Chronic obstructive pulmonary disease (COPD) is the fourth-leading cause of death in the United States and is a preventable and treatable condition. According to the Centers for Disease Control and Prevention’s National Health Interview Survey 2008, 6 percent of American adults have been diagnosed with either emphysema or chronic bronchitis. Prevalence estimates for COPD vary widely according to the type of study. It is likely that the actual number of Americans with COPD could be as high as 24 million due to the fact many individuals with COPD remain undiagnosed.

The Clinical Practice Guidelines for Chronic Obstructive Pulmonary Disease (COPD) 2010 provide an overview of evidence-based recommendations for COPD evaluation and management. The guidelines have been largely adapted from Standards for the Diagnosis and Management of Patients with COPD 2004, co-sponsored by the American Thoracic Society and the European Respiratory Society. The guidelines are intended to improve quality of care and health outcomes by decreasing practice variability, while accelerating implementation of evidence-based treatments in everyday practice. Our Company revises disease-specific guidelines at a minimum of every two years, but does so earlier when critical scientific evidence emerges or updated national standards are published.

These recommendations are for your information only. They are not intended to be, and should not serve as, an exclusive course of treatment or a substitute for professional medical advice, diagnosis or treatment. Decisions regarding care are subject to individual consideration and should be made by a patient in concert with the treating medical professionals. The information does not establish or imply coverage for any particular treatment or service. The recommended services may not be covered. Eligibility and coverage depend upon the specific terms and conditions of the patient’s applicable benefit plan.
**DIAGNOSIS**

A diagnosis of COPD should be considered in any patient with the following:

- Symptoms of cough; or
- Sputum production; or
- Dyspnea; and/or
- History of exposure to risk factors associated with developing COPD

A COPD diagnosis is based on the presence of airflow obstruction due to chronic bronchitis or emphysema and requires spirometry testing for confirmation. Airflow obstruction is generally progressive and may be accompanied by partially reversible airway hyperreactivity. The patient history, physical findings and diagnostic testing should support the presence of airflow obstruction.1

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**History**

**Clinical history**

- Cough: Initially may be intermittent, but progressively more frequent
- Sputum: Initially in the morning, but progressively more frequent; usually tenacious, mucoid and in small quantities
- Dyspnea: Usually progresses to become persistent

**Past medical history**

- Asthma, allergies or childhood respiratory infections
- Wheezing, chest tightness or pain, morning headache
- Unexplained weight loss
- Signs and symptoms of sleep apnea
  (can exacerbate some signs and symptoms of COPD, including hypercapnea):
  - Excessive daytime sleepiness
  - Heavy snoring
  - Observed apnea during sleep
  - Choking during sleep

**Family history**

- COPD
- Respiratory disease

**Exposure history**

- Tobacco use: Current smoking status, age at initiation, average daily use, quit date
- Environmental/occupational risk factors (including passive smoke inhalation)
**Physical Examination**

Although an important component of patient care, the physical examination rarely establishes a definitive diagnosis of COPD. Physical signs have relatively low sensitivity and specificity because airflow limitation is usually not present until significant impairment of lung function has occurred.\(^1\)

An initial physical exam should include the following:

- Vital signs, height and weight with body mass index (BMI) calculation
- Chest examination: inspection, auscultation of breath sounds and heart sounds
- Abdominal examination for hepatomegaly
- Neck vein distention
- Peripheral edema
- Digital clubbing
- Cyanosis

**Diagnostic Testing**

The following diagnostic tests should be obtained for all patients prior to establishing a diagnosis of COPD:

- Spirometry (pre- and post-bronchodilator)
  - Post-bronchodilator FEV\(_1)/FVC < 0.7\) confirms the presence of airflow limitation that is not fully reversible
- Bronchodilator reversibility
  - This test should be performed at least once to exclude asthma and to establish optimal lung function baseline
- Chest radiographs (PA and lateral)
  - A chest X-ray is useful for ruling out other causes of lung diseases; however, mild to moderate COPD is not reliably diagnosed by chest radiography alone
- Arterial blood gas or pulse oximetry\(^2\)

Chronic asthma is not always distinguishable from COPD with current imaging or pulmonary function testing. In these cases, it is assumed that the two diseases (asthma and COPD) co-exist and their management should be similar to that of asthma.\(^3\)

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**Indications for Alpha-1 Antitrypsin Deficiency Screening**

