COPD Management (Outpatient) Clinical Approach

September 2018

Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease characterized by progressive airflow limitation and chronic inflammatory response in the airways. Presbyterian strives for consistent and effective management of COPD using evidence-based practices that are coordinated by multidisciplinary care teams in primary and specialty care settings.

Essentials

- Protocols for screening, diagnosis, and treatment of COPD are evidence-based and implemented across Presbyterian Medical Group Internal Medicine, Family Medicine (PMG), and Pulmonology clinics.
- To facilitate disease management and enable reporting, PHS maintains a registry of patients diagnosed with COPD through Epic’s Healthy Planet module.
- Presbyterian’s COPD care pathways are based on and updated in rhythm with the GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines.

PHS Success and Impact

Annually, PHS treats and manages thousands of COPD patients. Currently, there are over 14,000 patients on the COPD Healthy Planet registry.

In 2016, PHS received two Healthgrades awards related to management of COPD patients:

- America’s Top 5% for overall Pulmonary Services
- Five-Star Recipient for Treatment of COPD

What we know about COPD

Chronic lower respiratory disease, primarily COPD, is the third leading cause of death in the United States (CDC). Fifteen million Americans report that they have been diagnosed with COPD; however, it remains an under-diagnosed disease. More than 50% of adults with low pulmonary function are not aware they have COPD. In the United States, tobacco smoke is a key factor in the development of and progression of COPD.

COPD develops slowly and is a major cause of disability. Symptoms often worsen over time and can limit the ability to do routine activities, such as work, exercise, and sleep. Currently, there is no cure, but COPD can be treated and managed. Treatment can alleviate symptoms, decrease the frequency and severity of exacerbations, and increase exercise tolerance.
**Spirometry**

Spirometry is a pulmonary function test (PFT) that is required to establish a diagnosis of COPD. PHS has implemented spirometry machines (Care Fusion) at each PMG Primary Care site, including training for clinical staff. Spirometry requires a patient to exhale forcefully into an apparatus that assesses lung capacity, using Forced Expiratory Volume in 1 second (FEV$_1$)/ Forced Vital Capacity (FVC). Adults with normal lung function can breathe out 60-90% of their breath during the first second. This percentage often decreases with age. In obstructive lung diseases, the FEV1/FVC ratio is lower than the normal range. An FEV1/FVC ratio of less than 70% along with evaluation of symptoms confirms the presence of airflow limitation and COPD.

After a diagnosis of COPD is established, annual spirometry is recommended to assess disease progression.

**Smoking Cessation**

Smoking cessation has been demonstrated to reduce the rate of loss of lung function and mortality among patients with mild to moderate COPD, and is associated with a reduced risk of COPD exacerbations (Wu, 2011). Patients diagnosed with COPD are strongly encouraged to quit smoking as part of their treatment.

**COPD Assessment Test (CAT)**

The COPD Assessment Test is a patient-completed questionnaire designed to quantify the impact of COPD symptoms on the health status of patients. It consists of eight questions that are rated on a scale from 0-5 (zero=normal/none; five=markedly abnormal), and provides an overall score of 0–40 to indicate the impact of disease. A higher score is indicative of higher severity. Providers use the CAT to monitor disease progression and potentially assist in the identification of patients at increased risk of exacerbations. At PHS, the CAT is updated every six months in Epic as part of the patient’s Health Maintenance. Additional details about PHS’ CAT can be found in the [Care Process Model: COPD](#).

**COPD Action Plan**

The COPD Action Plan is a tool that provides additional information and education to the patient. It is designed to help providers have a conversation with the patient about the status of their disease, and to provide additional information about when it is appropriate to seek emergent care.

**GOLD Classifications and Staging**

The GOLD classifications are a method used by providers to describe the severity of COPD. GOLD (the Global Initiative for Chronic Obstructive Lung Disease) is a collaboration between the National Institutes of Health and the World Health Organization.

The GOLD staging system classifies people with COPD based on their degree of airflow limitation (obstruction) as measured during pulmonary function tests (PFTs). GOLD classifications provide recommendations from subject matter experts on medication therapy and other aspects of care for patients diagnosed with COPD. GOLD staging uses four categories of severity for COPD, based on the value of FEV1:
Staging:

<table>
<thead>
<tr>
<th>GOLD A: Mild COPD</th>
<th>GOLD B: Moderate COPD</th>
<th>GOLD C: Severe COPD</th>
<th>GOLD D: Very Severe COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEV1 &gt; 80%</td>
<td>FEV1 50% to &lt; 80%</td>
<td>FEV1 30% to &lt; 50%</td>
<td>FEV1 &lt; 30%</td>
</tr>
<tr>
<td>FEV1/FVC &lt; 70%</td>
<td>FEV1/FVC &lt; 70%</td>
<td>FEV1/FEV &lt; 70%</td>
<td>FEV1/FEV &lt; 70%</td>
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<tr>
<td>Low level of symptoms</td>
<td>0-1 exacerbations in the past 12 months</td>
<td>CAT score &lt; 10</td>
<td>CAT Score ≥ 10</td>
</tr>
<tr>
<td>CAT score &lt; 10</td>
<td>Symptomatic with CAT score ≥ 10</td>
<td>High risk: 2 or more exacerbations in the past year, none resulting in hospitalization</td>
<td>High risk: 2 or more exacerbations in the past year, or 1 requiring hospitalization</td>
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</tbody>
</table>

COPD Medication

The table below lists the most common types of medication used to treat COPD, per GOLD Guidelines.

<table>
<thead>
<tr>
<th>Category</th>
<th>Pharmacological Therapy for COPD</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchodilators</td>
<td>Short-acting beta2 agonists are used for monotherapy in mild COPD (GOLD A), and in combination for all stages. Long acting bronchodilators – long-acting muscarinic antagonists, long-acting beta2-agonists, anticholinergic, or combination therapy- are used for moderate to very severe COPD (GOLD B,C,D).</td>
<td>Atrovent, Albuterol, Spiriva, Tudorza, Incruse Ellipta, Serevent, Foradil</td>
</tr>
<tr>
<td>Inhaled Corticosteroids</td>
<td>Long-term treatment with inhaled long-acting beta2-agonist (LABA) and inhaled corticosteroids (ICS) is appropriate for severe and very severe COPD (GOLD C,D), and for patients with frequent exacerbations that are not adequately controlled by long-acting bronchodilators.</td>
<td>Flovent, QVAR, Asmanex, Pulmicort, Advair, Symbicort</td>
</tr>
<tr>
<td>Phosphodiesterase-4 (PDE-4) Inhibitors</td>
<td>PDE-4 inhibitor may be used to reduce exacerbations in patients with chronic bronchitis, severe and very severe airflow limitation, and frequent exacerbations that are not controlled by long-acting bronchodilators</td>
<td>Daliresp (roflumilast), Theophylline</td>
</tr>
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</table>

Specific information about GOLD classifications and medication therapy recommendations can be found in the Clinical Practice Model: COPD.

PHS’ Approach to COPD Management

To improve the diagnosis and treatment of COPD, Presbyterian launched a redesigned care pathway in December 2015 for COPD patients seen in the PMG clinics. The COPD care pathway incorporates a COPD patient registry, evidence-based protocols, and additional tools for medication management.
COPD Registry

Presbyterian maintains a registry, enabled by Epic’s Healthy Planet module, of patients diagnosed with COPD. The system generates a report showing COPD patients within each PMG clinic who require attention. These are individuals who:

- Are due for Spirometry
- Are overdue for a visit; or
- Have a need for disease management or preventive screenings/vaccines related to COPD management.

Primary Care PMG Care Managers review the Healthy Planet registry to identify these gaps in care. The Care Manager then takes action on gaps in care using a nursing protocol to place orders on behalf of the PCP for any appropriate labs and/or overdue vaccines. The Care Manager also performs patient outreach to notify the patient of the orders, health coaching to support the patient’s self-management goals, and patient education as needed.

Evidence-Based Protocols

PHS has implemented evidence-based protocols for diagnosing and treating hypertension based on the GOLD classifications. These protocols include how to determine severity of disease, using decision support tools in the electronic health record, and scheduling regular follow up visits.

**Spirometry**

Annual spirometry testing is performed on patients with a diagnosis of COPD in both Primary Care and Pulmonary settings.

**Alerts and Smart Order Sets**

Point-of-care decision support via the electronic health record aids the physician in providing care for each patient. For example, a one-time BPA will fire when COPD is added to a Problem List or Diagnosis to include/exclude CAT, COPD Action Plan, and COPD Spirometry.

Other alerts include:

- Annual Spirometry HM
- COPD Assessment Test (CAT) Health Maintenance will fire every 6 months
- COPD Action Plan Health Maintenance will fire annually Team Care

Every member of the PMG Patient-Centered Medical Home care team is involved in COPD management:

**Primary Care Provider (PCP)**

Leading the care team, the Provider initiates treatment for COPD, discusses medication(s) with the patient, monitors the treatment, and refers the patient to Pulmonologist as needed.

**Specialty Care Provider (Pulmonologist)**

PMG Pulmonologists monitor treatment of moderate/severe COPD patients in the Pulmonary Medicine setting. There are two full-time outpatient-based pulmonologists: one housed at Kaseman POB and one
at Rust Medical Center. Additionally, six PMG pulmonologists rotate between ICU, hospital rounds, outpatient clinic, and inpatient pulmonary consult.

