

Living with Chronic Obstructive Pulmonary Disease (COPD)

Quick Reference Guide

Elements of a COPD treatment plan^{1,2}

Smoking Cessation	Quitting tobacco has the greatest impact on slowing COPD progression and improves mortality. (See Tobacco Use Disorder (sharepoint.com) for more information).
Vaccines	Influenza vaccination reduces COPD exacerbations and hospitalizations. Pneumococcal vaccinations reduce the rate of community-acquired pneumonia in patients with COPD. Routine vaccinations are recommended for patients with COPD as they are for the general population and include Zoster, tetanus/diphtheria/pertussis (Tdap), COVID-19, and respiratory syncytial virus (RSV).
Pharmacotherapy	Pharmacotherapy reduces symptoms, frequency, and severity of COPD exacerbations, and improves exercise tolerance and health status.
Non-Pharmacologic	Proper nutrition, exercise, and use of pulmonary rehabilitation therapies (if criteria are met) help improve quality of life and reduce exacerbations.
Treating Other Comorbidities	The most common cause of death in Veterans with COPD is cardiovascular disease. Addressing this, along with other common comorbidities, like depression, lung cancer, obesity, and osteoporosis, is vital to the overall health of patients with COPD.

Vaccines in patients 65 years and older with COPD^{*1-3}

Vaccine	Why in COPD	Adverse Effects	Scheduling
Influenza (IIV4 and RIV4)	Reduces incidence of lower respiratory infections and death	Injection site reactions, myalgia, headache, diarrhea	1 dose annually Age 65+ should get one of the following: High-Dose quadrivalent vaccine (HD-IIV4) Adjuvanted quadrivalent vaccine (aIIV4) Recombinant quadrivalent vaccine (RIV4)

*For more information on CDC vaccine guidance see Advisory Committee on Immunization Practices: <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>. #If immunocompromised give PPSV23 > 8 weeks after PCV15.

Vaccines in patients 65 years and older with COPD*1-3

Vaccine	Why in COPD	Adverse Effects	Scheduling
Pneumococcal vaccination (PCV20 alone OR PCV15 + PPSV23)	Reduces incidence of community-acquired pneumonia	Fatigue, loss of appetite, injection site reactions, fever, headache	<p>No prior vaccination</p> <ul style="list-style-type: none"> • PCV20 or • PCV15 + PPSV23 > one year after PCV15[#] <p>Prior PPSV23 only at any age</p> <ul style="list-style-type: none"> • PCV20 > 1 year after PPSV23 or • PCV15 > 1 year after PPSV23 <p>Prior PCV13 only at any age</p> <ul style="list-style-type: none"> • PCV20 > 1 year after PCV13 or • PPSV23 > 1 year after PCV13[#] <p>Prior PCV13 at any age and PPSV23 at < 65 years</p> <ul style="list-style-type: none"> • PCV20 > 5 years after last PPSV23 or • PPSV23 > 5 years after previous PPSV23 <p>Complete series: PCV13 at any age and PPSV23 ≥ 65 years</p> <ul style="list-style-type: none"> • Consider PCV20 > 5 years after series
Zoster (RZV)	Increased risk of shingles	Injection site reactions, myalgia, headache, nausea, shivering	Ages 50+: 2 doses given 2–6 months apart
Tetanus, Diphtheria (Td), Pertussis (Tdap)	Increased severity of pertussis infection	Injection site reactions, GI upset, fatigue, headache	1 dose Tdap, then Td OR Tdap booster every 10 years
SARS-CoV-2 (COVID-19)	Reduces risk of contracting severe COVID requiring hospitalization	Injection site reactions, fatigue, headache, myalgia, chills, fever, nausea	COVID-19 bivalent vaccination is recommended for adults with COPD. Refer to CDC recommendations for guidance.
Respiratory Syncytial Virus (RSV)	Reduces risk of symptomatic RSV-associated lower respiratory track disease	Injection site reactions, fatigue, fever, headache, nausea, diarrhea and muscle or joint pain	Adults ≥ 60 years old using shared clinical decision making

*For more information on CDC vaccine guidance see Advisory Committee on Immunization Practices: <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>. [#]If immunocompromised give PPSV23 > 8 weeks after PCV15.

