


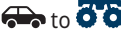


















Appendix B: COPD Medication Table






Environmental Impact Symbol Guide



Symbol	Environmental Impact	Per inhaler carbon footprint
	Higher	> 100 km by car
	Mid-range	38.8 – 50 km by car
	Lowest	5 – 27.1 km by car

Generic Name <i>Trade name</i> Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
RELIEVER MEDICATION					
Short acting beta-agonists (SABA)					
Salbutamol <i>Airomir™, Ventolin®, G (pMDI)</i> 100 mcg/puff 200 doses  <i>Ventolin® Diskus (DPI)</i> 200 mcg/inhalation 60 doses 	Acute relief: 1 to 2 puffs prn Prevention: 1 to 2 puffs QID Acute relief: 1 inh prn Prevention: 1 inh every 4-6 hours Maximum: 800 mcg/day; may be increased in action plan)	\$6.50 \$0.13 to \$0.26 (1 to 2 puffs QID) \$11 \$0.55 to \$0.73 (3 to 4 inhalations/day)	Regular benefit Non benefit	Greater than 10%: Tremor (up to 38%; particularly in the hands, usually disappears as treatment continues, frequency increases with age), nervousness, pharyngitis Greater than 5%: tachycardia (dose-related, more likely in susceptible patients) Transient metabolic disturbances are well-known but rarely of clinical significance ↓ in serum potassium, phosphate ↑ in serum glucose	Improves symptoms; does not reduce exacerbations. Use with caution in patients with cardiovascular disease (coronary artery disease, arrhythmias, hypertension); seizure disorders; hypothyroidism. Paradoxical bronchospasm is unusual (~4%) and may be related to the propellant. Alternatives include dry powder inhaler or an alternative therapy, such as a SAMA, may also be considered.  Low-volume HFA MDIs: Airomir™ and TEVA-Salbutamol High-volume HFA MDIs: Ventolin®; APO-Salbutamol; SANIS-Salbutamol  High-volume HFA MDIs: Ventolin®; APO-Salbutamol; SANIS-Salbutamol
Terbutaline <i>Bricanyl Turbuhaler® (DPI)</i> 500 mcg/inhalation 120 doses 	Acute relief: 1 to 2 inhalations prn Maximum: 6 inhs (3000 mcg) /day may be increased in action plan)	\$11 \$0.37 to \$0.55 (4 to 6 inhalations/day)	Regular benefit	↓ in serum potassium, phosphate ↑ in serum glucose	

Generic Name Trade name Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
Short-Acting Muscarinic Antagonist (SAMA) or Short-Acting Anticholinergic					
Ipratropium bromide <i>Atrovent® (pMDI)</i> 20 mcg/puff 200 doses 	40 mcg (2 puffs) TID to QID Maximum: 240 mcg (12 puffs) daily; minimum 4 hours between doses	\$22 \$0.66 to \$0.88 (2 puffs TID to QID)	Regular benefit	Greater than 10%: Bronchitis, sinusitis Greater than 5%: headache, dyspnea	Improves symptoms; does not reduce exacerbations. Use cautiously and monitor for worsening urinary retention in patients with pre-existing urinary tract obstruction. Use cautiously in patients with narrow angle glaucoma. Avoid spraying mist into eyes (ocular complications have been reported).
Short-Acting Beta-Agonists/ Short-Acting Muscarinic Antagonist (SABA/SAMA)					
Ipratropium bromide / salbutamol <i>Combivent® Respimat</i> 20/100 mcg/inhalation 120 doses 	20/100mcg (1 inh) QID Maximum: 6 inhs/ day	\$35	Regular benefit	Similar adverse effects as SABAs and SAMAs (see above)	Similar therapeutic considerations as SABAs and SAMAs (see above).
LONG ACTING MEDICATIONS					
Long-Acting Muscarinic Antagonist (LAMA)					
Tiotropium <i>Spiriva® Respimat</i> 2.5mcg/inhalation 60 doses 	5 mcg (2 inh) once daily	\$60	Regular benefit	Greater than 10%: Dry mouth (rinse mouth after inhalation to decrease) Greater than 5%: headache, pharyngitis, sinusitis, dyspepsia	Should not be used for the relief of acute symptoms. When initiating treatment with a LAMA, discontinue the use of any previous regularly scheduled short acting bronchodilator(s). Use SABA as a rescue medication PRN to treat acute bronchospasm.
<i>Spiriva® HandiHaler®, G (cap)</i> 18 mcg/inhalation Boxes of 30 capsules for inhalation 	18 mcg (1 cap) once daily by oral inhalation	\$60	Regular benefit		No convincing evidence to support one LAMA product is superior to another, consideration should be given to usability and adherence. LAMAs may have more tolerability vs LABAs (less discontinuation).
Umeclidinium <i>Incruse™ Ellipta® (DPI)</i> 62.5 mcg/inhalation 7, 30 doses 	62.5 mcg (1 inh) once daily	\$55	Regular benefit		Use cautiously and monitor for worsening urinary retention in patients with pre-existing urinary tract obstruction (e.g., prostatic hyperplasia).

