

# **The Potential Costs and Benefits of COPD Support Groups and Motivational Interviewing**

by

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Megan Wurst, MPH

University of Pittsburgh, 2022

## **Abstract**

Public health institutions have come a long way in working to eliminate disease, but one that is still threatening the United States (U.S.) health care system is chronic obstructive pulmonary disorder (COPD). COPD is the third highest cause of death globally, which leaves the medical and economic burden at an all-time high. There is a severe delay in diagnosis and treatment, which causes an underutilization of preventative care services. COPD care management is below the standard of quality care, which ultimately causes insufficient outcomes for patients and providers. This information alone is of high public health relevance, and is enough to call for a reform in the COPD treatment care path. Preventative care technique's ability to be cost effective and their ability to improve overall patient outcomes in COPD patients will be examined thoroughly. The primary aim of this essay is to discuss the potential costs and benefits of including COPD support groups and motivational interviewing (MI) into a regular part of the COPD care pathway. Including these preventative measures into the COPD care pathway is the goal of this research in order to reduce readmissions and improve overall quality of life. Based on this research, the author will advocate to utilize these techniques in a prevention program.

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## **Preface**

Identifying my background is imperative in understanding the problem of this essay. I was given the opportunity as an Administrative Resident at West Penn Allegheny Health Network (AHN) at Allegheny General Hospital (AGH). I had the opportunity to work alongside a Service Line Director and their leadership team within the pulmonary, critical care, and sleep medicine departments. Mainly being assigned duties in the pulmonary sector, I was able to get a better understanding of the burden that chronic disease plays within the health system. My main obligations were to directly interact with the COPD care coordinators and operational team members regarding the planning of assignments, participate and engage in the planning and implementation of COPD related interventions, projects and programs, and conduct extensive COPD research, among other pulmonary-related responsibilities. I routinely collaborated with respiratory therapists, nurse navigators, physicians, specialists, and other members of the health care sector to work to identify the needs of COPD patients. I recognized needs that are not being met for COPD patients, which led to the topic of this essay. Preventative care is lacking in the COPD care pathway, and other techniques must be implemented in order to improve care.

## **1.0 Introduction**

### **1.1 Addressing the Problem**

Health care systems over time have started to acknowledge and understand the significance of establishing more effective structures and strategies in order to successfully execute public health goals. The United States (U.S.) federal government has made strengthening our health care system a priority by investing in various resources to improve the overall well-being of the population (WHO, 2007). Despite this, our country still carries quite a large health care burden. This is where the role of public health comes into play. Public health is the backbone of health, and without a stable and strong effort from public health professionals to provide guidance and interventions for the population, disease prevention would be a challenge. Public health institutions such as the U.S. Centers for Disease Control and Prevention (CDC), for example, work hard to give our country a sense of direction and a focal point for what needs must be addressed (Bloland et al., 2012).

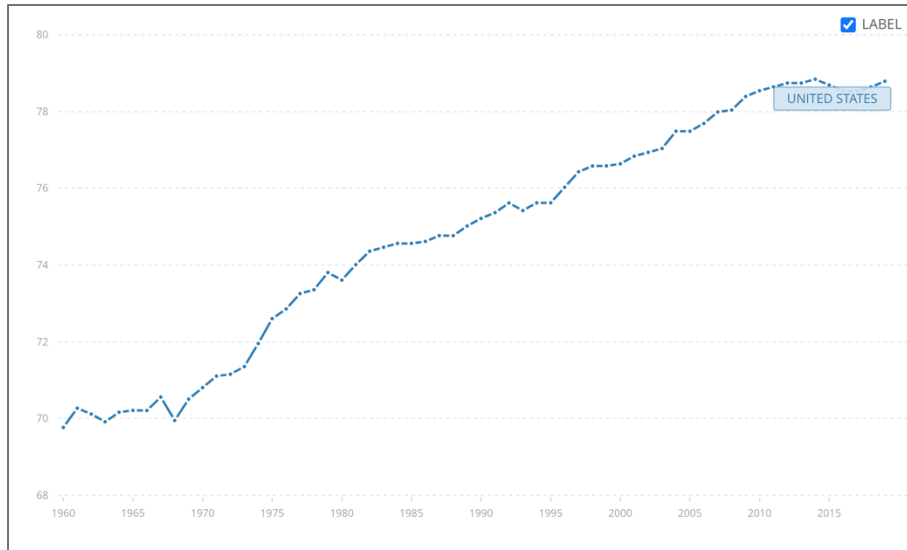
Bloland et al. (2012) argue that the most important function of public health in terms of improving our health care system is providing accurate epidemiological research and data in order to achieve a positive health care goal. It is important to mention that reaching this goal is not just about addressing already existing illnesses in patients but also providing data to help formulate safe and effective interventions to prevent illnesses at the right time (Frieden & Koplan, 2010). Connecting data collection and action leads to prevention and control of disease. Utilizing this technique to create interventions is the way to both enhance and protect at-risk populations and make an impact on the public (Bloland et al., 2012).

Successful and essential health care programs have eliminated and controlled both infectious and non-infectious diseases. However, research mentions a large shift in disease burden, which will be discussed later in the essay (Bloland et al., 2012). With such a large and growing health care burden of non-communicable diseases, one disease is COPD, otherwise known as Chronic Obstructive Pulmonary Disease. A cost-benefit evaluation of including a primary/secondary prevention, motivational interviewing, and a tertiary prevention, support groups, into a patient's individual COPD care model will be of focus here (Institute for Work & Health, 2015; Noordman et al., 2012). Advocating to include these prevention measures into the care model to reduce COPD readmissions and improving overall quality of life is the goal of this essay. Primary/secondary and tertiary prevention techniques can be used to help better manage disease and potentially delay disease progression. Based on this research, I will recommend and advocate for utilizing these techniques in a program.

## 2.0 Background

### 2.1 Chronic Disease Role in Modern Medicine

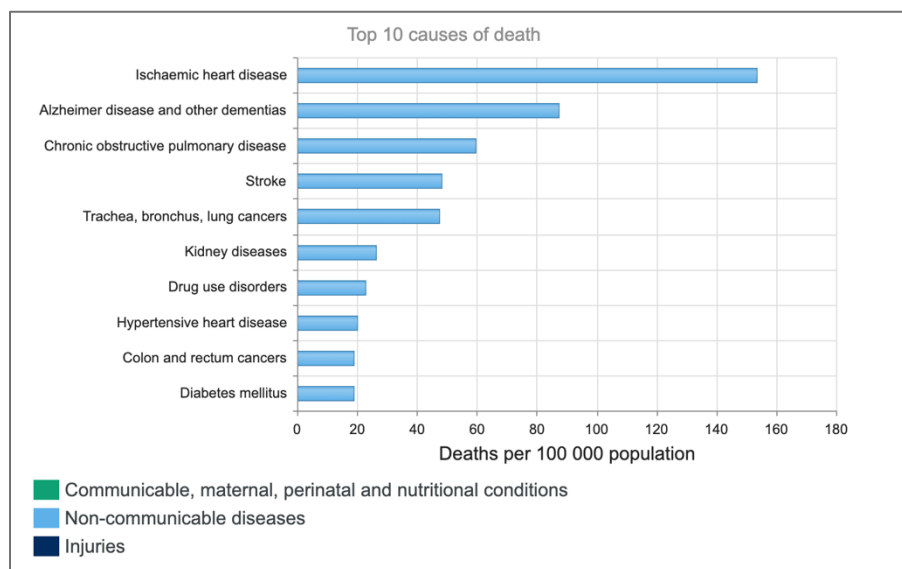
Since 1900, the life expectancy for individuals in the United States has increased by more than 30 years (Frieden, 2015). This can be explained by the epidemiologic transition. This transition describes the changing patterns of health measures such as mortality, fertility, and life expectancy, among others. Theorist, A. R. Omran (McKeown, 2009) formulated a proposition that a disease transition phase occurred, called The Age of Receding Pandemics. This is when mortality rates decrease as epidemics also decrease. This decrease has caused a 30 to 50-year increase in life expectancy and will work to maintain constant population growth rates. Omran (1971) also said that this transition happened due to a shift in patterns of disease and mortality from infectious disease to now chronic diseases. Early infectious diseases such as polio, measles, and smallpox have declined, and now the focus is on chronic diseases like COPD, cancer, and diabetes. This shift happened because of transformations in socioeconomic statuses, cultural changes, and politics. The environment and the current standard of living have also improved, as has the science of public cleanliness, nutrition, and hygiene, not to mention advancements that have been made in treatment of chronic conditions (McKeown, 2009). **Figure 1** below displays the increasing life expectancy over a 58-year period (The World Bank, 2021).



**Figure 1. U.S. Life Expectancy at Birth 1960-2019**

**Figure 1** from The World Bank (2021) helps to visualize the shift in life expectancy steadily increasing over time. With these data in mind, it is important to discuss where chronic diseases lie today. Chronic diseases are the most common and most expensive health conditions in the United States currently. About 45% of Americans have at least one type of chronic disease, and this number is rising as the population ages and as unaddressed risk factors become more apparent. Chronic diseases commonly include cancer, diabetes, high blood pressure, stroke, heart and respiratory disease, obesity, arthritis, and oral health problems among others (American Association of Retired Persons, 2018; Fried, 2017; Tinker, 2017). Chronic diseases can lead to severe hospitalizations, long-term damage, and decreased quality of life as well as mortality. Chronic diseases, the main cause of increased health expenditures, also negatively impact workforce attendance. More than 85% of all health care costs are driven by chronic disease (Holman, 2020). In fact, chronic disease is responsible for seven out of 10 deaths in the United States (Tinker, 2017). The main problem is that treating and managing chronic conditions is difficult because there is normally always more than one disease to treat at a time. About 25%

adults in the U.S. have more than two chronic conditions, and some older adults have three or more. The older we become, the greater the chance of developing a chronic condition (Raghupathi & Raghupathi, 2018). **Figure 2** below, from the World Health Organization's (WHO) Global Health Estimates (2021b), displays the chronic disease representation in the country. All of the top 10 causes of death on this list are chronic diseases. COPD is listed as the third highest cause of death. This chart shows researchers how dominant the chronic disease burden is today (WHO, 2021b).



**Figure 2. U.S. Top 10 Causes of Death (WHO, 2021b)**

The U.S. population is aging at an accelerated rate, and as a result, health care needs are changing. This places an extreme demand for chronic disease care on our health care system and its funding (James, Morton, & Dunn, 2014). Østbye et al. (2005) suggest that we are not able to meet this demand entirely. This is because the resources that are needed to address chronic disease far outweigh the time practitioners have available to properly address patient care needs. In fact,

U.S. medical professionals did not react appropriately and gave little attention to the rise of chronic disease prevalence at the time. The failure to adequately manage chronic disease consequentially led to a complete redesign of new care strategies that were not acute disease focused (Holman, 2020). The University of Pittsburgh's Health Policy Institute (2014) claims we are still in need of reform in order to manage chronic disease properly. This creates an opportunity for our health care system to put a greater emphasis on preventative measures to avoid, monitor, and treat chronic illnesses in our country.

## **2.2 Lack of Preventative Care**

Chronic diseases are the most expensive health condition in the U.S. As of 2016, the total direct costs for treatment of chronic conditions were greater than \$1 trillion (Levine et al., 2019). Because of the increase in cost, primary, secondary, and tertiary prevention strategies have become more popular in treatment. Levine et al. (2019) state that these combined interventions along with changes in lifestyle have c to greatly decrease the frequency of chronic disease, disability, and death. Yet, preventative services are severely underused regardless of the burden of chronic disease. In fact, Borsky et al. (2018) say that in 2015 alone, only 8% of U.S. adults over the age of 35 utilized the suggested preventive services available to them. Preventative care resources are not taken advantage of because physicians fail to give precedence in advising these services, despite their benefits to chronic disease management (Levine et al., 2019). This points out a major flaw in our health care system: that almost all health care providers are compensated to treat disease, not prevent it.

