

A Rural Hospital Guide to Improving Chronic Obstructive Pulmonary Disease

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Preface

Purpose of Chronic Obstructive Pulmonary Disease (COPD) Guide

The overall purpose of this guide, supported by the Federal Office of Rural Health Policy (FORHP), is to provide information about COPD and clarity around best practices of care management for those with COPD in rural communities. The objective is to help rural hospital leadership develop a thorough understanding of COPD services in rural areas, clinical diagnosis and treatment including treatment options available and new developments in technology that are useful to rural populations.

Rural hospitals should use this manual to identify areas for improvement in diagnosis, treatment, and long-term care of COPD patients in their communities. State Offices of Rural Health (SORH) partners may also benefit from this guide when meeting with hospital leadership to assist them in thoughtful discussion related to improving the community's health.

The role of the Technical Assistance and Services Center (TASC) at the National Rural Health Resource Center

Created in 1999, the Technical Assistance and Services Center (TASC), a program of the National Rural Health Resource Center, has provided information, tools and education to Medicare Rural Hospital Flexibility (State Flex) Programs and to critical access hospitals (CAHs) through a cooperative agreement with the FORHP.

The National Rural Health Resource Center (The Center) is a nonprofit organization dedicated to sustaining and improving health care in rural communities. As the nation's leading technical assistance and knowledge center in rural health, The Center focuses on five Core Areas:

- Transition to Value and Population Health
- Collaboration and Partnership
- Performance Improvement
- Health Information Technology
- Workforce

Intended Audience for the Manual

This manual is intended for State Flex personnel and programs, rural hospitals, including CAHs, and provider-based Rural Health Clinics (RHCs) to increase awareness of the potential community and patient benefits of implementing pulmonary rehabilitation services to support patients with COPD. Goals of the manual are to increase awareness on the benefits of COPD services, including disease burden and clinical aspects, and to support the development of pulmonary rehabilitation services, including:

- Expanding existing services or developing services
- Financial viability of services
- Conditions of participation
- Billing/coding
- Workforce development
- Operational efficiencies

Disclaimer

The information presented in this guide is intended to provide the reader with general guidance. The materials do not constitute and should not be treated as professional advice regarding the use of any technique or the consequences associated with any technique. Every effort has been made to assure the accuracy of these materials. The Center, TASC, Stroudwater Associates and the authors do not assume responsibility for any individual's reliance upon the written or oral information provided in this guide, which is subject to updates. Readers and users should independently verify all statements made before applying them to a situation and should independently determine the correctness of any guide content before recommending to a client or implementing it on the client's behalf.

Introduction

Introduction to Chronic Obstructive Pulmonary Disease in America

Chronic obstructive pulmonary disease (COPD), the major component of chronic lower respiratory disease, was the third leading cause of death in the United States in 2015 and the fourth leading cause in 2016.¹ More recent data from 2017 of CDC analyzed state-specific Behavioral Risk Factor Surveillance System (BRFSS) data, indicated that, overall among U.S. adults, 6.2% (age-adjusted) reported having been told by a health care professional that they had COPD.² Approximately 15.5 million adults were diagnosed in 2015, 350,000 Medicare patients were hospitalized, and 150,350 deaths occurred as a result of this preventable and treatable disease.³ This does not account for the millions of people who have undiagnosed COPD and struggle with COPD symptoms. The financial burden associated with COPD continues to increase, with more than \$32 billion spent on COPD-related patient care in 2010, and is projected to increase to \$49 billion by 2020.⁴ Given the severity and overall cost of this disease and its burden on patients, a “call to action” was needed to ignite changes in perception, treatment, and long-term care of COPD.

In 2016, at the request of Congress, the National Institutes of Health’s National Heart, Lung and Blood Institute (NHLBI) brought together federal and nonfederal partners, as well as COPD patients and their caregivers, to discuss strategies, objectives, and benchmarks to tackle COPD. This resulted in the development of the COPD National Action Plan, the first-ever blueprint for a multi-faceted, unified fight against the disease, which was released in 2017. [The Action Plan](#) includes five core goals, outlined below:⁵

Goal 1: Empower people with COPD, their families, and caregivers to recognize and reduce the burden of COPD.

Goal 2: Improve the prevention, diagnosis, treatment, and management of COPD by improving the quality of care delivered across the health care continuum.

Goal 3: Collect, analyze, report, and disseminate COPD-related public health data that drive change and track progress.

Goal 4: Increase and sustain research to better understand the prevention, pathogenesis, diagnosis, treatment, and management of COPD.

Goal 5: Translate national policy, educational, and program recommendations into research and public health care actions.

The first goal of the action plan is aimed to help people at higher risk, patients, families, and caregivers recognize and understand the disease.⁶ Education around risk symptom awareness is a key component of increasing public awareness, and in turn, earlier detection and diagnosis of COPD. Ultimately, the objective is to help COPD patients live their optimal state of health, to reduce symptoms and minimize COPD exacerbations.

Goal 2 centers around unifying health care professionals to coordinate treatment and care for patients with COPD.⁷ Collaboration is needed to create quality, patient-centered, multidisciplinary, team-based approaches to COPD prevention, treatment, and care.⁸ Uniformity and team-based approaches can help improve access to care for patients with COPD in hard to reach or rural areas.⁹

The need to close data gaps is addressed in Goal 3. Coordinated data collection, analysis and sharing of data are critical for informed future decision-making around COPD.¹⁰

Goal 4 is aimed at helping patients and the general population understand the causes and progression of COPD along with the prevention, diagnosis and treatment of the disease. Research is particularly emphasized within this goal to help improve the identification of the causes and the drivers of COPD development.¹¹

Goal 5 dictates that both federal and nonfederal partners must work together to meet the objectives laid out in the COPD National Action Plan and allow all parties that are interested to participate.¹²

Urban Versus Rural

COPD is a widespread disease, but it disproportionately impacts rural communities. Recent studies show that the COPD prevalence rate is about 12% for individuals living in rural communities compared to 7% across the U.S.¹³ The CDC estimates that age-adjusted prevalence of COPD for adult populations in rural areas as of 2015 is a staggering 8.2%, almost twice the prevalence rate for adults in metropolitan areas of 4.7%.¹⁴ Rural populations have a higher COPD risk due to their patient base having greater exposure to the risk factors associated with COPD, such as tobacco exposure,

respiratory infections, occupational and environmental exposures and genetics.¹⁵ Exposure to these risk factors can be detrimental in populations that have less access to smoking cessation programs and a higher percentage of lower socio-economic residents with limited access to specialists to aid in early diagnosis, treatment and management of COPD.¹⁶

Barriers to health care and COPD treatment are more present in rural than in metropolitan communities. Management of COPD in rural areas is typically conducted by a primary care provider as access to pulmonologists is limited both by lack of geographic proximity and access to transportation. Rural communities tend to have larger uninsured populations, and many have difficulty affording treatment or understanding how to become involved in programs that would grant them access to treatment. Other barriers include cultural perceptions about seeking care and consistency with medications and treatment.¹⁷ In 2016, 27% of adults reported they had not spoken with their physician about their COPD symptoms.¹⁸ Improved access for adults to pulmonary rehabilitation, oxygen therapy, comprehensive chronic disease self-management, and tobacco cessation programs in rural communities can help reduce the prevalence of the disease and improve treatment outcomes.

Importance of COPD Services

A patient's survival rate and quality of life rely heavily on their access to COPD services. Common methods for COPD treatment are pulmonary rehabilitation, smoking cessation, and oxygen therapy. Evidence-based research illustrates individuals who receive pulmonary rehabilitation experience a reduction in hospital admissions, hospital length of stay, and mortality.¹⁹ Long-term oxygen therapy (LTOT) has been a treatment for COPD for decades and is found to reduce pulmonary artery pressure and improves survival in a set of patients.²⁰ Patients, especially those in rural areas, with increased barriers to treatment suffer the consequences of lack of access to these services.