<table>
<thead>
<tr>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early onset emphysema (age 45 or younger)</td>
</tr>
<tr>
<td>Emphysema in the absence of a recognized risk factor (smoking, occupational dust exposure, etc.)</td>
</tr>
<tr>
<td>Emphysema with prominent basilar hyperlucency</td>
</tr>
<tr>
<td>Liver disease of unknown cause</td>
</tr>
<tr>
<td>Necrotizing panniculitis</td>
</tr>
<tr>
<td>ANCA (anti-proteinase 3) positive vasculitis</td>
</tr>
<tr>
<td>Family history of any of the following: emphysema, bronchiectasis, liver disease or panniculitis</td>
</tr>
<tr>
<td>Bronchiectasis without evident etiology</td>
</tr>
</tbody>
</table>

Source: ATS/ERS: Standards for the Diagnosis and Management of Individuals with Alpha-1 Antitrypsin Deficiency, 2003.
Alpha-1 Antitrypsin Deficiency

Alpha-1 antitrypsin (AAT) deficiency is the only known genetic abnormality leading to COPD and accounts for less than five percent of all COPD cases in the United States. AAT deficiency is caused by an inherited deficiency of the hepatically produced protein alpha-1 antitrypsin, a known lung protector. When AAT is absent, emphysema is virtually inevitable. AAT deficiency symptoms usually begin between ages 32 and 41 and are frequently under-recognized or misdiagnosed.2

Staging of COPD

According to the American Thoracic Society/European Respiratory Society Guidelines, COPD management would be improved by incorporating a standardized staging system to assist with prognosis and generalized treatment of patients with COPD. For educational purposes, the following contains a simple classification of disease severity into five severity categories.

Table 1: Classification of COPD by Severity

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>POST BRONchodilator FEV₁/FVC</th>
<th>FEV₁ % PREDICTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>At risk*</td>
<td>&gt; 0.7</td>
<td>≥ 80</td>
</tr>
<tr>
<td>Mild COPD</td>
<td>≤ 0.7</td>
<td>≥ 80</td>
</tr>
<tr>
<td>Moderate COPD</td>
<td>≤ 0.7</td>
<td>50 – 80</td>
</tr>
<tr>
<td>Severe COPD</td>
<td>≤ 0.7</td>
<td>30 – 50</td>
</tr>
<tr>
<td>Very severe COPD</td>
<td>≤ 0.7</td>
<td>&lt; 30</td>
</tr>
</tbody>
</table>

*Patients at risk include those who: smoke or have exposure to pollutants; have a cough, sputum or dyspnea; have family history of respiratory disease.

MANAGEMENT OF STABLE COPD

Routine Appointments
Outpatient management of stable COPD should be directed toward improving the quality and duration of life by preventing acute exacerbations, relieving symptoms, reducing risk factors and improving exercise tolerance.

Patients with severe COPD should be seen at least every six months. Follow-up evaluations should include documentation of smoking status, immunization record and current medications.

Treatment Recommendations

Smoking Cessation
Smoking cessation is the most effective intervention in slowing the progression of COPD. The first step in a successful smoking cessation program is to identify all smokers in your practice. Those continuing to smoke after a diagnosis of COPD has been established should be counseled about the urgent necessity of smoking cessation. Each office visit note should document your counseling efforts, including mention of adjunctive treatments. Appendices B and C provide an overview of interventions to assist those patients expressing a desire to stop smoking.

The SuperWell® QuitLine (866.845.7702), our tobacco cessation program, offers special services to all of our members, including:
- Telephone counseling
- Up to eight weeks of nicotine replacement therapy available with full program participation

Long-Term Oxygen Therapy
Long-term oxygen therapy can reverse secondary polycythemia, decrease pulmonary artery pressure and improve cardiac function. This therapy results in improved survival, exercise tolerance, sleep regularity and cognitive performance for patients with resting hypoxemia. Once the need for long-term oxygen therapy has been established, it should be considered a lifetime commitment. Table 2 describes physiological indications for home oxygen therapy.
Pulmonary Rehabilitation

The American Thoracic Society and the European Respiratory Society define pulmonary rehabilitation as an evidence-based, multidisciplinary, comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased ability to perform daily activities. When included in the treatment plan, pulmonary rehabilitation can help reduce symptoms, optimize functional status and reduce healthcare costs. Comprehensive programs involve assessment, exercise training, education, nutritional intervention and psychosocial support.