There is a great deal of financial influence when considering the utilization of preventative care (Levine et al., 2019). Whether or not utilization of preventive care is cost-effective has been debated by some analysts. However, Maciosek et al. (2010) suggest that increasing the use of preventative care packages to 90% in the population could potentially lead to two million increased years of life each year they are delivered. A preventive care package refers to the adoption of multiple evidence-based clinical preventative services, such as screenings and medication use. In addition, the cost of implementing these services would later become regained. This is beneficial to payers, insurers, and patients because utilizing groups of preventive care services is cost-neutral and also leads to better health outcomes (Maciosek et al., 2010).

The payers who encourage patients to utilize preventive services will incur lower costs. The current ACA provisions under Section 2716 of the Public Health Service Act obligate payers to offer specific preventive services, such as screenings, for free when care is given by certain networks (Keith, 2022). Utilizing preventive care will decrease the chances of patients developing costly chronic illnesses; therefore, payers will not have to pay for costlier treatments. It will also help to decrease the over-utilization of emergency departments (EDs) and hospital admissions/readmissions, which are troublesome for payers. Payers will be unable to maintain profitability with the continued overuse of emergency room and hospital resources when other options are available (Beaton, 2017).

Almost all chronic diseases can be prevented because they can often be traced back to common risk factors (WHO, 2005). Utilizing preventive care has very high economic and medical value. With preventative care, our health care system benefits financially while at the same time saving lives. Companies that enact workplace health promotion programs account for high cost-savings and a healthier workforce (Goetzel & Ozminkowski, 2008). Community-based



interventions and other preventive strategies could save \$5 for every \$1 that is spent (Levi, Segal, & Juliano, 2008). In **Table 1** below, the Institute of Medicine's (IMO) Roundtable on Evidence-based Medicine (2010) have identified the cost of implementing primary and secondary prevention services and the savings of delivering that service at a 90% rate. Services included 20 clinical screenings and immunizations for diseases such as breast, cervical and colorectal cancer, hypertension, depression among others.

**Table 1. Impact of Preventative Services on Healthcare Expenditures**

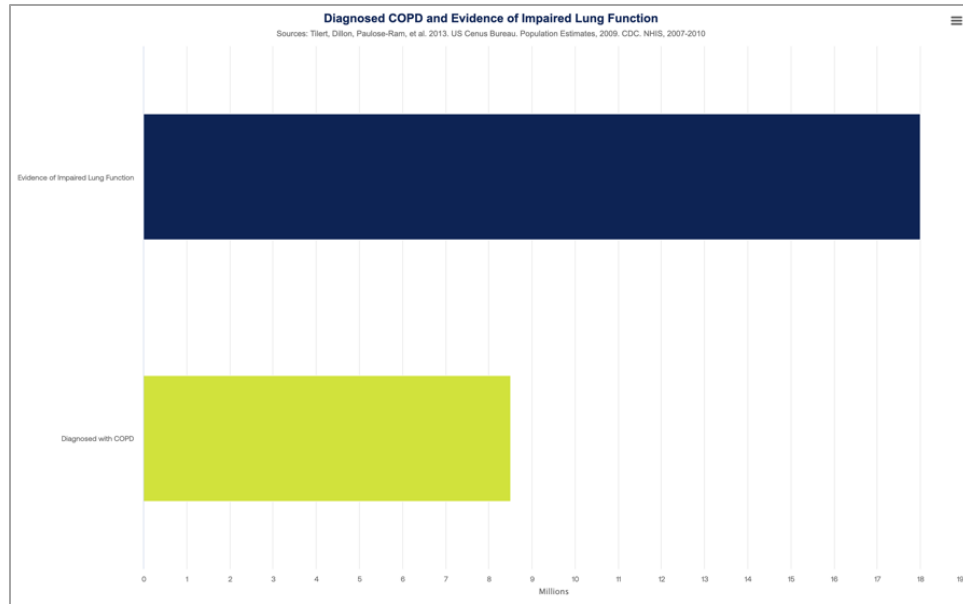
<b>Impact of Preventive Services on Healthcare Expenditures</b>		
	<i>Delivery Costs of 90% Use</i>	<i>Savings with 90% Use</i>
<i>Primary Prevention</i>	\$52.1 billion	\$53.9 billion
<i>Secondary Prevention</i>	\$5.3 billion	\$0.2 billion

With a 90% delivery rate of primary preventative services, health care expenditures can decrease by \$53.9 billion. A 90% delivery rate of secondary preventative services can result in a savings costs of \$0.2 billion. Although different preventive services have the possibility of different outcomes and effects, depending on the population and delivery rate, these data show the benefit and net-cost savings of primary and secondary preventive care in our health care system (Institutes of Medicine [IOM], 2010). It is also possible to produce cost savings from the use of enhanced tertiary prevention. The use of effective tertiary prevention has a very strong probability to produce better health outcomes and reduced health expenditures. In 2008, the total annual health spending on patients with chronic conditions was estimated to be \$1.5 trillion. In 2021, the total annual health spending on patients with chronic conditions was \$3.8 trillion (CDC, 2021c). If 30%

of that is spent on tertiary prevention services, experts estimate a potential savings of 10% in costs. If widespread adoption of tertiary prevention programs can be achieved for key chronic conditions, an additional \$45 billion a year could be saved annually (IOM, 2010).

### **2.3 COPD Effect on Health Care**

COPD is a crippling illness that creates a very large burden on our health care system. This burden affects the U.S. medically and also economically. COPD is the third leading cause of death globally (May & Li, 2015). It caused 3.23 million deaths in 2019 (WHO, 2021a). In the U.S. alone, COPD causes more than 150,000 deaths each year. This is equivalent to one death every four minutes (CDC, 2021b). In addition to mortality, COPD accounts for 15.4 million doctor visits, 1.5 million ER visits, and 726,000 hospitalizations annually. In the U.S., 14.8 million individuals are diagnosed with COPD, and an additional 12 million have undiagnosed COPD. The American Lung Association (ALA) provides data on the number of patients diagnosed with COPD in comparison to the number of patients with impaired lung function without a diagnosis. This is shown in **Figure 3** below (ALA, 2007-2010).

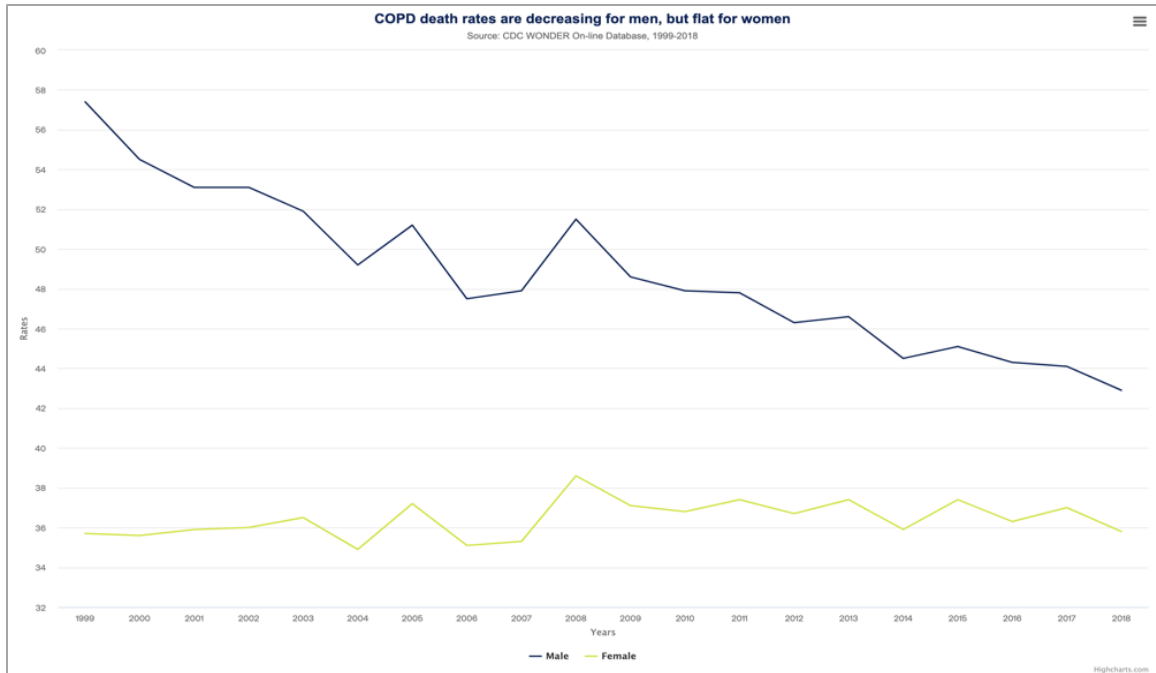


**Figure 3. Diagnosed COPD and Evidence of Impaired Lung Function**

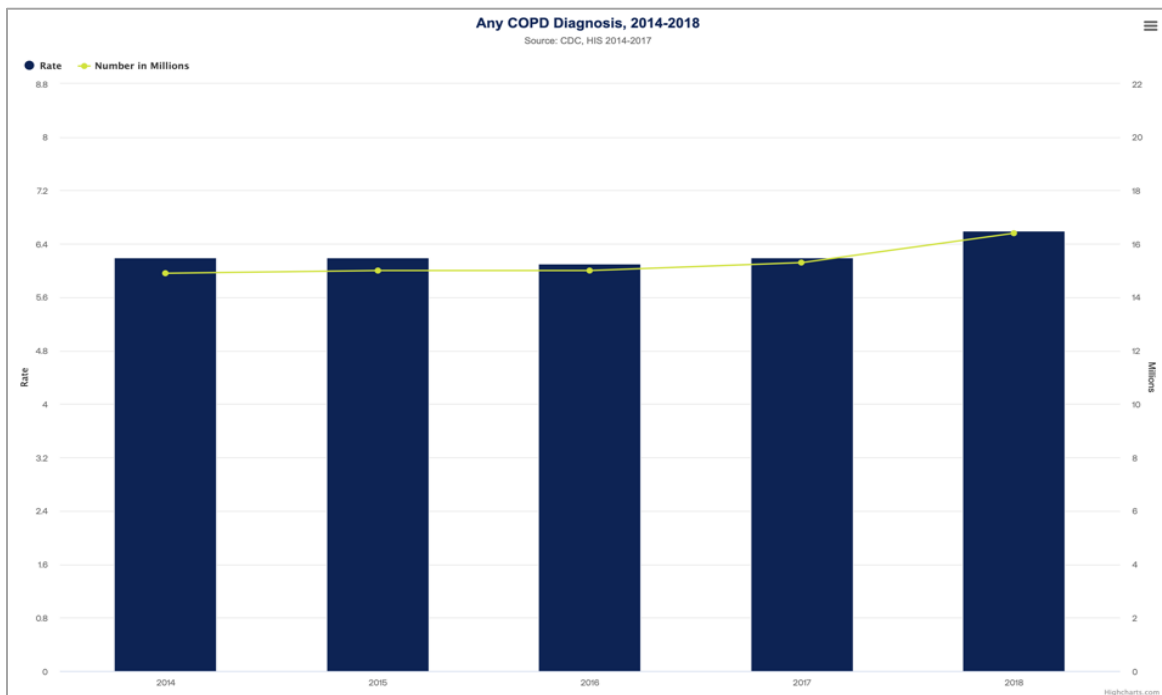
COPD is a highly undiagnosed disease, and even patients with severe cases of the illness are treated correctly only 50% of the time. Rennard et al. (2000) and Rennard and Farmer (2001) note that the undiagnosed rate for COPD is partially caused by the lack of ability to self-identify symptoms. A delay in the diagnosis may cause quicker advancement of illness and overconsumption of health care services. This is because diagnosis usually occurs when a patient has lost half or more of their original lung capacity (Ferguson, 1995). This leads patients to utilize more resources later on, when their condition has worsened without treatment (May & Li, 2015). Early diagnosis for COPD can initiate treatment that may slow lung function depletion and improve quality of life before severe airflow onset (Welte, Vogelmeier & Papi, 2015).

