THE IMPORTANCE OF CLINICALLY EFFECTIVE INHALER TECHNIQUE

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Aim of Session

- To highlight the importance of effective inhaler technique
- To point out what patients do wrong
- To discuss the most common mistakes patients make
- To teach the difference in technique between dry powder inhalers and aerosol inhalers
- To highlight the benefit of using a spacer device
- To discuss how to properly clean a spacer device
https://m.youtube.com/watch?v=PBCvRcA2LnE&feature=youtu.be

https://m.youtube.com/watch?v=bDHEEV0M62Y
### Common Mistakes

#### Mistakes with pressurized metered dose inhalers (pMDI)
- Protecting cap not removed: 5.35%
- Inhaler not held upright: 1.78%
- Inhaler not shaken before use: 57.14%
- Activation not early enough: 67.8%
- No slow and deep inhalation: 69.64%

#### Mistakes with dry powder inhalers (DPI)
- Inhaler not correctly reloaded: 13.6%
- Mouthpiece not in the mouth: 3.8%
- No deep and forceful inhalation: 18.53%

#### General mistakes
- Not deeply exhaled before inspiration: 65.8%

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Adapted from: Beerendonk van I, Mesters I, Mudde AN, Tan TD. Assessment of the inhalation technique in outpatients with asthma or chronic obstructive pulmonary disease using a metered-dose inhaler or dry powder device. 1998. Journal of Asthma; 35: 273-279
Why does it matter if patients get it wrong?

- They will not get the benefit of the drug
- No relief of symptoms
- Waste of money

- Why do patients get it wrong??
Problems Associated with Inhalers

Device and Technique
Inhaler devices
Problems Associated with Inhalers..

- Patients are on multiple different devices for different symptoms and these require different techniques
- Shape/Colour
- Ease of use
- Lack of dose counter/too small to see
- Multi-step technique
- Dexterity problems
- Co-ordination
- Lack of feedback that dose has been delivered
- Risk of double dosing
What is correct inhaler technique?

DPI Vs MDI
### Differences between DPI and MDI techniques

<table>
<thead>
<tr>
<th>DPI’s</th>
<th>Aerosol MDI’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larger particles</td>
<td>Small particles</td>
</tr>
<tr>
<td>Patient has to create the aerosol</td>
<td>Device creates the aerosol</td>
</tr>
<tr>
<td>Require a fast, forceful inhalation</td>
<td>Require a slow, gentle inhalation</td>
</tr>
<tr>
<td>Common problem: inhalation is <strong>too weak</strong></td>
<td>Common problem: inhalation is <strong>too fast</strong></td>
</tr>
</tbody>
</table>
## Speed of inhalation

<table>
<thead>
<tr>
<th>Good Technique</th>
<th>Poor Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 80% swallowed</td>
<td>□ 95% swallowed</td>
</tr>
<tr>
<td>□ 20% deposition</td>
<td>□ 5% deposition</td>
</tr>
</tbody>
</table>
Inspiratory Flow Rate has an Influence on Drug Deposition

As the lungs are the target organs depositing the drug elsewhere can cause side effects.

<table>
<thead>
<tr>
<th>Inspiratory Flow</th>
<th>Drug Deposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Slow</td>
<td>Mouth</td>
</tr>
<tr>
<td>Too Fast</td>
<td>Throat</td>
</tr>
<tr>
<td>Correct Speed</td>
<td>Lungs</td>
</tr>
</tbody>
</table>
Comparing DPI with MDI

- Studies have shown only 7.6% of patients use an MDI correctly (Al-Showair et al, 2007)

- Specific Errors Include:
  - 42% errors in flow rate
  - 47% in co-ordination
  - 24% not breath holding
  - 39% not breathing deeply (ADMIT, 2015)

- Supported by further research comparing DPI’s and MDI’s
Demonstration
The good old MDI

- Still most commonly used

- Correct Technique
  - Take cap off
  - Shake
  - Exhale fully
  - Put mouthpiece in mouth
  - Breathe in, slowly and deeply,
  - Depress canister
  - Continue to inhale steadily and deeply
  - Hold breath 10 seconds
  - Wait 30 seconds before next dose.
DPI/MDI Demonstration

- Breath out first
- Open device until it clicks
- Seal lips tightly around the mouth piece
- Breath in fast
- Exhale away from the device
Non-pre loaded DPI’s

- Peal back foil – do not try to pop out like a tablet
- One capsule per dose
- Ensure capsule is empty post use
What to check... Is the patient getting it right?