COPD Services in Rural America

Current State of COPD Services in Rural America, Including Barriers

The disparity in COPD outcomes for rural individuals is exacerbated by many factors, largely the lack of access and availability of transportation to services and specialty care, such as respiratory therapy, creating a more pronounced divide between rural and non-rural areas.²¹ Of the 12,392 self-identified pulmonologists in the U.S. in 2013, 92.2% were located in urban centers compared to rural areas (2.1%), demonstrating the wide disparity in access to specialty care.²² A recent study conducted by the Washington, Wyoming, Alaska, Montana, Idaho (WWAMI) Rural Health Research Center discovered that among Medicare beneficiaries in five states, patients who lived in small rural locations had to drive an average of 33.4 miles, spending more than 42 minutes traveling to receive pulmonary function tests.²³ The CDC validated this finding by reporting that in rural populations, 95.2% had access to one or more pulmonologists within 50 miles, but only 34.5% had access to one that was within 10 miles, as opposed to urban populations where 100% had access to one or more within 50 miles, and 97.5% had access to one that was less than 10 miles away.²⁴

Lack of access in rural environments creates a barrier to diagnosis and adequate treatment. Long wait lists for treatment programs due to a lack of available programs and needed providers can delay necessary treatment and long-term care for COPD patients. It is understandable that not all rural areas can attract a full-time pulmonologist, however many can provide a form of respiratory care services. In rural areas patients are often diagnosed with COPD by their primary care physician (PCP), who may not be aware of the treatment options involved in respiratory care services, pulmonary rehabilitation, or other programs for advanced stages of the disease.

Respiratory care services are services that can be prescribed by a physician or non-physician practitioner to help with the diagnosis, treatment, management, and monitoring of patients with abnormal cardiopulmonary function.²⁵ Availability of respiratory care services is crucially important for COPD treatment in rural areas; without it, many patients suffer through recurring episodes of acute exacerbation and hospitalizations.

Currently, CMS regulations state that respiratory care services are optional for hospitals. If a hospital chooses not to provide them, they must comply with standards in federal or state laws along with recommendations and standards from nationally recognized professional organizations, which includes having enough experienced and qualified personnel to provide services.²⁶ Medicare-specific conditions require a full-time or part-time director of respiratory care services and sufficient respiratory therapists, respiratory therapy technicians, and other qualified medical staff consistent with state law.²⁷ Currently, 81% of respiratory therapists are employed at a hospital, and this number is anticipated to grow by 23% from 2016 - 2026 due to the increased rate of patients with respiratory conditions such as COPD.²⁸ Research by the University of Minnesota Rural Health Research Center found that CAHs are 11.1 percentage points less likely to provide respiratory care services compared

to rural Prospective Payment System (PPS) hospitals, and 12.9 percentage points less likely compared to urban PPS hospitals at 83.0%, 95.0%, and 96.8% respectively.²⁹ 30.7% of CAHs reported that they had no respiratory therapists compared to only 12.1% of rural PPS hospitals, and 9.2% of urban PPS hospitals. 69.4% of CAHs reported that they had both respiratory care services and respiratory therapists compared to rural PPS hospitals at 87.9%, and urban PPS hospitals at 90.8%.³⁰ These statistics shed light on how CAHs lag in respiratory services care in comparison to other hospitals. The increasing rate of rural COPD patients puts great pressure on these hospitals to recruit and retain personnel who can provide these necessary services.

From a financial perspective, it is understood that the more severe the COPD, the higher cost of care at the patient level. From 2002 – 2010, patients with stage I COPD experienced a direct cost of \$1,681 per patient per year, stage II experienced \$5,037 per patient per year, and stage III \$10,812 per patient per year, with hospitalization as the greatest cost variable across these three stages.³¹ The financial cost of COPD is higher for patients over 40 years of age most likely due to other health factors and complications.³² Healthcare costs associated with COPD have been on the rise over the past two decades with the additional cost of hospitalization for overall COPD hospitalizations being \$9,323 more in 2010 than in 2002 (after adjusting for medical care inflation).³³ These financial charges for COPD remain high, even with the shortening of the total length of hospital stay, creating greater barriers of care for patients in rural and lower income areas.³⁴

A patient's insurance coverage may limit access to treatment. Medicare patients, for example, may be responsible for portions of their pulmonary rehabilitation services. Medicare Part B covers a comprehensive pulmonary rehabilitation program if the patient has moderate to very severe COPD.³⁵ Medicare states, the amount owed for the service depends on where the service was performed. If conducted in a physician's office, the patient pays 20% of the Medicare-approved amount; if the service is conducted in a hospital outpatient setting, the patient also pays the hospital a copayment per session.³⁶ In both cases, the Medicare Part B deductible applies.

Patients with high-deductible commercial plans must pay for 100% of their treatment until the deductible is met, which can delay or prohibit seeking treatment depending upon how much they are able to pay up front. Other commercial plans may not follow Medicare guidelines and limit visits to fewer than Medicare's 36 lifetime rehabilitation sessions. Rural populations with less socioeconomic flexibility may feel extra financial pressure when it comes to treatment coverage because of these current policies.

Clinical Diagnosis and Treatment of COPD

Risk Factors for COPD

There are numerous risk factors associated with the development and progression of COPD. Cigarette smoking is the most well-known risk factor but studies show groups of individuals who are non-smokers that have also developed COPD.³⁷ As many as one out of four Americans with COPD never smoked cigarettes.³⁸ However, smoking accounts for as many as 8 out of 10 COPD-related deaths³⁹ and 38% of the nearly 16 million U.S. adults diagnosed with COPD report being current smokers.⁴⁰ The interaction between genetic factors and the environment are foundational in the development of the disease. Chronic inflammation causing airway narrowing and destruction of lung tissue are seen in chronic bronchitis and emphysema which are the two most common conditions that contribute to COPD. Patients having dyspnea, chronic cough or sputum production should be evaluated for COPD. Common risk factors are as follows:⁴¹

- Genetic Factors
 - Hereditary deficiency of alpha-1 antitrypsin, a protein that protects the lungs
 - Airflow limitation seen as familial risk
- Age and Sex
 - Although unsubstantiated, lifelong exposures may impact structural changes
 - Some studies indicate females are more susceptible than males
- Lung Growth and Development
 - Potential effects of altered lung growth during gestation and birth
- Exposure to particles
 - Tobacco smoke
 - Smoke from cooking/heating fuels
 - Air pollution
 - Occupational dusts, vapors, fumes, gases and chemicals
- Socioeconomic status
 - Poverty
- Asthma and airway hyper-reactivity
 - Chronic airflow limitation
 - Bronchial hyper-reactivity is possible without diagnosis of asthma
- Chronic bronchitis
 - Increased potential for developing COPD
- Infections
 - Recurrent respiratory tract infections

Signs and Symptoms

Shortness of breath (dyspnea), chronic cough, sputum production and wheezing are hallmark symptoms of COPD with ongoing and advancing dyspnea being the most prevalent symptom. Dyspnea is reported as difficulty breathing, especially during physical activity, tightness of the chest and a feeling of suffocation.⁴² It is important to note that an absence of chest tightness or wheezing does not exclude a diagnosis of COPD.

Frequently, a persistent cough is the first symptom a patient may experience. However, patients may attribute their cough to smoking or other environmental factors. At the onset of the disease, the cough may be sporadic but gradually become more persistent and present throughout the day, and every day.⁴³ Coughing is physiological response to prevent limitation of airflow in the patient.⁴⁴

In some cases, coughing may produce mucus (sputum) that may be clear, white, yellow or greenish in color. Sputum production is hard to evaluate as many patients tend to swallow their sputum, and sputum production goes through periods of remission and flare up.⁴⁵ Development of consistent sputum is indicative of bacterial exacerbation and an increase in inflammatory mediators.⁴⁶

As COPD worsens, patients may experience weight loss and anorexia, fatigue, blueish fingernail beds and lips as well as swelling of their feet and ankles. Many of these symptoms can be signs of other illnesses such as lung cancer or heart issues and should be discussed with a physician immediately. In more severe cases of COPD, coughing fits have been known to cause rib fractures and fainting in patients.⁴⁷ Finally, symptoms of anxiety and depression are common in COPD patients and should be monitored closely and addressed.

Assessment and Diagnosis

Diagnosis of COPD can be complex. COPD is often misdiagnosed, as it shares symptoms with various other conditions such as heart disease or may be diagnosed late in the disease phase when treatment options are less effective. To diagnose COPD, medical providers will conduct the following assessments.

