Lahey Health | Lahey Clinical Performance Network

Pharmacy Fact Sheet: Inhaled Therapies for Asthma and COPD

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Key Points

- **Poor adherence is very common** – it is estimated that 50% of adults and children do not take controller medications as prescribed. Contributory factors may be unintentional (e.g. forgetfulness, cost, confusion) and/or intentional (e.g. no perceived need, fear of side effects, cultural issues, cost)
- **Medication monitoring** should focus on dosages of prescribed medications, potential overuse of reliever medication (e.g. short-acting beta-agonists), adherence, inhaler technique, response to therapy, and side effects
- **Provide hands-on inhaler skills training – remember the 4 "C"s** *(see box to right).* For patients who continue to have difficulties with inhaler use, a referral to a pharmacist or respiratory therapist can be very helpful.
- **Self Management Education** is recommended with the support of a case manager for the prevention of COPD exacerbation complications such as hospital admissions. **Shared Decision Making** has been found to be effective for improving asthma medication adherence
- **Depending on the clinical situation, recommendations for using ICS therapy differ for asthma and COPD (*see table 3 below)***
- **Inhaler therapies for Asthma and COPD are expensive due to the lack of any generically available products.** Judicious prescribing and monitoring of patients on these medications is critical for optimizing patient outcomes and reducing unnecessary cost. Always ask patients if they are able to afford their medications

The 4 "C"s for patient inhaler training

Choose an appropriate device depending on medication options, manual dexterity, patient skills, and cost. For inhaled corticosteroid (ICS) by pressurized metered dose inhaler (pMDI), prescribe a spacer. *Check* technique at every opportunity – ask the patient to demonstrate for you and identify errors. *Correct* by demonstrating how to use the inhaler correctly – check up to 2-3 times and re-check technique frequently (errors often recur within 4-6 weeks). *Confirm* by asking the patient to demonstrate technique again.

Table 1: Asthma Treatment Recommendations: Global Initiative for Asthma (GINA) 2017 Update LINK HERE

Asthma Severity Step	Preferred Controller	Preferred Reliever
Step 1	Consider low dose ICS	As needed SABA
Step 2	Low dose ICS	
Step 3	Low dose ICS/LABA (Med dose ICS only for ages 6-11)	As needed SABA or low dose ICS/formoterol
Step 4	Med/high dose ICS/LABA	
Step 5		

Table 2: COPD Treatment Recommendations: Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017 Update LINK HERE

GOLD Grade *(based on symptom severity and frequency of exacerbations)*	Initial Therapy	Evaluation/Action
Group A	Bronchodilator	Continue, stop, or try alternative class of bronchodilator
Group B	Long acting bronchodilator (LABA or LAMA)	If persistent symptoms, LAMA + LABA
Group C	LAMA	If further exacerbations, LAMA + LABA (preferred) or LABA +ICS
Group D	LAMA + LABA (preferred) or LABA + ICS	If persistent symptoms/further exacerbations, LAMA + LABA + ICS

Table 3: Current Recommendations for Inhaled Corticosteroids that Differ for Asthma and COPD

ICS Recommendations	Asthma	COPD
Place in Therapy	ICS w/ or without LABA preferred at all stages of Asthma, with increased dosage based on asthma severity step (i.e. 1 - 5)	For patients with persistent exacerbations, ***LABA/LAMA is preferred over LABA/ICS due to increased risk of pneumonia in some patients using an ICS.***
Step Down and/or Stopping Therapy	Appropriate when symptoms have been well controlled and lung function stable for ≥ 3 months. 25-50% ICS dose reduction at 3 month intervals is feasible and safe for most patients. ***Stopping ICS is not recommended in adults with asthma because of risk of exacerbations***.	***Stop ICS*** in patients with continued exacerbations despite therapy with LABA/LAMA/ICS ***due to reported lack of efficacy and elevated risk of adverse effects, including pneumonia***
Key to abbreviations - ICS = inhaled corticosteroid, LABA = long acting beta agonist, LAMA = long acting muscarinic antagonist, SABA = short acting beta agonist. → ***This guide is not intended to be a comprehensive review of Asthma and COPD treatment guidelines – this is a focused review of inhaled medications.***		

Inhaled Controller Therapy for Asthma / COPD Currently available in the United States

(HFA = hydrofluoroalkane, DPI = dry powder inhaler, SMI = soft mist inhaler)

