Treatment of Stable Chronic Obstructive Pulmonary Disease: the GOLD Guidelines

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Chronic obstructive pulmonary disease (COPD) is a common problem in primary care. COPD is diagnosed with spirometry only in clinically stable patients with a postbronchodilator forced expiratory volume in one second/forced vital capacity ratio of less than 0.70. All patients with COPD who smoke should be counseled about smoking cessation. Influenza and pneumococcal vaccinations are recommended for all patients with COPD. The Global Initiative for Chronic Obstructive Lung Disease assigns patients with COPD into four groups based on the degree of airflow restriction, symptom score, and number of exacerbations in one year. Pulmonary rehabilitation is recommended for patients in groups B, C, and D. Those in group A should receive a short-acting anticholinergic or short-acting beta₂ agonist for mild intermittent symptoms. For patients in group B, long-acting anticholinergics or long-acting beta₂ agonists should be added. Patients in group C or D are at high risk of exacerbations and should receive a long-acting anticholinergic or a combination of an inhaled corticosteroid and a long-acting beta₂ agonist. For patients whose symptoms are not controlled with one of these regimens, triple therapy with an inhaled corticosteroid, long-acting beta₂ agonist, and anticholinergic should be considered. Prophylactic antibiotics and oral corticosteroids are not recommended for prevention of COPD exacerbations. Continuous oxygen therapy improves mortality rates in patients with severe hypoxemia and COPD. Lung volume reduction surgery can improve survival rates in patients with severe, upper lobe–predominant COPD with heterogeneous emphysema distribution. (Am Fam Physician. 2013;88(10):655-663. Copyright © 2013 American Academy of Family Physicians.)

► See related editorial on page 650.


CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 643.

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Suspected COPD should be confirmed by spirometry in stable patients with a postbronchodilator forced expiratory volume in one second/forced vital capacity ratio of less than 0.70. Smoking cessation is recommended for all patients with COPD who smoke. Patients in GOLD group A should be treated with a short-acting anticholinergic or short-acting beta, agonist on an as-needed basis. Patients in GOLD group B should be treated with a long-acting anticholinergic or long-acting beta, agonist. Patients in GOLD group C or D should be treated with a long-acting anticholinergic or a combination of an inhaled corticosteroid and long-acting beta, agonist. Long-term oxygen therapy improves mortality rates in patients with severe hypoxemia and COPD.

**Table 1. Comparison of Recommendations for Treatment of Chronic Obstructive Pulmonary Disease**

| American College of Physicians/American College of Chest Physicians/American Thoracic Society/European Respiratory Society guideline | FEV₁ = 60% to 80% predicted: inhaled bronchodilators may be used |
| Global Initiative for Chronic Obstructive Lung Disease guideline | FEV₁ < 60% predicted: long-acting anticholinergic or long-acting beta₂ agonist recommended; combination therapy may be used (long-acting anticholinergic, long-acting beta₂ agonist, or inhaled corticosteroid) |
| National Institute for Health and Care Excellence guideline | Patient group A*: short-acting anticholinergic or short-acting beta₂ agonist as needed |
| | Patient group B*: long-acting anticholinergic or long-acting beta₂ agonist |
| | Patient group C or D*: long-acting anticholinergic or combination of long-acting beta₂ agonist plus inhaled corticosteroid |

**Clinical recommendation**

**Evidence rating**

**References**

| COPD = chronic obstructive pulmonary disease; GOLD = Global Initiative for Chronic Obstructive Lung Disease. |
| A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort. |

**FEV₁ = forced expiratory volume in one second.**

---See Figure 1 for definition of patient groups.

Information from references 3 through 5.

decisions, whereas the National Institute for Health and Care Excellence guideline focuses on symptoms of breathlessness and exacerbations. The GOLD guideline combines the subjective and objective components of COPD to classify severity and guide treatment recommendations.