Although early diagnosis leads to better disease management early on, COPD has no medical cure, as it is a treatable disease not a reversible disease (Agarwal, Raja, & Brown, 2021). Because of this, patients frequently experience exacerbations. Hospitalizations directly linked to exacerbations play a large role in the COPD burden. For people ages 45-64, the hospitalization

rate per 10,000 persons was 30.1, and was 121.3 for those 65 and older. Yeatts et al., (2013) finds that the ED visit rate due to COPD was 13.8 visits per 1,000 individuals. Of these, 7% return within 30 days, and 28% return with the same year (Yeatts et al., 2013). With such a high volume of ED visits, hospitalizations, and readmissions for COPD, the burden on resources and hospitals continues to grow. COPD is strongly linked to increased health costs. Maleki-Yazdi et al. (2012) found that the yearly COPD total related costs per year were about \$4,147 per person. In 2010, the estimated cost for COPD in the U.S. was around \$36 billion. Research funding for COPD is also expensive (Ford et al., 2014). In fact, the National Institutes of Health (NIH) provided \$102 million in contributions to COPD research. However, this is much less funding compared to other diseases, like cardiovascular disease (CVD) (\$1.9 billion) and stroke (\$282 million) (NIH, 2014). COPD is linked to high levels of disease and death, which drives health care costs dramatically. This puts a burden on the health care system that is not addressed enough on a national level compared to other chronic diseases (May & Li, 2015). The ALA provides death rates for COPD patients from 1999-2018 and the trend in COPD diagnosis from 2014-2018 in **Figure 4 and Figure 5** below (ALA, 1999-2018; ALA, 2014-2017).



**Figure 4. COPD Death Rates, 1999-2018**



**Figure 5. Any COPD Diagnosis, 2014-2018**

While death rates decline in the U.S. male population, the change is flat for the U.S. women population, with no signs of improvement. There is also an increase in the number of COPD diagnoses, with no sign of decline. This information tells us that COPD is far from being solved or going away anytime soon (ALA, 1999-2018; ALA, 2014-2017).

### **3.0 Methods**

My research evaluated the costs and benefits of including motivational interviewing and support groups into a patient's individual COPD care model. The research methodology applied was a literature review, which allowed me to use a mixed approach to reviewing both qualitative and quantitative data. I chose this strategy because it is a great methodological tool to provide answers when aiming to explore a specific issue (Snyder, 2019). The literature review data collection process allowed me to synthesize already existing data to identify any COPD research that is lacking or already in existence. Proper measures were taken to avoid gathering information that was low-quality, incredible, or unreliable. This literature review was necessary, because it makes a practical contribution to improving COPD patient's disease management outcomes (Snyder, 2019).

Appropriate, unbiased research was used to properly address the issue. My search consisted of empirical studies, scholarly peer-reviewed journals in databases, systematic reviews, published novels, and government websites. I also utilized the references from the existing sources cited in my bibliography to achieve a broader collection of data. My search strategy was inclusive of relevant terms related to chronic disease, prevention, COPD, support groups, and motivational interviewing. The data collected from these sources can be replicated, are straightforward, clear and, applicable to the addressing the problem at hand (Snyder, 2019). I completed a secondary analysis of existing quantitative and qualitative data gathered from my research findings. I utilized a research-question driven approach, in which I reviewed the data presented and later determined what relevant answers, questions, and conclusions could be drawn (Cheng & Phillips, 2014).

## **4.0 Literature Review**

### **4.1 Epidemiology of COPD**

COPD is a slowly progressing disease of the respiratory system. A very severe deficiency of air flow is present and cannot be fully reversed. In the lungs, there is an uncommon inflammatory response to various gases and molecules, categorizing it as a chronic inflammatory disease rather than simply just a response. COPD is broken down into chronic obstructive bronchiolitis and emphysema (Barnes, 2000). Chronic bronchitis is the blockage and inflammation of small airways and bronchial tubes. Emphysema causes the breakdown of bronchioles, lung elasticity, and shrinkage of small airways. COPD is caused by smoking and other risk factors, such as poor environment, diet, and exposure (Barnes, 2000). About half of ageing COPD patients experience accelerated lung function decline (Kerkhof et al., 2020). Constraints in airflow slowly progress, as we get older, leading to disability and death. Over time, the thickness in the smaller airways increase which leads to a growth of lymphoid follicles and collagen in the outer airways. This process causes limitation in how much the airways can open (Hogg et al., 2004). COPD is associated with a high number of inflammatory cells. Risk factors stimulate these cells, which cause them to release mediators of inflammation (Barnes, Shapiro & Pauwels, 2003).



## 4.2 Symptoms and Life Expectancy of Disease

COPD is often associated with symptoms of severe lung damage, difficulty breathing, mucus production, shortness of breath, chest tightness, chronic cough, respiratory infections, and weight loss. COPD patients often experience exacerbations, which can worsen and prolong symptoms. COPD is also associated with a multitude of other conditions. Those with COPD have a higher likelihood of getting sick with the common cold, influenza, pneumonia, and other respiratory infections. Also, COPD can increase the risk of heart problems such as heart disease and heart attacks. Lung cancer and high blood pressure are shown to be higher in COPD patients as well. COPD can lead to symptoms of mental illness. Having a disease that is limiting on your life and breathing can make it difficult to carry out fun, daily activities that people enjoy. This can ultimately lead to depression (Mayo Clinic, 2020b).

The life expectancy for those diagnosed with COPD is affected by various risk factors for disease such as exposure to tobacco smoke, asthma, occupational exposure to chemicals, exposure to burning fuel fumes as well as genetics. The greatest risk factor for COPD is tobacco smoke exposure (Mayo Clinic, 2020b). Life expectancy for COPD is also influenced by the severity of the disease. The severity of COPD can be determined by Global Initiative on Obstructive Lung Disease System (GOLD). This technique utilizes a forced expiratory volume test (FEV1) to look how much an individual can exhale out in one second into a spirometer. **Table 2** below shows the stages of COPD using the GOLD test (Global Allergy & Airways Patient Platform (GAAPP), 2021; GOLD, 2018).

**Table 2. The Four Stages of COPD**

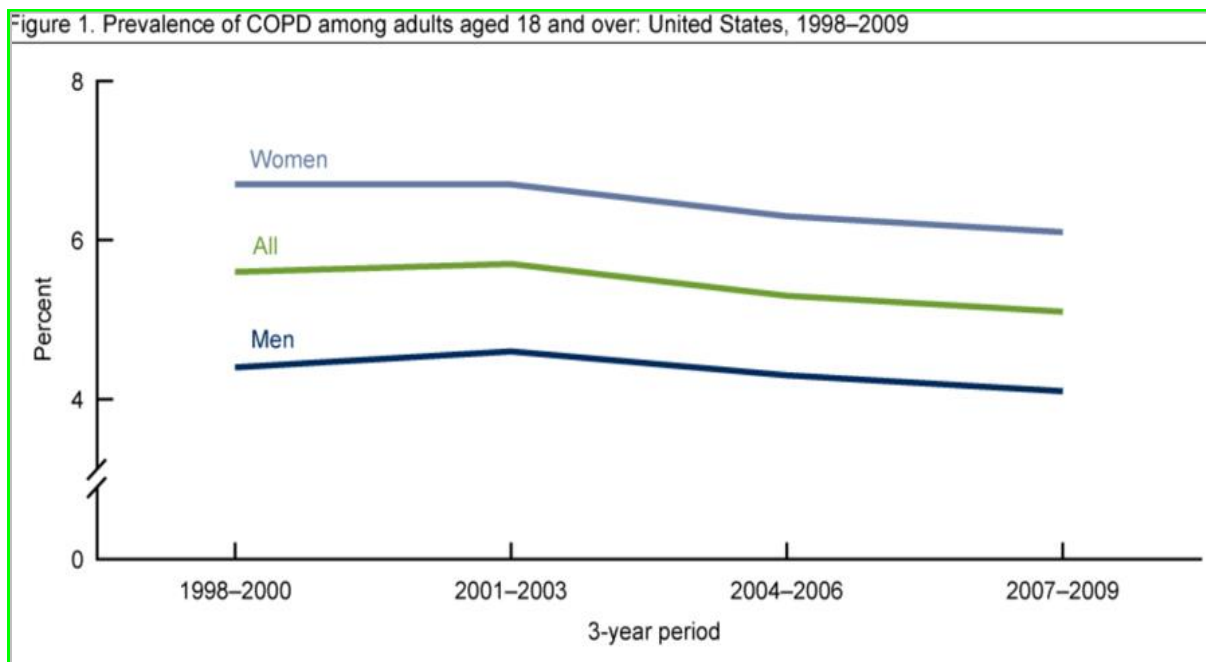
		<b>Stages of COPD</b>	
<b>GOLD Stage</b>		<b>FEV1 Level</b>	<b>Severity of Disease</b>
<i>GOLD 1</i>	FEV1 less than or equal to 80% predicted		Mild Severity
<i>GOLD 2</i>		FEV1 50-80% predicted	Moderate Severity
<i>GOLD 3</i>		FEV1 20-50% predicted	Severe
<i>GOLD 4</i>		FEV1 less than 30% predicted	Very Severe

This test and data are important to determine the severity of disease. Without this information, it will be difficult to not only determine the life expectancy, but also to develop a treatment plan for a patient. Using this test and scale assists physicians in managing COPD based on the stage of disease present in a given patient. When COPD is caught at an earlier, milder stage, medical treatments will be more efficient in improving lung function, and also will provide patients a 10 to 20-year life expectancy after being diagnosed. Research states that no decrease in life-expectancy for patients diagnosed in GOLD Stage 1. For patients found in the more severe GOLD stages, the mean life expectancy decrease is around 8 to 9 years (GAAPP, 2021).

### **4.3 COPD Patient Population**

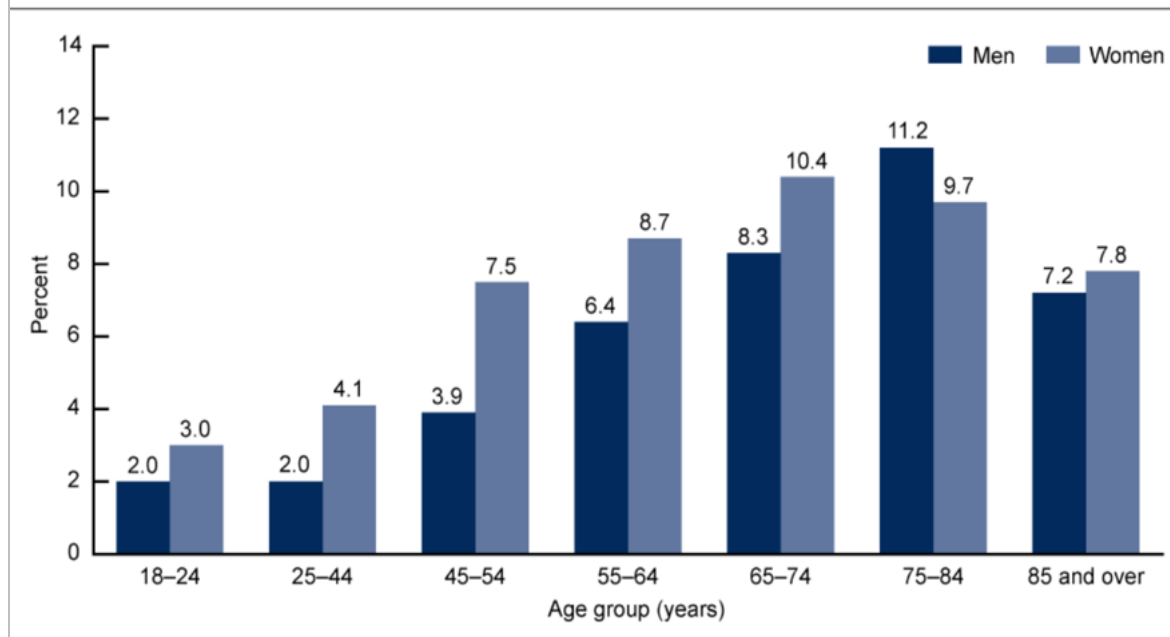
Determining who is most burdened by COPD is important, as it allows a more accurate identification of specific targets for prevention techniques and intervention programs tailored to a particular population. Like most chronic disease, COPD is more common in the older population. The prevalence of COPD continues to rise for both men and women over the years. Prevalence is

higher in women in all age groups, except for the 75–84 range. For women, the COPD prevalence for ages 65–74 is 10.4% and for ages 75–84 is 9.7%. For men, the COPD prevalence for ages 65–74 is 8.3% and for ages 75–84 is 11.2%. The difference in the age groups is not considered statistically significant. **Figure 6** and **Figure 7** below shows the prevalence of the gender and age gap of COPD diagnosis (NCHS Data Brief, 2011).