A review of signs and symptoms and a detailed medical history will be performed. The medical history review should include:⁴⁸

- **Patient’s exposure to risk factors**, such as smoking and occupational or environmental exposures
- **Past medical history**, including asthma, allergy, sinusitis, or nasal polyps; respiratory infections in childhood; other respiratory and non-respiratory diseases
- **Family history of COPD** or other chronic respiratory disease
- **Pattern of symptom development**
- **History of exacerbations or previous hospitalizations** for respiratory disorder
- **Presence of comorbidities** such as heart disease, osteoporosis, musculoskeletal disorders, and malignancies that may also contribute to activity limitation.
- **Impact of disease on patients’ life** including limitation of activity, missed work and economic impact, effect on family routines, feelings of depression or anxiety, well-being and sexual activity.
- **Social and family support** available to the patient
- **Propensity for reducing known risk factors**, especially smoking cessation

A thorough physical examination is important, but not comprehensive enough to conclude the disease is present. A diagnostic assessment should be conducted to support the diagnosis of COPD. Diagnostic assessment for COPD includes the following tests:

- Lung Function Tests: Measure the amount of air a patient can inhale and exhale, and if his/her lungs are delivering enough oxygen to his/her blood.
 - Spirometry is the most common lung function test. It is a noninvasive and readily available test that can be administered in any health care setting. Patients are to blow into a large tube, which is connected to a machine called a spirometer. The spirometer measures how much air the patient’s lungs can hold and how much and how fast air can be blown out of the lungs. The two main measures include:
 - Forced vital capacity (FVC). This is the amount of air that you breathe out in one complete breath (six seconds or more).
 - Forced expiratory volume (FEV-1). This is the amount of air that you breathe out in the first second.

The results (%) are compared to those of someone of your age, gender, height, and race. People with COPD have FEV₁/FVC of less than 80% of predicted value (moderate COPD). If FEV₁/FVC is less than 50%, COPD is likely to be diagnosed as severe. See below classification of airflow limitation severity in COPD according to the Global

Initiative for Chronic Obstructive Lung Disease (GOLD), 2019. A recent study published in The Journal of the American Medical Association (JAMA) found that a 70% ratio of two spirometry indicators of lung function proved as good, or even better, than other used thresholds for predicting COPD-related hospitalizations and deaths.⁴⁹

Classification of Airflow Limitation Severity in COPD (Based on post-bronchodilator FEV₁)

In patients with FEV₁/FVC < 0.70:

GOLD I	Mild	FEV ₁ ≥ 80% predicted
GOLD II	Moderate	50% ≤ FEV ₁ < 80% predicted
GOLD III	Severe	30% ≤ FEV ₁ < 50% predicted
GOLD IV	Very Severe	FEV ₁ < 30% predicted

Source: Global Initiative for Chronic Obstructive Lung Disease Pocket Guide to COPD Diagnosis, Management and

In addition to the measurement of airflow limitation, the following measures of patient symptoms are commonly used:

- Chronic Respiratory Questionnaire (CRQ)
- St. George's Respiratory Questionnaire (SGRQ)
- COPD Assessment Test (CAT)
- COPD Control Questionnaire (CCQ)
- Modified Medical Research Council (mMRC) Dyspnea Scale

Both the COPD Assessment Test and COPD Control Questionnaire are routinely utilized in practice and include shorter comprehensive measures relative to the CRQ and SGRQ.⁵⁰

In addition to basic assessment methodology, patients should be screened for history of exacerbations and exacerbation risk. Typically, this is done by determining whether past exacerbations were mild in nature only requiring short-acting bronchodilators; a moderate illness needing both bronchodilators and antibiotics; or severe symptoms requiring emergent treatment or hospitalization.⁵¹ Further, the patient's medical history should be reviewed for comorbidities that can pose additional risk to the patient and treatment options. Comorbidities are common at any severity of COPD.⁵² Frequently seen comorbidities are coronary artery disease, heart failure, diabetes, anxiety, depression, sleep disturbances, osteoporosis, obesity, and anemia.⁵³

When treating patients with COPD and specific comorbidities, comorbidities should not alter COPD treatment and should be treated per usual standard.⁵⁴ Often, comorbidity symptoms similar to those of COPD are overlooked (i.e., heart failure and lung cancer symptoms also include breathlessness, hence the importance of reviewing a patient's medical history).⁵⁵ In patients with both COPD and a comorbidity, an exacerbation of one can significantly worsen the other. COPD is known to significantly affect the outcomes of other diseases. For example, a patient hospitalized for congestive heart failure has a greater risk of morbidity and mortality when COPD is also present.⁵⁶

Adjunct to the above history and assessment tools, consideration of further diagnostics such as chest x-ray, CT scan, arterial blood gas analysis and laboratory tests could be considered in diagnosing and assessing COPD, in addition to assessment of physical activity and exercise testing utilizing composite scores.

Clinical Treatment Options

After the initial diagnosis of COPD, it is important that treatment plans be individualized for the effective management of the disease and to understand the potential risk of exacerbations. Outlined in the Global Initiative for Chronic Obstructive Lung Disease, the goals for the treatment of stable COPD should be focused on the reduction of current symptoms while improving exercise tolerance and health status, as well as reducing the risk of exacerbations, preventing disease progression, and reducing mortality.⁵⁰

Although COPD cannot be cured, there are treatment options that can help prevent exacerbations and enable patients to breathe easier and feel better. Pharmacological and non-pharmacological options are commonly and often used in tandem. Controller medications are commonly used to improve COPD symptoms, which are used for maintenance and prevention while rescue medications are used for relieving immediate symptoms.⁵⁷

Controller Medications

- Short-acting Anticholinergic Bronchodilators
- Long-acting Anticholinergic Bronchodilators
- Long-acting Beta-agonist Bronchodilators
- Corticosteroids
- Combination Corticosteroids and Long-acting Beta-agonists
- Combination Long-acting Anticholinergics and Long-acting Beta-agonists
- Combination Corticosteroids, Long-acting Anticholinergics and Long-acting Beta-agonists
- Phosphodiesterase-4 Inhibitor⁵⁷

In addition to medication intervention, non-pharmacological interventions including education, self-management and rehabilitation are key in the effort to empower the patient, families and caregivers in lifestyle and treatment changes in COPD. Non-pharmacological treatment options include:⁵⁸

- [Pulmonary Rehabilitation](#)
- Physical Activity and Exercise
- Education & Self-Management
- [Oxygen Therapy and Ventilator Support](#)
- Surgical Interventions
- Nutritional Support
- Palliative Care

Information below outlines self-management advice regarding lifestyle and treatment changes.⁵⁹

Lifestyle changes	Treatment changes with provider oversight
<ul style="list-style-type: none"> • Stop smoking • Use nicotine replacement • Use effective breathing methods • Use effective coughing methods • Exercise as advised • Eat a well-balanced diet • Adjust your daily activities to conserve energy 	<ul style="list-style-type: none"> • Continue regular bronchodilators • If symptoms worsen, increase dose, frequency and possibly route of administration • If sputum changes color, consider starting reserve course of antibiotics • If becoming more breathless and response to bronchodilators is decreased, consider steroids as prescribed by provider • Use oxygen as advised

Developing treatment options without thoroughly evaluating non-pharmacologic strategies to assist in improving the patients’ quality of life would not provide complete management of the disease. Physicians and health care providers should expand their scope of practice to beyond just education and advice-giving and incorporate ways to help patients learn and adopt sustainable self-management skills.⁶⁰ Additional self-management support includes involving patients in monitoring and managing the signs and symptoms of their disease, being adherent to treatment, maintaining regular contact with health care providers, and managing the psychosocial consequences of their condition.⁶¹

Care provider education is essential in supporting the needs of COPD patients. The CDC – National Institute of Health’s COPD National Action Plan describes the need for the development of educational materials for health care providers. Education should be aimed at evidence-based prevention, care and treatment with a deliberate focus on populations where COPD occurrence is frequent and access to care may be limited. Additionally, the National Action Plan calls for all health care professionals to collaborate on training, tools and practices to create a multidisciplinary approach to address the lack of resources and education specifically related to primary care providers.⁶²

Recent practice guidelines from the American Thoracic Society and the Global Initiative for Chronic Lung Disease address prevention and management of COPD exacerbations, optimization of home oxygen therapy and prevention of readmissions. The National Action Plan calls for these existing guidelines to be used and built upon to create national standards.

Healthcare providers, patients and families can benefit greatly from multidisciplinary education. Providers first must possess the skills necessary to become a learner for the delivery of patient education. The delivery of education should be structured to reflect the patients' and family members' foundational skill set, literacy levels and learning needs, and providers should design an educational plan to assist in self-management techniques.⁶³ For patients newly diagnosed or being discharged from an acute care setting, [stoplight guides](#) indicating green, yellow and red zones are helpful in self-management.

Willard et.al documented the need for COPD patients to receive education and ongoing assessment regarding oxygen use as well as a complete medication reconciliation.⁶⁴ The authors further described the importance of patient engagement in education due to a high rate of non-adherence to a medication regimen. The use of the *teach-back* technique not only engages the patient and family in education but can also provide the clinician responsible for education a degree of assurance that the materials or procedure practices have been understood.⁶⁵

Treatment Compliance

Patient non-adherence (not taking pharmacologic or non-pharmacologic treatments recommended by a health care provider) is common in patients with COPD and contributes to adverse outcomes in multiple areas⁶⁶, hence the need to implement strategies that target factors that hinder a patient's ability to adhere to the prescribed treatment plan to ensure the patient's well-being and a hospital's sustainability from a readmissions perspective.