Inhaler Name	Inhaler Type	Dosing			Avg Cost[1]
Inhaled Corticosteroids - Adults and Adolescents (≥ 12 years) and Children (6-11 years)		**Low Dose (daily)**	**Med Dose (daily)**	**High Dose (daily)**	**Consider costs to LCPN, patient affordability, plan coverage when prescribing**
Beclomethasone (Qvar)	HFA (divide dose twice daily)	80 - 240 mcg 80 - 160 mcg	> 240 - 480 mcg > 160 - 320 mcg	> 480 mcg > 320 mcg	$130-$160
Budesonide (Pulmicort)	DPI (divide dose twice daily)	180 - 600 mcg 180 – 400 mcg	> 600 - 1200 mcg > 400 – 800 mcg	> 1200 mcg > 800 mcg	$150
Ciclesonide (Alvesco)	HFA (divide dose twice daily)	80 – 160 mcg 80 mcg	> 160 – 320 mcg > 80 – 160 mcg	> 320 mcg > 160 mcg	$180
Fluticasone propionate (Flovent)	HFA, DPI (divide dose twice daily)	HFA 88 - 264 mcg or DPI 100 – 250 mcg HFA 88 – 176 mcg DPI 100 – 200 mcg	HFA > 264-440 mcg DPI > 250 - 500 mcg HFA >176-352 mcg DPI > 200–400 mcg	HFA > 440 mcg DPI > 500 mcg HFA > 352 mcg DPI > 400 mcg	Diskus $160-$190 HFA $140-$290
Fluticasone furoate (Arnuity Ellipta)	DPI (dose once daily)	100 mcg	NA	200 mcg	$160-$200
Mometasone (Asmanex)	HFA (divide dose twice daily)	110 – 220 mcg 110 mcg	>220 – 440 mcg ≥ 220 – < 440 mcg	> 440 mcg ≥ 440 mcg	$180
Long Acting Beta Agonists (LABA)					
Indacaterol (Arcapta Neohaler)	DPI	75 – 300 mcg once daily			No Claims Data Est ~$200-$400+
Olodaterol (Striverdi Respimat)	SMI	2.5 mcg/inhalation - 2 inhalations daily (maximum)			No Claims Data Est ~$160
Salmeterol (Serevent Diskus)	DPI	50 mcg/inhalation - 1 inhalation twice daily (maximum)			$300
Long Acting Muscarinic Antagonists (LAMA)					
Aclidinium (Tudorza Pressair)	DPI	400 mcg/inhalation - 1 inhalation twice daily			$250
Tiotropium (Spiriva Handihaler, Spiriva Respimat)	DPI, SMI	Spiriva Handihaler: 18 mcg/capsule - 1 capsule inhaled via device once daily Spiriva Respimat: 2.5 mcg/actuation - 2 inhalations once daily			$300
Umeclidinium (Incruse Ellipta)	DPI	62.5 mcg/inhalation - 1 inhalation once daily			$325
ICS/LABA Combinations		**Low Dose (per inhalation)**	**Med Dose (per inhalation)**	**High Dose (per inhalation)**	
Fluticasone and Salmeterol (Advair Diskus, Advair HFA, AirDuo Respiclick)	HFA, DPI fluticasone propionate / salmeterol	Diskus: 100 mcg/50 mcg (one inhalation twice daily) HFA: 45 mcg/21 mcg (two inhalations twice daily) Respiclick: 55 mcg/14 mcg (one inhalation twice daily)	250 mcg/50 mcg[2] (one inhalation twice daily) 115 mcg/21 mcg (two inhalations twice daily) 113 mcg/14 mcg (one inhalation twice daily)	500 mcg/50 mcg (one inhalation, twice daily) 230 mcg/21 mcg (two inhalations twice daily) 232 mcg/14 mcg (one inhalation twice daily)	Diskus $260-$420 HFA $300-$450
Fluticasone and Vilanterol (Breo Ellipta)	DPI fluticasone furoate / vilanterol	100 mcg/25 mcg[3] (one inhalation once daily)		200 mcg/25 mcg (one inhalation once daily)	$300
Mometasone and Formoterol (Dulera)	HFA mometasone / formoterol	100 mcg/5 mcg (two inhalations twice daily)		200 mcg/5 mcg (two inhalations twice daily)	$230
Budesonide and Formoterol (Symbicort)	HFA budesonide / formoterol	80 mcg/4.5 mcg, (two inhalations twice daily)		160 mcg/4.5 mcg[3] (two inhalations twice daily)	$220
LAMA/LABA Combinations *(indicated for COPD only)*					
Umeclidinium and Vilanterol (Anoro Elipta)	DPI	Umeclidinium/vilanterol 62.5 mcg/25 mcg (one inhalation once daily)			$285
Tiotropium and Olodaterol (Stiolto Respimat)	SMI	Tiotropium/olodaterol 2.5 mcg/2.5 mcg (two inhalations once daily)			$285

[1]Average cost per 30-day claim throughout LCPN for BCBS, HPHC and THP; [2] Maximum dose for COPD; [3] COPD dosage

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