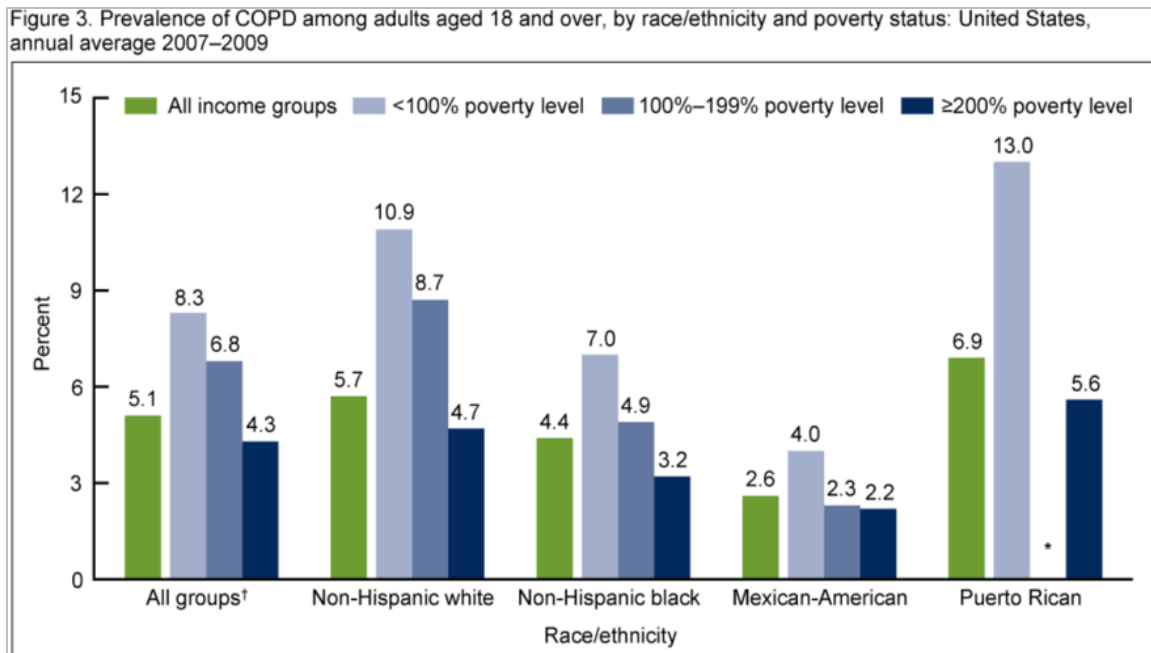
**Figure 6. Prevalence of COPD by Sex**

Figure 2. Prevalence of COPD among adults aged 18 and over, by age group and sex: United States, annual average 2007–2009



**Figure 7. Prevalence of COPD by Age Group and Sex**

The prevalence of COPD is highest among Non-Hispanic White (5.7%) and Puerto Rican (6.9%) individuals. COPD prevalence increases with decreasing income levels. The prevalence of COPD for individuals with income below the federal poverty level (FPL) is 8.3%, the prevalence of COPD for individuals at 100% to 199% of the FPL is 6.8%, and the prevalence of COPD for individuals with income more than 200% of the FPL is 4.3% (NCHS Data Brief, 2011). **Figure 8** displays the prevalence of COPD based on race/ethnicity and poverty status (NCHS Data Brief, 2011).

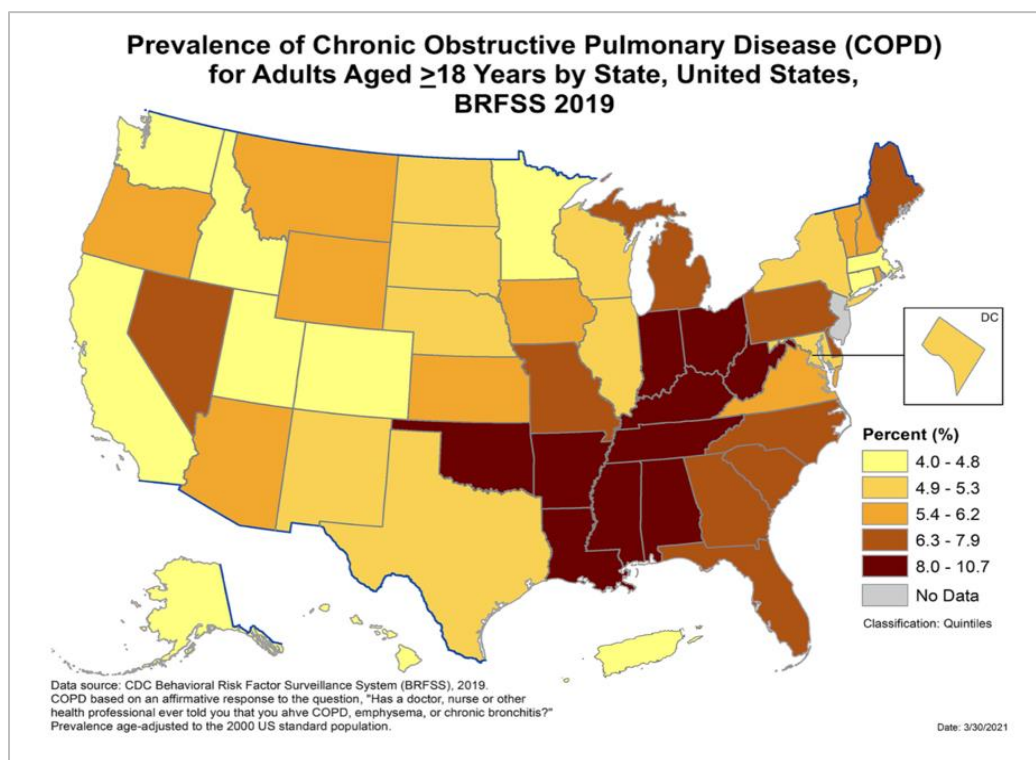


**Figure 8. Prevalence of COPD by Race/Ethnicity and Poverty**

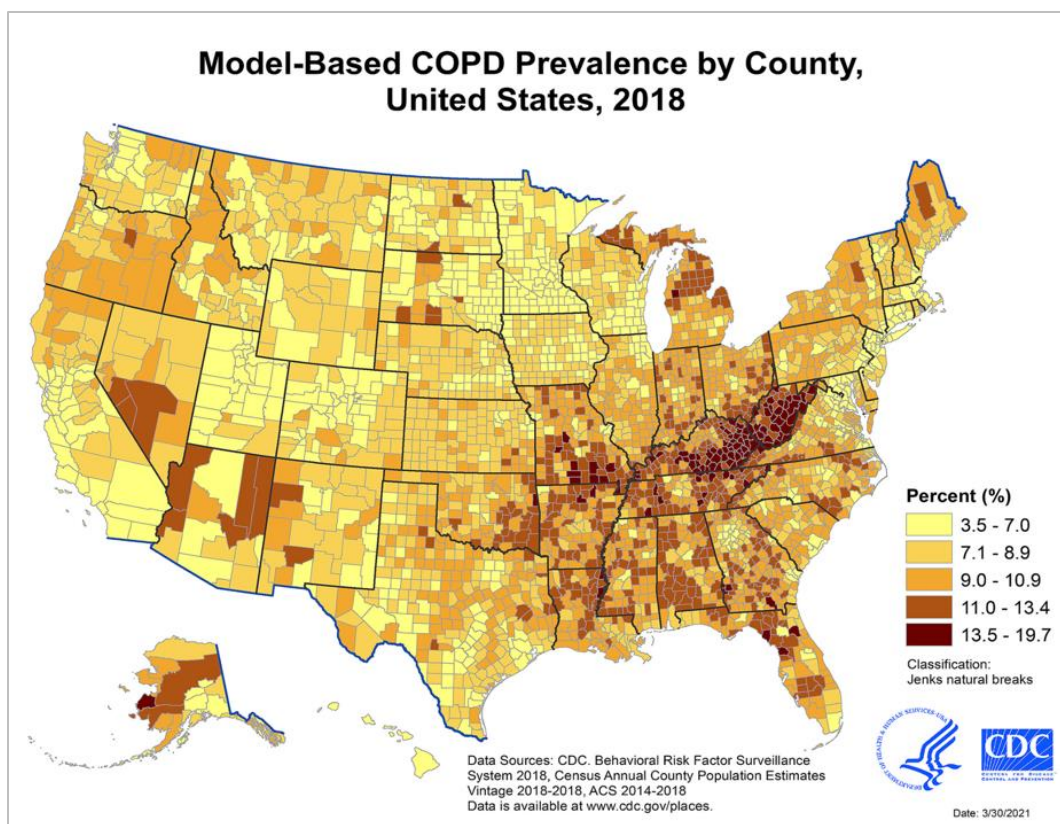
Individuals who have a lower education level have a higher risk of COPD. Gjerdevik et al. (2015) found that, in participants with COPD, those who had a lower level of education had higher rates of emphysema compared to those who had achieved a higher level of education. In addition, with 10-15% of COPD cases being attributed to workplace exposures, it is essential to look at the COPD burden based on occupation as well (Balmes et al., 2003). Fishwick et al. (2015) found 27 different occupations that are at an increased risk of COPD and harmful agents located at those workplaces that attribute to the increased risk of COPD.

The prevalence of COPD varies by state. In states like California, Colorado, Hawaii, Minnesota, and Utah, the prevalence is less than 4.5%, whereas states in the south east region of the U.S. such as Alabama, Arkansas, Kentucky, and West Virginia have a prevalence of greater than 9% (CDC, 2021a). The percentage of individuals living in rural areas (8%) that are diagnosed with COPD is almost double the percentage of those living in urban areas (5%). Death rates for

COPD are higher in rural (55 per 100,00 persons) than in urban areas (32 per 100,000 persons) (CDC, 2020). Individuals living in rural areas of the U.S. have a greater number of COPD-related problems, are more at risk of being uninsured, and are at greater risk of being below the poverty line. Rural areas lack nearby preventive health care programs. This leaves residents with less access to care, and therefore a delay in diagnosis and treatment (CDC, 2020). **Figure 9** and **Figure 10** below show the burden of COPD prevalence by State and County (CDC, 2021a).



**Figure 9. Prevalence of COPD in the United States, by State**



**Figure 10. Prevalence of COPD in the United States, by County**

## **5.0 Findings of COPD Data**

### **5.1 Standard of Care**

Being educated about the standard of care and typical treatment for COPD is important for better understanding the disease as a whole. The first and most vital treatment always recommended to COPD patients is to quit smoking, if they are a smoker. Smoking only continues to inhibit someone's ability to breathe and worsens COPD over time. Various kinds of medications can be used to reduce the symptoms of COPD. Bronchodilators, which are in inhalers that work to relax muscles near the airways and alleviate shortness of breath, are a mainstay of COPD treatment. Other options include inhaled steroids, combination inhalers, oral steroids, phosphodiesterase-4 inhibitors, theophylline, and antibiotics (Mayo Clinic, 2020a).