**Primary Support LPN/MA**
Patients are prepared for their visit by the Primary Support LPN/MA, who obtains a full set of vital signs, performs medication reconciliation, asks the patient to complete the CAT and documents results, queues up refills, and checks for any outstanding tests or vaccinations.

**Team Nurse**
The team nurse provides support for symptom-related messages (i.e., chronic cough, breathing difficulty), prescription refill management, and prior authorizations. The team nurse performs spirometry testing in the PMG clinics, administers medications and flu vaccine, and assists with hospital transfers (SBAR communication).

**RN Care Manager- Primary Care**
The Care Manager performs regular patient outreach to mild/moderate COPD patients, including checking to see that the patient is taking medication(s) appropriately, monitoring the patient’s progress on self-management goal(s), assessing the patient for any negative side effects, and providing ongoing patient education. Working under protocols, the nurse can queue up orders for any pulmonary function tests, lab tests, or vaccines that are due. The Care Manager also consults with PCP for complex or noncompliant patients, and initiates referrals to Pharmacist Clinician, Behavioral Health Clinician, Healthy Solution Coach, or Care Coordinator, when indicated.

**RN Care Manager- Pulmonology**
The Pulmonary Care Manager performs regular patient outreach, health coaching, follow up, scheduling, and support for severe COPD patients. The Care Manager also helps facilitate interaction for the patient as they cross multiple care settings, such as inpatient, emergency, and palliative.

**Pharmacist Clinician**
In the State of New Mexico, Pharmacist Clinicians have prescriptive authority; they can independently prescribe any medication used in the scope of a primary care visit, as well as manage a spectrum of common chronic disease states, including COPD.

**Episodes of Care**
At PHS, patients diagnosed with COPD are seen in a variety of care settings depending on the severity of their condition. Patients diagnosed with mild and moderate COPD are treated in the Primary Care setting and followed by a Care Manager. When patients progress to moderate or severe COPD or if they experience an exacerbation event, they are referred to PMG Pulmonary Medicine and followed by a Pulmonary Care Manager. Patients who progress to very severe COPD are treated by a collaborative Pulmonary and Palliative Care team. As needed, pulmonary clinicians attend the Palliative Care weekly meetings to design and discuss care plans for COPD patients.
Patients are seen in the Pulmonary Medicine clinic annually if their condition is stable. Unstable patients are seen much more frequently— at times, on a weekly basis. When patients are recovering from an exacerbation, or struggling with a comorbidity, a status sometimes referred to as “stable/sick,” they will be seen in the Pulmonary Medicine clinic every three months.

Referrals
In general, patients are referred to PMG Pulmonary Medicine by:

- Patient (self-referral)
- Primary Care
- Emergency Department (symptom-related referral: shortness of breath with unknown etiology)
  - ED referrals are received by the Pulmonary Care Managers as an Epic InBasket message requesting follow up. The Care Manager then schedules a follow up appointment for the patient at the Kaseman or Rust Pulmonary clinic.

Recommended Vaccinations
The following vaccinations are recommended for all COPD patients at PHS, regardless of severity in condition:

- Annual flu vaccine
- Pneumococcal vaccine
- Tdap vaccine

Oxygen Therapy
Oxygen therapy is managed in the Primary and Specialty Care settings. Long-term oxygen therapy (LTOT) is used for COPD when a patient has hypoxia (low levels of oxygen in the blood). Oxygen therapy improves survival, quality of life, exercise, sleep, and cognitive performance. Physiological indicators for oxygen include an arterial oxygen tension (Pa,O2 < 7.3 kPa (55 mmHg). The therapeutic goal is to maintain SP,O2 > 90% during rest, sleep, and exertion (American Thoracic Society). For Medicare patients, providers must certify continued need for oxygen therapy. This justification requires a patient’s oxygen saturation levels to drop below 88% without oxygen therapy intervention, and must occur during a face-to-face visit with a provider.

Arterial Blood Gas (ABG)
ABG measures gas exchange and acid base status. It is recommended for initiation of oxygen therapy as well as to determine arterial carbon dioxide tension (Pa,CO2). It is performed so that an accurate
measurement of oxygen and carbon dioxide can be obtained, to deliver appropriate oxygen to patients. In general, ABG is used to inform oxygen therapy; it is not measured at each office visit.

**Oximetry Testing**

Pulse oximetry is a real-time, non-invasive method used to measure the oxygen level in the blood and heart rate. It is able to rapidly detect changes in blood oxygen level when a patient is resting, and before and after exercise/physical exertion. Oximetry testing is used for all Primary and Specialty Care office visits, and at the start of each Pulmonary Rehabilitation session.