Case management plays a pivotal role in supporting the needs of patients with COPD and reducing the number of COPD hospital readmissions. A multidisciplinary approach to COPD case management is critical to achieve the common components:⁶⁷

- Identify and reduce exposure to risk factors
- Treatment of stable COPD – non-pharmacological and pharmacological
- Monitoring and follow-up
- [Control and manage exacerbations](#)

Another approach to improving patient treatment compliance and reducing hospital readmissions is the creation of a COPD navigator program. A COPD navigator program provides patients with appropriate care to treat their acute exacerbation along with education and follow-up care to prevent further exacerbations. Common functions of a COPD navigator include:⁶⁸

- Smoking cessation education
- Pulmonary rehabilitation needs assessment
- Medication reconciliation and education
- Oxygen needs screening
- Communication with primary and secondary providers

All patients should be screened for potential readmission risks and suboptimal outcomes. A key player in the success of treatment is the evaluation of the patients' overall social determinants. Patients should be screened as an inpatient and within the primary care setting for potential roadblocks to successful treatment. Potential areas of evaluation are:

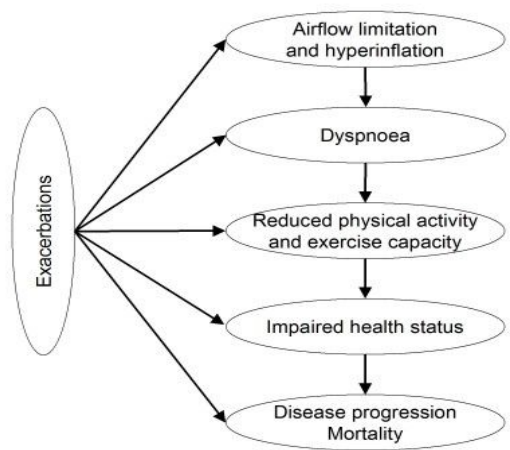
- Does the patient have access to a primary care provider? If so, do they have annual wellness visits or follow-up visits scheduled?
- Does the patient have access to transportation for medical appointments?
- Does the patient have adequate communication sources such as a landline and/or cell phone?
- Can the patient afford food and prepare food?
- Does the patient have electricity and are they able to continue to pay their utility bills?
- Is the patient in stable housing or homeless?
- Does the patient feel safe in their environment, and if evaluated in the home, does the assessment reflect a potential unsafe environment?
- Does the patient have concerns regarding caring for their family? If so, what are those concerns?

Performance Measurement

Clinical outcomes

Current methods for assessing COPD progression mainly rely on lung function tests (FEV₁).⁶⁹ However, clinical and patient-reported outcome measures such as dyspnea, exercise capacity, physical activity, exacerbations, and health status have been recognized and applied as an essential

part of the clinical assessment of COPD beyond FEV₁ measurements.⁷⁰ Below are the outcome measures relevant for the evaluation of COPD management.⁷¹



In recent years, the addition of questionnaires has allowed providers and researchers to measure health status beyond dyspnea. The Chronic Respiratory Questionnaire (CRQ), the St. George’s Respiratory Questionnaire (SGRQ) and the Modified Medical Research Council (mMRC) scale are comprehensive health status questionnaires, but as mentioned previously, are often too cumbersome to utilize in routine practice.⁷² The COPD Assessment Test (CAT) was published in 2009 and has become a GOLD standard in measuring reliable health status of COPD patients. CAT provides a comprehensive measure of the overall impact of COPD and reflects the complexity of COPD.⁷³

value-based purchasing Program

The Hospital Value-Based Purchasing (VBP) Program is a CMS initiative that rewards acute-care hospitals with incentive payments for the quality of care provided to Medicare beneficiaries.⁷⁴ Beginning in FY 2021, for PPS hospitals (performance period July 1, 2016 to June 30, 2019) 30-day COPD Mortality will be added to the VBP program’s clinical outcomes.⁷⁵ Additionally, for PPS hospitals, the Hospital Readmission Reduction Program (HRRP), which reduces hospital payments with excess readmissions, includes COPD 30-day unplanned readmissions as a measure. These two programs promote quality of care and provide incentives and penalties to hospitals.

Research-Based Clinical Practices

The Institute for Healthcare Improvement (IHI) developed the concept of bundles as a structured way of improving processes of care and patient outcomes. A bundle is a small, straightforward set of evidence-based practices (generally three to five) that, when performed collectively and reliably, have been proven to improve patient outcomes.⁷⁶ Common clinical care bundles utilized by hospitals are the central line bundle, sepsis bundle, and the ventilator bundle. The goal of clinical care bundles is to deliver high quality, consistent care that will improve patient outcomes.

Recent research was conducted measuring the effects of a COPD discharge care bundle on hospital 30-day readmission rates. The evidence-based COPD care bundle was developed with three primary objectives:⁷⁷

- Patient education on COPD by health care providers prior to discharge
- Completion of an individualized self-management COPD action plan to be used by patients after hospital discharge
- Timely outpatient follow-up with a pulmonologist

The study concluded that implementation of a discharge care bundle in patients admitted with COPD exacerbations significantly and consistently reduced 30-day hospital readmission rates without increasing hospital length of stay, and that the reduction in readmissions was sustained through 60 and 90 days.⁷⁸ The data related to the use of evidence-based care bundles suggests that care bundles improve patient outcomes. To note, there have been multiple studies performed showing success in areas, such as adequate inhaler technique, programs for disease management, individual care plans, assessment and referral for pulmonary rehabilitation, outpatient follow-up and to smoking cessation programs.⁷⁹

Models of Treatment Services

Oxygen Therapy and Ventilator Support

Long-term oxygen therapy (LTOT) (>15 hours per day) has been shown to improve survival in patients with COPD and severe resting hypoxemia.⁸⁰ LTOT is a highly utilized treatment option for patients with COPD, and more than 1 million Medicare beneficiaries receive oxygen at home.⁸¹ According to Medicare, the cost of oxygen therapy exceeds \$2 billion per year in the U.S.

Portable noninvasive open ventilation systems (NIOV) are a popular at-home treatment for individuals with COPD. Studies have shown that NIOV improved activities of daily living in COPD patients at home.⁸² In comparison to oxygen therapy, the noninvasive open ventilation system led to clinically significant advancement in endurance time and oxygenation in COPD patients as well as a decline in fatigue, dyspnea, and discomfort.⁸³ NIOV has shown to have prolonged the time to hospital readmission for patients with COPD after an acute exacerbation.⁸⁴ The noninvasive ventilator works by aligning with the patient's breathing and delivering oxygen through a mask ventilator. By providing high amounts of oxygen, the O2 count is kept high with low carbon dioxide waste.⁸⁵

Ventilators are covered by Medicare according to the Centers for Medicare & Medicaid Services (CMS) National Coverage Determinations Manual for chronic respiratory failure consequent to COPD.⁸⁶ For pricing, ventilators are covered in the frequent and substantial servicing (FSS) payment category, or items that need frequent maintenance.⁸⁷ Therefore, monthly rental payment of ventilators requires no separate payment by Medicare, and all repairs and replacements are included in the rental. However, Medicare does not cover a spare or back-up equipment.⁸⁸

Smoking Cessation

Smoking cessation can greatly influence a person's path with COPD. According to the American Lung Association, if effective resources and time are dedicated to smoking cessation, long-term quit success rates of up to 25% can be achieved.⁸⁹ Smoking cessation treatment options include pharmacological products such as nicotine replacement products, as well as counseling sessions provided by a health care professional. Medicare, Medicaid and most private health plans cover smoking cessation counseling, but despite improved documentation and coverage, very few providers bill for smoking cessation services, according to the American Lung Association.⁹⁰

CMS covers smoking and tobacco use cessation counseling for outpatient and hospitalized Medicare beneficiaries who use tobacco, regardless of whether they have signs or symptoms of tobacco-related disease, who are competent and alert at the time of counseling and whose counseling is provided by a physician or other qualified health care professional recognized by Medicare can bill Medicare directly for the service.⁹¹

Effective October 1, 2016, providers are to use CPT codes 99406 and 99407 to bill for smoking and tobacco use cessation counseling to Medicare Part B.⁹²

- 99406: Intermediate counseling cessation treatment, greater than 3 minutes but no more than 10 minutes.

- 99407: Intensive counseling, greater than 10 minutes.