Lung therapies are an additional option for people who have moderate to severe COPD. Oxygen therapy is used for patients who do not have an adequate amount of oxygen in their blood and need more. Patients can do this via portable or stationary units and may require oxygen at rest, with activity, and/or with sleep. This is the only COPD therapy that is actually proven to increase the life expectancy of a COPD patient. In addition to oxygen therapy, providers may refer patients to a pulmonary rehabilitation program. These programs offer education, fitness training, nutrition counseling, and other general therapies. Using pulmonary rehabilitation can potentially lower hospital readmission rates and improve quality of life (Mayo Clinic, 2020a).

Patients can utilize in-home noninvasive ventilation therapy as well. Using this machine at home with a mask may improve breathing and lower the retention of carbon dioxide that could eventually lead to acute respiratory failure and hospitalization. A final treatment option that is



available for COPD patients is lung volume reduction. This is for individuals suffering from severe emphysema when medications are not very helpful. Different options include Lung Volume Reduction Surgery (LVRS), a bullectomy, or placement of an endobronchial valve (Klooster & Slebos, 2021; Mayo Clinic, 2020a). LVRS involves reducing the size of the lungs by removing 30% of problematic lung tissue. Outcomes of LVRS have shown to improve breathing performance, lung capacity, and quality of life. In a bullectomy, bullae, large air sacs from damaged alveoli that decrease functioning in the lung, are removed. The removal process can improve the ability to breathe. Lung Transplants are recommended if the damage to a patient's lungs is nonrepairable due to extensive damage. Transplants involve risks and complications but when successful can improve ability to breathe properly. However, not every COPD patient will qualify for these procedures (ALA, 2021). Of course, as with every chronic condition, various lifestyle and home strategies can help slow damage to the lungs. These include controlling breathing, airway clearance, regular exercise, healthy eating, avoiding smoking and air pollution, and seeing a doctor on a regular basis (Mayo Clinic, 2020a). This information gives us the opportunity to review the actual effectiveness of this care.

## **5.2 Justification of COPD Care Plan Reform**

Based on the epidemiological data and research found, COPD leaves a large burden on our health care system, specifically for older populations of women, for people in the low poverty and low education sectors living in the rural south east region of the country. For these numbers to decrease, and to improve the COPD health of these groups, a population-based intervention must be implemented directly in the COPD care pathway (CP). A care pathway is used to enhance

adherence to medical plans and improve outcomes. It is defined as “a complex intervention for the mutual decision making and organization of predictable care for a well-defined group of patients during a well-defined period” (Vanhaecht et al., 2016, pg. 2897). In fact, preventative medicine favors interventions targeted at a specific population rather than a large number of high-risk persons. A population-level COPD intervention that emphasizes early diagnosis can increase the number of healthy life-years lived (Ambrosino & Bertella, 2018). Using this strategy can help to reduce disease burden, and impact future disease outcomes (Zulman et al., 2008). With that being said, it is important to evaluate the current effectiveness of the COPD care delivery treatment path of patients.

Lodewijckx et al. (2009), a pilot study and Roberts et al. (2013), a systematic review, analyzed the management of COPD exacerbations and adherences to GOLD guidelines. Both authors found that the current hospital management of COPD has been deemed below the standard of quality care (Lodewijckx et al., 2009; Roberts et al., 2013). This ultimately causes unexpected readmission and mortality outcomes. Despite the fact that global established standard procedures and protocols exist for COPD disease management, disease outcome remains unacceptable and subpar (Vanhaecht et al., 2016). Although the global standard procedures and protocols have advanced over the years, the most overlooked part of COPD management is the implementation and accessibility to care. Whether or not a patient’s quality of life gets better depends on how care is implemented. COPD patients encounter issues with accessibility and implementation in their care pathway. They also face additional obstacles to care, because a large majority of patients need access to a considerable number of services such as inpatient and outpatient services, medications, oxygen, and pulmonary rehabilitation. This creates an issue for COPD patients and their care

delivery, because it has become difficult to differentiate the priorities of patients versus the priorities of payers within the intricate health care system we have today (Han et al., 2016).

Yawn & Martinez (2020) state that there are currently no recommendations to screen the general population for COPD, unless they are symptomatic. The U.S. Preventive Services Task Force (2016) says that identifying asymptomatic COPD does not impact outcomes, but rather only emphasizes the significance of exposure. However, COPD is a good disease candidate for facilitated symptom recognition. This is because COPD respiratory symptoms often go unrecognized, which is not the same as asymptomatic (Yawn & Martinez, 2020). In fact, newly-diagnosed COPD patients often express having symptoms of breathlessness 10 to 15 years prior to initial diagnosis, assuming symptoms were attributed to smoking or old age (Hopkinson, 2016). Individuals who have unacknowledged or unaddressed COPD respiratory symptoms are left undiagnosed as a result (Yawn & Martinez, 2020).

The 2014 COPE (Chronic Obstructive Pulmonary Experience) survey data showed that almost three years before official diagnoses, patients were experiencing symptoms of illness (Business Wire, 2014). Such a long delay in diagnosis creates a strain on both the patient and the provider. Screening is a secondary prevention measure that is essential in preventative care. The impact of a delayed diagnosis on a patient is hard to deal and cope with (Ansari et al., 2014). Han et al. (2016) claim that delayed diagnoses often leave patients with a mix of negative emotions. This ultimately makes it more difficult for the patient to initiate behavior change related to treatment and lifestyle.

COPD patients often experience stigma about their disease, which leaves them with less motivation to receive treatment and help. This stigma derives from the lack of education provided to patients about COPD, about access to care, and about how to receive social support to improve

their overall quality of life (Martinez et al., 2012). Patients themselves have expressed a lack of education about their disease progression and treatment pathway. The COPE survey revealed a lack of not only education but also communication with providers about COPD disease management. There is large disparity in understanding simple and standard conversations that patients should have with providers such as knowing the steps after diagnosis, disease prognosis, treatment options, and self-monitoring skills (Business Wire, 2014). Patients wish they would have been well-educated by their provider sooner so could have recognized symptoms of COPD exacerbations early on. Earlier disease education and discussion of treatment options may also address patients' feelings of anxiety about their disease. In the COPE survey, approximately 16% of participants were not aware of what an exacerbation was (Business Wire, 2014). Most patients had to receive educational opportunities and materials about therapy sessions and support groups from someone other than their provider. With little knowledge about their disease, COPD patients are looking for change and as a result look for research, knowledge, and support elsewhere. This further emphasizes a deficiency in the COPD care delivery model. Improving education and communication among providers will greatly improve adherence to treatments (Han et al., 2016).

One of the largest obstacles for COPD patients is getting access to affordable medication. According to the Continuing to Confront COPD Survey, around 50% of total COPD-treatment related expenditures are paid by Medicare, 25% is paid by Medicaid, and 18% is paid by commercial insurance plans. The remaining patients are covered by other plans or programs (Menezes et al., 2015). Medicare pays most COPD-treatment related costs. Medicare Part D has improved access to medications for some patients; however, we have seen in the last decade an adaptation to more restrictive cost-containment strategies and costlier co-pays for COPD patients, with no lower cost options available. Insurers commonly include only a single drug in their

coverage, which changes frequently, many times without notifying the patient of this change, causing dissatisfaction. Even when medications are included in their coverage plan, patients still have co-pays ranging from \$75-\$125 or greater for a single drug (Menezes et al., 2015). Because of this, patients have noted not getting proper refills and taking the wrong dose according to their needs. These data highlight the need for improvement of affordable patient-access to COPD drug interventions, education, and drug-free interventions.

Non-pharmacological interventions can greatly improve quality of life for COPD patients by giving them a channel through which they can connect and communicate to other patients and also attain more education and knowledge of their condition. However, because health care institutions rarely invest in these programs, there is a shortage of them, as well as a lack of referrals by providers to the programs that are available (Han et al., 2016). Evidence shows a lack of care coordination and inadequate illness-specific training among providers, specifically those who deal with COPD care. Patients want all of their providers and specialists to communicate with one another in order to have better access and better quality of care that is personalized to their health care needs. Overall, evidence highlights the issues within COPD care delivery, which are diagnostic delay, low use of screening, lack of guideline implementations, affordable medications, access to non-drug therapies, education, and provider coordination. In addition, COPD research is not well funded, and COPD patients have high readmission rates as well. The lack of preventative care is evident, and treatment options for COPD patients need quite an improvement, which is my justification for a reform (Han et al., 2016).

### 5.3 COPD Data Findings: AGH, AHN, PA and Allegheny County

Showing the number of COPD prevalence and readmissions conditions among inpatient hospital admissions is imperative for understanding deficiencies in the COPD care pathway. **Table 3** below displays AGH’s COPD readmission and prevalence rates in comparison to the total AHN, PA, and Allegheny County averages (AHN, 2015; CDC, 2021a; Pennsylvania Health Care Cost Containment Council [PHC4], 2015). ‘Total AHN Average’ refers to a benchmark for the six AHN Hospitals located in the Pittsburgh area: Allegheny General Hospital (AGH), Allegheny Valley Hospital (AVH), Forbes Hospital (FH), Canonsburg Hospital (CH), Jefferson Hospital (JH), and West Penn Hospital (WPH). It should be noted that AHN services are included in three separate counties but mainly serve Allegheny County (AHN, 2015).

**Table 3. COPD Readmission and Prevalence Statistics**

<b>COPD Readmission and Prevalence Statistics</b>				
<i>Measure</i>	<b>AGH Average</b>	<b>Total AHN Average</b>	<b>Pennsylvania Average</b>	<b>Allegheny County Average</b>
<b>COPD 30-Day Readmission Rate</b>	17%	17%	7.7%	--
<b>COPD Prevalence Rate</b>	23%	26%	6.3% - 7.9%	3.5% -7.0%

The AHN *Community Health Needs Assessment Research Report* (2015) showed that AGH had the highest 30-day COPD readmission rate of all AHN hospital averages for commercial payers, Medicaid, and Medicare. The report also revealed that AGH prevalence of COPD (23%) was lower than the AHN average (26%), yet the readmission rate matched the AHN average. The

report makes the point that a lower prevalence should result in a lower readmission rate, but this is not the case. This indicates that COPD patients at AGH could benefit from increased community and preventative resources to better manage their disease. The report (2015) directly states that after close analysis, the number of chronic disease readmissions signifies the need for improvement in COPD case management (AHN, 2015).

The data above help quantify and assess the readmission rates of COPD patients in AGH. They also further confirm the lack of effective, high quality care of the COPD care delivery model treatment options (PHC4, 2010). In fact, a research study (Rinne et al., 2017) was conducted to analyze the relationship between COPD readmission and measures of hospital quality of care plans. The authors found significant associations between COPD readmissions and hospital quality of care across all patient experience domains using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. It is important to note that the HCAHPS survey concentrated specifically on patient care domains that contribute to readmittance, like communication strategies and discharge knowledge. These domains are very important elements that have proven to decrease the number of COPD readmissions, improve disease management, and increase patient education. However, few care delivery efforts prioritize these domains despite their essential role in improving COPD care (Rinne et al., 2017). This implies that institutional factors do influence COPD outcomes and the quality of care, resulting in readmission. The current COPD care pathway treatments are inadequate for patient needs. This is justification for reform in the COPD care delivery model. Support groups and motivational interviewing (MI) are two strategies that will be explored as possible reform techniques and prevention approaches to include in the pathway and as a possible intervention programs that are scaled up based on the at-risk population.

## **6.0 Findings of Support Group Data**

### **6.1 Support Groups Background**

Support groups in the health care setting can be used for any person who is battling a severe disease or dealing with a stressful adjustment in their life. Support groups are meant to assemble, join, and unite groups of individuals who are dealing with a lot of the same issues and events, such as COPD. But they can be used for other disease as well such as cancer, addiction, and more (Mayo Clinic, 2020c). Support groups work to give those who are struggling the freedom and chance to share personal opinions, thoughts, feelings, and experiences along with information about disease or treatments. Support groups, especially those that are health-related, work to fill a treatment gap between medical care and emotional needs. They can act as the connection between individuals who experience similar obstacles to care (Mayo Clinic, 2020c).