Vaccines in patients 19–64 years old with COPD^{1–3}

Vaccine	Why in COPD	Adverse Effects	Scheduling
Influenza (IIV4 and RIV4)	Reduces incidence of lower respiratory infections and death	Injection site reactions, myalgia, headache, diarrhea	1 dose annually
Pneumococcal vaccination (PCV20 alone OR PCV15 + PPSV23)	Reduces incidence of community-acquired pneumonia	Fatigue, loss of appetite, injection site reactions, fever, headache	<p>No prior vaccination</p> <ul style="list-style-type: none"> • PCV20 or • PCV15 + PPSV23 > 1 year after PCV15 <p>Prior PPSV23 only at any age</p> <ul style="list-style-type: none"> • PCV20 > 1 year after PPSV23 or • PCV15 > 1 year after PPSV23 <p>Prior PCV13 only at any age</p> <ul style="list-style-type: none"> • PCV20 > 1 year after PCV13 or • PPSV23 > 1 year after PCV13 • Review recommendations again at age 65 years <p>Prior PCV13 and PPSV23</p> <ul style="list-style-type: none"> • No additional vaccine needed • Review recommendations again at age 65 years
Zoster (RZV)	Increased risk of shingles	Injection site reactions, myalgia, headache, nausea, shivering	Ages ≥ 50 years: 2 doses given 2–6 months apart
Tetanus, Diphtheria (Td), Pertussis (Tdap)	Increased severity of pertussis infection	Injection site reactions, GI upset, fatigue, headache	1 dose Tdap, then Td OR Tdap booster every 10 years
SARS-CoV-2 (COVID-19)	Reduces risk of contracting severe COVID requiring hospitalization	Injection site reactions, fatigue, headache, myalgia, chills, fever, nausea	COVID-19 bivalent vaccination is recommended for adults with COPD. Refer to CDC recommendations for guidance.

*For more information on CDC vaccine guidance see Advisory Committee on Immunization Practices: <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>.

Vaccines in patients 19–64 years old with COPD^{1–3}

Vaccine	Why in COPD	Adverse Effects	Scheduling
Respiratory Syncytial Virus (RSV)	Reduces risk of symptomatic RSV-associated lower respiratory disease	Injection site reactions, fatigue, fever, headache, nausea, diarrhea and muscle or joint pain	Adults ≥ 60 years old using shared clinical decision making

*For more information on CDC vaccine guidance see Advisory Committee on Immunization Practices: <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>.

Comparing VA/DoD Clinical Practice Guidelines to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) Report

VA/DoD Clinical Practice Guidelines are based on a systematic review of both clinical and epidemiological evidence developed by multidisciplinary experts. The guidelines are designed to provide information and assist in decision making but are not intended to define a standard of care.

VA/DoD Clinical Practice Guidelines 2021 ⁴	GOLD Report 2024 ¹
Step 1: LAMA tiotropium (Spiriva [®])	Group A: LAMA or LABA* mMRC 0–1 or CAT < 10 and 0–1 moderate exacerbation**
Step 2: LAMA + LABA tiotropium + olodaterol (Stiolto [®])	Group B: LAMA + LABA mMRC > 2 or CAT > 10 and 0–1 moderate exacerbation**
Step 3: LAMA + LABA + ICS tiotropium + olodaterol (Stiolto [®]) + mometasone HFA (Asmanex [®])	Group E: LAMA + LABA Consider LAMA + LABA + ICS with history of asthma, blood eosinophils ≥ 300, or frequent and severe exacerbations Any score on mMRC or CAT and > 2 moderate exacerbations or > 1 leading to hospitalization

*LAMA or LABA for patients with persistent symptoms. SAMA or SABA can be used instead for Group A if only occasional dyspnea. **Not leading to hospitalization.

