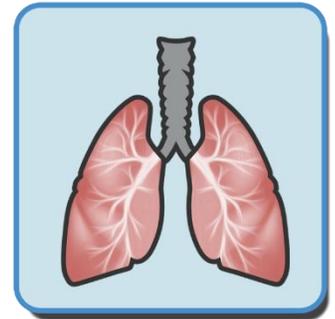


September 2015

## COPD and New Devices

In Ontario, Chronic Obstructive Pulmonary Disorder (COPD) is a degenerative lung disorder that causes the airways in sufferers to narrow. This narrowing limits airflow and reduces lung function. It is not curable but there is treatment to help control symptoms. It is one of the number one causes of hospital admissions in Canada according to Canadian Institute Health Information. <sup>(1)</sup> To help lower hospital costs, there has been a big focus to help patients to properly use inhalers and help recognize symptoms of an exacerbation.



### TREATMENT OPTIONS

In the last year, the options for treatment of chronic obstructive pulmonary disorder (COPD) have multiplied. There are many exciting new options for improved patient care. Even with new advancements, the most essential part of COPD care is proper inhaler technique. If used improperly, inhalers can be useless. With proper technique and education on how to recognize exacerbations, there can be improved quality of life and reduced hospitalizations for patients. <sup>(1)</sup>

Short acting beta-agonists (SABA) and short acting anticholinergics are used for mild disease. Long Acting Beta-Agonists (LABA) and Long Acting Anticholinergics (LAACs) are first line for mild or moderate disease. Inhaled corticosteroids can be used for moderate to severe disease. Inhaled corticosteroids when used with LABA have been shown to improve exercise endurance, symptom control, lung function and improve exacerbations rates. Corticosteroids should not be used as monotherapy.

The goal for COPD is to minimize the use of corticosteroids. Although they reduce exacerbations for a short period, they increase the chances of pneumonia. (Additional chance of pneumonia for 1 in every 50 patients treated with inhaled corticosteroids for 18 months.) If the patient is stable, then the patient should taper off inhaled steroid over the course of 12 weeks. Symptoms could worsen if stopped abruptly. <sup>(3)</sup> In the study, Fluticasone was reduced every 6 weeks, from a total daily dose of 1000 mcg to 500 mcg 200 mcg and then finally 0 mcg. <sup>(3)</sup>

If the medication contains a corticosteroid, then the patient should always rinse their mouth afterwards. Otherwise, the patient may be at higher risk for thrush infections and hoarseness. One exception is ciclesonide (Alvesco) because this steroid is activated only in the lung. For this reason it does not increase the risk of yeast infections in the mouth. It is primarily used for asthma but can be used for COPD if used in combination with a LABA.

A general rule for all inhalers is to have the patient exhale away from the device before administering the medication. Then, have the patient take a deep inhalation of the medication. The patient should hold their breath for as long as possible after administering any of the medications listed below.

Below provides the basics on how to use the different devices. Please see the product monograph provided with each inhaler or call the pharmacy if you have further questions.

### Genuair Device

There are two products that use the Genuair mechanism Tudorza Genuair (LAAC) and Duaklir Genuair (LAAC/LABA). The dose for both is 1 actuation inhaled twice daily.

*To use:* The patient should hold the inhaler level and press the back button. The indicator window will turn green when the dose is ready. The patients can then exhale and take a deep breath. **\*The patient must not be pressing the button while they take their breath.\*** The indicator window will turn to red in both devices after the patient has properly inhaled. The patient will also hear a click. The patient should continue to breathe in as long as possible even after they hear the click. The Genuair has a counter that will indicate 0 when empty. This product is ideal for patients if you are unsure they are able to inhale powder type medications.



## Breezhaler

There are currently three inhalers that use the Breezhaler technology: Seebri (LAAC), Ultibro (LAAC/LABA), and Onbrez (LABA.) The dose for all of these inhalers is 1 inhaled capsule once daily.