**Diagnosis**

A diagnosis of COPD should be considered in patients with progressive dyspnea, chronic cough, or increased sputum production with risk factors (e.g., smoking). COPD can be diagnosed with spirometry only in stable patients (i.e., those not experiencing an acute exacerbation of symptoms) with a postbronchodilator FEV₁/forced vital capacity ratio of less than 0.70.¹ The diagnosis of COPD and interpretation of spirometry results have been reviewed previously.⁶,⁷

**Assessment**

GOLD classifies persons with COPD into four groups based on the severity of disease, as assessed by the following criteria: the degree of airflow restriction, a patient symptom score, and the number of exacerbations in one year (Figure 1).⁸ This grading system uses objective spirometry data and subjective symptoms because the degree of airflow restriction does not always correlate well with symptoms.⁹ The degree of airflow restriction is graded as mild, moderate, severe, or very severe (Table 2).⁸ Persons with mild or moderate airflow restriction are assigned to group
A or B, whereas those with severe or very severe airflow restriction are assigned to group C or D.

COPD symptoms are assessed subjectively using one of two validated patient symptom questionnaires. Because $FEV_1$ does not necessarily correlate with patient symptoms, and because improvement of a patient’s health status and reduction in symptoms are the goals of treatment, the inclusion of symptom questionnaires allows for the diagnostic assessment to match treatment goals, similar to the guidelines from the National Institute for Health and Care Excellence. GOLD recommends the use of the COPD Assessment Test (CAT) or the modified Medical Research Council Dyspnea Scale (mMRC, Table 3). The CAT is available at http://www.catestonline.org/(eFigure A), and the CAT and the mMRC are available in the smartphone app COPD Pocket Consultant Guide (http://bit.ly/1aTrkIs). Patients with a CAT score less than 10 or an mMRC score of 0 or 1 are assigned to group A or C. Those with a CAT score of 10 or more or an mMRC score of 2 or more are assigned to group B or D.

The third component used to determine the GOLD group is the number of COPD exacerbations in one year. GOLD defines an exacerbation as an acute event characterized by worsening of respiratory symptoms beyond normal day-to-day variations that leads to a change in medication. Exacerbations are associated with higher mortality. Patients with no or one exacerbation per year are assigned to group A or B, and those with two or more are assigned to group C or D. If there is a discrepancy when all three components are considered, the patient should be assigned to the higher-risk group.

Patients with COPD should be reassessed every two to three months. Symptom questionnaires (e.g., CAT, mMRC), smoking cessation (if applicable), and exacerbation history should be reviewed. Repeat spirometry is recommended on a yearly basis.

### Table 2. Classification of Severity of Airflow Limitation in Chronic Obstructive Pulmonary Disease*

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Spirometric classification</th>
<th>Exacerbations per year</th>
<th>mMRC score</th>
<th>CAT score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Low risk, less symptoms</td>
<td>$GOLD 1$ or $2$</td>
<td>$\leq 1$</td>
<td>$0$ or $1$</td>
</tr>
<tr>
<td>B</td>
<td>Low risk, more symptoms</td>
<td>$GOLD 1$ or $2$</td>
<td>$\geq 2$</td>
<td>$\geq 10$</td>
</tr>
<tr>
<td>C</td>
<td>High risk, less symptoms</td>
<td>$GOLD 3$ or $4$</td>
<td>$\geq 2$</td>
<td>$0$ or $1$</td>
</tr>
<tr>
<td>D</td>
<td>High risk, more symptoms</td>
<td>$GOLD 3$ or $4$</td>
<td>$\geq 2$</td>
<td>$\geq 2$</td>
</tr>
</tbody>
</table>

When assessing risk, choose the highest risk according to GOLD grade or exacerbation history. One or more hospitalizations for COPD exacerbations should be considered high risk.

