

INHALERS for COPD

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INTRODUCTION

- Most drugs for COPD are given via inhalers.
- This reduces the dose that needs to be given and delivers the drugs directly to the airways so that there are few if any systemic effects.
- To be delivered throughout the airways the drug particles need to be $< 5 \mu\text{m}$.
- The larger particles are generally deposited in the upper airway and large airways.

Inhaler technique

- There is no perfect inhaler; the percentage of particles delivered by inhalers that are of this respirable size varies from 10 to 50 % depending on the inhaler.
- Inhaler technique is important, so select one that best suits each patient.
- The proper technique needs to be taught to each patient initially.
- Always review inhaler technique.

Types of inhalers

- **WET AEROSOLS:**
- Pressured metered dose inhalers (MDIs)
- Soft mist inhaler (Respimat)
- Nebulisers
- **DRY AEROSOLS:**
- Pre-loaded – Accuhaler, Turbuhaler, Genuair, Ellipta, Spiromax
- Capsule devices – Handihaler, Breezhaler

WET AEROSOLS

- The particles are liquid droplets.
- The particles are generated by the devices themselves independent of a patient's inhalation.
- Particle deposition in the airways is best with a full slow inspiration.
- Co-ordinating the inhalation with triggering the device is critical.
- The standard dose is two inhalations.

MDIs for COPD

- Seretide MDI 250/25 (fluticasone propionate 250 μg + salmeterol 25 μg) ii puffs bd.
- Symbicort Rapihaler (budesonide 200 μg + eformoterol 6 μg ii puffs bd.
- These are best given through a spacer:
 - easier co-ordination of the inhalation and MDI triggering.
 - most of the larger particles stay in the spacer rather than be deposited in the upper airway, so reducing local side effects.

MDI technique

- A few squirts are needed if the MDI is new or has not been used for a while.
- Remove the cap, shake the MDI and place it in the spacer.
- Breathe out fully, put the spacer in the mouth and fire it.
- Take a full breath in slowly, and hold it for a few seconds.
- Repeat the shaking, firing and inhalation for a second time to get the full dose.
- Rinse out the mouth.

Respimat

- Spiriva (tiotropium 2.5 µg) ii puffs daily
- Spiolto (tiotropium 2.5 µg +olodaterol 2.5 µg) ii puffs daily.
- The dose of tiotropium is lower than that in the Handihaler as the Respimat delivers a much higher % of fine particles. The lower airways receive the same dose.
- With each new prescription the device needs to be assembled before use.
- It then needs to be fired a few times.

Respimat technique

- Twist the top half 180° relative the bottom half. This tenses a spring. Remove the cap.
- Breathe out fully, and put the Respimat in the mouth.
- Take a full breath in slowly, and fire the inhaler at the start of inspiration. Hold the breath for a few seconds.
- Replace the cap and repeat the twisting, cap removal, firing and inhalation for a second time to get the full dose.
- If the cap is not replaced during the twisting, the device can be easily fired accidentally.

Nebulisers

- These are generally the most expensive and difficult devices to use so tend to be avoided, although there are modern ones that are quicker and easier.
- The driving pressure is critical in generating the fine particles. The hole size is also important so they need to be cleaned after each use to prevent crystallization of the drug affecting the hole size.
- Some patients get a good placebo response with them as they appear "dramatic," plus air blowing on the face reduces the sensation of dyspnoea.

DRY POWDER AEROSOLS

- To generate some fine particles, not only does the device have to be used correctly, but the patient has to inhale from it at the correct inspiratory flow rate.
- They cannot be used with spacers so larger particles are deposited in the upper airway, so with corticosteroids thrush and dysphonia can sometimes occur.
- Some of them provide feed-back to the patient about correct use.
- One dose is one puff.

Handihaler

- Spiriva (tiotropium 18 µg) i capsule daily.
- The patient only gets the capsules with a prescription so needs to buy or be given the Handihaler.
- Open the lid, then open the mouth piece.
- Place the capsule in the device, then press the mouth piece shut.
- Press the lever on the side, once only, and not while trying to inhale.

Handihaler

- Release the lever. If it is not released, no drug will come out of the capsule.
- Breathe out fully, put the Handihaler in the mouth and take in a quick full breath.
- Hold it for a few seconds.
- Take in a second full breath, without pressing the lever again.

Breezhaler

- Seebri (glycopyrronium 50 µg) i capsule daily.
- Onbrez (indacaterol 150 µg or 300 µg) i capsule daily.
- Ultibro (glycopyrronium 50 µg + indacaterol 110 µg) i capsule daily.
- The patient only gets a few devices and the capsules with each prescription.
- Take off the lid, then flip open the mouth piece.
- Place the capsule in the device, then press the mouth piece shut.