Choose an Appropriate Inhaler Device for the Veteran^{1,4,5}

Consider the following to ensure the Veteran can use the device correctly:

- Cognitive ability, number of different device types and number of steps required to prepare
- Manual dexterity and force needed to load or actuate
- Inspiratory flow required for use
- Time taken to deliver the drug
- Size and portability
- Cleaning and maintenance

?
Did You Know

Randomized controlled trials have not identified superiority of one device and there is no evidence for superiority of nebulizers.⁶ Clinicians should visually check inhalation technique with Veterans. If in doubt or the Veteran cannot inhale forcefully enough through a DPI device, the clinician should switch to an MDI (+/- spacer) or an SMI depending on drug availability and patient characteristics.^{1,4}

Figure 1.
Meter Dose Inhaler (MDI +/-) or Soft Mist Inhaler (SMI) compared to Dry Powder Inhaler (DPI)

Requires slow and deep inspiration

Meter Dose Inhaler



To learn how to use a metered dose inhaler watch this video:
[Instructional Video in Veteran’s Health Library for MDI](#)

Soft Mist Inhaler



To learn how to use a soft mist inhaler (e.g., Respimat) watch this video:
[Instructional Video in Veteran’s Health Library for SMI \(Respimat\)](#)

compared to:

Requires forceful inspiration

Dry Powder Inhaler



To learn how to use a dry powder inhaler (e.g., Wixela Inhub) watch this video: [Instructional Video in Veteran’s Health Library for Wixela Inhub](#)

Why Use Long-acting Bronchodilators Over Short-acting Bronchodilators for Persistent Symptoms^{7,8}?

Long-acting Bronchodilators

- Improve lung function
- Improve dyspnea
- Improve health status
- Reduce exacerbations

Short-acting Bronchodilators

- Improve dyspnea
- Temporarily improve lung function

Rescue inhalers (use only for intermittent symptoms)^{1,2,4,9-11}

Inhaler Formulations	Cost Comparison	Duration of Action	Device and Dosing	Comments
Short-Acting Beta2 Agonists (SABA)				
Albuterol (Proair®, Proventil®, Ventolin HFA®)	\$	4–6 hours	MDI, DPI: 2 inhalations every 4–6 hours as needed Nebulizer*: 2.5 mg every 6–8 hours as needed	Monitor for sinus tachycardia, tremors, nervousness, and hypokalemia.
Levalbuterol (Xopenex HFA®)	\$	6–8 hours	MDI: 2 inhalations every 4–6 hours as needed Nebulizer*: 0.63 mg every 6–8 hours as needed (3 times per day)	
Short-Acting Muscarinic Antagonist (SAMA)				
Ipratropium (Atrovent HFA®)	\$	6–8 hours	MDI: 2 inhalations up to 4 times per day Nebulizer*: 500 mcg every 6–8 hours	Monitor for dry mouth and urinary symptoms. Increased side effects in combination with LAMAs.
Combination SABA/SAMA				
Albuterol/ Ipratropium (Combivent Respimat®)	\$	6–8 hours	SMI: 1 inhalation up to 4 times daily Nebulizer*: one 3 mL vial 4 times daily	Superior to either medication alone. Monitor for side effects of individual components.

Formulary medications in **green**. Cost for 30-days supply: \$ = \$0-\$49; \$\$ = \$50-\$99, \$\$\$ = \$100-\$199, \$\$\$\$ = \$200+. *May be more convenient for patients who are acutely ill or patients unable to use inhaler devices; patients not responding may benefit from increased dosage. VA Formulary information at: <https://www.va.gov/formularyadvisor/>.

