

CHRONIC OBSTRUCTIVE PULMONARY DISEASE TREATMENT

Risk Factors: genetic factors, exposure to particles (tobacco smoke, occupational dusts, outdoor air pollution), oxidative stress, respiratory infections, nutrition, comorbidities.

Classification

- Stage 1: Mild – FEV₁/FVC < 0.70; FEV₁ ≥ 80% predicted.
- Stage 2: Moderate – FEV₁/FVC < 0.70; 50% ≤ FEV₁ < 80% predicted.
- Stage 3: Severe – FEV₁/FVC < 0.70; 30% ≤ FEV₁ < 50% predicted.
- Stage 4: Very Severe – FEV₁/FVC < 0.70; FEV₁ < 30% predicted or FEV₁ < 50% predicted + CRF.

Step-wise treatment: Visit the Global Initiative for Chronic Obstructive Lung Disease (GOLD) website at www.goldcopd.org for information about use of medications at various stages of COPD.

Generic	Brand	Form	Usual Dosage
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BRONCHODILATORS

Long-Acting Beta₂-Agonists (LABAs)

arformoterol	Brovana ¹	soln	Adults: Inhale 15mcg twice daily (AM & PM) by nebulization (max: 30mcg/day). Use standard jet nebulizer with air compressor (see full labeling). Children: Not recommended.
formoterol	Perforomist ^{1,2}	soln	Adults: One 20mcg vial twice daily (AM & PM) by oral inhalation via nebulizer (max: 40mcg/day) Children: Not recommended.
indacaterol	Arcapta Neohaler ^{1,2}	caps	Adults: 1 inh of one 75mcg caps once daily, using Neohaler device. Do not swallow caps. Children: Not recommended.
olodaterol	Striverdi Respirat	MDI	Adults: 2 inh once daily; max 2 inh/24hrs Children: Not established.
salmeterol	Serevent Diskus ²	DPI	Adults: 1 inh (50mcg) twice daily (approx. 12hrs apart) Children: Not established.

Short-Acting Anticholinergics

ipratropium bromide	— ¹	soln	Adults: 500mcg by oral nebulization 3–4 times daily every 6–8hrs Children: Not recommended.
	Atrovent HFA ¹	MDI	Adults: 2 inh 4 times daily (max: 12 inh/day) Children: Not recommended.

Long-Acting Anticholinergics

acclidinium bromide	Tudorza Pressair	DPI	Adults: 1 inh (400mcg) twice daily Children: Not established.
glycopyrrolate	Lonhala Magnair	soln	Adults: 1 oral inh of one 25mcg vial twice daily (AM & PM), using Magnair device Children: Not established.
	Seebri Neohaler	caps	Adults: 1 oral inh of one 15.6mcg caps twice daily (AM & PM). Do not swallow caps. Children: Not established.
revefenacin	Yupelri ¹	soln	Adults: 1 oral inh of one 175mcg vial once daily using a mouthpiece. Use standard jet nebulizer with air compressor. Children: Not established.
tiotropium bromide	Spiriva HandiHaler ¹	caps	Adults: 2 oral inhalations of one 18mcg caps once daily, using HandiHaler device. Do not swallow caps. Children: Not recommended.
umeclidinium	Incruse Ellipta	DPI	Adults: 1 inhalation every 24hrs Children: Not established.

Anticholinergic + Beta₂-Agonist

ipratropium bromide + albuterol	— ¹	soln	Adults: ≥18yrs: 1 vial (3mL) 4–6 times daily via nebulizer Children: <18yrs: Not recommended.
	Combivent Respirat ¹	MDI	Adults: 1 inh 4 times daily (max: 6 inh/day) Children: Not recommended.

Anticholinergic + Long-Acting Beta₂-Agonist (LABA)

glycopyrrolate + formoterol	Bevespi Aerosphere ^{1,2}	MDI	Adults: 2 inh twice daily (in the AM + PM); max 2 inh twice daily Children: Not established.
glycopyrrolate + indacaterol	Utibron Neohaler	caps	Adults: 1 oral inh of one 27.5mcg/15.6mcg caps twice daily (AM & PM), using Neohaler device. Do not swallow caps. Children: Not established.
tiotropium + olodaterol	Stiolto Respirat	MDI	Adults: 2 inh once daily (max: 2 inh/24hrs) Children: Not established.
umeclidinium + vilanterol	Anoro Ellipta	DPI	Adults: 1 inh once daily Children: Not established.

CORTICOSTEROIDS

Corticosteroid + Long-Acting Beta₂-Agonist (LABA)

budesonide + formoterol	Symbicort 160/4.5 ²	MDI	Adults: 2 inh of 160/4.5mcg twice daily Children: Not indicated.
fluticasone + salmeterol	Advair 250/50 Diskus ^{2,3}	DPI	Adults: 1 inh of 250/50mcg twice daily (approx. 12hrs apart) Children: Not established.
	Wixela Inhub ²	DPI	Adults: 1 inh of 250/50mcg twice daily (approx. 12hrs apart) Children: Not established.
fluticasone + vilanterol	Breo Ellipta	DPI	Adults: 1 inh of 100/25mcg once daily (max) Children: ≤17yrs: Not established.

Corticosteroid + Anticholinergic + Long-Acting Beta₂-Agonist (LABA)

fluticasone + umeclidinium + vilanterol	Trelegy Ellipta ^{1,2}	DPI	Adults: 1 inh once daily (max) Children: Not established.
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OTHER

PDE4-Inhibitor

roflumilast	Daliresp ^{1,2}	tabs	Adults: One 500mcg tab once daily Children: Not recommended.
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Key: CRF = chronic respiratory failure; DPI = dry powder inhaler; FEV₁ = forced expiratory volume in one second; FVC = forced vital capacity; MDI = metered dose inhaler

¹Indicated only for COPD. ²Not indicated for the relief of acute bronchospasm. ³Only Advair 250/50 Diskus twice daily is approved for maintenance treatment of COPD because an efficacy advantage of the higher strength Advair 500/50 over Advair 250/50 has not been demonstrated. Other strengths and formulations of Advair are available.

Not an inclusive list of medications and/or official indications. Please see drug monograph at www.eMPR.com and/or contact company for full drug labeling.

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