Pulmonary rehabilitation should be considered for all COPD patients with any of the following:

- Persistent symptoms
- Limited functional activity
- Inability to adjust to illness despite otherwise optimal medical management

### Table 2: Physiological Indications for Home Oxygen Therapy

<table>
<thead>
<tr>
<th>Patients with documented hypoxemia on room air, PaO₂ ≤ 55 mm Hg or SaO₂ ≤ 88%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with a PaO₂ 55-59 mm Hg or SaO₂ 89%, in association with one of the following:</td>
</tr>
<tr>
<td>- History of edema</td>
</tr>
<tr>
<td>- “P” pulmonale</td>
</tr>
<tr>
<td>- Polycythemia with HCT &gt; 55%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients (on room air, in stable condition, while awake) with a PaO₂ ≥ 60 mm Hg or SaO₂ ≥ 90% in association with one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Exercise desaturation</td>
</tr>
<tr>
<td>- Sleep desaturation not corrected by continuous positive airway pressure (CPAP)</td>
</tr>
</tbody>
</table>

*Oxygen therapy is indicated when the PaO₂ ≤ 55 mm Hg or SaO₂ ≤ 88% during these two specific activities.*

- Lung disease with severe dyspnea responding to O₂

Patient Education

Education is critically important for all COPD patients, but especially when pharmacologic therapy and/or oxygen have been prescribed. Patients must understand why lifestyle changes and enhanced compliance with the prescribed therapeutic regimen are important in preventing acute exacerbations. Above all, a COPD patient who continues to smoke must be encouraged and supported in an effort to quit smoking.

Education should include:

- Smoking cessation
- Medication name, dose, precautions and delivery system technique training
- Exercise and nutritional counseling
- Management of environment

A number of organizations are available to assist physicians by providing educational materials concerning smoking cessation, COPD and proper treatment.

Education resources:

- American Thoracic Society/European Respiratory Guidelines: 212.315.8600; visit thoracic.org
- American Lung Association: 800.LUNG.USA (800.548.8252); visit lungusa.org
- American Cancer Society: 800.ACS.2345 (800.227.2345); visit cancer.org
Pharmacologic Therapy
Regulating pharmacologic therapy is a key component of successful treatment. Treatment effectiveness should be evaluated based upon symptomatic benefit, with adjustments made accordingly. Common COPD medications include bronchodilators and glucocorticosteroids. See Appendix A.

Bronchodilators
Bronchodilator medications commonly used in COPD treatment include: beta₂-agonists, anticholinergics and methylxanthines. These medications can improve exercise tolerance and perceived breathlessness.

Glucocorticosteroids
Inhaled glucocorticosteroid therapy may help reduce the frequency of exacerbations in patients with more advanced disease. Long-term treatment with oral corticosteroids is not recommended in stable COPD due to side effects.

To increase compliance and decrease side effects, a spacer should be recommended whenever metered dose inhaled corticosteroids are prescribed. When using metered dose inhalers (MDI), spacers should also be routinely recommended for elderly patients or any other individuals with diminished manual dexterity. The use of a nebulizer could also be considered for any patient who is unable to use an MDI.

Preventive Immunizations

Annual influenza vaccination
Using a recommended vaccine against influenza can reduce serious illness and death in patients with COPD by approximately 50 percent.¹, ⁴

Pneumococcal vaccination
Pneumococcal vaccination should be offered to all patients with COPD.⁴
MANAGEMENT OF COPD EXACERBATIONS

Evaluation
A COPD exacerbation is an acute worsening of baseline dyspnea, cough and/or sputum production beyond day-to-day variability sufficient to warrant a change in therapy. The most common causes of exacerbation are infection and air pollution.¹

Despite aggressive medical treatment, approximately one-third of patients discharged from the emergency department with acute exacerbations have recurrent symptoms within 14 days, and 17 percent experience a relapse that requires hospitalization. Identification of patients at risk for relapse improves decisions about hospital admissions and follow-up.¹

Increased risk for relapse:
- Low FEV₁ < 53% predicted
- History of more than three exacerbations in the last two years
- Active smoking
- Presence of comorbid conditions (congestive heart failure, coronary artery disease, chronic renal or liver failure).¹

Treatment Recommendations
Smoking cessation, long-term oxygen therapy, pulmonary rehabilitation and patient education should be addressed once the exacerbation has stabilized. Refer to Treatment Recommendations under Management of Stable COPD (Pg. 6) for more information about these components of COPD management.