Maintenance inhalers^{1,2,4,6-13}

Inhaler Formulations	Cost Comparison	Duration of Action	Device and Dosing	Comments
Long-Acting Muscarinic Antagonist (LAMA)				
Tiotropium (Spiriva Respimat [®] , Spiriva HandiHaler [®])	\$	24 hours	DPI: 2 inhalations of contents of 1 capsule daily SMI: 2 inhalations once daily	Use as initial monotherapy Monitor for dry mouth, urinary symptoms and increased side effects in combination with SAMAs.
Umeclidinium (Incruse Ellipta [®])	\$\$\$\$	24 hours	DPI: 1 inhalation once daily	Use soft mist inhaler (e.g., Respimat [®]) as first line formulation due to ease of use.
Aclidinium (Tudorza Pressair [®])	\$\$\$\$	12 hours	DPI: 1 inhalation twice daily	
Glycopyrrolate (Lonhala Magnair [®])	\$\$\$\$	12–24 hours	Nebulizer: 25 mcg every 12 hours*	
Revefenacin (Yupelri [®])	\$\$\$\$	24 hours	Nebulizer: 175 mcg once daily*	
Long-Acting Beta Agonists (LABA)				
Olodaterol (Striverdi Respimat [®])	\$	24 hours	SMI: 2 inhalations once daily	Added to LAMA when combination therapy is indicated.
Salmeterol (Serevent Diskus [®])	\$\$\$\$	12 hours	DPI: 1 inhalation twice daily	Monitor for sinus tachycardia, tremors, and hypokalemia. <i>Do not use as monotherapy in patients with asthma. Asthma patients should also be using an inhaled corticosteroid (ICS).</i>
Arformoterol (Brovana [®])	\$-\$\$\$\$	12 hours	Nebulizer: 15 mcg every 12 hours*	
Formoterol (Perforomist [®])	\$\$\$\$	12 hours	Nebulizer: 20 mcg every 12 hours*	

Formulary medications in **green**. Cost for 30-days supply: \$ = \$0-\$49; \$\$ = \$50-\$99, \$\$\$ = \$100-\$199, \$\$\$\$ = \$200+. VA Formulary information at: <https://www.va.gov/formularyadvisor/>. *May be more convenient for patients who are acutely ill or patients unable to use inhaler devices.

Maintenance inhalers^{1,2,4,6-13}

Inhaler Formulations	Cost Comparison	Duration of Action	Device and Dosing	Comments
Inhaled Corticosteroid (ICS)				
Mometasone (<i>Asmanex Twisthaler</i> ®, <i>Asmanex HFA</i> ®)	\$	No broncho-dilation effects – dosing based on study dosing and varied drug half-lives	MDI: 2 inhalations twice daily DPI: 1–2 inhalations once to twice daily	Do not use as monotherapy in patients without asthma.
Ciclesonide (<i>Alvesco</i> ®)	\$-\$\$		MDI: 1–2 inhalations by mouth twice daily	
Fluticasone Furoate (<i>Arnuity Ellipta</i> ®)	\$\$\$		DPI: 1 inhalation once daily	Rinse mouth with water after use, do not swallow water.
Fluticasone Propionate (<i>Flovent Diskus</i> ®)	\$\$\$		MDI: 2 inhalations twice daily DPI: 1 inhalation twice daily	
Budesonide (<i>Pulmicort Flexhaler</i> ®)	\$\$\$		DPI: 2 inhalations twice daily	
Beclomethasone (<i>Qvar Redihaler</i> ®)	\$\$\$		MDI: 1 inhalation twice daily	

Formulary medications in **green**. Cost for 30-days supply: \$ = \$0-\$49; \$\$ = \$50-\$99, \$\$\$ = \$100-\$199, \$\$\$\$ = \$200+. VA Formulary information at: <https://www.va.gov/formularyadvisor/>. *May be more convenient for patients who are acutely ill or patients unable to use inhaler devices.

Combination maintenance inhalers^{1,2,4,6-13}

Inhaler Formulations	Cost Comparison	Duration of Action	Device and Dosing	Comments
Combination LAMA/LABA				
Tiotropium/ Olodaterol (<i>Stiolto Respimat</i> ®)	\$\$	24 hours	SMI: 2 inhalations once daily	Do not use with other LABAs or LAMAs.
Umeclidinium/ Vilanterol (<i>Anoro Ellipta</i> ®)	\$\$\$\$	24 hours	DPI: 1 inhalation once daily	
Glycopyrrolate/ Formoterol (<i>Bevespi Aerosphere</i> ®)	\$\$\$\$	12 hours	MDI: 2 inhalations twice daily	More cost-effective to use combination inhaler than 2 separate inhalers.
Aclidinium/ Formoterol (<i>Duaklir Pressair</i> ®)	\$\$\$\$	12–24 hours	DPI: 1 inhalation twice daily	

Formulary medications in **green**. Cost for 30-days supply: \$ = \$0-\$49; \$\$ = \$50-\$99, \$\$\$ = \$100-\$199, \$\$\$\$ = \$200+. VA Formulary information at: <https://www.va.gov/formularyadvisor/>.