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**Figure 1. Combined assessment of COPD. (CAT = COPD Assessment Test; COPD = chronic obstructive pulmonary disease; GOLD = Global Initiative for Chronic Obstructive Lung Disease; mMRC = modified Medical Research Council Dyspnea Scale.)**

COPD treatment is guided by the patient group assignment. As disease severity increases, long-acting inhalers and combination therapies are added to provide additional symptom control and reduce the risk of exacerbations.

SMOKING CESSATION
Patients who smoke should be assisted with smoking cessation through counseling and effective medications.14,15 The American Academy of Family Physicians’ Ask and Act Tobacco Cessation Program provides online resources for physicians and patients (http://bit.ly/1fV71eZ).

IMMUNIZATIONS
Influenza vaccination reduces COPD exacerbations and is recommended yearly.16 The Centers for Disease Control and Prevention recommends pneumococcal vaccination for all adults 19 years and older who have chronic lung disease, including COPD. However, a meta-analysis of seven studies did not show a decrease in pneumonia rates, hospital admissions, or emergency department visits in patients with COPD who received the pneumococcal vaccine.17

PULMONARY REHABILITATION
Pulmonary rehabilitation has been shown to improve exercise tolerance, reduce dyspnea, and improve health-related quality of life in patients similar to those in GOLD groups B through D.18

INHALED MEDICATIONS
For patients in group A, a short-acting anticholinergic (e.g., ipratropium [Atrovent HFA]) or short-acting beta2 agonist (e.g., albuterol, levalbuterol [Xopenex HFA], pirbuterol [Maxair Autohaler]) is recommended on an as-needed basis for mild intermittent symptoms. A meta-analysis of 13 studies found that short-acting beta2 agonists improved lung function, dyspnea, and fatigue, and decreased breathlessness compared with placebo.19 A 2006 Cochrane review that included 3,912 patients showed a small benefit in quality of life and lung function in those receiving ipratropium compared with albuterol.20 Combination therapy with scheduled albuterol and ipratropium has been shown to increase FEV1, but does not affect patient symptom scores.21 It is not known if as-needed dosing is more or less effective than scheduled administration.

For patients in group B, long-acting inhaled medications should be used. Options include long-acting anticholinergics (e.g., tiotropium [Spiriva], aclidinium [Tudorza Pressair]) or long-acting beta2 agonists (e.g., arformoterol [Brovana], formoterol [Foradil], indacaterol [Arcapta], salmeterol [Serevent Diskus]). Tiotropium has been shown to improve quality-of-life scores, with a number needed to treat of 14 to prevent one exacerbation and 30 to prevent one hospitalization over one year.22 If tiotropium is prescribed, patients should be switched from ipratropium or ipratropium/albuterol (Combivent) to albuterol alone as short-acting rescue medication.

Long-acting beta2 agonists reduce exacerbation risk and improve FEV1, and daily symptom scores.23 A randomized, double-blind trial of 6,112 patients with moderate to severe COPD showed that salmeterol improved FEV1 and decreased exacerbation risk, but did not reduce mortality.24 Indacaterol is a once-daily long-acting beta2 agonist that improves FEV1 and reduces rescue use of albuterol.25 In patients with comorbid asthma or an unclear diagnosis, monotherapy with a long-acting beta2 agonist is contraindicated because it may increase cardiovascular mortality.26

Tiotropium reduces exacerbations and COPD-related hospitalizations compared with long-acting beta2 agonists, but does not affect mortality.27 For patients whose symptoms are not controlled with tiotropium or a long-acting beta2 agonist alone, a combination of tiotropium and a long-acting beta2 agonist is recommended based on short-term outcomes of improved symptom scores and higher FEV1.28,29

A 2008 meta-analysis found an association between the use of inhaled anticholinergics (ipratropium and tiotropium) and cardiovascular mortality in patients