**Pulmonary Rehabilitation**

Pulmonary rehabilitation is a multidisciplinary program for patients with COPD who have dyspnea or other respiratory symptoms, reduced exercise tolerance, a restriction in activity, or impaired health status. It is designed to control and alleviate symptoms, optimize functional capacity, and enhance quality of life for patients living with COPD. Each patient’s unique needs are assessed and a program of care is designed at an individual level. At PHS, pulmonary rehab is offered at the Presbyterian Healthplex in Albuquerque, NM. A physician referral and diagnosis of pulmonary disease are requisite. Generally, an individualized program involves 36 visits of exercise and education classes.

**Key Tools**

Healthy Planet is an Epic software module that compiles patient data into a suite of reports, dashboards, and workflow tools. These population health analytics assist the care management teams in moving toward better and more coordinated care for individuals, greater health and disease prevention, and less healthcare expenditure.

**Clinician Training**

Care Managers learn COPD management protocols, evidence-based guidelines, and health coaching techniques as part of the PMG nursing orientation and monthly meetings.

**Patient Education and Shared Decision Making**

In the Pulmonary clinic setting, the nurse care manager provides education to the patients about their disease progress. The most common educational components are related to oxygen therapy, quality of life (i.e., how to enjoy life with medical equipment), and smoking cessation.

In the Primary Care setting, PMG care teams provide education and work with patients to self-manage goals. Progress towards self-management goals are documented by the PMG Care Manager in Epic.

**Patient Education Tools**

Every patient receives a brochure introducing COPD, with basic guidelines for self-management. In addition, the Care Managers can provide more information from the patient education tools available in Epic. Smoking cessation education is provided at every visit to COPD patients who smoke cigarettes. These materials are also included as part of the Patient Instructions, given to patients at the end of a visit.
Leadership

<table>
<thead>
<tr>
<th>Process Owners</th>
<th>Leadership</th>
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<tbody>
<tr>
<td>Dr. Denise Gonzales, MD - Medical Director, Clinical Specialties</td>
<td></td>
</tr>
<tr>
<td>Elizabeth Garcia, RN, BSN, MBA - Director of Nursing, Primary Care</td>
<td></td>
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<tr>
<td>Dr. Matthew Montoya, MD – COPD Clinical Guidelines Chair</td>
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<tr>
<td>Dr. Angela Macias-Gallegos, MD – Primary Care</td>
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<tr>
<td>Fauzia Malik, MPAS, MS - Director, Evidence-Based Care Design</td>
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Measures of Success

<table>
<thead>
<tr>
<th>Objective</th>
<th>Measure</th>
<th>Aligns with Aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Spirometry for Patients with Diagnosed COPD</td>
<td>% of patients</td>
<td>Better Health</td>
</tr>
<tr>
<td>Measured monthly</td>
<td>Reported for all PMG patients</td>
<td></td>
</tr>
</tbody>
</table>

The Data and Analytics Department has developed a Quality dashboard for several conditions including COPD, which enhance clinical leadership’s ability to monitor and act on real-time quality performance analytics at the clinic, department, and Provider level. The dashboard enables streamlined data reporting, identification of “outlier” patients, and improved adherence to protocols.

Future Work

Continuous Improvement

Developed as an EBCD initiative, COPD management has a continuous improvement cycle managed by the Quality department.

COPD Medication Adherence

Glossary

| COPD | Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease characterized by progressive airflow limitation and chronic inflammatory response in the airways. |
| CAT | COPD Assessment Test |
| PFT | Pulmonary Function Test |
**Additional References**

**Clinical Care Model**
- [COPD](#) Clinical Practice Model (CPM)
- [Evidence-Based Care Design](#)
- [Palliative Care](#)
- [Patient-Centered Medical Home](#)
- [Pulmonary Rehab](#)

**Clinical Practice Guidelines**
- [Guideline: Therapy at Each Stage of COPD and Outpatient Management of COPD Exacerbations](#) [PHS login required]
- [GOLD: Global Initiative for Chronic Obstructive Pulmonary Disease](#)

**Resources: PHS login required**
- [EpicConnect EHR: COPD Clinician Tip Sheet](#)
- [EpicConnect EHR: COPD Pathway](#)
- [EpicConnect EHR: COPD Provider Tip Sheet](#)
- [EpicConnect EHR: COPD Pulmonary Clinical Staff Tip Sheet](#)
- [EpicConnect EHR: COPD Pulmonary Provider Tip Sheet](#)
- [PMG COPD Management](#)

**Additional Resources**
- Diagnosing and Treating COPD ([American Lung Association](#))
- COPD: [American Thoracic Society](#)
- COPD: [Centers for Disease Control and Prevention](#)
- About: [Healthgrades](#)