Support groups can be offered at various locations including a non-profit organization, clinic, hospital, or community event center. They can be held in-person or through online associations. Support groups normally have a lead facilitator to run the meetings, such as a nurse, social worker, psychologist, respiratory therapist, or a patient (Mayo Clinic, 2020c). An education component is commonly included, with material from guest speakers such as doctors, psychologists, nurses, social workers, or anyone who can provide expertise around a topic that caters to the group's needs. It is important to note here that support groups are not entirely the same as group therapy sessions. Group therapy is used for a specific type of mental health illness under the management of a licensed mental health counselor. (Mayo Clinic, 2020c).



## **6.2 Effectiveness of Support Groups**

Support groups have a lot of value. Giving patients access to support groups may help them focus on needs other than those related to the medical aspect of their disease. Support groups are effective at providing various benefits to patients (Cope, 1995). For example, support groups offer education. This is achieved by information exchange through patients, brochures, pamphlets, demonstrations, web materials, or simply a conference meeting. Support groups allow patients to share their illness experience, which helps patients improve their anxiety, depression, and coping methods (Schou et al., 2008; Spiegel, Bloom, & Yalom, 1981). Hu (2017) suggests that support groups give members a sense of strength, emotional guidance, confidence, and empowerment. Hospitals and providers have not been able to offer these things to the same extent. Support groups offered at large national organizations also provide public awareness and funding to give fiscal assistance for patients and researchers (Hu, 2017).

Most research to determine the effectiveness of support groups looks at their application to chronic disease, particularly cancer, and their impact on quality of life. The earliest known study looking at long-term support groups and their effect on the quality of life for those with chronic disease, was in 1999 (Hammerlid). The results from the study showed that the program did indeed improve psychiatric morbidity and social and emotional functioning, as well as quality of life (Hammerlid et al., 1999). An additional study (Vakharia et al.) was conducted in 2007 for the same condition. The researchers utilized the University of Michigan's Head and Neck QOL instrument and found that patients who participated in the support group had higher scores on aspects such as eating, emotion, pain, and response to treatment (Vakharia et al., 2007).

Hu (2017) states that there are some barriers to accessing peer support groups. The barrier that is of most importance for this research is a clear lack of patient awareness. Health care

providers are not informing patients of relevant programs that may be available to them, despite the value patient support groups provide (Van Uden-Kraan CF et al., 2011). **Table 4** (Embuldeniya et al., 2013) below represents a journal article’s qualitative data synthesis of the impact of support groups for a number of chronic diseases such as rheumatic disease, HIV/AIDS, CVD, cancer, asthma, diabetes, and other chronic disease.

**Table 4. Chronic Disease Peer-Support Study Outcomes**

Chronic Disease Peer-Support Study Outcomes							
Chronic Disease Type:	RA	Chronic Disease	Cancer	HIV	CVD	Diabetes	Asthma
Sense of Connection	✓	✓	✓	✓	✓	✓	
Experiential Knowledge	✓	✓	✓	✓	✓	✓	✓
Finding Meaning	✓	✓	✓	✓	✓	✓	
Sharing	✓	✓	✓	✓		✓	
Helping	✓	✓	✓	✓	✓	✓	✓
Reciprocity		✓	✓	✓	✓	✓	
Role Satisfaction	✓	✓		✓	✓		✓
Changed Outlook	✓	✓	✓	✓	✓	✓	✓
Changed Behavior	✓	✓		✓	✓	✓	✓
Changed Knowledge	✓	✓	✓	✓	✓	✓	✓
Empowerment	✓	✓		✓	✓		

The results from the table show a peer support group’s ability to mirror and surpass the current medical models of building relationships between a patient and their disease (Embuldeniya et al., 2013). There are significant practice implications for the development of support group programs in chronic disease in the health care setting (Embuldeniya et al., 2013). Further analysis from Haidari et al. (2017) revealed that peer support group programs improve adherence to

treatment regimens, decrease depression scores, and improve quality of life for chronic diseases, such as hypertension, multiple sclerosis, and diabetes.

### **6.3 Support Groups Applied to COPD Patients**

According to Ambrosino and Bertella, (2018) COPD interventions that focus on self-management techniques improve health-related quality of life, physical activity capability, and self-efficacy. Patient support groups and similar networks help patients better manage COPD and other respiratory problems. In fact, individuals with various respiratory illness, such as COPD, can benefit from patient support groups because they play a critical role in combining aspects of education, social interaction, guidance, and direction for change (Hashem & Merritt, 2018). Support groups work to improve the self-management strategies for COPD patients. A research study from Hashem and Merritt (2018) shared a key finding regarding the roles that social networks and support groups play. Participants with respiratory diseases found a great social benefit in attending support group sessions. They shared their background knowledge about COPD, which helped them to gain additional support for their illness, which they were not able to receive in other areas of treatment (Hashem & Merritt, 2018).

A clinical trial completed by John Hopkins University and the Patient-Centered Outcomes Research Institute provides more insight into this topic (Aboumatar, 2020). Aboumatar (2020) looked at the impact of a peer support group program on COPD patients and their caregivers, while simultaneously reviewing the effectiveness of a peer support group program on COPD management. The first condition of the randomized control trial (RCT) offered half the participants support from only a health care provider, who would be the sole communicator about COPD self-

management techniques. The second condition of the RCT offered a dual approach. One half of participants received support via a peer support group as well, with support group mentors acting as an additional communicator to the physician. Researchers compared the impact of the two strategies based on measuring patient satisfaction, patient experience, self-efficacy, behaviors, health status, and quality of life (Aboumatar, 2020).

The health-related quality of life at six and nine months was better for the peer support group than the non-support group patients. In addition, the number of COPD-related hospital and ED visits per participant was better in the peer support group program than the other group for the three-, six- and nine-month periods. The mortality rate was less for those in the peer-support group program at both the six- and nine-month period. This randomized control trial highlights the clear impact and benefit of a peer support group program for COPD patients regarding their quality of life, mortality rate, and rate of ED and hospital visits (Aboumatar, 2020).

Welch et al. (2020) sought to understand the clinical and financial benefits of support groups for COPD patients focusing specifically on health status, symptom burden, overall quality of life, and health utilization cost differences. Program implementors analyzed the difference between a usual care group and a support group. The usual care group did not receive any additional peer-support. They were provided with a pulmonary rehabilitation discharge pack that consisted of an exercise DVD and advice pamphlets about support and walking groups (Welch et al., 2020).

Welch et al. (2020) analyzed differences in clinical outcomes using the COPD Assessment Tool (CAT), Patient Health Questionnaire (PHQ-9), and the seven-item anxiety scale. The EuroQoL instrument EQ- 5D was also used to assess quality of life, mobility, self-care, usual activities, pain level, and mental health whereas the Inventory (CSRI) instrument was used to

determine service utilization, income, and other cost-related variables. Data from the study are indicated below in **Table 5** (Welch et al., 2020).

**Table 5. COPD Pilot Peer-Support Study Outcomes**

<b>COPD Pilot Peer-Support Study Outcomes</b>		
	<b>Support Group</b>	<b>Usual Care Group</b>
Overall Symptom Burden (CAT Score)	Stable	Increase
Generalized Anxiety Score (GAD)	Decrease	Increase
PHQ-9: Patient Health Score	Increase	Decrease
EQ-5D Quality of Life Score	Increase	Decrease
Health Utilization Costs	Decrease (40%)	Decrease of (<1%)

This intervention in Welch et al. (2020) successfully addressed many COPD patients' clinical needs through the use of peer-support network groups. The results suggest that utilizing peer-support networks can not only increase engagement but also act interdependently to already existing COPD management techniques (Welch et al., 2020). The decrease in health utilization costs for the intervention group accounts for a reduction of around \$8,200 for inpatient activity and around \$1,800 for outpatient visits. The remaining outcomes were more favorable for the support group opposed to the usual care group in all areas examined by the program implementors. The researchers also stated that participants in COPD support groups have the capability to elicit motivation among peers to continue to utilize community resources that would not only sustain overall health status, but also slow down disease progression over time (Welch et al., 2020).

## **7.0 Interviewing Data**

### **7.1 Motivational Interviewing Background**

Motivational interviewing, most commonly known as (MI), is an evidence-based approach to changing behavior. The Motivational Interviewing Network of Trainers, or MINT (2020), describes it as a coordinated, goal-oriented approach to conversation while simultaneously utilizing language to promote change. MI aims to increase a patient's motivation and commitment towards achieving a goal by identifying their own personal obstacles to change while remaining nonjudgmental (MINT, 2020). Essentially, MI is a type of communication delivery that motivates an individual or patient to want to make a change for themselves. MI has adapted over the years, but the most current strategy focuses on a guiding approach to communication. The interviewer ensures both following and directing tactics. They remain a good listener and give information to the interviewee. It is a respectful, inquisitive and confidential approach of talking to people that initiates the natural process of making a change. (Miller, & Moyers, 2017; Miller, & Rollnick, 2013; MINT, 2020).

Partnership, evocation, acceptance, and compassion make up the core elements of the MI process. MI needs to be collaborative. The interviewer must identify the pre-existing skills, priorities, and values of the interviewee. The interviewer takes an uncritical stance while helping patients explore reasons for change. The skills that must be employed during MI are use of open questions, affirmations, and reflections, summarizing, and exchange of information. These skills require the interviewer to ask open-ended questions that delve into what the person already knows, then guide them to reflect on how change may be both beneficial and possible. MI should be seen

as a method of communication rather than a planned health care program, to be used alongside other treatment options (Miller, & Moyers, 2017; Miller, & Rollnick, 2013; MINT, 2020).

MI calls for an interviewer engaging in the conversation to act as an equivalent to the interviewee and to abstain from giving unsolicited advice. MI is not a tactic to demand or advise people to change, but rather a set of techniques to hold a conversation around that topic. MI does not happen quickly and involves self-awareness from the provider giving this service. Although MI can be helpful in many domains, it is especially beneficial to help patients analyze their situation when ambivalence is high and when confidence, desire, and importance are low. These people are hesitant about change, challenge their capability and ambition to change, and do not find any advantage in making a change (Miller, & Moyers, 2017; Miller, & Rollnick, 2013; MINT, 2020). COPD patients often are diagnosed with anxiety and depression as a result of their disease burden. Langer et al. (2014) reiterate this, claiming that COPD patients become inactive over time, which further decreases any motivation to change. With that being said, COPD patients can benefit emotionally from MI interventions.

The script provided in **Table 6** below was applied in a qualitative study design that utilized interviews among COPD patients (Harb, Foster & Dobler, 2017) and shows what a MI conversation could look like. The questions have helped researchers better understand the burden COPD patients face. This emphasizes the importance of regularly and continually introducing communication and MI in the COPD care path that align with the patient's values (Harb et al., 2017).