<table>
<thead>
<tr>
<th>Score</th>
<th>Description of breathlessness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>I get breathless only with strenuous exercise.</td>
</tr>
<tr>
<td>1</td>
<td>I get short of breath when hurrying on level ground or walking up a slight hill.</td>
</tr>
<tr>
<td>2</td>
<td>On level ground, I walk slower than other people my age because of breathlessness, or I have to stop for breath when walking at my own pace.</td>
</tr>
<tr>
<td>3</td>
<td>I stop for breath after walking about 100 yards or after a few minutes on level ground.</td>
</tr>
<tr>
<td>4</td>
<td>I am too breathless to leave the house, or I am breathless when dressing.</td>
</tr>
</tbody>
</table>

Information from reference 11.
with COPD. However, a subsequent randomized, double-blind trial with 5,993 patients demonstrated decreased cardiovascular and overall mortality with tiotropium after four years of follow-up. A large cohort study of U.S. veterans showed an increased risk of cardiovascular events with the use of ipratropium in the previous six months. Given this association, ipratropium should be avoided in patients with cardiovascular disease.

Patients in GOLD groups C and D should be prescribed a long-acting anticholinergic or a combination of an inhaled corticosteroid and long-acting beta2 agonist. Compared with tiotropium alone, fluticasone/salmeterol (Advair) improved daily symptom scores and decreased mortality (number needed to treat = 40), but increased the incidence of pneumonia (number needed to harm = 25) and did not change the rate of exacerbations. Patients with poorly controlled symptoms should start triple therapy with an inhaled corticosteroid, long-acting anticholinergic, and long-acting beta2 agonist. The data for triple therapy are inconsistent, with studies showing improvement in lung function and symptom scores but conflicting results regarding reduction in exacerbation rates compared with tiotropium alone. A summary of initial treatment options and common medications is presented in Table 4 and Table 5, and patient instructions for inhaler use are reviewed in eFigure B.

### Table 4. Initial Pharmacologic Management of Chronic Obstructive Pulmonary Disease

<table>
<thead>
<tr>
<th>Patient group*</th>
<th>First choice</th>
<th>Second choice</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Short-acting anticholinergic as needed (e.g., ipratropium [Atrovent HFA]) or Short-acting beta2 agonist (e.g., albuterol) as needed</td>
<td>Long-acting anticholinergic (e.g., tiotropium [Spiriva]) or Long-acting beta2 agonist (e.g., salmeterol [Serevent Diskus]) or Short-acting beta2 agonist and short-acting anticholinergic</td>
<td>Theophylline</td>
</tr>
<tr>
<td>B</td>
<td>Long-acting anticholinergic or Long-acting beta2 agonist</td>
<td>Long-acting anticholinergic and long-acting beta2 agonist</td>
<td>Short-acting anticholinergic as needed and/or short-acting beta2 agonist as needed Theophylline</td>
</tr>
<tr>
<td>C</td>
<td>Inhaled corticosteroid (e.g., fluticasone [Flovent]) and long-acting beta2 agonist or Long-acting anticholinergic</td>
<td>Long-acting anticholinergic and long-acting beta2 agonist</td>
<td>Phosphodiesterase-4 inhibitor (e.g., roflumilast [Daliresp]) Short-acting anticholinergic as needed and/or short-acting beta2 agonist as needed Theophylline</td>
</tr>
<tr>
<td>D</td>
<td>Inhaled corticosteroid and long-acting beta2 agonist or Long-acting anticholinergic</td>
<td>Inhaled corticosteroid and long-acting anticholinergic or Inhaled corticosteroid and long-acting beta2 agonist and long-acting anticholinergic or Inhaled corticosteroid and long-acting beta2 agonist and phosphodiesterase-4 inhibitor or Long-acting anticholinergic and long-acting beta2 agonist or Long-acting anticholinergic and phosphodiesterase-4 inhibitor</td>
<td>Short-acting anticholinergic as needed and/or short-acting beta2 agonist as needed Theophylline</td>
</tr>
</tbody>
</table>

*—See Figure 1 for definition of patient groups.