Additional treatment recommendations
- Supplemental oxygen if saturation <90%
- Ventilatory support if respiratory distress occurs
**Pharmacologic Therapy**

**Bronchodilators**
- Short-acting beta$_2$-agonist and/or ipratropium MDI with spacer or handheld nebulizer should be used as needed
- Consider adding a long-acting bronchodilator

**Glucocorticosteroids (the actual dose may vary)**
- Prednisone 30–40 mg orally every day for 10 days
- If patient can not tolerate oral intake, the equivalent dose should be administered intravenously for up to 14 days
- Consider using an inhaled corticosteroid

**Antibiotics**
- Antibiotics may be beneficial in patients who present with increased dyspnea, sputum purulence and sputum volume

**Follow-Up after Emergency Room Visit or Inpatient Discharge**
- Schedule office visit within two weeks
- Evaluate symptoms and conduct physical exam
- Assess need for supplemental oxygen
- Consider spirometry testing
- Assess social environment
- View inhaler technique
- Re-adjust the treatment regimen as needed$^1$
## APPENDICES

### Appendix A: Treatment at Each Stage of COPD

<table>
<thead>
<tr>
<th></th>
<th>STAGE ONE MILD COPD</th>
<th>STAGE TWO MODERATE COPD</th>
<th>STAGE THREE SEVERE COPD</th>
<th>STAGE FOUR VERY SEVERE COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Postbronchodilator</strong></td>
<td>&lt;70%</td>
<td>&lt;70%</td>
<td>&lt;70%</td>
<td>&lt;70%</td>
</tr>
<tr>
<td><strong>FEV1/FVC</strong></td>
<td>≥80%</td>
<td>50% to 80%</td>
<td>30% to 50%</td>
<td>&lt;30% or &lt;50%</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>Intermittent symptoms (e.g., cough, wheeze, exertional dyspnea)</td>
<td>Persistent symptoms (e.g., dyspnea, nocturnal awakening)</td>
<td>Frequent exacerbations (at least 1 per year)</td>
<td>Respiratory failure</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Influenza vaccination, Pneumococcal vaccination, Avoid risk factors</td>
<td>Add short-acting bronchodilator to use as needed</td>
<td>Add inhaled glucocorticosteroids (ICS) if repeated exacerbations. Consider a combination ICS and long acting bronchodilator</td>
<td>Add long-term oxygen if chronic respiratory failure; Consider surgical treatments</td>
</tr>
</tbody>
</table>

*Source: Adapted from the American Thoracic Society and European Respiratory Society. Standards for the Diagnosis and Management of Patients with COPD, 2004.*
Appendix B: Five Steps to Assist Patients with Smoking Cessation

### Step 1: Ask patients at every preventive visit

Inquire and document:
- Current tobacco use and quantity
- Previous tobacco use and quit date(s)
- Never used tobacco

E.g. “Do you use tobacco? If so, what kind and how much?”

### Step 2: Advise all tobacco users to quit

An office reminder system ensures every patient at every visit is asked about tobacco use.

A simple intervention taking as little as three minutes can lead to long-term smoking cessation

E.g. “I strongly encourage you to quit smoking; I can offer you information and medication to help.”

### Step 3: Assess readiness to quit

Assess readiness to quit by determining whether your patient is willing to attempt quitting within the next 30 days.

The three most common barriers to quitting tobacco are:
- Fear of weight gain
- Withdrawal symptoms
- Fear of failure

E.g. “Are you ready to quit in the next 30 days?”

### Step 4: Assist the patient in quitting

Offer counseling and pharmacological assistance. Help your patient to develop a Quit Plan.

Less than 16 percent of smokers are able to quit without pharmacological assistance

- SuperWell Quitline: 866.845.7702
- American Cancer Society: 800.227.2345 or cancer.org
- American Lung Association: 800.LUNG.USA or lungusa.org

### Step 5: Arrange follow-up contact

Anticipate potential relapses. The majority of smokers relapse during the first two weeks.

Follow-up within two weeks of the quit date, either in person or by telephone

E.g. Remind your patient that a relapse should be viewed as a learning experience and praise even limited success.