Medicare limitations of coverage include:⁹³

- Two cessation attempts are covered per 12-month period. Each attempt may include a maximum of 4 intermediate OR intensive counseling sessions, for a total of 8 counseling sessions 12-months.
- The patient may receive another 8 counseling sessions during a second or subsequent year once 11 full months have passed since the first Medicare-covered cessation counseling session took place.

The Affordable Care Act (ACA) expanded tobacco cessation coverage for the Medicaid population, but gives states who did not expand Medicaid the ability to distinguish between the standard Medicaid and Medicaid expansion in terms of cessation coverage.⁹⁴ Standard Medicaid, Medicaid expansion and managed care / fee-for-service coverage is described below:⁹⁵

- Standard Medicaid Coverage
 - Medicaid Pregnant Women: All FDA-approved tobacco cessation medications as well as individual, group, and phone counseling.
 - Adults: All FDA-approved tobacco cessation medications. There is no counseling requirement.
 - Adolescents and Children: Coverage of counseling and tobacco cessation medications is mandatory under the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit.
- Medicaid Expansion Coverage
 - Coverage of counseling and tobacco cessation medications are required as part of the ACA's Essential Health Benefit under preventive and wellness services.
- Managed Care and Fee for Service Coverage
 - Medicaid managed care organizations (MCOs) are required to provide at least a comparable level of benefits to the fee-for-service option.

The Patient Protection Act (ACA) requires most private health insurance plans to cover many clinical preventative services. Preventative services include smoking cessation screening and treatment, which include:⁹⁶

- Tobacco use screening for all adults and adolescents
- Tobacco cessation counseling for adults and adolescents who use tobacco
- FDA approved tobacco cessation medications for all non-pregnant adults who use tobacco

Studies have shown that low-dose CT scan, paired with cessation programs, can improve the participation in smoking cessation programs and smoking relapse rate.⁹⁷ COPD patients can greatly benefit from smoking cessation programs, as smoking cessation is a reliable treatment to slow the progression of COPD, help maintain what lung function is left of the patient, and reduce exacerbations. Hospitals and providers should consider a reliable, cost-effective smoking cessation strategy for patients who use tobacco.

Pulmonary Rehabilitation Services

Evidence supporting pulmonary rehabilitation as a standard treatment approach for patients with lower respiratory diseases such as COPD, include benefits such as improving quality of life, increasing exercise capacity, and decreasing shortness of breath, and improved disease management education.⁹⁸ In addition, pulmonary rehabilitation services contribute to fewer and shorter hospital admissions, and thus, to cost savings.⁹⁹ Unfortunately, despite the evidence supporting the benefits of pulmonary rehabilitation programs, few programs exist in rural areas.

Recent studies have indicated that there is a significant variation in access to hospital outpatient pulmonary rehabilitation programs across the US. According to a 2018 study, 1,366 US counties or county equivalents have at least one hospital outpatient pulmonary rehabilitation program located in a short-term acute care general medical or surgical hospital in the county, while 1,776 counties do not have a pulmonary rehabilitation program, including 697 counties that do not have a hospital.¹⁰⁰

The availability of a hospital outpatient pulmonary rehabilitation program varies significantly by county type. Over half of metropolitan (57.5%) and micropolitan (51.9%) counties have at least one hospital outpatient pulmonary rehabilitation program, compared to only 27% of non-core counties. Over one-third (36.3%) of CAHs and just under one-half (46.7%) of rural PPS hospitals have an outpatient pulmonary rehabilitation program, along with 53.2% of urban PPS hospitals.¹⁰¹

The percentage of hospitals with an outpatient pulmonary rehabilitation program also varies significantly by Census Region, with the Northeast (52.7%) and the Midwest (61.7%) being much more likely to have programs than the South (39.0%) and the West (35.5%).¹⁰² The percentage of hospitals with a PR program by state ranges from 4.6% to 85.7%.¹⁰³ The availability of hospital-based PR programs also differs significantly by state and Census Region; the lower percentages of hospitals offering pulmonary rehabilitation in the West (35.5%) and the South (39.0%) are of additional concern given the large distances between hospitals in many parts of the West and the high incidence of COPD in many Southern states.¹⁰⁴

Hospitals are often faced with barriers to providing pulmonary rehabilitation services due to lack of awareness of potential benefits of a pulmonary rehabilitation program, limitations in staffing and low

Medicare reimbursement.¹⁰⁵ Given the high disease prevalence of COPD within the U.S. and especially rural communities, it is important for rural hospitals to become aware of pulmonary rehabilitation services and consider supporting the needs of their COPD community. The following sections look at pulmonary rehabilitation specifics such as programing, billing and coding, workforce and considerations for implementation.

Should We Offer Pulmonary Rehabilitation Services?

Consider these questions when evaluating whether to implement a pulmonary rehab program at your organization.

1. What are our hospital's current economics?
2. What is the current market demand for PR services?
 - a. Where will referrals come from?
3. Are there competitors in the market? Where are our patients receiving PR services now, if at all?
4. What are the clinical and regulatory requirements of PR services?
5. What are our partnership opportunities (health systems, providers, payers)?
6. What are the investment needs (space, capital, staff, equipment)?
7. Who will provide physician oversight?
8. What will be our reasonable pricing strategy?
9. What is the potential profitability of PR service?
10. Does this fit with our organization's mission?

Answering the above questions is the first step in weighing the opportunity of implementing a pulmonary rehabilitation program at your organization, always remember that appropriate service line planning needs to be done to understand service feasibility.

Pulmonary Rehabilitation Program Specifics

Medicare Conditions of Participation for Pulmonary Rehab Services: 42 CFR 410. 47

Effective January 1, 2010, the Medicare Improvements for Patients and Providers Act (MIPPA) began coverage of physician-supervised, comprehensive pulmonary rehabilitation program for patients with moderate to very severe COPD.

The following are mandatory components of a pulmonary rehabilitation program:

Physician-prescribed exercise. Physical activity includes techniques such as exercise conditioning, breathing retraining, step and strengthening exercises. Some aerobic exercise must be included in each pulmonary rehabilitation session. Physical activity must be prescribed by a physician.

A physician's prescription for exercise should include:

- Mode of exercise (typically aerobic)
- Target intensity (e.g., a specified percentage of the maximum predicted heart rate, or number of METs)
- Duration of each session (e.g., "20 minutes")
- Frequency (number of sessions per week)
- Total number of target sessions
- Progression
- Personalized for the individual patient

Education or training. Education or training must be closely and clearly related to the individual's care and treatment which is tailored to the individual's needs. Education includes information on respiratory problem management and, if appropriate, smoking cessation counseling. Any education or training prescribed must be documented in the individual's treatment plan.

Psychosocial assessment. The psychosocial assessment requires a written evaluation of an individual's mental and emotional function as it relates to the individual's rehabilitation or respiratory condition and includes:

- An assessment of those aspects of an individual's family and home situation that affects the individual's rehabilitation treatment.
- Periodic psychosocial reevaluation of the individual's response to and rate of progress under the treatment plan
- A recognized assessment tool can be utilized, i.e., depression screening, but must include physician's plan of action based on the results

Outcomes assessment. The outcomes assessment requires a written evaluation of the patient's progress as it relates to the individual's rehabilitation that includes the following:

- Show the interventions/services did or did not result in some benefit to the patient
- Goal-based
- If goal not met, what modifications were made to address the failure? For example, if the goal was for the patient to be able to walk for 30 minutes on the treadmill at 2 miles per hour daily

without shortness of breath and the goal was met or not met. If the goal was not met, it is necessary to include what modifications were made to the care plan to address the failure.

Individualized treatment plan (ITP). The ITP must be established, reviewed, and signed by a physician, who is involved in the patient's care and has knowledge related to his or her condition, every 30 days. Whether the initial PR ITP is developed by the referring physician or the PR medical director, the medical director must review and sign the plan prior to subsequent treatment in the PR program.

One method of documenting this is a progress note from the treating physician, done at the time of admission to the PR program, which includes:

- The patient's clinical history
- Reason for the prescription of PR
- A discussion of the individual patient's needs and how they would be met by an exercise program
- A description of the exercise program
- A description of the education program detailing what factors need to be addressed for a patient's lifestyle (obesity, tobacco use, etc.)
- Goal(s) for the psychosocial assessment

Further documentation is required from the treating physician, no later than 30 days after the initiation of treatment, which describes:

- The outcomes assessment specifies any modifications needed in the plan of care previously prescribed, or
- Reason(s) to continue the present plan

Medicare Part B pays for a pulmonary rehabilitation in the following settings:

- Physician offices
- Hospital outpatient settings

All settings must have the following available for immediate use and accessible at all times:

- The necessary cardio-pulmonary emergency, diagnostic, and therapeutic life-saving equipment accepted by the medical community as medically necessary to treat chronic respiratory disease.
- Oxygen
- Cardiopulmonary resuscitation equipment
- Defibrillator

A physician must be immediately available and accessible for medical consultations and emergencies at all times when services are being provided under the program. This provision is satisfied if the physician meets the requirements for direct supervision for physician office services at § 410.26 of this subpart and for hospital outpatient services at § 410.27 of this subpart.

