Factors that predict failure in home management of an acute exacerbation of COPD

There is increasing interest in managing patients with non-severe acute exacerbation of chronic obstructive pulmonary disease (AECOPD) in the community. Hospital at Home and COPD Outreach programmes facilitate discharge of patients that would otherwise require hospital admission and have been shown to reduce hospital stay, readmission and healthcare costs without compromising patient care and satisfaction. Despite the human and health-related benefits associated with home services, ~50% of patients relapse within 8 weeks, requiring hospital readmission. In an effort to better understand the factors that predict relapse in these patients, we prospectively studied consecutive admissions with AECOPD discharged to a COPD Outreach programme. Patients with an AECOPD who met specific criteria were enrolled within 24 h of presentation to hospital. At presentation demographics, number of hospitalisations in the previous year, oxygen use, vaccination status (pneumococcal and influenza) and smoking history were assessed. Breathlessness and quality of life scores were recorded and oxygen saturations and spirometry were measured. Readmission data were collected at day 14, 6 weeks and 3 months following discharge. Readmission for AECOPD was defined as hospitalisation for >24 h and was assessed using hospital records.

Patient variables were analysed for their association with readmission by day 14, 6 weeks and 3 months using $\chi^2$ or the Fischer exact test. Multivariable analyses to evaluate for independent risk factors were performed using logistic regression with readmission as the categorical dependent variable. Admissions for reasons other than COPD were not included in the analyses.

In total, 349 admissions with AECOPD were enrolled in the study. There were 46 readmissions (13%) for AECOPD to hospital by day 14, 81 (23%) by 6 weeks and 106 (30%) by 3 months. The study had approximately equal numbers of males (49%) and females (51%), with a mean age of 69.2 years. Median FEV1 (forced expiratory volume in 1 s) % predicted was 46.43%.

Univariate analysis is shown in table 1. We found no association between readmission and age, gender, spirometry, quality of life score or length of index admission.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Day 14</th>
<th>Week 6</th>
<th>Month 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions in previous year</td>
<td>p=0.02</td>
<td>(OR 2.3, CI 1.1 to 4.7)</td>
<td>p=0.014</td>
</tr>
<tr>
<td>Long-term oxygen therapy</td>
<td>p=0.05</td>
<td>(OR 1.95, CI 0.9 to 3.8)</td>
<td>p=0.001</td>
</tr>
<tr>
<td>Portable oxygen</td>
<td>p=0.51</td>
<td>(OR 1.33, CI 0.6 to 2.9)</td>
<td>p=0.02</td>
</tr>
<tr>
<td>Home nebuliser</td>
<td>p=0.43</td>
<td>(OR 1.38, CI 0.6 to 3.1)</td>
<td>p=0.36</td>
</tr>
<tr>
<td>Oxygen saturation &lt;92% on room air</td>
<td>p=0.28</td>
<td>(OR 1.51, CI 0.7 to 3.3)</td>
<td>p=0.005</td>
</tr>
<tr>
<td>Pack-yearhistory ≥50</td>
<td>p=0.78</td>
<td>(OR 1.07, CI 0.35 to 3.3)</td>
<td>p=0.03</td>
</tr>
<tr>
<td>Borg scale ≥3</td>
<td>p=0.026</td>
<td>(OR 2.47, CI 1.2 to 5.1)</td>
<td>p=0.001</td>
</tr>
<tr>
<td>MMRC scale ≥3</td>
<td>p=0.02</td>
<td>(OR 2.56, CI 1.1 to 5.7)</td>
<td>p=0.01</td>
</tr>
<tr>
<td>Pharmacoeccoccal influenza</td>
<td>p=0.65</td>
<td>(OR 1.2, CI 0.58 to 2.4)</td>
<td>p=0.8</td>
</tr>
</tbody>
</table>

Pack-year history, number of packets of cigarettes smoked per day > total number of years smoking; Borg scale refers to level of dyspnoea at enrolment; MMRC (modified Medical Research Council) scale ≥3 refers to level of dyspnoea at enrolment.

Table 1. Univariate analyses of association between independent variables and readmission.

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REFERENCES
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