*To use:* Remove a capsule from the blister pack and place in chamber. Close the inhaler. In order to release the medication from the capsule press the piercing buttons on both sides of the inhaler. **Pierce ONLY ONCE!** The patient should exhale away from the inhaler and take a deep breath. The capsule will rattle and make a whirling sound if the patient is taking a strong enough breath. **When removing the capsule make sure that there is no powder left in the chamber or in the capsule.**

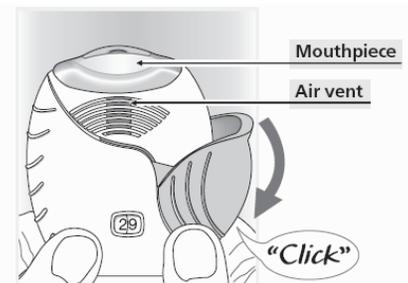


## Ellipta

There are three products that use the Ellipta drug release device: Incruse (LAAC), Anoro (LAAC/LABA), and Breo (Corticosteroid/ LABA.) The recommended dose for the three drug products is 1 actuation once daily.

*To use:* Slide the cover until you hear a click. Have the patient put their mouth over the coloured mouthpiece. They should exhale away from the device and take a deep breath in. The device should be stored with the cap closed. There is a device counter on the inhaler. There are 30 inhalations per device.

**NOTE:** Since the Breo contains a corticosteroid, it is very important to have the patient rinse their mouth afterwards.



## Respimat

There are currently three products available in the Respimat format: Spiriva Respimat (LAAC), Inspiroto (LAAC/LABA), and Combivent Respimat. This is an excellent type to use when the patient does not have the strength to inhale deeply. It can be used to replace the powder since it is a mist.

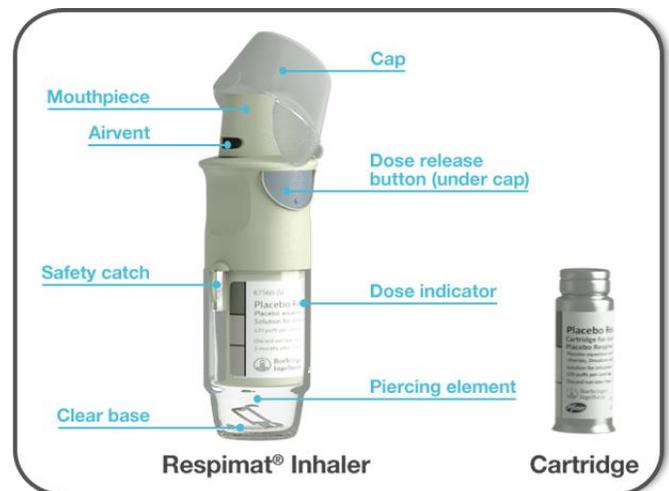
The dose of Inspiroto and Spiriva Respimat is 2 actuations inhaled once daily. The dose of Combivent is 1 actuation QID plus as required (maximum 6 inhalations/day.) In order to use the Respimat for the first time, the cartridge must be inserted. (Please note that at Medical Arts Pharmacy we usually do this step for you.)

*To insert the cartridge:* Remove the clear base by pressing the safety latch on the inhaler. Insert the cartridge with the narrow end first until it clicks into place. Press the bottom of the cartridge against a flat surface to ensure it is properly placed. Replace the clear base.

*First time priming:* When using for the first time, turn the clear base a half turn following the arrows. You will hear a click. With inhaler facing down, open the cap and press the dose release button. Repeat this process until a cloud is visible. \*Caution: do not face inhaler into eyes. (Please note that usually Medical Arts Pharmacy does this for you.)