For hospital-based settings, the immediate availability and accessibility of a physician for medical consultation and medical emergencies is presumed. For **non-hospital-based settings**, the place of service and the facility must provide documentation to verify a physician is immediately available and accessible for medical consultations and emergencies at all times when items and services are being furnished under the program.

*Direct supervision means that the physician or non-physician practitioner must be immediately available to furnish assistance and direction throughout the performance of the procedure. It does not mean that the physician or non-physician practitioner must be present in the room when the procedure is performed. **For pulmonary rehabilitation, direct supervision must be furnished by a MD or DO, as specified in §§ 410.47 and 410.49, respectively.***

A Medical Director is required and can be a shared responsibility; he/she is responsible for supervising the program and staff and is involved substantially in directing the progress of individuals in the program, in consultation with the staff.

A Supervising Physician is required and must be physically immediately available and accessible for medical emergencies at all times the program is being furnished. Must be “interruptible” to physically respond immediately. In a hospital, can be a physician-run code team or emergency department physician.

The Medical Director and the Supervising Physician do not have to be the same physician!

Programs providing pulmonary rehabilitation services typically follow a set of policies and procedures. These policies and procedures should include information about how the direct supervision requirement is met.

For example, some facilities have a hospitalist who is on duty in their facility. Providers must maintain documentation which demonstrates there is a procedure in place which meets this requirement and that the procedure was followed in the specific case being reviewed (on the day of service in question). For instance, a copy of the section of the policy and procedure manual that explains direct supervision would suffice. For a non-hospital-based facility, a log identifying the direct supervising physician that is signed and dated by that physician is expected.

Medicare Part B pays for pulmonary rehabilitation services supervised by a physician who meets the following requirements:

- Is responsible and accountable for the pulmonary rehabilitation program, including oversight of the pulmonary rehabilitation staff.
- Is involved substantially, in consultation with staff, in directing the progress of the individual in the program including direct patient contact related to the periodic review of his or her treatment plan.
- Has expertise in the management of individuals with respiratory pathophysiology, and cardiopulmonary training and/or certification including basic life support.
- Is licensed to practice medicine in the State in which the pulmonary rehabilitation program is offered.

Limitations on coverage:

- Medicare Part B pays for services provided in connection with a pulmonary rehabilitation exercise program for up to two (2) one-hour sessions per day, for up to 36 lifetime sessions (in some cases, up to 72 lifetime sessions) of pulmonary rehabilitation. Additional sessions may be approved by the Medicare contractor, based on medical necessity in accordance with section 1862(a)(1)(A) of the Act.
- Commercial Coverage: There are varying limitations on pulmonary rehabilitation services (BCBS Kansas – 18 sessions in a single 6-week period), while some commercial insurers follow Medicare limitations.

Basic Billing and Coding for Pulmonary Rehab

CMS Medicare Benefit Policy Pub 100-02, Transmittal 124

- Pulmonary rehabilitation services are now bundled into a single HCPCS code: G0424 - Pulmonary rehabilitation, including aerobic exercise (includes monitoring), per session, per day
- Hospitals and practitioners may report a maximum of 2 1-hour sessions per day.
- In order to report one session of pulmonary rehabilitation services in a day, the duration of treatment must be at least 31 minutes.
- Two sessions of pulmonary rehabilitation services may only be reported in the same day if the duration of treatment is at least 91 minutes, Medicare will deny all pulmonary rehabilitation claims (both professional and facility claims) that exceed two units on the same date of service.
 - In other words, the first session would account for 60 minutes and the second session would account for at least 31 minutes, if two sessions are reported.

- If several shorter periods of pulmonary rehabilitation services are furnished on a given day, the minutes of service during those periods must be added together for reporting in 1-hour session increments.

Example 1: If the patient receives 20 minutes of pulmonary rehabilitation services in the day, no pulmonary rehabilitation session may be reported because less than 31 minutes of services were furnished.

Example 2: If a patient receives 20 minutes of pulmonary rehabilitation services in the morning and 35 minutes of pulmonary rehabilitation services in the afternoon of a single day, the hospital or practitioner would report 1 session of pulmonary rehabilitation services under 1 unit of the HCPCS G-code for the total duration of 55 minutes of pulmonary rehabilitation services on that day.

Example 3: If the patient receives 70 minutes of pulmonary rehabilitation services in the morning and 25 minutes of pulmonary rehabilitation services in the afternoon of a single day, the hospital or practitioner would report two sessions of pulmonary rehabilitation services under the HCPCS G-code because the total duration of pulmonary rehabilitation services on that day of 95 minutes exceeds 90 minutes.

Example 4: If the patient receives 70 minutes of pulmonary rehabilitation services in the morning and 85 minutes of pulmonary rehabilitation services in the afternoon of a single day, the hospital or practitioner would report two sessions of pulmonary rehabilitation services under the HCPCS G-code for the total duration of pulmonary rehabilitation services of 155 minutes. A maximum of two sessions per day may be reported, regardless of the total duration of pulmonary rehabilitation services.

If a patient does not meet the COPD criteria (diagnosed with moderate, severe, or very severe COPD as established by the GOLD guidelines), their services can be covered as individual respiratory care services (not pulmonary rehabilitation). Medicare contractors have established local coverage determinations (LCD) for this subset of patients. In the absence of an LCD, contractors can pay claims on a case-by-case basis if the service is deemed medically necessary. G0424 should not be used in billing services for non-COPD patients. The goal of respiratory care services is not to achieve maximum exercise tolerance, but to ultimately transfer care and continue respiratory services at home.

- G0237 – Therapeutic procedures to increase strength or endurance or respiratory muscles,

face-to-face, one-on-one, each 15 minutes (includes monitoring)

- *Example: Breathing retraining or inspiratory muscle training on select patients who would benefit. The training is performed between one staff person and one patient in a face-to-face situation.*
- G0238 – Therapeutic procedures to improve respiratory function, other than described by G0237, one-on-one, face-to-face, per 15 minutes (includes monitoring) *Example: Teaching patients strategies for performing tasks with less respiratory effort including ADLs, airway clearance strategies, stair climbing, or other activities to improve functional capacity.*
- G0239 – Therapeutic procedures to improve respiratory function or increase strength or endurance or respiratory muscles, two or more individuals (includes monitoring)
 - *Example: Group exercise. Not a timed code; it is billed once per day only.*

Roles and Staffing Needs for Pulmonary Rehabilitation

Primary Care Providers (including Nurse Practitioners (NPs) and Physician Assistants (PAs))¹⁰⁶ roles and responsibilities include the medical evaluation, management, and treatment of a patient. A person's primary care physician is a very important member of the COPD treatment team. The primary care provider usually provides most of a patient's COPD care during the early stages of the disease. In most cases, the primary care physician is the one who diagnoses COPD in a patient and may consult with a pulmonologist.

If the primary care provider diagnoses a person with COPD, the provider must put together a health care team to design a personal COPD treatment plan for the patient. The goal of this plan is to help manage the symptoms of COPD in the best way possible. The primary care provider will conduct regular monitoring and surveillance of the disease and ensure the completion of a COPD treatment plan. In addition to case management, coordination and referral to specialist services as appropriate.

A **pulmonologist**¹⁰⁷ is a physician who has special training to treat people with lung diseases. Often a pulmonologist is not needed until a person's COPD has progressed to a later stage, but this decision can be made between the COPD patient and the primary care provider. The pulmonologist can carry out special tests to get more information about a person's COPD and suggest the best treatment for the symptoms.

A **respiratory therapist**¹⁰⁸ is a key member of the COPD treatment team. Respiratory therapists help to teach the patient about COPD. Respiratory therapists also provide support and guidance about many other parts of the COPD treatment plan, including:

- Understanding COPD medications and how to take them correctly
- Giving advice and support about how to quit smoking for good
- How to avoid infections
- How to use oxygen therapy safely
- Advice about how to improve breathing
- How to deal with COPD attacks (also called “exacerbations”)
- Additional roles for RTs include exercise testing, prescription and training, musculoskeletal assessment, treatment and advice, airway clearance education, strategies for the management of dyspnea, inspiratory muscle training, assessment of ambulatory oxygen requirements

Nurses provide disease-specific education, development of action plans, home visiting and support.