Information from reference 8.
Table 5. Medications Commonly Used for Treating Chronic Obstructive Pulmonary Disease

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
<th>Cost*</th>
<th>Potential adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-acting anticholinergic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ipratropium (Atrovent HFA)</td>
<td>Two puffs every six hours as needed</td>
<td>$236 per inhaler</td>
<td>Anaphylaxis, angioedema, bronchospasm (paradoxical), glaucoma (narrow-angle), hypereffect</td>
</tr>
<tr>
<td><strong>Short-acting beta, agonists</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuterol</td>
<td>Two puffs every four to six hours</td>
<td>$33 per inhaler (generic)</td>
<td>Angina, angioedema, arrhythmias, bronchospasm (paradoxical), hypertension, hypokalemia, QT-interval prolongation, seizures</td>
</tr>
<tr>
<td>Levalbuterol (Xopenex HFA)</td>
<td>Two puffs every four to six hours</td>
<td>$55 per inhaler</td>
<td>Anaphylaxis, arrhythmias, bronchospasm (paradoxical), hypertension, hypokalemia, metabolic acidosis, paresthesia, syncope</td>
</tr>
<tr>
<td>Pirbuterol (Maxair Autohaler)</td>
<td>One or two puffs every four to six</td>
<td>$450 per inhaler</td>
<td>Arrhythmias, bronchospasm (paradoxical), hypokalemia, reactions, seizures</td>
</tr>
<tr>
<td><strong>Long-acting anticholinergics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aclidinium (Tudorza Pressair)</td>
<td>One dose twice per day</td>
<td>$237 for 60 doses</td>
<td>Atrioventricular block, bronchospasm (paradoxical), cardiopulmonary arrest, heart failure, hypereffect</td>
</tr>
<tr>
<td>Tiotropium (Spiriva)</td>
<td>One dose per day</td>
<td>$282 for 30 doses</td>
<td>Angioedema, bronchospasm (paradoxical), glaucoma, hypereffect</td>
</tr>
<tr>
<td><strong>Long-acting beta, agonists</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arformoterol (Brovana)</td>
<td>15 mcg twice per day (nebulizer only)</td>
<td>$249 for 30 vials (15 mcg per vial)</td>
<td>Arrhythmias, bronchospasm (paradoxical), hypokalemia, lung cancer</td>
</tr>
<tr>
<td>Formoterol (Foradil)</td>
<td>One dose every 12 hours</td>
<td>$200 for 60 doses</td>
<td>Anaphylaxis, arrhythmias, asthma exacerbation, atrial fibrillation, bronchospasm (paradoxical), hypertension, hypokalemia, metabolic acidosis</td>
</tr>
<tr>
<td>Indacaterol (Arcapta)</td>
<td>One capsule per day</td>
<td>$187 for 30 capsules</td>
<td>Arrhythmias, bronchospasm (paradoxical), hypokalemia, seizure disorder</td>
</tr>
<tr>
<td>Salmeterol (Serevent Diskus)</td>
<td>One puff every 12 hours</td>
<td>$205 per inhaler</td>
<td>Anaphylaxis, angioedema, arrhythmias, bronchospasm (paradoxical), fever, glaucoma, hypokalemia, reaction, hypertension, hypokalemia, paresthesia, pelvic inflammatory disease, vasculitis</td>
</tr>
<tr>
<td><strong>Inhaled corticosteroids</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beclomethasone (Qvar, 40 to 80 mcg per puff)</td>
<td>40 to 320 mcg twice per day</td>
<td>$176 per inhaler</td>
<td>Anaphylaxis, angioedema, bronchospasm, hypokalemia, reaction, glaucoma, suicidal ideation</td>
</tr>
<tr>
<td>Budesonide (Pulmicort, 90 to 180 mcg per puff)</td>
<td>180 to 360 mcg twice per day</td>
<td>$120 to $135 per inhaler, depending on dosage</td>
<td>Adrenal insufficiency, angioedema, benign intracranial hypertension, bronchospasm, glaucoma, hypokalemia, reaction, hypertension, hypokalemia, leukocytosis</td>
</tr>
<tr>
<td>Ciclesonide (Alvesco, 80 to 160 mcg per puff)</td>
<td>80 to 160 mcg twice per day</td>
<td>$188 per inhaler</td>
<td>Angioedema, bronchospasm (paradoxical), elevated liver enzymes, increased intraocular pressure</td>
</tr>
</tbody>
</table>