*To use:* Turn the clear base in the directions of the arrows for a half turn until you hear click. Open cap afterwards to ensure that you do not release dose during. The patient should breathe out slowly then close their lips around the mouthpiece. The Respimat should be pointed to the back of the throat. The patient should take a deep breath while pressing the dose release button. Ask the patient to continue to breathe in as long as they can then hold their breath for at least 10 seconds. Repeat this step since the dose is normally 2 actuations. Note: The normal dose of 2 actuations (2.5 mcg/actuation) once daily is considered to be equivalent to 1 inhaled capsule (18 mcg) from Spiriva Handihaler.

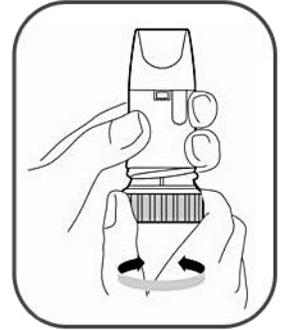
*How to tell if it is empty:* Monitor the dose indicator. Once completely empty, then the clear base will not rotate and the cloud will not form.



## Turbuinhaler

There Turbuinhaler is an older device that has been used for a long time. For COPD, there is currently Oxeze Turbuinhaler (LABA), Bricanyl (SABA), and Symbicort (Corticosteroid/LABA). Dosing varies based on type. Please see individual monographs.

*To use:* Hold the inhaler upright. To load the inhaler, turn the bottom grip as far as it will go in one direction and then back to original position. A “click” will indicate that it is ready. The patient should breathe out away from the mouthpiece and place the mouthpiece between their teeth. The patient should close their lips and breathe in forcefully and deeply. The turbuhaler has a dose indicator window. Please monitor to ensure that the patient is getting their dose.

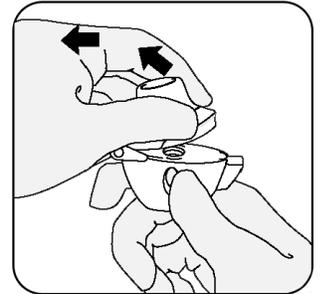


## Handihaler

The original Spiriva comes in the handihaler form. This is currently the only form of Spiriva covered on the ODB formulary. The dose is one inhaled capsule daily.

*To use:* Open the dust cap and the mouthpiece. Open blister pack revealing only one capsule at a time. Place capsule in centre chamber. Close the mouthpiece. Pierce the capsule by pressing the green button. **(Only once!)**

The patient should breathe out away from the mouthpiece then inhale deeply. They should hold their breath for at least 10 seconds after use. **They must inhale the same capsule twice to get the full dose.**



## Diskus

Currently, there are four products that are in the form of diskus: Serevent (LABA), Ventolin Diskus (SABA) and Flovent (corticosteroid) Advair Diskus (LABA/corticosteroid). The dose varies based on product.

*To use:* Open the outer case to reveal the mouthpiece. Hold the Diskus horizontally and slide the lever until you hear a click. The patient should exhale away from the diskus and take a deep inhalation. They should hold their breath for as long as they can afterwards. The patient should close the mouthpiece. **It is very important that the patient rinse their mouth afterwards for Advair Diskus and Flovent!**



## Inhalers using pressurized Meter Dose Inhaler (pMDI)

Ventolin (SABA), Atrovent (short acting anticholinergic), Flovent, Zenhale and Advair (LABA/corticosteroid) are available in the pMDI form. The dose varies based on products.

*To use:* Shake the inhaler well prior to use. The patient should exhale and place their mouth over the mouthpiece. They need to start inhaling before they press on the inhaler. If they are not able to do so then they must use an aerochamber. The patient should hold their breath after use. **(Rinse their mouth after Zenhale, Advair use and Flovent.)**

To ensure patients are getting the proper dose, they should be using with a spacer/Aerochamber. This is especially important for patients that are not capable of understanding to inhale as the medication is released. If it contains a corticosteroid, then the spacer can help decrease side effects and increase the amount of medication that reaches the lungs by up to 6 times.