Pharmacists¹⁰⁹ will provide medication management, medication reconciliation, advice/education on respiratory medication and inhaler use and medication support for patients with comorbidities.

Social Workers¹¹⁰ provide information and access to support services for the patient

Administration¹¹¹ may not be necessary as a specific position to coordinate a pulmonary rehab program, but if a hospital or clinic chooses to, the roles and responsibilities of a program coordinator include the following:

- Process referrals
- Make appointments for assessments
- Allocate individuals to exercise classes
- Produce written materials
- Facilitate input from the multidisciplinary team
- Communicate with the referrers
- Organize maintenance options for patients upon completion of the program

The program coordinator should be a health care professional with an interest and knowledge of chronic lung diseases such as a specialist nurse or other health care worker.

Workforce development using multidisciplinary teams with clearly defined roles and responsibilities and adequate training in the following will strengthen a hospitals’ pulmonary rehabilitation program:

- Brief intervention for tobacco smoking
- Chronic disease self-management training

- Palliative care and its application to chronic conditions
- Pulmonary rehabilitation
- Spirometry

Improvement Opportunities for Current Pulmonary Rehab Programs

Successful pulmonary rehabilitation programs will often look to expand existing services or provide additional opportunities to their programs. One of those opportunities is the utilization of respiratory therapists in primary care clinics. Studies have shown important benefits of having respiratory therapists in primary care settings which have improved the frequency and quality of pulmonary function testing and improved provider skill and confidence in interpreting spirometry and improved application to clinical care.¹¹² In addition, respiratory therapists support providers in such tasks as oxygen certification and recertification, sleep studies, orders and education for continuous positive airway pressure, asthma action plans, and improved self-care skills for all patients with chronic lung diseases, not just patients who choose pulmonary rehabilitation.¹¹³

Support groups for patients with chronic lung disease provide an environment for patients and caregivers to share information, friendship, experiences and encouragement. Patients can take a more active role in their health management with the advice and support of others in a similar situation. Patient support groups would be an opportunity for hospitals to expand their current pulmonary rehabilitation offerings. Following a pulmonary rehabilitation, patients should be introduced to existing support groups or encouraged to consider establishing a group if one does not exist.

Lastly, a great opportunity for hospitals currently offering a pulmonary rehabilitation is to add a maintenance program for patients who have finished their pulmonary rehabilitation. National guidelines stress the importance of continuing regular exercise after completion of a pulmonary rehabilitation program in order for benefits to be maintained.¹¹⁴ Hospitals can implement a maintenance program for pulmonary rehabilitation graduates to attend a supervised maintenance exercise program weekly for a nominal fee. A patient's health insurance does not cover this benefit.

Care Management

Today's value-based payment environment represents a significant opportunity for organizations to enhance and integrate inpatient and ambulatory care management efforts, such that patients, and especially those with chronic conditions, experience improved outcomes. Patients with multiple chronic conditions are generally under the care of multiple physicians. The goal is to align and coordinate care plan strategies with PCPs, including facilitating optimal patient engagement and education, avoiding unintended duplication of services or testing, and ultimately, ensuring patients receive the right care, at the right time, and in the right place. To find the most up-to-date information regarding Medicare's care management program, refer to [Medicare's Learning Network](#).

Transitional Care Management

Transitional Care Management (TCM)¹¹⁵ services are designed to prevent hospital readmissions by providing seamless care when a patient is discharged from an inpatient facility (hospital) to community-based care (clinic).

Providers may conduct the following TCM components beginning at the day of discharge up to 30 days:

- Interactive contact within 2 business days of discharge (phone, email, face-to-face)
- Certain non-face-to-face services (review discharge information, establish referrals, interact with other health care professionals)
- Face-to-face visit within either 7-14 calendar days of discharge

These health care professionals may furnish TCM services:

- Physicians (any specialty)
- Physician Assistants
- Nurse Practitioners
- Certified Nurse Midwives
- Clinical Nurse Specialists

You may provide TCM services, beginning the day of the beneficiary's discharge from one of these inpatient hospital settings:

- Inpatient Acute Care Hospital
- Inpatient Psychiatric Hospital
- Long-Term Care Hospital
- Skilled Nursing Facility
- Inpatient Rehabilitation Facility
- Hospital outpatient observation or partial hospitalization
- Partial hospitalization at a Community Mental Health Center

After inpatient discharge, the beneficiary must return to their community setting:

- Home
- Domiciliary
- Rest home
- Assisted living facility

Medicare allows (no limit):

- Communication (direct contact, telephone, electronic) with the patient and/or caregiver within two business days of discharge; Medical decision making of at least moderate complexity during the service period; Face-to-face visit, within 14 calendar days of discharge **(CPT 99495)**
- Communication (direct contact, telephone, electronic) with the patient and/or caregiver within two business days of discharge; Medical decision making of high complexity during the service period; Face-to-face visit, within seven calendar days of discharge **(CPT 99496)**

Chronic Care Management

Chronic Care Management (CCM)¹¹⁶ services are designed to address the complex needs of Medicare beneficiaries suffering from multiple chronic conditions. CCM allows health care professionals to be reimbursed for the time and resources used to manage Medicare patients' health between face-to-face appointments. CCM can be furnished to Medicare patients with two or more chronic conditions who are at risk of death, acute exacerbation/decompensation, or functional decline.

CCM services include:

- Conduct an initial face-to-face visit
- Utilizing EHR to record patient health information
- Development of a comprehensive care plan
- Access to care and care continuity (24/7)
- Comprehensive care management
- Transitional care management

In addition to physician offices, CCM services can be provided by [Federally Qualified Health Centers \(FQHCs\)](#), [Rural Health Clinics \(RHCs\)](#), and Critical Access Hospitals (CAHs). The following health care professionals can bill for CCM services:

- Physicians
- Physician Assistants
- Nurse Practitioners
- Certified Nurse Midwives
- Clinical Nurse Specialists

Only one practitioner/facility per patient may be paid for CCM services for a given calendar month. Services may be furnished by the billing health care professional as well as clinical staff that meet Medicare's "incident to" rule.

Medicare allows (no limit):

- At least 20 minutes of clinical staff time directed by a physician or other qualified health care professional is required in order to bill Medicare for the service (**CPT 99490**).

- Moderate or complex medical care, up to 60 minutes of clinical staff time must be recorded for billing purposes (**CPT 99487**). Note that CCM services are subject to the usual Medicare Part B cost sharing requirement.

Community Support Services

Community Health Workers

Community Health Workers (CHWs) are an extension to the patient care team. CHWs facilitate care coordination, enhance access to community-based services, and address social determinants of health. While state definitions vary, CHWs are typically frontline workers who are trusted members of and/or have a unique and intimate understanding of the communities they serve.

CHWs create a bridge between hospitals and community needs. Studies have shown that patient health outcomes have improved and that CHWs provide a positive return on investment through cost savings, fewer emergency department visits and hospital admissions.¹¹⁷

CHW initiatives typically follow one of four basic models, based on outreach goals.¹¹⁸

Anchor role: Community health workers are part of a holistic, comprehensive set of health care services, anchoring community infrastructures.

Specialist role: The hospital or health system focuses on a chronic condition, such as diabetes management, and community health workers help to disseminate best practices to the targeted community.

Convener role: Community health workers help to provide targeted outreach responses by bringing together relevant stakeholders.

Promoter role: Community health workers provide education, outreach and comprehensive disease management in a focused collaboration with the hospital or health system.

Community Paramedics

Community paramedicine is a locally designed, community-based, collaborative model of care that leverages the skills of paramedics and emergency medical services (EMS) systems to address specific local problems and to take advantage of locally developed linkages and collaborations between and among EMS and other health care and social service providers.¹¹⁹

Community paramedics receive specialized training in addition to general paramedicine training and work within a designated CP program under local medical control as part of a community-based team of health and social services providers.¹²⁰

Typically, there are three types of service:¹²¹

Post-hospital Discharge: Patient follow-up in-home visits and/or follow-up calls assist patients in avoiding hospital readmission after they have been discharged from the hospital. This is accomplished by promoting physician treatment plan adherence by providing information, education and guidance while monitoring patients in their home. Patients are enrolled and monitored for up to 30 days after discharge.

Episodic Evaluation: In-home visits within four (4) hours of a request provides primary care physicians or referring health care providers with an in-home patient care service when there are limited resources available and an emergency department visit may not be optimal.