Combination maintenance inhalers^{1,2,4,6-13}

Inhaler Formulations	Cost Comparison	Duration of Action	Device and Dosing	Comments
Combination LABA/ICS				
Salmeterol/Fluticasone <i>(Wixela Inhub®, Advair Diskus®, Advair HFA®)</i>	\$ Wixela \$\$ Advair Diskus \$\$\$\$ Advair HFA	12 hours	DPI: 1 inhalation twice daily MDI: 2 inhalations twice daily	Consider use in combination with LAMA when a cost-effective triple therapy is indicated. Monitor for side effects of individual components.
Formoterol/Mometasone <i>(Dulera MDI®)</i>	\$\$	12 hours	MDI: 2 inhalations twice daily	
Formoterol/Budesonide <i>(Symbicort MDI®)</i>	\$\$\$ - \$\$\$\$	12 hours	MDI: 2 inhalations twice daily	
Vilanterol/Fluticasone <i>(Breo Ellipta®)</i>	\$\$\$\$	24 hours	DPI: 1 inhalation once daily	
Combination LAMA/LABA/ICS				
Glycopyrrolate/Formoterol/Budesonide <i>(Breztri Aerosphere®)</i>	\$\$\$	12 hours	MDI: 2 inhalations twice daily	Consider when triple therapy is indicated. Using 2 devices (e.g., LAMA/LABA + ICS) is more cost effective. Monitor for side effects of individual components.
Meclidinium/Vilanterol/Fluticasone <i>(Trelegy Ellipta®)</i>	\$\$\$\$	24 hours	DPI: 1 inhalation once daily	

Formulary medications in **green**. Cost for 30-days supply: \$ = \$0-\$49; \$\$ = \$50-\$99, \$\$\$ = \$100-\$199, \$\$\$\$ = \$200+. VA Formulary information at: <https://www.va.gov/formularyadvisor/>.

Considerations for starting treatment with inhaled corticosteroids (ICS)^{1,12}

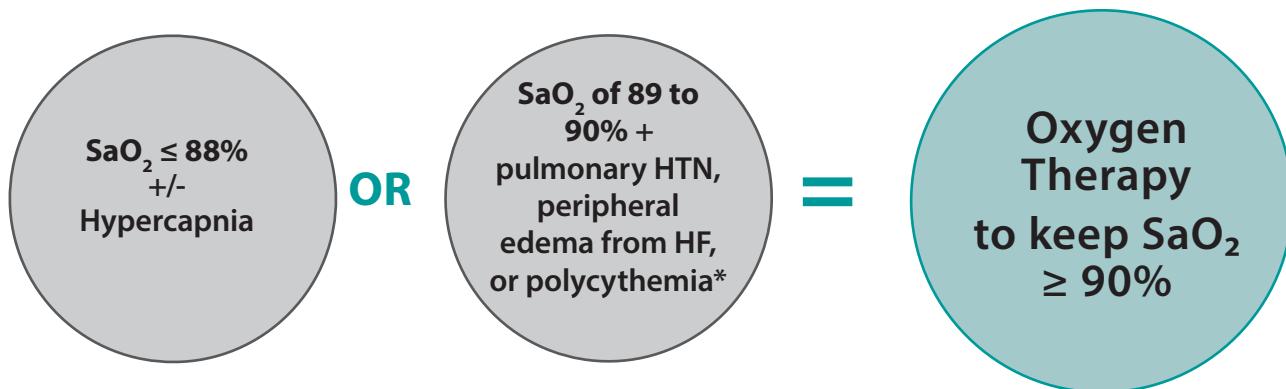
Encourage Use	Consider Use	Advise Against Use
<ul style="list-style-type: none"> History of asthma History of hospitalization(s) for exacerbations ≥ 2 moderate exacerbations of COPD/year Blood eosinophils > 300 cells/μL 	<ul style="list-style-type: none"> 1 moderate exacerbation of COPD/year Blood eosinophils 100–300 cells/μL 	<ul style="list-style-type: none"> Repeated pneumonia events Blood eosinophils < 100 cells/μL History of mycobacterial infection No moderate/severe exacerbations in the past 2 years