ORAL MEDICATIONS

Theophylline can be added or used as an alternative in patients whose symptoms are not controlled with triple therapy or who cannot afford inhaler therapy. Theophylline requires drug level monitoring and improves lung function parameters, but has uncertain effects on symptoms and exacerbations.36

Roflumilast (Daliresp), an oral phosphodiesterase-4 inhibitor approved for use in patients with COPD and chronic bronchitis symptoms, can also be added to long-acting bronchodilators in patients in group C or D. Studies have demonstrated improvement in FEV₁ but inconsistent results regarding reduction of exacerbation rates.37,38

Prophylactic antibiotic therapy is not recommended to prevent COPD exacerbations. Although erythromycin and azithromycin (Zithromax) have shown a reduced risk of exacerbations,39,40 there are insufficient data about the effects on macrolide resistance and long-term adverse effects to recommend their use.

Oral corticosteroids do not improve quality of life or reduce exacerbation rates, and are not recommended for patients with stable COPD.41

OXYGEN

Long-term oxygen therapy is recommended for patients with COPD and severe hypoxemia (oxygen saturation...
Table 6. BODE Index for Predicting Mortality in Patients with Chronic Obstructive Pulmonary Disease

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index (kg per m²)</td>
<td>0</td>
</tr>
<tr>
<td>Obstruction: percentage of predicted FEV₁</td>
<td>1</td>
</tr>
<tr>
<td>Dyspnea: mMRC score (Table 3)</td>
<td>2</td>
</tr>
<tr>
<td>Exercise: distance walked in six minutes (meters)</td>
<td>3</td>
</tr>
</tbody>
</table>

NOTE: Scores range from 0 to 10; higher scores indicate a greater risk of death. Patients with scores of 6 or greater meet criteria for referral for lung transplantation.

FEV₁ = forced expiratory volume in one second; mMRC = modified Medical Research Council Dyspnea Scale.


Surgery

Lung volume reduction surgery improves five-year survival rates in patients with severe COPD and heterogeneous distribution of emphysema with upper lobe predominance. Conversely, patients with severe COPD and FEV₁ less than 20%, homogenous emphysema, or low carbon monoxide diffusion capacity have increased 30-day mortality after lung volume reduction surgery. Lung transplantation may improve quality of life and functional capacity in selected patients with severe COPD. Criteria for referral include a score greater than 5 on the BODE (body mass index, obstruction, dyspnea, exercise) Index (Table 6).

Data Sources: A PubMed search was completed in Clinical Queries using the key terms COPD treatment and COPD therapy. The search included meta-analyses, randomized controlled trials, clinical trials, and reviews. Also searched were EBSCO Host Academic Search Premier, DynaMed, Essential Evidence Plus, and UpToDate. Search Date: October 2012.

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Reprints are not available from the authors.