High-utilizer Intervention: Following identification and assessment of patients that make frequent visits to the emergency department or frequent calls to 9-1-1, this intervention assists patients in accessing the right care or service and includes a resource plan to resolve each patient's unmet health care, mental health and social service needs.

Benefits include:¹²²

- Improve each patient's satisfaction with their overall health care experience
- Improve referring provider's knowledge of the patient's home environment, including medication usage, health routines and living habits
- Improve referring provider's access to accurate and timely early warning signs of worsening conditions

- Avoid exacerbations of chronic illness through close observation and early reporting of symptoms
- Avoid an unplanned hospital readmission and avoid unnecessary utilization of emergency services (such as a call to 9-1-1 or a visit to the emergency department).

Home Health

Home health is defined as a variety of services that skilled health care professionals can deliver in the home. Common home health services include physical and occupational therapy, speech language therapy, skilled nursing care and other medical social services.¹²³ Home health staff specialize in creating a continuity of care between the patient, their therapy and treatment, and the physician's orders. Typically, home health staff create a plan of care along with the patient's physician and work to implement and update the care plan as needed while keeping the physician informed of progress.¹²⁴

There is a greater desire for home health care as recent technological advances have allowed services that once needed to be performed in a hospital or physician office to be performed in the home. Home health is also cost effective with services being less expensive, but as effective as those performed out of the home.¹²⁵ Finally, patients tend to feel more comfortable in their home setting.

Home health has proven to be a useful option for COPD patients. Studies have shown home-based pulmonary rehab programs are an effective nonpharmacological intervention in the management of stable COPD patients.¹²⁶ There are a variety of home health programs that work with COPD patients. For those suffering from moderate to severe COPD, Medicare will pay for home care at zero co-pay if the patient meets the eligibility criteria.

1. Be confined to the home (that is, homebound)
2. Need skilled services
3. Be under the care of a physician
4. Receive services under a home health plan of care (POC) established and periodically reviewed by a physician and
5. Had a face-to-face encounter related to the primary reason the patient requires home health services with a physician or an allowed non-physician practitioner no more than 90 days prior to the home health start-of-care date or within 30 days of the start of the home health care.¹²⁷

Smoking cessation programs are covered in Medicare Part B and D, while medication coverage depends on the patient's supplemental programs.¹²⁸ Partial coverage is offered for oxygen treatments, bronchodilators, and inhaled steroids.¹²⁹

Home health is an important option for COPD patients to consider as it brings effective, quality care to their doorstep. Patients can be treated in a more enjoyable environment, allowing for a smoother, calmer recovery.

Effective Technologies

Telehealth is an important vehicle for health care delivery in rural communities. There are three types of telehealth:

- Store and Forward: forward and share patient medical data with a provider in a different location.
- Remote Patient Monitoring (RPM): tracks a patient's status over time from a distance (Example: home-based telehealth).
- Real-time Telehealth: requires live interaction using audio or video communication.

Telehealth allows rural hospitals to provide needed health care services in the local facility at lower costs.¹³⁰ This reduces long distance travel to specialists, and avoids patient transfers.¹³¹ Typically, rural primary care providers work with subspecialist as a team and share knowledge through an e-consult software platform between locations.

Research related to the effectiveness of telehealth for the treatment of COPD has shown mixed results on whether systems are more effective and less expensive than typical care.¹³² For instance, out of 18 studies, only three found improvements in health related to quality of life for patients with COPD undergoing telemedicine.¹³³ However, studies have also shown benefits associated with telehealth and COPD, including telehealth's association with the reduction in hospitalization or general practitioner calls, and in health care costs.¹³⁴

A study conducted by researchers at the University of Alabama at Birmingham in 2016 found that utilization of telehealth reduced the 30-day all cause readmissions rates for recently hospitalized COPD patients.¹³⁵ A video-based connected care program allowed providers to begin clinic-based pulmonary rehabilitation (PR) after they had been treated and discharged for COPD.¹³⁶ The program reduced readmissions to the hospital by roughly 200%, reducing the rate from 18.1% to 6.2%.¹³⁷

Telehealth for pulmonary rehabilitation has been an effective tool for increasing COPD PR services in rural areas, and in turn, improving the quality of life and exercise capacity for patients in these regions. COPD teleassistance has also been shown to reduce the frequency of exacerbations when combined with noninvasive ventilation.¹³⁸

In May 2019, a three-year COPD pilot program, The Better Respiration through Expanded Access to Tele-health (BREATHE) Act, has been proposed in the US House of Representatives.¹³⁹ The program would allow qualified respiratory therapists to use telehealth to deliver chronic care management to selected Medicare members with COPD. Upon completion of the program, the Centers for Medicare & Medicaid Services would publish a report on the effectiveness of the BREATHE program.¹⁴⁰

It is not only key to understand the services offered with telehealth and how they can be beneficial to COPD patients, but also how to be reimbursed for such services. In 2019, CMS had made considerable changes to reimbursable telehealth services, largely supported by the Bipartisan Budget Act of 2018 (BBA) and the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment (SUPPORT) for Patients and Communities Act (Support Act). Medicare has very specific guidelines as to what it will cover based on the type of telehealth service, the provider, the site of service, and the specific code associated with the service.

Currently Medicare pays for a specific (Part B) physician or practitioner services through real-time telehealth, where the communication is real time between the distant site, and the beneficiary at the originating site. Store- and-forward telehealth is only permitted in Alaska and Hawaii due to the remoteness of those states. The site of service for a COPD telehealth patient must be located in a Health Professional Shortage Area (HPSA) or a Metropolitan Statistical Area (MSA), and performed at either a:

- Hospital
- Critical Access Hospital (CAH)
- Physician or practitioner office
- Rural Health Clinic
- Federally Qualified Health Center
- Hospital-based or CAH-based Renal Dialysis Center
- Skilled Nursing Facility
- Community Mental Health Center
- Renal Dialysis Facility
- Homes of beneficiaries of End-Stage Renal Disease (ESRD) getting home dialysis
- Mobile Stroke Unit

Providers that are reimbursed for telehealth services under Medicare are physicians, nurse practitioners, physician assistants, nurse midwives, clinical nurse specialists, certified registered nurse anesthetists, clinical psychologists, clinical social workers, and registered dietitians or nutrition professionals.

Some specific HCPCS/CPT Codes that pertain to COPD that are approved by Medicare Telehealth services are:¹⁴¹

Service	HCPCS/CPT Code
Telehealth consultations, emergency department or initial inpatient	G0425–G0427
Follow-up inpatient telehealth consultations furnished to beneficiaries in hospitals or SNFs	G0406–G0408
Office or other outpatient visits	99201–99215
Subsequent hospital care services, with the limitation of 1 telehealth visit every 3 days	99231–99233
Subsequent nursing facility care services, with the limitation of 1 telehealth visit every 30 days	99307–99310
Smoking cessation services	G0436, G0437, 99406, 99407

There are many other telehealth codes that can be affiliated with COPD treatment. Please refer to www.cms.gov for more information.

Telehealth becomes infinitely more complex when policies move to the state level, as is the case with Medicaid. Forty-nine states and Washington D.C. have some form of reimbursement for telehealth within their Medicaid public program; as of 2018, only Massachusetts did not have any written reimbursement policies around telehealth.¹⁴² As with Medicare, states have restrictions on reimbursement by type of service, type of provider, and location of patient or originating site. However, these restrictions can differ from state to state. For example, of the forty-nine states that

provide some form of reimbursement for telehealth in their Medicaid programs, only thirty-four state Medicaid programs offer a transmission or facility fee when telehealth is used.¹⁴³

Most private insurers are embracing the cost savings of telemedicine and have chosen to cover services under their plans. Under federal law, the major private/commercial payers like Blue Cross Blue Shield, Aetna, and Cigna are not required to provide coverage for any telehealth services. However, currently 39 states and D.C. have passed parity laws that require private insurance companies to reimburse for telehealth in some form.¹⁴⁴ Just like in Medicare and Medicaid regulations, private payer telehealth coverage is limited by type of telemedicine, location, facility type, condition, and eligible providers. The telehealth coverage parity law requires insurers to cover the same services delivered through telehealth as would be covered in person. All 39 states with parity laws require private payer reimbursement for real-time telehealth, while fewer reimburse for store-and-forward.¹⁴⁵

Conclusion

This COPD guide was developed to provide rural hospital executive and management teams a practical approach to understanding COPD prevalence, urban vs. rural differences, disease management, and treatment options available. The guide should increase hospital leadership awareness of COPD services in rural areas, clinical diagnosis and treatment, treatment options available and new developments in technology that are useful to rural populations. Most importantly, this guide is designed to improve the access to and the quality of COPD services for rural Americans.

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