If the patient is still symptomatic despite maximal treatment of inhalers and proper technique, then the patient may require a nebulizer. Appropriate use of other inhalers should be encouraged over nebulizers. The use of nebulizers can increase the chances of hospital-acquired pneumonia. If a nebulizer is required, it is essential to clean, disinfect, rinse with sterile water (if required) and dry any small volume in-line.(4)

It is very important to follow these proper steps each time to ensure the patient is getting the proper medication. Remember that this is essential for them to breathe!

Brand Name	Generic Name	Dosing	Covered on ODB	Benefit
<b>Long Acting Anticholinergics (LAAC) single entity</b>				
Spiriva handihaler	Tiotropium 18 ug/capsule	1 capsule inhaled once daily	Yes	Better for compliance
Spiriva Respimat	Tiotropium 2.5 ug/actuation	2 actuations inhaled once daily	No	Use if unable to inhale powder
Tudorza Genuair	Acclidinium 400 mcg	1 inhalation BID	Yes	Indicator window to see if patient inhaled dose properly
Seebri Breezhaler	Glycopyrronium 50 ug/capsule	1 capsule inhaled once daily	Yes	Better for compliance
Incruse Ellipta	Umeclidinium 62.5 ug	1 inhalation once daily	No	Better for compliance
<b>Long Acting Anticholinergics (LAAC) / Long Acting Beta- Agonists (LABA)</b>				
Duaklir Genuair	Acclidinium 400 mcg/formaterol 12 mcg	1 inhalation BID	No	Indicator window to see if patient inhaled dose properly
Ultibro Breezhaler	Glycopyrronium 50 mcg/ indacaterol 110 mcg per capsule	1 capsule inhaled once daily	LU 459 (COPD)	Better for compliance
Inspiolto Respimat	Tiotropium 2.5 mcg/ olodaterol 2.5 mcg	2 actuations inhaled once daily	No	Use if unable to inhale powder
Anoro Ellipta	Umeclidinium 62.5/ vilanterol 25 mcg	1 actuation inhaled once daily	LU 459 (COPD)	Better for compliance
<b>Long Acting Beta Agonists (LABA)</b>				
Foradil	Formoterol fumarate 12 mcg/capsule	1 capsule BID May increase to 2 capsules inhaled BID if required) (maximum 48 mcg/day.)	LU 132 (only for asthma)	
Oxeze Turbuinhaler	Formoterol fumarate 6 or 12 ug/actuation	1 actuation inhaled Q12H; maximum 48 mcg/day	LU 132 (only for asthma)	
Onbrez Breezhaler	Incaterol 75 mcg/capsule	1 capsule inhaled once daily	LU 443 (COPD)	
Serevent Diskus /Diskhaler	Salmeterol 50 mcg	1 blister actuation inhaled BID	LU 132 (asthma) LU 391 (COPD)	
<b>Inhaled Corticosteroid/ Long Acting Beta Agonists (LABA)</b>				
Symbicort Turbuinhaler	Budesonide/ formoterol 100/6, 200/6	2 actuations inhaled BID (Maximum 8 actuations per day)	LU 330 (Asthma)	
Advair pMDI	Fluticasone/salmeterol 125/25 mcg/puff 250/25 mcg/puff	2 puffs BID	LU 330 (Asthma)	
Advair Diskus	Fluticasone/salmeterol 100/50 mcg/ actuation or 250/50 mcg /actuation Or 500/50 mcg/ actuation	1 puff BID *Note maximum of Diskus is 1 puff	LU 330 (Asthma)	
Breo Ellipta	Fluticasone/ vilanterol 100/ 25 mcg	1 actuation inhaled once daily	LU 456 (COPD)	Once daily dosing
Zenhale	Mometasone furoate/ Formoterol Fumarate dehydrate 200/5, 100/5, 50/5	2 inhalations BID	LU 330 (Asthma)	
<b>Short acting anticholinergics</b>				
Atrovent	Ipratropium 20 mcg/puff	2-4 puffs Q6-8H; maximum 12 puffs per day	Yes	
Atrovent nebulas	Ipratropium 250-500 mcg	250-500 mcg TID-QID	Yes (generic)	
<b>Short acting anticholinergics/ Short Acting Beta Agonists (SABA)</b>				
Duovent nebulas	Ipratropium/fenoterol 0.5 mg/ 1.25 mg per 4 mL	4 mL Q6H PRN	No	
Combivent nebulas	Ipratropium/salbutamol 0.5/2.5 mg per 2.5 mL	2.5 mL Q6H PRN	With LU see formulary	
Combivent Respimat	Ipratropium/ salbutamol 20/100 mcg	1 actuation QID; additional doses prn to maximum of 6 doses/ 24 h	No	