Note: Prior to adding ICS, patient should be appropriately using one or two long-acting bronchodilators.

Advanced Therapies

Oxygen Therapy^{1,4,14,15}

Using supplemental oxygen long term (> 15 hours a day) for patients with chronic respiratory failure increases survival in patients who also have severe chronic resting hypoxemia. Oxygen is indicated when oxygen saturation (SaO_2) decreases to $\leq 88\%$. Recheck SaO_2 in 60–90 days after starting oxygen therapy to determine if supplemental oxygen is effective and still indicated.



*Polycythemia defined as hematocrit > 55%. In patients with stable COPD and moderate resting or exercise-induced arterial desaturation, however, long-term oxygen does not prolong survival or time to first hospitalization or provide sustained benefit in health status, lung function, or 6-minute walk distance.

Anti-inflammatory medications^{1,2,4,9,10}

Phosphodiesterase-4 (PDE4) Inhibitor	
Dosing	Comments
<p>Roflumilast orally once daily</p> <p>Initiate at 250 mcg x 4 weeks then maintenance dose of 500 mcg once daily</p>	<p>Reserve for patients whose inhaler therapy has been optimized with FEV₁ < 50% and more than one exacerbation requiring systemic steroids, unscheduled healthcare contact, or hospitalization in the previous year. Avoid use in underweight patients. Prescribed only by a pulmonologist or designated expert.</p> <p>Monitor for nausea, diarrhea, abdominal discomfort, unexplained weight loss, insomnia, and headaches. Avoid use in patients with depression. May increase the risk of suicide.</p> <p>Extensive hepatic metabolism. Contraindicated in moderate to severe liver impairment. Monitor for drug interactions.</p>

VA formulary information and criteria for use of roflumilast is available at: <https://www.va.gov/formularyadvisor/>.

Chronic Antibiotics^{1,2,4,9,10}

Chronic Azithromycin	
Dosing	Comments
<p>Azithromycin</p> <p>250 mg by mouth once daily</p> <p>500 mg by mouth 3x weekly</p> <p>No data showing benefit beyond one year of treatment.</p>	<p>Indicated for patients on LAMA/LABA or LAMA/LABA/ICS with recurrent exacerbations. Associated with increase bacterial resistance, hearing impairments, and QTc prolongation.</p> <p>No data showing benefit beyond one year of treatment. Patients should be re-assessed annually for continuation of treatment.</p> <p>Best evidence is for use in patients who are former smokers</p>

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Abbreviations

CAT: COPD Assessment Test
DPI: Dry Powder Inhaler
HF: Heart Failure
HTN: Hypertension
ICS: Inhaled Corticosteroid
IIV: Inactivated Influenza Vaccine
LABA: Long-Acting Beta2 Agonists
LAMA: Long-Acting Muscarinic Antagonist
MDI: Metered Dose Inhaler
mMRC: Modified Medical Research Council Breathlessness Scale
NRT: Nicotine Replacement Therapy

RIV: Recombinant Influenza Vaccine
RZV: Recombinant Zoster Vaccine
SABA: Short-Acting Beta2 Agonists
SAMA: Short-Acting Muscarinic Antagonist
SaO₂: Oxygen Saturation
SMI: Soft Mist Inhaler
ZVL: Zoster Vaccine Live

U.S. Department of Veterans Affairs

This reference guide was created as a tool for VA providers and is available from the Academic Detailing Services SharePoint.

These are general recommendations only. The treating provider should make clinical decisions based on an individual patient's clinical condition.

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