Lung function assessed by home Forced Oscillation and self reported symptoms during COPD exacerbations

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on behalf of CHROMED consortium

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CHROMED is an EU-funded, multicenter, randomized trial aimed at evaluating the socio-economic impact of a home-monitoring platform on the quality of life COPD patients with comorbidities.

Methods

- Data from 70 patients in the monitoring arm.
- Patient compliance: number of measures received/number of scheduled measures.
- A worsening event has been defined as a cluster of persistent alarms generated within 7 days.
- A symptom-based exacerbation was identified using diary cards if at least one major and one minor symptom were present for at least 2 consecutive days (Seemungal et al., Am J Respir Crit Care Med 1998).
- Association between a worsening event, a prescribed treatment and the presence of a symptom-based exacerbation was investigated for the week preceding and the week after the date of generation of the first alarm.

Population

Table 1 – Baseline data

<table>
<thead>
<tr>
<th>Nr of patients (M/F)</th>
<th>57/13</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>71.6 ± 5.9</td>
</tr>
<tr>
<td>BMI (Kg/m²)</td>
<td>27.4 ± 5.2</td>
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<tr>
<td>Smoking history</td>
<td>42.8 ± 25.5</td>
</tr>
<tr>
<td>%FEV1 postbd</td>
<td>47.8 ± 15.5</td>
</tr>
<tr>
<td>%FVC postbd</td>
<td>72.0 ± 19.0</td>
</tr>
<tr>
<td>Exacerbations last yr</td>
<td>2.1 ± 1.2</td>
</tr>
<tr>
<td>Hospitalsizations last yr</td>
<td>1 ± 0.9</td>
</tr>
</tbody>
</table>

Results

- NONE: 4%
- SOB: 1%
- CARDIOVASCULAR + SOB + OBESITY: 4%
- CARDIOVASCULAR + OBESITY: 6%
- CARDIOVASCULAR + SOB: 9%
- CARDIOVASCULAR: 76%

Table 2: Symptom diary card. Major symptom (M), minor symptom (m)

Population

Please select any WORSENING of symptoms ABOVE YOUR USUAL daily level:

- No changes
- Increased BREATHLESSNESS (M)
- Increased SPUTUM COLOUR (M)
- Increased SPUTUM AMOUNT (M)
- Increased COUGH (m)
- Increased WHEEZE or CHEST TIGHTNESS (m)
- A COLD such as a runny or blocked nose (m)
- FEVER (m)
- SORE THROAT (m)

Do you have one or more of the following?

- INCREASED PHYSICAL FATIGUE
- INCREASED CASHING

Partners of the consortium:

Conclusion

- Patients’ compliance to the study protocol was high, confirming the suitability of FOT as an unsupervised monitoring tool in a community setting.
- The majority of CHROMED events were associated with a treatment and/or a worsening in lung perceived symptoms.
- In a small group of patients, a worsening in lung mechanic was neither associated with a worsening in symptoms nor with a prescribed treatment.

Worsening events

- 381 Alarms have been generated in the whole period resulting in 311 worsening events.
- Rate of worsening events per patient was 0.65±0.3 per month.
- 48% of the CHROMED worsening events were associated with a treatment and/or a symptom-based exacerbation. An additional 15% of events was associated with worsening of one major symptom. (see Fig.4)

Treated events:

- with symptom-based exacerbation
- without symptom-based exacerbation

Untreated events:

- with symptom-based exacerbation
- without symptom-based exacerbation:
  - with a worsening of one major symptom

Fig.4: Percentages of worsening events generated by the monitoring platform and associated with a treatment and/or an exacerbation or worsening in a major symptom. 1 101 alarms were excluded since handled more than 48 hours after their generation.

- Eight (11%) of the population patients generated 48% of the asymptomatic untreated worsening events.

Fig.2: Comorbidities distribution. Cardiovascular diseases: Congestive heart failure, hypertension, ischemic disease, hyperlipidemia. SOB: Sleep disordered breathing.

Fig.3: FOT measurements and completed questionnaires