**Table 6. COPD Interview Guide**

**Table S1 Interview Guide**

<b>Question</b>	<b>Probes and Follow-Up Questions</b>
<b>Item 1:</b> What types of health problems are dealing with right now?	<ul style="list-style-type: none"> <li>Besides the COPD, have you been diagnosed with any conditions? (If yes) Do these conditions affect you? How?</li> </ul>
<b>Item 2:</b> What kinds of things do you do to care for your COPD?	<ul style="list-style-type: none"> <li>Do you measure your oxygen levels at home? (If yes) what do the results mean to you?</li> <li>Do you have other ways of monitoring your health in general, including other conditions?</li> <li>Have you had any difficulties learning about your COPD? (If yes) What were they?</li> <li>Tell me about any times where you felt confused about the information given to you?</li> <li>I'm interested, tell me what you know about your COPD/emphysema?</li> <li>Where do you get your information from?</li> <li>(If yes) What sort of things? Please tell me about that in more detail.</li> </ul>
<b>Item 3:</b> What sort of things make it difficult to care for your COPD? Do you ever cut back on doing things for your COPD?	
<b>Item 4:</b> What sort of things make it easier to care for your COPD?	<ul style="list-style-type: none"> <li>In caring for your health, do you get support from other people? (If yes) Who? What kind of things did they do to help you?</li> <li>How's your health care ever created tension between you and other people? In what way?</li> <li>Please tell me about the relationships that you have had with your healthcare providers.</li> <li>It is communication between you and the providers particularly good or bad? Can you give me an example to illustrate this?</li> </ul>
<b>Item 5:</b> Thinking of all the things you have to do to care for your COPD: how do they affect you?	<ul style="list-style-type: none"> <li>Does looking at your COPD affect your work, social, or family life? Looking after your COPD might include taking treatments (e.g., reducing smoking, taking exercise) (If yes) Can you give me an example?</li> <li>Has managing COPD affected you at all financially? (If yes) In what way?</li> <li>For some people, caring for their health condition can be emotionally challenging. By that, I mean some people say they get anxious, feel down, or feel upset. Have you had any experiences like that? (If yes) Can you describe the experience?</li> <li>What kind of things make you feel better when you're feeling this way?</li> <li>Have you been asked to make lifestyle changes, such as your diet, for your COPD? (If yes) How do you feel about that?</li> <li>Were you able to make any of those changes, and how difficult was it?</li> </ul>
<b>Item 6:</b> How do you feel about exercise?	<ul style="list-style-type: none"> <li>Do you think exercises is good or bad for COPD?</li> <li>What makes you say that?</li> <li>What are your thoughts on breathlessness and exercise?</li> </ul>



## **7.2 Effectiveness of Motivational Interviewing**

MI has been shown to be effective in a broad range of settings, populations, languages and treatments. In fact, when examined in contrast to other evidence-based approaches, MI compares very well and is consistent with the effectiveness of them. Patients have shown interest in MI, and it can be easily applied in clinical practice (Miller, & Moyers, 2017; Miller, & Rollnick, 2013; MINT, 2020). MI has been effective in improving people's awareness and positive thinking. This approach has been used for over 30 years and has yielded significant results in studies. The effectiveness of MI has been proven in areas such as psychotherapy, medicine, and education among other fields of interest. MI is the most empathetic approach a health provider can use in order to affirm and support a patient's sense of self-efficacy (Winnicki et al., 2016). It significantly improves not only communication, but also collaboration and the quality of the patient-provider relationship during treatment over time (Szczekala et al., 2018).

Lundahl et al. (2013) completed a systematic review of 48 randomized control trials that used MI in a primary health care setting. Lundahl et al. (2013) found a statistically significant impact in patients for reducing mortality, blood pressure control, improving quality of life, reducing sedentary lifestyle, increasing confidence, intention of change, treatment engagement, cholesterol level, body weight, and HIV viral load. VanBuskirk and Wetherell (2014) completed a systematic review of the same 48 randomized control trials. They found MI to be effective in 63% of participants, and more effective than standard patient-physician initial consultation in primary health care settings. The majority of this effectiveness is achieved with 15-minute MI conversations between a patient and a doctor, psychologist, nurse, midwife, or a dietician (Szczekala et al., 2018).

Not only does MI help the patient, but it is advantageous for the health professionals who use the technique as well. The quality of medical practitioners' interviews improves and obtains better results after using MI. Lindhardt et al. (2015) found that professionals who utilized MI learned to ask fewer closed-ended questions. The shift in dialogue dramatically changed the atmosphere of the conversation to lean more in the direction of change (Lindhardt et al., 2015). Chisholm et al. (2017) revealed that 66 health care providers demonstrated significant development of holistic skills, MI skills, and MI knowledge after a one-day MI program. The providers found training not only valuable for good communication but also relevant to disease management (Chisholm et al., 2017). The information provided reiterates the fact that MI is effective in the health care setting and has an important role in patient-provider communication and health outcomes (Szczekala et al., 2018).

### **7.3 Motivational Interviewing Applied to COPD Patients**

Benzo et al. (2016) compared health coaching and MI with usual COPD care for patients after an exacerbation to see the change in COPD-related rehospitalizations. Participants were randomly assigned to either receive MI or receive guideline-based usual care with referrals to pulmonary rehabilitation. Results revealed that a health-coaching intervention based on MI decreased COPD-related hospitalizations at one, three, and six months after discharge. Results also found improvement in disease-specific quality of life, and in physical and emotional performance. These outcomes reveal a new way of delivering preventative care to COPD patients after they are admitted. Benzo et al. (2016) found that MI was both economically and operationally feasible with a high probability rate of replication for future studies in a number of different treatment paths.

Although pulmonary rehabilitation has been shown to be the best program to improve these aspects in COPD patients, only about 10% of patients actually complete it. This makes MI and health care coaching a more widespread and viable option (Benzo et al., 2016).

Rehman et al. (2017) revealed similar results. In fact, 50 GOLD stage 2-4 diagnosed COPD patients took part in a three-month intervention of 10 MI sessions performed by a registered nurse. Researchers measured baseline and post-intervention values of dyspnea, using the Medical Research Council (mMRC) Dyspnea Scale, and disease specific QOL, using the Chronic Respiratory Disease Questionnaire (CRQ). The CRQ recorded general self-rated health status (GSRH) data on dyspnea, fatigue, emotional, mastery, and generic QOL. The results of the intervention are displayed in **Table 7** below (Rehman et al., 2017). Clinically meaningful improvements are defined as a 0.5-point change for the CRQ measure, and a 1-point change for the mMRC and GSRH measure.

**Table 7. Motivational Interviewing COPD Study Results**

<b>Motivational Interviewing COPD Study Results</b>		
<b>Measurement Tool</b>	<b>Baseline</b>	<b>Patients with Clinically Significant Improvements (%)</b>
mMRC (0-4)	2.4	27.4%
CRQ Dyspnea (1-7)	4.8	25.5%
CRQ Fatigue (1-7)	4.0	33.3%
CRQ Emotion (1-7)	5.0	31.4%
CRQ Mastery (1-7)	5.1	33.3%
GSRH (1-5)	3.7	33.3%

Exactly 71% of patients (36) in the study showed a clinically meaningful improvement in one of the outcome measures (Rehman et al., 2017). For mMRC and GSRH, the lower change value represents the best condition, whereas for the CRQ values a higher change value represents the best condition. At three- and six-months post-intervention, fatigue, emotional function, overall health status, dyspnea, and mastery domains showed clinically significant improvement. Rehman et al. (2017) concluded that MI is beneficial for and acceptable to COPD patients.

Treatment adherence for COPD patients ranges from 22%-78% (Burkhart & Sabaté, 2003). The most important aspects that affect treatment adherence include treatment techniques, education, and health care provider communication. Promoting treatment adherence requires motivation, and in comparison, to other techniques, MI best exemplifies this feature. (George et al., 2005). Naderloo et al. (2018) revealed that treatment adherence in patients who receive MI in comparison to patients who do not receive MI is significantly better.

#### **7.4 Support Groups and Motivational Interviewing Dual Approach**

Although MI has been developed as an individual intervention and support groups are a group intervention, it is possible to adapt MI to be effective in a group setting. Wagner (2013) provides evidence of how MI can be useful in a chronic disease diabetic support group in his book, *Motivational Interviewing in Groups*. In a support group setting, MI can be more counselor-driven and directive than typical MI sessions. Wagner (2013) says that using MI in a support group setting can be helpful to increase the amount of important disease management information given. This allows group leaders to provide more essential knowledge that will help group members better target their own personal goals. Utilizing MI in a chronic disease support group allows the group

leader to better respond to a variety of problems, which ultimately focuses more dialogue on the patient's needs (Wagner, 2013).

The literature expresses skepticism regarding challenges with running MI sessions in support groups, as it is more difficult to provide high-quality sessions with more people. However, Wagner (2013) addresses these challenges. Though limited data are available on using MI in support groups, evidence so far suggests MI can be adapted to be effective. Controlled studies are available that show significant results of its implementation. MI in a group setting can provide many advantages that individual interventions do not have according to Wagner (2013).

## 8.0 Discussion

### 8.1 Benefits of Program Implementation

**Tables 4** (pg. 31), **5** (pg. 34) and **7** (pg. 40) summarize the clinical benefits of implementing MI and support groups for chronic disease patients, specially COPD. Health care programs, such as the one I am advocating for, can work to eliminate and control non-infectious diseases, including COPD (Bloland et al., 2012). Implementing preventative services like support groups and MI into the usual COPD care pathway is beneficial for payers, insurers, and patients because preventative care in general is cost neutral and also leads to better health outcomes (Maciosek et al., 2010). Beaton (2017) tells us that payers who encourage patients to use preventative services will have lower costs, and the patients who use the services will have a smaller risk of chronic disease development. Overall, preventative care has been proven to have both high economic and medical value (IOM, 2010).

Agarwal et al. (2021) share that COPD is treatable, not reversible, leaving patients with no cure and our hospital systems with a large burden. COPD accounts for millions of hospitalizations, ER visits, and exacerbations requiring outpatient treatment, which ultimately drives costs (May & Li, 2015). With this in mind, COPD patients can benefit from the use of preventative services from a financial and medical perspective. The preceding sections show that the current treatment model for COPD is well below the standard of care, leading to insufficient health outcomes (Vanhaecht et al., 2016). Preventative medicine favors interventions targeted at a specific population, and using strategies such as support groups and MI can reduce disease burden, and impact future disease outcomes (Zulman et al., 2008).

Support groups have many benefits that are applicable in the clinical setting including providing emotional and moral support, increasing knowledge, improving education, and improving awareness (Hu, 2017). COPD patients in particular have exhibited improved self-management strategies, health, quality of life, decreased hospital and ED visits related to COPD, increased treatment adherence, and better caregiver and patient satisfaction as well as improved patient self-awareness (Aboumatar, 2020). MI benefits a broad range of people, for a broad range of diseases, in a broad range of settings, COPD included (Miller, & Moyers, 2017; Miller, & Rollnick, 2013; MINT, 2020). MI improves communication, collaboration, treatment adherence, and quality of care (Szczekala et al., 2018). COPD patients who went through MI programs showed reduced hospital readmissions, better overall quality of life as well as improved treatment adherence (Naderloo et al., 2018; Rehman et al., 2017). The benefits of support groups and MI in the COPD care pathway are evident in reading this essay.

## **8.2 Disadvantages of Program Implementation**

Little information on the negative impacts of MI and support groups are available. Rarely do research studies mention the potential issues that can exist amongst in either intervention (Galinsky & Schopler, 1994). Galinsky and Schopler (1994) examined the positive and negative outcomes of support groups. Social workers collected data based on issues with participants and issues with implementation. Support group leaders from 20 different support groups participated in the data collection process and reported on the negative aspects of their group sessions. **Table 8** below represents only the negative results found in this study (Galinsky & Schopler, 1994).

**Table 8. Negative Effects of Support Group Study Results**

<b>Negative Effects of Support Group Study Results</b>	
<b>Participant Effects</b>	<b>Implementation Effects</b>
Sense of Loss When Member Leaves	Inappropriate Composition/Behavior
Becomes Too Dependent on Group	Varied Length of Membership
Open Communication Threatening	Members at Different Stages
Sense of Loss When Group Ends	Fail to Follow Group Rules
Learning Inappropriate Behavior	Premature Termination
Obtaining Incorrect Information	Confidentially Violation
Stressed by Group Obligations	Interpersonal Conflict
Feel Pressure to Conform	Irregular Attendance
Becoming Overconfident	Lack of Participation
Feels Overwhelmed	Disruptive Members
Feeling Excluded	Overly Dependent
Embarrassment	Unclear Goals

Galinsky and Schopler (1994) state that the negative effects should not be considered alarming, but rather should be used as a tool about how to prevent them. It is important to recognize that each support group will be different in how they work and that group leaders should be prepared for these types of problems to occur. The negative effects of the members were not frequent nor severe or extreme. Galinsky and Schopler (1994) also suggest that these problems tend to arise as a result of an uneducated group leader. Negative effects that arise from support groups are a result of negative experiences in the group, not the actual purpose or intention of the group itself (Galinsky & Schopler, 1994).