- **Observation**
  - Shaking the device if necessary
  - Complete exhalation prior to using device
  - Using device correctly – orientation of device, changing capsules etc, correct technique
  - Waiting between doses if taking more than single dose
  - Maintenance of devices

- **Check Technique at every available opportunity**
  - Do not assume because you taught it once before they have remembered all that you said

- **No side effects**
  - If technique is poor they are likely to report side effects
Breath-actuated/Easibreathe Device

- Research has demonstrated:
  - Greater asthma control than MDI
  - Fewer GP consultations
  - Compared to MDI - A large study of 7412 patients demonstrated that when using ICS, breath actuated devices led to:
    - 25% less SABA use
    - 64% less oral steroid
    - 44% less antibiotics use

Chrystyna H & Price D. Primary Care Respiratory Journal (2009); 18(4): 243-249
Spacer devices
Why use a **Spacer with an Inhaler?**

**Inhaler alone**

When an inhaler is used alone, medicine ends up in the mouth, throat, stomach and lungs.

**Inhaler used with spacer device**

When an inhaler is used with a spacer device, more medicine is delivered to the lungs.

"Comparative respiratory deposition of Tc labeled particles of albuterol using a metered dose inhaler, a metered does inhaler with Aerocam® spacer and OptiChamber® spacer in healthy human volunteers using gamma-sciintigraphy," R. Beilm, PhD, Scintipor, Inc., Indianapolis, IN and D. Doherty, MD, Dept. of Pulmonology, University of Kentucky Medical Center, Lexington, KY, 1997.

Images kindly provided by Respironics HealthScan Inc.

Allies Against Asthma, Center for Pediatric Research, 855 W. Brambleton Ave., Norfolk, VA 23510, 757-668-6435
Use and Care of Spacer Devices

- The drug should be administered by repeated single actuations of the MDI into the spacer, each followed by inhalation.
- There should be minimal delay between actuation and inhalation.
- Tidal breathing is as effective as single breaths.
- Spacers should be cleaned monthly rather than weekly as per manufacturer's recommendations or performance is adversely affected.
- They should be washed in detergent and allowed to dry in air. The mouthpiece should be wiped clean of detergent before use.
- Drug delivery may vary significantly due to static charge. Metal and other antistatic spacers are not affected in this way.
- Plastic spacers should be replaced at least every 12 months but some may need changing at six months.
Not just technique...

If patients don’t know how to use their device it can lead to non-compliance
Patient Education

- Clinician demo
- Use of placebos
- Right Breathe  [www.rightbreathe.com](http://www.rightbreathe.com)
- Training devices
- Hand-outs
- Internet
- Pharmaceutical Company websites/material
- BLF
- YouTube
www.rightbreathe.com

Inhaler prescribing information

Inhalers
Search, filter and find the right inhaler from all those currently available

Spacers
Start your search for the right inhaler by choosing a spacer

Pathways
Find the right inhaler by choosing a point on a local, national or global pathway

❤️ Think before you prescribe
Educating and Checking patients..

- [https://m.youtube.com/watch?v=bGCfCGw9h24](https://m.youtube.com/watch?v=bGCfCGw9h24)
New Device!! Measuring inspiratory flow rate
Regular Effective Review

- **COPD**
  - Check inhaler technique
  - Ensure diagnosis / severity is correct
  - Appropriate pharmacotherapy in line with NICE
  - MRC
  - Frequency of exacerbations
  - Address smoking cessation
  - Address hypoxaemia
  - Address flu vaccinations
  - Appropriateness for pulmonary rehabilitation
  - COPD Management Plan
  - Appropriateness for palliative care discussions

- **ASTHMA**
  - Check Inhaler technique
  - Check compliance with treatment
  - Stepping Up to control symptoms
  - Stepping down once control maintained
  - RCP 3 questions
  - Address smoking cessation
  - Asthma management Plan
Competency Assessments

Genuair

<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Check dose counter</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Remove cap by squeezing arrows and pulling</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Hold inhaler so large coloured button is facing straight up</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Without tilting inhaler, press and release the button</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Check control window has changed from red to green</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Breathe out gently, away from the inhaler</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Place mouthpiece in mouth and close lips to form a good seal. Keep inhaler horizontal.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Breathe in strongly and deeply. Keep breathing in after click is heard</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Hold breath for 5 seconds or as long as is comfortable</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>While holding breath, remove inhaler from mouth</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Breathe out gently, away from inhaler</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Check control window has changed to red</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Replace cap to cover the mouthpiece</td>
<td></td>
</tr>
</tbody>
</table>

Score /13

Feedback:
Placebos

- All pharmaceutical representatives are happy to supply placebos/education material – many companies offer a self order service or will personally deliver to you.
Thank you.

COPD
Bronchiectasis
Asthma
Interstitial Lung Disease
Differential diagnosis
Spirometry
Clinical assessment skills
Oxygen assessment and treatment
Delivering community based respiratory care

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