Long-term maintenance of pharmacists' inhaler technique with a novel educational tool

IA Basheti, HK Reddel, CL Armour, SZ Bosnic-Anticevich

Dry Powder Inhalers

- Efficient devices, however, incorrectly used

- Turbuhaler (TH) - Incorrect technique is common (54% of patients)

- Accuhaler/Diskus (ACC) - Incorrect technique is common (50% of patients)

Pharmacists and technique

- Pharmacists provide patients with their inhalers (new or refill)
- Pharmacists are in an excellent position to educate patients on correct inhaler technique
- However, few pharmacists review and educate their customers on inhaler technique

(Osman 1999, Nimmo 1993)

Why?

- Incorrect inhaler technique:
  - Health care providers (various devices): 31-85%
  - Pharmacists TH: 43-71%, ACC: 55%
- Lack of confidence
- Perception that advice may not be welcome

AIM

To compare the effect of a pharmacist intervention, focusing on device technique training vs. standard practice, on pharmacists’ inhaler technique skills short-term and long-term

The educational workshop for pharmacists

Introduction, asthma management, Peak Flow Meters and monitoring asthma

Questionnaire:
Demographics and past education on PFM, ACC, and TH

ACC, TH and PFM technique assessment, PFM education

Randomisation

Active
TH, ACC education
Assessment of device technique

Control
Study protocol, documentation, data collection

Study protocol, documentation, data collection
Participant recruitment

Pharmacists

Control PFM technique

Patients

Active PFM technique + DPI technique

Pharmacists

R

Inhaler technique intervention

Assess technique

Highlight label with initial problems

Educate

Attach label to inhaler
Inhaler Technique Checklists

**Turbuhaler**
1 - Remove cap from inhaler
2 - Keep inhaler upright
3 - Rotate grip until "click"
4 - Exhale to residual volume
5 - Exhale away from the mouth piece
6 - Mouth piece between teeth and lips
7 - Inhale forcefully and deeply
8 - Hold breath for 5 seconds
9 - Exhale away from mouth piece

**Accuhaler/Diskus**
1 - Open inhaler
2 - Push lever back completely
3 - Exhale to residual volume
4 - Exhale away from mouthpiece
5 - Mouthpiece between teeth and lips
6 - Inhale forcefully and deeply
7 - Hold breath for 5 seconds
8 - Exhale away from mouthpiece
9 - Close inhaler

---

Score 1 point for each correct item (max 9)

(Van der Palen, 1998)

---

**Pharmacists’ demographics**

<table>
<thead>
<tr>
<th></th>
<th>Active (n=16)</th>
<th>Control (n=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Male</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td>Age (mean ±SD)</td>
<td>40.4 (± 10.7)</td>
<td>33.4 (± 9.3)</td>
</tr>
<tr>
<td>Years in practice (mean±SD)</td>
<td>16.1 ±11.4</td>
<td>10.1±9.4</td>
</tr>
</tbody>
</table>
Proportion of pharmacists with correct technique before and after education

**Before education (Active and Control)**

<table>
<thead>
<tr>
<th>% pharmacists</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active - baseline</td>
<td>20</td>
<td>60</td>
<td>20</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control - baseline</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

**Before and after education (Active)**

<table>
<thead>
<tr>
<th>% pharmacists</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active - baseline</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Active - end of workshop</td>
<td>80</td>
<td>60</td>
<td>20</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- TH
- ACC

Active group – followed for 6 months
Number of repeats of "show and tell" counselling

**TH group**

<table>
<thead>
<tr>
<th>Months</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td>80</td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>60%</td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

**ACC group**

<table>
<thead>
<tr>
<th>Months</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td>80</td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
<td>60</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>60%</td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>
Time for delivering the education (mins)

(TH)       (ACC)

| Time of inhaler technique education mean (95% CI) |
|-----------------|-----------------|
| 0 1 2 3 6       | 0 1 2 3 6       |

Pharmacist technique - TH

Inhaler technique score, mean (95% CI)

Months

0 3 6 12 24

Mann-Whitney U test
p=0.002

Similar results for ACC
Patients’ data:
Pharmacist intervention focusing on inhaler technique was significantly better than a standard intervention on:

* Inhaler Technique
* Peak Flow Variability
* Asthma Related Quality of Life
* Perceived Control
* Daily reliever use
* Mean Daily Peak Flow
* Asthma severity

(Basheti I 2007)

Summary

- Inhaler technique is poor - pharmacists and patients
- Simple intervention about DPI technique
  - “Train the trainer” in a brief evening workshop
    - Feasible for delivery in community pharmacy (<5 mins)
    - Effective in improving inhaler technique - Both pharmacists and patients
    - Optimal inhaler technique skills for pharmacists long-term
    - Improved asthma outcomes for asthma patients
    - This type of intervention is feasible and sustainable in clinical practice
- A continuing professional development module for health professionals has been developed