Breezhaler

- Press the two levers on the side, once only, and not while trying to inhale.
- Release the levers. If they are not released, no drug will come out of the capsule.
- Breathe out fully, put the Breezhaler in the mouth and take in a quick full breath.
- The capsule should make a rattling sound – if not, open the mouth piece and reposition the capsule.
- Hold the breath for a few seconds.

Breezhaler

- Open the mouth piece and remove the capsule. It is clear so that the patient can see if the drug has come out of it.
- The patient can usually feel some powder in the mouth.
- Some people have a few coughs after inhaling Onbrez.

Genuair

- Bretaris (aclidinium) i puff bd.
- Brimica (aclidinium + eformoterol) i puff bd.
- The device is preloaded with 60 doses.
- It is bd, which some patients prefer as they want to take something in the evening.
- Remove the cap.
- Press down the large coloured button fully.
- Do not shake the device.

Genuair

- The little window at the front should have changed from red to green.
- If the device is empty the window will stay red.
- Breathe out fully, put the device in the mouth and take in a full breath quickly.
- Hold the breath for a few seconds.
- If done correctly, the patient should feel some powder in the mouth, hear the device click with the inspiration, and the window will have changed back to red.

Ellipta

- Incruse (umeclidinium) i puff daily.
- Anoro (umelidinium + vilanterol) i puff daily.
- Breo (fluticasone furoate +vilanterol) 100/25 i puff daily. (The 200/25) dose is not used in COPD.)
- Trelegy (umelidinium + vilanterol + fluticasone furoate) i puff daily
- Each device is preloaded with 30 doses.

Ellipta

- Slide the cover around fully so that it clicks and does not go any further.
- Do not shake the inhaler or move it around as the dose will be lost.
- Breathe our fully and place the Ellipta mouth piece in the mouth, keeping the vents clear.
- Inhale fully and quickly, then hold for a few seconds.
- Rinse the mouth after Breo and Trelegy.

Seretide Accuhaler and Symbicort Turbuhaler

- Seretide 500/50 and Symbicort 400/12 are indicated for COPD, but the Accuhaler and Turbuhaler were originally designed for people with asthma.
- They thus require a good inspiratory flow rate to get the drugs out of the devices with some fine particles.
- If using Seretide and Symbicort in COPD, it is preferable to us the MDIs with spacers.

SUMMARY

- Inhaler technique is important.
- No inhaler is perfect, so select one that best suits each patient.
- The proper echnique needs to be taught to each patient initially.
- Always review inhaler technique.

Drugs for COPD

DRUGS THAT OPEN UP THE AIRWAYS		DRUGS THAT REDUCE INFLAMMATION
Anticholinergics	Beta Agonists	Corticosteroids
Spiriva Seebri Bretaris Incruse (Atrovent)	Onbrez (Serevent) (Oxis) (Foradile)	(Flixotide) (Pulmicort) (Alvesco) (prednisolone)
Ultibro or Anoro or Brimica or Spiolto		Seretide or Symbicort or Breo or Trelegy

Summary of single drugs for COPD

Some people will be taking

- Spiriva, Seebri, Bretaris or Incruse



Summary of double drugs for COPD

Some people will be taking

- Ultibro or Anoro



- or Brimica or Spiolto



Summary of drugs with corticosteroids for COPD

Some people with COPD will be taking

- Spiriva, Seebri, Bretaris or Incruse AND Seretide or Symbicort or Breo



- OR just Trelegy



Some inhalers should not be taken with others as they have the same types of drugs in them, so mixing them may cause side effects, but be of no extra benefit.

- If you take Spiriva, Seebri, Bretaris or Incruse

DO NOT ALSO TAKE

- Ultibro, Anoro, Brimica, Spiolto or Trelegy

Some inhalers should not be taken with others as they have the same types of drugs in them, so mixing them may cause side effects, but be of no extra benefit.

- If you take Obrez

DO NOT ALSO TAKE

- Ultibro, Anoro, Brimica, Spiolto, Seretide, Symbicort, Breo or Trelegy

Some inhalers should not be taken with others as they have the same types of drugs in them, so mixing them may cause side effects, but be of no extra benefit.

- Ultibro, Anoro, Brimica, Spiolto

DO NOT ALSO TAKE

- Spiriva, Seebri, Bretaris, Incruse, Onbrez, Seretide, Symbicort, Breo or Trelegy

Some inhalers should not be taken with others as they have the same types of drugs in them, so mixing them may cause side effects, but be of no extra benefit.

- Seretide, Symbicort, Breo

DO NOT ALSO TAKE

- Onbrez, Ultibro, Anoro, Brimica, Spiolto or Trelegy

Some inhalers should not be taken with others as they have the same types of drugs in them, so mixing them may cause side effects, but be of no extra benefit.

- Trelegy

DO NOT ALSO TAKE

- Any other inhaler for COPD