### Appendix C: First-Line FDA Approved Pharmacological Adjuncts for Smoking Cessation

<table>
<thead>
<tr>
<th>AGENT</th>
<th>COMMENTS</th>
<th>ADVERSE EFFECTS</th>
<th>DOSAGE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine Replacement Therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicotine gum</td>
<td>Chewed slowly until a peppery taste emerges, then stored between the cheek and gum Drinks such as coffee or soda should be avoided before, during and after gum use</td>
<td>Mouth soreness, hiccups, jaw ache, dyspepsia</td>
<td>Gum should be chewed on a regular schedule every 1 to 2 hours</td>
<td>1 to 3 months</td>
</tr>
<tr>
<td>Nicotine Inhaler*</td>
<td>Inhaled through mouth</td>
<td>Local irritation of mouth and throat, cough, rhinitis</td>
<td>6 to 16 cartridges/day</td>
<td>Up to 6 months</td>
</tr>
<tr>
<td>Nicotine Nasal Spray*</td>
<td>Delivered to each nostril, contraindicated in persons with severe reactive airway disease</td>
<td>Nasal irritation, nasal congestion</td>
<td>1 to 2 doses every hour with maximum of 40 doses/day</td>
<td>3 to 6 months</td>
</tr>
<tr>
<td>Nicotine Patch</td>
<td>Transdermal patch available in different strengths</td>
<td>Local skin reaction, insomnia and/or vivid dreams</td>
<td>Worn 16 to 24 hours a day, usually in a stepped sequence of lowering doses over the duration of treatment</td>
<td>8 weeks or less</td>
</tr>
<tr>
<td>Nicotine Lozenge</td>
<td>Slowly dissolved in the mouth over a 20 to 30-minute period</td>
<td>Nausea, hiccups, heart burn, headache and coughing</td>
<td>2 mg and 4 mg lozenges taken regularly, at least 9 lozenges per day, but no more than 20</td>
<td>Up to 12 weeks</td>
</tr>
</tbody>
</table>

### Nicotine-Free Smoking Cessation Aids

<table>
<thead>
<tr>
<th>AGENT</th>
<th>COMMENTS</th>
<th>ADVERSE EFFECTS</th>
<th>DOSAGE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chantix™ (varenicline)*</td>
<td>Consider adjusting dosage in patients with severe renal impairment or in patients undergoing hemodialysis</td>
<td>Suicidal ideation, nausea, trouble sleeping, abnormal/vivid/strange dreams</td>
<td>Days 1 – 3: 0.5 mg qd Days 4 – 7: 0.5 mg bid Week 2 – 12: 1 mg bid Begin treatment 1 week prior to quit date</td>
<td>Maintenance up to 6 months</td>
</tr>
<tr>
<td>Sustained release bupropion*</td>
<td>Contraindicated in patients with a history of eating disorders, seizures, concomitant use of another bupropion product, or monoamine oxidase inhibitor (MAOI) use in the last 14 days</td>
<td>Insomnia, dry mouth</td>
<td>150 mg every morning for 3 days; then 150 mg twice daily Begin treatment 1 to 2 weeks prior to quit date.</td>
<td>7 to 12 weeks Maintenance up to 6 months</td>
</tr>
</tbody>
</table>

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Refer to the Food and Drug Administration (FDA) package insert to obtain a complete list of precautions, warnings, contraindications and side effects. Obtain psychiatric history prior to prescribing varenicline or bupropion and observe for signs/symptoms of a worsening psychiatric condition.

*Available by prescription

REFERENCES


We are committed to serving the healthcare needs of our members. To assist individuals diagnosed with chronic diseases or who are pregnant, we offer the SuperWell® Disease and Maternity Management Program. The program helps pregnant members and those with chronic conditions to better understand and manage their condition by providing specially trained health coaches who offer structured education and support. In addition, health coaches work with the member to identify ways to avoid potential complications while stressing prescribed treatment plan compliance. Members benefit from routine monitoring by their health coach with program emphasis on improving a member’s overall well-being.

**Programs**
We currently offer the SuperWell Disease and Maternity Management Program for eligible members who are pregnant or those diagnosed with one or more of the following conditions:

- Congestive heart failure
- Chronic obstructive pulmonary disease
- Diabetes
- Coronary artery disease
- Asthma
- Chronic pain conditions
- Depression

For more information or to enroll a member, please call 800.861.4826, or visit one of our Web sites, MedMutual.com, ConsumersLife.com or CarolinaCarePlan.com.