Development of a COPD Exacerbation Recognition Tool (CERT) for use by Chinese patients: item reduction and final content

**Background**
- Patients under report exacerbations of COPD.
- Unreported exacerbations have similar outcomes to reported ones.
- A key factor for under-reporting may be patients' lack of understanding of the significance of worsening symptoms.
- The objective was to develop a COPD Exacerbation Tool (CERT) to provide guidance for seeking medical attention when they worsened.
- The qualitative identification of 28 symptoms experienced by patients with exacerbations has been presented at ATS 2019.
- This poster reports item reduction and selection of CERT items.

**Methods**
- The previously identified 29 candidate items were completed by 150 patients in three centres in China (north, southwest and east mainland China), 50 per centre.
- The association between item responses and demographic factors was tested.
- Exploratory factor analysis (EFA) was used to identify domains.
- A panel of statisticians, patient reported outcome specialists and clinicians, took into account all the data to ensure an adequate balance of items based on frequency response and factor loading in the EFA.

**Inclusion and exclusion criteria**
- Inclusion criteria:
  - male or female; age ≥20 years, sputum positive confirmed COPD; treated COPD exacerbation within 3 months prior to the study visit; informed consent.
- Exclusion criteria:
  - current diagnosis of asthma or clinically relevant bronchitis, concurrent significant, uncontrolled, other active medical condition.

**Results**

**Table 1 Demographics**

<table>
<thead>
<tr>
<th>Item no.</th>
<th>Description</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>Labored breathing</td>
<td>0.80</td>
</tr>
<tr>
<td>Item 2</td>
<td>Shortness of breath</td>
<td>0.76</td>
</tr>
<tr>
<td>Item 3</td>
<td>Exhaustion &amp; fatigue</td>
<td>0.69</td>
</tr>
<tr>
<td>Item 4</td>
<td>Chest distress</td>
<td>0.63</td>
</tr>
<tr>
<td>Item 5</td>
<td>Abnormal sound during breathing (wheezing)</td>
<td>0.51</td>
</tr>
</tbody>
</table>

**Table 2 Response rates**

<table>
<thead>
<tr>
<th>Severity score</th>
<th>Change score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate and severe combined</td>
<td>0.76</td>
</tr>
<tr>
<td>Severe</td>
<td>0.17</td>
</tr>
</tbody>
</table>

**Table 3 Mean response rate and mean factor loading (Severity & Change scores combined)**

**Summary and Conclusions**
- **Two factors were identified:**
  - Factor 1 breathlessness and activity limitation
  - Factor 2 cough and sputum
- **Five items were selected for the CERT based on frequency and factor analysis:**
  - Worsening cough
  - Increased volume of sputum
  - Shortness of breath
  - Laboured breathing
  - Limitation of activity

**References**
3. Xu et al. Eur Respir J. 2010;35:1022
5. Qianli Jones, Grace Wang, Brentford, United Kingdom; Inst of Respiratory Disease, North Kuanren General Hospital; GlaxoSmithKline, Shanghai, China.