Brand Name	Generic Name	Dosing	Covered on ODB	Benefit
<b>Short Acting Beta-Agonists (SABA)</b>				
Ventolin/ Airomir/ generics	Salbutamol 100 mcg/puff	1-2 puffs TID-QID PRN (max 8 puffs/day)	Yes	
Ventolin Diskus	Salbutamol 200 mcg/ actuation	1 actuation TID-QID prn (maximum 800 mcg/day)	Yes	
Ventolin nebulas	Salbutamol 2.5 mg/ 2.5 mL, 5 mg/2.5 mL	2.5-5 mg QID prn	Yes (generics)	
Bricanyl Turbuinhaler	Terbutaline 0.5 mg/actuation	1 actuation inhaled Q4-6H (max 6 per day)	Yes	
<b>Inhaled Corticosteroids (only to be used in combination with LABA for COPD)</b>				
Flovent pMDI	Fluticasone 50 mcg, 100 mcg, 250 mcg	Dose varies; 2 puffs BID	Yes	
Flovent diskus	Fluticasone 50/100/250/500 mcg	1 puff BID	Yes	
Qvar	Beclomethasone 50/ 100 mcg	Dose varies; 250-500 ug/day	Yes	
Pulmicort Turbuinhaler	Budesonide 100 mcg/ 200 mcg/ 400 mcg	Dose varies; 400 to 2400 µg daily; can be given once daily, or divided BID/QID	Yes	
Pulmicort Nebuamp	Budesonide nebulizer 0.125 mg/mL, 0.25 mg/mL, 0.5 mg/mL	Dose varies; 1000-2000 mcg/day	Yes	
Alvesco pMDI	Ciclesonide 100 µg/inhalation 200 µg/inhalation	Dose varies; 100 to 800 µg per day; once to twice daily dosing	Yes	
Asmanex	Mometasone furoate DPI 100 µg/ 200 ug/ 400 ug	Dose varies; 400 µg once a day in the evening or 200 µg twice a day 100 µg pediatric	Yes	

## References

- 1) The Human and Economic Burden of COPD.
- 2) Inhalers for COPD. Pharmacist's Letter. January 2015 (Updated July 2015)
- 3) Canadian Pharmacist's Letter; November 2014; Vol: 21
- 4) Guidelines for Preventing Health-Care-Associated Pneumonia, 2003. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm>

## Images

- 1) Product Monograph Pr DUAKLIR™ GENUAIR® aclidinium bromide/formoterol fumarate dihydrate inhalation powder 400 mcg / 12 mcg
- 2) Product Monograph Pr ULTIBRO® BREEZHALER®, Indacaterol (as maleate)/glycopyrronium (as bromide) inhalation powder hard capsules, 110 mcg/50 mcg per capsule
- 3) Product Monograph Pr INCRUSE™ ELLIPTA® umeclidinium (as bromide) dry powder for oral inhalation 62.5 mcg umeclidinium per oral inhalation
- 4) Product Monograph Pr COMBIVENT® RESPIMAT® Ipratropium Bromide (as Monohydrate) and Salbutamol (as Salbutamol Sulfate) Inhalation Solution
- 5) Product Monograph. Spiriva.

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