Generic Name Trade name Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
Acclidinium <i>Tudorza® Genuair® (DPI)</i> 400 mcg/inhalation 60 doses 	400 mcg (1 inh) BID	\$60	Limited coverage		Use cautiously in patients with narrow angle glaucoma. Avoid spraying mist into eyes (ocular complications have been reported)
Glycopyrronium <i>Seebri® Breezhaler® (cap)</i> 50 mcg/inhalation Boxes of 30 capsules for inhalation 	50 mcg (1 cap) once daily by oral inhalation	\$60	Limited coverage		
Long-Acting Beta Agonists (LABA)					
Salmeterol <i>SereVent® Diskus (DPI)</i> 50 mcg/inhalation 60 doses 	50 mcg (1 inh) BID	\$70	Limited coverage	Greater than 10%: Headache, pain Greater than 5%: nasal congestion, bronchitis, throat irritation, pharyngitis, cough	LABAs are not typically used to treat acute bronchospasm. When initiating treatment with LABA, discontinue the use of any regularly scheduled SABA and transition to PRN use of the SABA. Use cautiously in patients with cardiovascular disorders (e.g., coronary artery disease, arrhythmias, hypertension). Monitor for hyperglycemia (occurs in 1-3%) in diabetic patients when initiating therapy.
Long-Acting Muscarinic Antagonist/ Long-Acting Beta Agonists (LAMA/LABA)					
Acclidinium/formoterol fumarate <i>Duaklir™ Genuair® DPI</i> 400/12 mcg/inhalation 60 doses 	400/12 mcg (1 inh) BID	\$65	Limited coverage	Similar adverse effects as LABAs and LAMAs (see above).	Do not administer a combination LAMA and LABA product concurrently with other products containing LABA or LAMA. Similar therapeutic considerations as LABAs and LAMAs (see above).
Indacaterol/ glycopyrronium <i>Ultibro® Breezhaler® caps</i> 100/50 mcg/inhalation Boxes of 30 capsules for inhalation 	100/50 mcg (1 cap) once daily by oral inhalation	\$85			

Generic Name <i>Trade name</i> Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
Tiotropium/olodaterol <i>Inspiralto™ Respimat®</i> 2.5/2.5 mcg/inhalation 60 doses 	5 /5 mcg (2 inhs) once daily	\$70			
Umeclidinium/vilanterol <i>Anoro™ Ellipta® DPI</i> 62.5/25 mcg 30 doses 	62.5/25 mcg (1 inh) once daily	\$95			
Inhaled Corticosteroids/Long-acting Beta-2 Agonists (ICS/LABA)					
Budesonide/formoterol <i>Symbicort® Turbuhaler® (DPI)</i> 200/6 mcg/inh 60, 120 doses 	400/12 mcg (2 inh) BID	\$95	Non-benefit for COPD (Limited Coverage for asthma)	Greater than 10%: Headache, upper respiratory tract infection, nasopharyngitis Greater than 5%: Oral thrush (can be reduced by rinsing mouth or using spacer device with an MDI), sinusitis, pharyngolaryngeal pain, dysphonia	High dose treatment should be tapered rather than stopped abruptly. ICS is associated with an increased risk of pneumonia (~2%/yr), particularly at higher doses. Both LAMA/LABA and ICS/LABA reduce exacerbations compared with single bronchodilators. Preference for LAMA/LABA therapy over ICS/LABA based on evidence of improved lung function and lower rates of pneumonia. However, ICS/LABA is preferred to LAMA/LABA in individuals who have concomitant asthma.
Fluticasone furoate/ vilanterol <i>Breo® Ellipta® (DPI)</i> 100/25 mcg/inh 30 doses 	100/25 mcg once daily (max 1 inh/day) <i>200/25 mcg not indicated for COPD</i>	\$100	Limited coverage		
Fluticasone propionate/ salmeterol <i>Advair® Diskus®, G (DPI)</i> 250/50, 500/50 mcg/inh 60 doses 	250/50 mcg or 500/50 mcg: 1 inhalation BID <i>100/50 mcg DPI not indicated for COPD</i>	\$55 - \$80			