REFERENCES

13. Garcia-Aymerich J, Serra Pons I, Mannino DM, Maas AK, Miller DP, Davis
How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy 0 1 2 3 4 5 I am very sad

I never cough 0 1 2 3 4 5 I cough all the time

I have no phlegm (mucus) in my chest at all 0 1 2 3 4 5 My chest is completely full of phlegm (mucus)

My chest does not feel tight at all 0 1 2 3 4 5 My chest feels very tight

When I walk up a hill or one flight of stairs I am not breathless 0 1 2 3 4 5 When I walk up a hill or one flight of stairs I am very breathless

I am not limited doing any activities at home 0 1 2 3 4 5 I am very limited doing activities at home

I am confident leaving my home despite my lung condition 0 1 2 3 4 5 I am not at all confident leaving my home because of my lung condition

I sleep soundly 0 1 2 3 4 5 I don’t sleep soundly because of my lung condition

I have lots of energy 0 1 2 3 4 5 I have no energy at all

COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmitKline group of companies. © 2009 GlaxoSmithKline group of companies. All rights reserved.

Last Updated: February 24, 2012

eFigure A. COPD Assessment Test.
The Asthma Society recommends that anyone, of any age, using an MDI should consider using a spacer. Spacers are available for purchase from pharmacies.

To use your MDI with a spacer:

1. Shake the inhaler well before use (three or four shakes)
2. Remove the cap from your inhaler, and from your spacer, if it has one
3. Put the inhaler into the spacer
4. Breathe out, away from the spacer
5. Bring the spacer to your mouth, put the mouthpiece between your teeth and close your lips around it
6. Press the top of your inhaler once
7. Breathe in slowly until you’ve taken a full breath
   If you hear a whistle sound, you are breathing in too fast
   Slowly breathe in
8. Hold your breath for about ten seconds, then breathe out

© Asthma Society of Canada

eFigure B. Directions for appropriate inhaler use. (MDI = metered-dose inhaler.)
MDI (puffer)

You should follow the instructions packaged with your medication. The following is one way to use your inhaler.

To use your MDI without a spacer:

1. Shake the inhaler well before use (three or four shakes)
2. Remove the cap
3. Breathe out, away from your inhaler
4. Bring the inhaler to your mouth. Place it in your mouth between your teeth and close your mouth around it.
5. Start to breathe in slowly. Press the top of your inhaler once and keep breathing in slowly until you’ve taken a full breath
6. Remove the inhaler from your mouth, and hold your breath for about ten seconds, then breathe out

If you need a second puff, wait 30 seconds, shake your inhaler again, and repeat steps 3-6.

Always write down the number of puffs you’ve taken so that you can anticipate when you need to refill your prescription.

Store all MDI’s at room temperature.

continued
To use your DISKUS® do the following for one dose:

1. Open your DISKUS®: hold it in the palm of your hand, put the thumb of your other hand on the thumb grip and push the thumb grip until it clicks into place.
2. Slide the lever away from you as far as it will go to get your medication ready.
3. Breathe out away from the device.
4. Place the mouthpiece gently in your mouth and close your lips around it.
5. Breathe in deeply until you’ve taken a full breath.
6. Remove the DISKUS® from your mouth.
7. Hold your breath for about ten seconds, then breathe out slowly.

Always check the number in the dose counter window to see how many doses are left.

Do not use a spacer with the DISKUS®, Turbuhaler® or any other dry powder inhaler.

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eFigure B. Directions for appropriate inhaler use.
To use your Turbuhaler®, do the following for one dose:

1. Unscrew the cap and take it off. Hold the inhaler upright.
2. Twist the coloured grip of your Turbuhaler® as far as it will go, then twist it all the way back. You’ve done it right when you hear a *click*.
3. Breathe out away from the device.
4. Put the mouthpiece between your teeth, and close your lips around it. Breathe in forcefully and deeply through your mouth.
5. Remove the Turbuhaler® from your mouth before breathing out.
6. Always check the number in the dose counter window under the mouthpiece to see how many doses are left. For the Turbuhalers® that do not have a dose counter window, check the window for a red mark, which means your medication is running out. When finished, replace the cap.

*Symbicort®: For first time use, hold the inhaler upright, turn the grip as far as it will go in one direction and then turn it back again as far as it will go in the opposite direction. Repeat this procedure twice.