Dinicola et al. (2013) researched the positive and negative impacts of social support from a COPD patient perspective. The two negative aspects of social support identified were the recognized use of apathetic responses by other members and an observed habit of the network to let them down when they are needed. Dinicola et al. (2013) say that these findings may be attributed to a participant's own concerns about exclusion and loneliness rather than the effectiveness of the support group itself. Not all individuals in a support group are at the same



stage of disease. With that being said, more recently diagnosed patients for COPD are more vulnerable to the negative effects of a support group (Dinicola et al., 2013).

The benefits of MI are apparent, yet again, little emphasis has been placed on the disadvantages of its practice. Hogden et al. (2012) completed a multi-method study to determine any disadvantages of MI for both the health professional and the patient. Respondents reported an increased need for flexibility in the model. Other MI limitations found included time constraints and unwanted clinician guidance (Hogden et al., 2012). Despite these limitations, clinicians involved in the study believe MI is a better fit tool compared to others when used with other treatment options. They feel that it fits well with a patient's care plan, has great educational opportunities, and is transdisciplinary (Hogden et al., 2012).

Hogden et al. (2012) suggest that one of the biggest limitations to MI is that success of the intervention is dependent on a patient's awareness, confidence, and willingness to change. However, this may change if a shift in attitudes towards the approach of this strategy across health care settings were to occur, according to Hogden et al. (2012). Patient engagement, interest, and dedication to change can easily improve if patients and caregivers are better supported by a health system that promotes its practice regularly across the different care models. This reflects a flaw in our health care system, rather than the actual effectiveness of MI as a practice and technique for change (Hogden et al., 2012).

## **9.0 Financial Costs of Program Implementation**

Costs do vary between support groups depending on size and type of group. Heisler (2006) provides a report on building peer support group programs to manage chronic disease. There are seven models of peer support groups, with the sixth model, “Support Groups,” being the most relevant to determining costs of my program recommendation at AGH. Heisler (2006) mentions that support group visits involve bringing together a group of people with the same chronic disease, experiences, situations, or problems through the use of emotional and practical support. The report goes on to mention that most effective support groups have a professional initiate to run the program to provide structure. Providers may be a participant of the program when needed. A survey of 252 support groups revealed that 27% were led by peers only, 34% were led by peers with some professional engagement, 28% were led by professionals only, and 11% were led by professionals and peers equally (Heisler, 2006).

The group can remain open to anyone who has shared the same experiences of COPD. Heisler (2006) mentions that groups usually do not charge for participation. However, donations or dues may be required to cover certain expenses of the group. Also, many times support groups are sponsored by various health care systems. Heisler (2006) says that group visits act as a time- and cost-efficient way to improve chronic-disease and self-management support. The report notes that most patient support groups meet at least one time per month. Average attendance for support groups can range from 10-15 people, but can be more. Support groups often recruit and engage new members thorough different channels such as word of mouth, newspapers, magazine listings, referrals from health care providers, flyers, brochures, calling via telephone, and TV or radio appearances. Heisler (2006) mentions that most health care organizations provide meeting space

for support groups. However, hospital management must consider both the economic cost of the room and the lost revenue from not using it at the highest practicable return.

The Heisler report (2006) states that the majority of support groups function with few to no costs. This is because health systems frequently provide free meeting space for participants. Not only this, but peer group leaders can be unpaid volunteers. If professionals, providers, or other speakers attend the meetings for a specific topic they normally do not charge. If a professional leads the group each month, again, there is usually no charge and they do it as a part of their professional duties. However, it may be necessary to pay for the facilitator's, travel and initial training. Some groups collect donations to cover the costs of refreshments, literature, postage, and special events. Peer support group programs must be given sufficient material and support from a sponsoring organization's staff in order to be successful (Heisler, 2006).

Wingate et al. (2017) and Simmons et al. (2015) evaluated the cost of running a peer support program for a chronic disease. Their analysis will help lay out the financial costs for running my proposed support program for COPD. The study was an RCT of Peer Support in Type 2 Diabetes (RAPSID). The study looked to compare efficacy of individual vs. group peer support and the economic impacts of each. All costs in the study were originally expressed in pounds (£), which I converted to dollar (\$) via the Google Exchange Rate Calculator. The implementation costs of the intervention are expressed in Table 9 (Simmons et al., 2015; Wingate et al., 2017).

**Table 9. Implementation Costs of Chronic Disease Peer-Support Group**

<b>Implementation Costs of Chronic Disease Support Group</b>			
<i>Item</i>	<i>Unit Cost (\$)</i>	<i>Units</i>	<i>Total Cost (\$)</i>
<b>Peer Support Meeting Costs</b>			
Venue	\$7.80	Monthly	\$93.60
Refreshments	\$2.34	Monthly	\$28.08
Mobile Telephone Vouchers	\$4.24	Monthly	\$50.88
<b>Total</b>	<b>--</b>	<b>--</b>	<b>\$172.56</b>
<b>Peer Support Facilitator Meeting Costs</b>			
Facilitator Meeting Time	\$75.24	Monthly Up to 20 Clusters	\$45.15
Facilitator Meeting Travel	\$3.95	Monthly Up to 20 Clusters	\$2.38
<b>Total</b>	<b>--</b>	<b>--</b>	<b>\$47.53</b>
<b>Facilitator Training and Material Costs</b>			
Peer Support Facilitator Literature	\$6.13	Per Cluster	\$6.13
Peer Support Facilitator Training Cost	\$376.12	Per Session Up to 10 Clusters	\$37.61
Peer Support Facilitator Venue Cost	\$73.14	Per Session Up to 10 Clusters	\$7.31
Peer Support Facilitator Catering Cost	\$14.26	Per Session Up to 10 Clusters	\$1.43
<b>Total</b>	<b>--</b>	<b>--</b>	<b>\$52.48</b>
<b>Total Roll Out Costs of Implementing Program per 15 Participants: \$272.57</b>			

A cluster represents 15 participants per session in total. The mobile telephone vouchers represent an alternate form of communication for participants if they were unable to attend in-person. In addition, the ‘literature’ refers to the support group program manual and a pamphlet describing local services (Simmons et al., 2015; Wingate et al., 2017). The total costs required for implementing a chronic disease peer-support group intervention is \$272.57 per cluster. Because each cluster amounts to 15 people, the implementation cost of the peer-support group program will be \$18.17 per participant annually (Simmons et al., 2015; Wingate et al., 2017). Because I am

advocating for a support group program similar to the one above, the costs of running the program will mirror that of Table 9. The program will have to budget for the following: venue, refreshments, time and travel, literature materials, training costs, and catering.

Marketing should be budgeted, as it is an important aspect of this program. The majority of recruiting will be done from referrals from AGH physicians and caregivers. However, paid and free advertising will be utilized here as well (Hampton, 2009). Marie Dolfi, the Marketing Coordinator for The Adoptive Foster and Family Coalition, provides strategies for marketing support groups. Dolfi (2010) highly recommended the use of email lists that can send out more than 100 emails at a time. For example, Mailchimp is a free service for professionals to send 3,000 emails a month in html format (Intuit Mailchimp, 2022). A booklet/brochure that includes information about the group is also suggested, which is already included in Table 9.

Website accessibility for the group is another recommendation. For example, Dolfi's (2010) organization utilizes a host website to create content online (Homestead Technologies, 2021). The fee for the website creation and utilization is \$9.74/month. Homestead Technologies (2021) converts the layout to html automatically, which makes it fairly inexpensive and easy to navigate. With this information in mind, an additional annual marketing fee of \$116.88 will be added to the budget. With the added marketing costs, the total cost required for implementing a chronic disease peer-support group intervention is \$272.57 per cluster, with a one-time annual fee of \$116.88 for website promotion content (Dolfi, 2010). Although there is variability in what can be included in support groups it is important to take on extra responsibility for providing optional items in order to make all participants feel comfortable and to encourage fellowship among group members (Hampton, 2021).

## 10.0 Conclusion

A substantial amount of information has been provided to support the implementation of a support group and MI-based program for COPD patients. Based on this research, I will advocate for a recommendation of this program. The population of interest for this program will be all patients with a confirmed diagnosis of COPD at Allegheny General Hospital, in Pittsburgh, Pennsylvania. This population will be targeted because the COPD prevalence rate (23%) is much higher in comparison to both the Pennsylvania average (6.3%-7.9%) and Allegheny County average (3.5%-7.0%) (AHN, 2015; CDC, 2021a; PHC4, 2015). Hampton (2021) recommends five to 15 participants per session, so it can remain both manageable and personal. Based on this and the information from Table 9, 15 participants will be the maximum number of participants for each group session.

The U.S. News and World Report indicated that the number of Medicare inpatients with COPD at AGH from 2015-2019 is considered 'high' with a range of 233 to 551 patients (News & World Report, 2019). A maximum number of 551 COPD patients over the course of 5 years, indicates there is an annual number of 110 COPD patients at AGH each year. With 15 patients per session, seven support groups would need to run monthly at the hospital, assuming all 110 patients attend. However, it is important to consider the lack of participation considering the low enrollment in other COPD preventative measures, such as pulmonary rehabilitation, despite its clinical benefits. In 2019, AHN had 1,280 COPD patients referred to pulmonary rehabilitation by their physician. The AHN average completion rate for pulmonary rehabilitation was 34% (AHN, 2021). With 34% of COPD patients completing the pulmonary rehabilitation program, program implementors can use this number as a baseline for the participation in the support group program.

Using this participation rate, we would need to accommodate 37 patients. With 37 patients participating, program implementors will need to implement three support group sessions per month to accommodate all potential participants. As the group grows, the number of sessions will increase.

This program will target patients already admitted for COPD to prevent re-admission. If the program is successful, the scope of the program will broaden and target patients with milder disease in the outpatient setting. This is because there is value to target them to prevent future admissions. A study from Conner et al. (2018) revealed that chronic disease patients who received a 3- month long peer support program intervention were significantly less likely to be readmitted for their disease compared to the patients who did not receive the support group intervention. Table 10 below compares the number of readmissions of the two groups after the program was complete (Conner et al., 2018).

**Table 10. Number of Hospital Readmissions After Peer Support Program**

<b>Number of Hospital Readmissions After Peer Support Program</b>			
<b>Time Post Hospitalization</b>	<b>Intervention Group (n=21)</b>	<b>Comparison Group (n=20)</b>	
30 days	0 (0%)	2 (10%)	
90 days	2 (10%)	4 (20%)	
12 months	3 (14%)	7 (35%)	

Results from Conner et al. (2018) revealed that patients who received a peer support group intervention, were less likely at 30 days post-intervention (0% vs 10%), 90 days post-intervention

(10% vs. 20%), and 1-year post-intervention (14% vs 35%) to be readmitted to the hospital for their chronic condition compared to those who did not receive a peer support group intervention.

Each month AGH will host three COPD support group-MI programs for patients, which will be a recommended and referred part of a patients care plan by the physician. Implementation of this program over a 12-month period will allow researchers and program directors to see the progress of patients and the effectiveness of the program. The COPD care path needs immediate reform. COPD has had a severe negative impact on the health care system, on both patients and providers. There is an evident lack of preventative care, representing a high level of deficits in our system. There are flaws in the COPD care pathway that lead to high prevalence of disease, high levels of undiagnosed patients, high co-morbidities, high financial burden among other consequences as well. Utilizing support groups and MI into a combined preventative care program addresses many of these issues, which is why they must be a mandated part of all COPD patient's care protocol. It should start at a small-scale intervention, then further expand to all areas of the health care system as a mandated treatment for all patients.



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