.

Green Zone: I am doing well today — Actions

- Usual activity and exercise level
- Usual amounts of cough and phlegm/mucus
- Sleep well at night
- Appetite is good

☐ Take daily medicines
☐ Use oxygen as prescribed
☐ Continue regular exercise/diet plan
☐ At all times avoid cigarette smoke, inhaled irritants*
☐ _____

Yellow Zone: I am having a bad day or a COPD flare — Actions

- More breathless than usual
- I have less energy for my daily activities
- Increased or thicker phlegm/mucus
- Using quick relief inhaler/nebulizer more often
- Swelling of ankles more than usual
- More coughing than usual
- I feel like I have a "chest cold"
- Poor sleep and my symptoms woke me up
- My appetite is not good
- My medicine is not helping

☐ Continue daily medication
☐ Use quick relief inhaler every ____ hours
☐ Start an oral corticosteroid (specify name, dose, and duration)
  _____
☐ Start an antibiotic (specify name, dose, and duration)
  _____
☐ Use oxygen as prescribed
☐ Get plenty of rest
☐ Use pursed lip breathing
☐ At all times avoid cigarette smoke, inhaled irritants*
☐ Call provider immediately if symptoms don't improve*
☐ _____

Red Zone: I need urgent medical care — Actions

- Severe shortness of breath even at rest
- Not able to do any activity because of breathing
- Not able to sleep because of breathing
- Fever or shaking chills
- Feeling confused or very drowsy
- Chest pains
- Coughing up blood

☐ Call 911 or seek medical care immediately*
☐ While getting help, immediately do the following:
☐ _____

*The American Lung Association recommends that the providers select this action for all patients.

The information contained in this document is for educational use only. It should not be used as a substitute for professional medical advice, diagnosis or treatment. THE AMERICAN LUNG ASSOCIATION DOES NOT ENDORSE ANY PRODUCT, DEVICE OR SERVICE, INCLUDING ANY PARTICULAR COPD MEDICATION OR TREATMENT DEVICE. For more information, visit www.Lung.org or call 1-800-LUNG-USA (1-800-586-4872) © 2015 American Lung Association

**1-800-LUNG-USA | Lung.org/copd**

ALA COPD AP V2 2 9 16

ANSWERS by heart | Cardiovascular Conditions

American Heart Association®
life is why™

What is Heart Failure?

If you have heart failure, you're not alone. About 5.7 million Americans are living with it today. In fact, it's one of the most common reasons people age 65 and older go into the hospital. It can take years for heart failure to develop. Heart failure is called congestive heart failure when fluid builds up in various parts of the body. So if you don't yet have it but are at risk for it, you should make lifestyle changes now to prevent it!

Heart failure symptoms usually develop over time as your heart becomes weaker and less able to pump the blood that your body needs. Heart failure usually results in an enlarged heart (left ventricle).
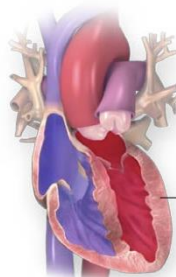
The Normal Heart
has strong muscular walls which contract to pump blood out to all parts of the body.

Heart muscle pumps blood out of the left ventricle.

Heart Failure
is a condition that causes the muscle in the heart wall to slowly weaken and enlarge, preventing the heart from pumping enough blood.

Weakened muscle prevents left ventricle from pumping enough blood.

Does your heart stop?

When you have heart failure, it doesn't mean that your heart has stopped beating. It means that your heart isn't pumping blood as it should. The heart keeps working, but the body's need for blood and oxygen isn't being met.

Heart failure can get worse if it's not treated. It's very important to do what your doctor tells you to do. When you make healthy changes, you can feel a lot better and enjoy life much more!

What can happen?

- Your heart does not pump enough blood.
- Blood backs up in your veins.
- Fluid builds up in your body, causing swelling in your feet, ankles and legs. This is called "edema."
- Fluid builds up in your lungs. This is called "pulmonary edema."
- Your body does not get enough blood, food and oxygen.

What are the signs of heart failure?

- Shortness of breath, especially when lying down
- Tired, run-down feeling
- Coughing or wheezing, especially when you exercise or lie down
- Swelling in feet, ankles and legs
- Weight gain from fluid buildup
- Confusion or can't think clearly

What are the causes?

The most common cause of heart failure is coronary artery disease (CAD). CAD occurs when arteries that supply blood to the heart muscle become narrowed by buildups of fatty deposits called plaque.

Other common risk factors that lead to heart failure are:

- Past heart attack has done some damage to the heart muscle
- Heart defects present since birth

(continued)

ANSWERS by heart | Cardiovascular Conditions

What is Heart Failure?

- High blood pressure
- Heart valve disease
- Diseases of the heart muscle
- Infection of the heart and/or heart valves
- Abnormal heart rhythm (arrhythmias)
- Being overweight
- Diabetes
- Thyroid problems
- Alcohol or drug abuse
- Certain types of chemotherapy

How is it treated?

- Your doctor may give you medicine to strengthen your heart and water pills to help your body get rid of excess fluids.
- Your doctor will recommend a low-sodium (salt) diet.
- You may be provided oxygen for use at home.
- Your doctor may recommend certain lifestyle changes.
- Surgery or cardiac devices may be needed, in some cases.

What can I do to manage my heart failure?

- Follow your doctor's advice.
- Quit smoking, if you smoke.
- Take your medicines exactly as prescribed.
- Weigh daily to check for weight gain caused by increased fluid.
- Track your daily fluid intake.
- Monitor your blood pressure daily.
- Lose or maintain your weight based on your doctor's recommendations.
- Avoid or limit alcohol and caffeine.
- Eat a heart-healthy diet that's low in sodium, saturated fat and *trans* fat.
- Eat less salt and salty foods.
- Be physically active.
- Get adequate rest.

HOW CAN I LEARN MORE?

1. Call **1-800-AHA-USA1** (1-800-242-8721), or visit **heart.org** to learn more about heart disease and stroke.
2. Sign up to get *Heart Insight*, a free magazine for heart patients and their families, at **heartinsight.org**.
3. Connect with others sharing similar journeys with heart disease and stroke by joining our Support Network at **heart.org/supportnetwork**.

Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

How much salt may I eat?

How much weight gain is too much?

My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit **heart.org/answersbyheart** to learn more.

American Heart Association®

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