Incorrect inhaler technique is common in patients with COPD – data from the TIE study

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Background
For effective drug delivery it is essential to ensure that patients can use their inhaler devices. Patients’ inhaler technique should be monitored at each health care visit according to guidelines.

Aim
To evaluate inhaler technique in COPD patients and to assess how many patients have received information about correct technique and had their inhaler technique controlled under the previous 12 months.

Methods
The COPD patients from two study centres demonstrated their inhaler technique with all their different inhalers in use at the first study visit. The errors were counted. A correct and an incorrect inhaler technique were defined as having no errors respective ≥1 error in any of following four critical steps:
- ability to open the inhaler/remove the cap
- positioning the inhaler
- loading the inhaler/preparing the dose
- exhalation into the inhaler mouthpiece after loading.

Two questions regarding received information and control of inhaler technique were asked:
Have you received instructions on how to use your inhalers?
Have your inhaler technique been controlled?

All data are presented as the percentage of the total number of observations.

Table 1. Patient characteristics grouped by inhaler technique (correct vs incorrect).

<table>
<thead>
<tr>
<th>Age, median (range)</th>
<th>Total N (%)</th>
<th>Correct (%)</th>
<th>Incorrect (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=253)</td>
<td>(n=127)</td>
<td>(n=126)</td>
<td></td>
</tr>
<tr>
<td>70 (39-87)</td>
<td>70 (47-87)</td>
<td>73 (39-87)</td>
<td></td>
</tr>
<tr>
<td>Sex, female n (%)</td>
<td>141 (56)</td>
<td>62 (49)</td>
<td>79 (63)</td>
</tr>
<tr>
<td>male n (%)</td>
<td>112 (44)</td>
<td>65 (51)</td>
<td>47 (37)</td>
</tr>
<tr>
<td>FEV1, pred % mean SD</td>
<td>53 (18)</td>
<td>55 (19)</td>
<td>51 (16)</td>
</tr>
</tbody>
</table>

Inhaler devices in inhalation control n (%) | 456% | 310 (68) | 146 (32)

Results
A total of 126 of the 253 enrolled patients (50 %) demonstrated an incorrect inhaler technique.

Patients with correct and incorrect inhaler technique had similar age, gender distribution and lung function (FEV1 % predicted) (Table 1).

The number of patients who reported that they had received information about correct technique for all their devices and who had had their technique controlled during the last year was 69 (28%) respectively 64 (26%) (Figure 1).

Inhaler technique varied between the groups of medications. Of the LAMA users 88% demonstrated a correct inhaler technique. Of the ICS/LABA users 50% had a correct technique (Figure 2).

The most common errors in the control of inhaler technique were holding the inhaler in an incorrect position and inability to load the device (Figure 3).

Conclusions
Incorrect inhaler technique was observed in 50% of the patients.
Less than 30% of the patients reported that they had received information about inhaler technique or had their inhaler technique controlled by a health caregiver during the previous 12 months.

Figure 1. Percentage of patients who reported having received information about inhaler technique and having had a control of inhaler technique under the previous 12 months.

Figure 2. Inhaler technique (correct vs incorrect) for patients with the different classes of medications with are commonly used in COPD.

Figure 3. Percentage of patients who did not perform the inhaler technique correct (n=126) was 5% (error 1), 71% (error 2), 34% (error 3) and 13% (error 4).

Acknowledgement
This study is part of an ongoing multicenter observational COPD study in Sweden: Tools for Identifying exacerbations (TIE).


Table 1.

Table 2.

Figure 1.

Figure 2.

Figure 3.