Generic Name <i>Trade name</i> Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
Inhaled Corticosteroids/ Long-Acting Muscarinic Antagonists/ Long Acting Beta2 Agonists (ICS/LAMA/LABA)					
Fluticasone furoate/ umeclidinium/vilanterol <i>Trelegy™ Ellipta® (DPI)</i> 100/62.5/25 mcg/inh 30 doses 	100/62.5/ 25mcg (1 inh) daily 200/62.5/25mcg <i>not indicated for COPD</i>	\$150	Limited coverage	Similar adverse effects as ICS/ LABAs and LAMAs (see above).	Consider for individuals at risk for AECOPD, factoring in spirometry, symptom burden, previous therapies, and mortality risk. Comparing ICS/LAMA/LABA to LAMA/LABA NNT=4 pts for 1 year to prevent 1 moderate to severe AECOPD with ICS/LAMA/LABA vs LAMA/LABA and NNH: 33 pts for 1 year to cause 1 pneumonia
Budesonide/glycopyrronium/ formoterol <i>Breztri™ Aerosphere®(pMDI)</i> 182/8.2/5.8 mcg/puff 120 doses 	364/16.4/11.6 mcg (2 puffs) BID \$135				
Oral Therapies					
Phosphodiesterase 4 (PDE4) inhibitor					
Roflumilast <i>Daxas®</i> Tablet: 500 mcg	500mcg (1 tab) PO daily	\$73/30 tabs (\$2.43/day)	Non benefit	Greater than 10%: Diarrhea Greater than 5%: Nausea, headache, weight loss (average of 2 kg) Rare but serious: suicide and/ or suicidal ideation or behaviour, aspartate aminotransferase (AST) increase.	Contraindicated in moderate or severe hepatic impairment (Child-Pugh B or C). Usually for severe COPD and initiated by specialists.
Systemic Corticosteroids for AECOPD					
Prednisone <i>G</i> Tablets: 1 mg, 5 mg, 50 mg	AECOPD: 30 to 50 mg PO once daily for 5 days	\$1/course (50 mg po daily x 5 days)	Regular benefit	Greater than 5%: GI upset, hypertension, hyperglycemia, behavioural disturbances, insomnia Dose related.	Increased risk of GI ulceration with concomitant NSAID. Increased risk of hypokalemia with concomitant diuretic (e.g., thiazide). Not used for maintenance therapy.

Generic Name <i>Trade name</i> Dose per inhalation Doses per device	Usual Adult Dosage	Cost per device ^A Approx. cost per usual daily dose	PharmaCare Coverage ^B	Adverse Effects	Therapeutic Considerations
Long-term macrolide therapy to reduce AECOPD					
Azithromycin <i>Zithromax[®], G</i> Tablets: 250 mg Oral suspension: 100 mg/5 mL, 200 mg/5 mL	To reduce risk of AECOPD: 500 mg PO three times per week	Tablets: \$0.88/day (500mg 3X weekly) Suspension: \$4.80/day (500mg 3X weekly)	Regular benefit	Greater than 10%: Diarrhea, nausea If gastrointestinal side effects occur at 500 mg 3X weekly, a dose reduction to 250 mg 3X weekly could be considered. Rare but serious: Hearing loss and tinnitus (linked to cumulative doses, tinnitus can occur as early as 24 hrs but majority of hearing loss with ≥ 4wks)	Long-term macrolide therapy could be considered if > 3 exacerbations requiring steroids and ≥ 1 exacerbation requiring hospital admission per year. Consider the risk of fatal cardiac arrhythmias in susceptible patients (e.g., current QT prolongation, electrolyte imbalance, concurrent treatment with QT prolonging medications, elderly). Potential for antimicrobial resistance and nasopharyngeal colonization with macrolide-resistant bacteria. Monitoring: LFTs and ECG at baseline and at 1 month.

Abbreviations: **AECOPD:** acute exacerbation of chronic obstructive pulmonary disease; **BID:** twice daily; **cap:** capsule; **DPI:** dry power inhaler; **G:** generic; **GI:** gastrointestinal; **hrs:** hours; **ICS:** inhaled corticosteroids; **inh:** inhalation; **LABA:** long acting beta-2 agonist; **LAMA:** Long-Acting Muscarinic Antagonist; **mcg:** micrograms; **MDI:** metered dose inhaler; **mg:** milligrams; **mL:** millilitres; **NNH:** number needed to harm; **NNT:** number needed to treat; **NSAID:** non-steroidal anti-inflammatory; **pMDI:** pressurized metered dose inhaler; **po:** oral; **prn:** as needed; **pts:** patients; **QID:** four times per day; **SABA:** short acting beta agonist; **SAMA:** Short-Acting Muscarinic Antagonist; **tab:** tablet; **TID:** three times per day; **wks:** weeks; **yr:** year.

A Drugs costs are average retail cost of the generic, when available. Current as of Feb 2023 and does not include retail markups or pharmacy fees. Cost per month is approximate and rounded to nearest \$5.

B PharmaCare coverage as of Feb 2023 (subject to revision). Regular Benefit: Eligible for full reimbursement*. Limited Coverage: Requires Special Authority to be eligible for reimbursement*. Non-benefit: Not eligible for reimbursement. *Reimbursement is subject to the rules of a patient's PharmaCare plan, including any deductibles. In all cases, coverage is subject to drug price limits set by PharmaCare. See: www.health.gov.bc.ca/pharmacare/plans/index.html and www.health.gov.bc.ca/pharmacare/policy.html for further information. * [Special Authority drug list](#)

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Note: Information on which products PharmaCare covers can be obtained using the B.C. PharmaCare Formulary Search (<https://pharmacareformularysearch.gov.bc.ca/>)



= Higher environmental impact option (per inhaler carbon footprint of > 100 km by car)



= Mid-range environmental impact option (per inhaler carbon footprint of 38.8 - 50 km by car)



= Lowest environmental impact option (per inhaler carbon footprint of 5 - 27.1 km by car)

For more information on the environmental impact of specific medications, please see the [Inhaler Coverage and Environmental Impact Guide](#)