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. Rehospitalisation 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. Multivariate analyses to evaluate for independent risk factors were performed using logistic regression with readmission as the categorical dependent variable. Admissions for reasons other than AECOPD were not included in the analyses. Readmission rates. Further investigation needs to be carried out to identify if interventions can reduce rehospitalisation in the high risk patients identified by this study and what these interventions may be.

Eleanor M Dunican, Brenda M Deering, Dorothy M Ryan, Niamh M McCormack, Richard W Costello
Department of Respiratory Medicine, Beaumont Hospital, Dublin, Ireland

Correspondence to Professor Richard Costello, Department of Respiratory Medicine, Beaumont Hospital, Dublin 9, Ireland; rcostello@rcsi.ie

Competing interests None.

Ethics approval This study was conducted with the approval of the Beaumont Hospital ethics (medical research) Committee.

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### REFERENCES


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

<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 (OR 2.3, CI 1.1 to 4.7)</td>
<td>p=0.014 (OR 2.0, CI 1.2 to 3.5)</td>
<td>p=0.027 (OR 1.8, CI 1.0 to 3.0)</td>
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<tr>
<td>Long-term oxygen therapy</td>
<td>p=0.05 (OR 1.95, CI 0.9 to 3.8)</td>
<td>p=0.001 (OR 3.84, CI 2.2 to 6.7)</td>
<td>p=0.001 (OR 3.5, CI 1.9 to 6.3)</td>
</tr>
<tr>
<td>Portable oxygen</td>
<td>p=0.51 (OR 1.33, CI 0.6 to 2.9)</td>
<td>p=0.02 (OR 2.76, CI 1.5 to 5.1)</td>
<td>p=0.001 (OR 3.28, CI 1.7 to 6.3)</td>
</tr>
<tr>
<td>Home nebuliser</td>
<td>p=0.43 (OR 1.38, CI 0.6 to 3.1)</td>
<td>p=0.36 (OR 1.3, CI 0.71 to 2.5)</td>
<td>p=0.24 (OR 1.4, CI 0.8 to 2.7)</td>
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<tr>
<td>Oxygen saturation &lt;92% on room air</td>
<td>p=0.28 (OR 1.51, CI 0.7 to 3.3)</td>
<td>p=0.005 (OR 2.17, CI 1.4 to 3.3)</td>
<td>p=0.02 (OR 1.7, CI 1.2 to 2.4)</td>
</tr>
<tr>
<td>Pack-year history ≥50</td>
<td>p=0.78 (OR 1.07, CI 0.35 to 3.3)</td>
<td>p=0.03 (OR 3.25, CI 1.5 to 6.9)</td>
<td>p=0.01 (OR 2.86, CI 1.3 to 6.2)</td>
</tr>
<tr>
<td>Borg scale ≥3</td>
<td>p=0.026 (OR 2.47, CI 1.2 to 5.1)</td>
<td>p=0.001 (OR 3.23, CI 1.7 to 6.0)</td>
<td>p&lt;0.01 (OR 3.23, CI 1.7 to 6.1)</td>
</tr>
<tr>
<td>MMRC scale ≥3</td>
<td>p=0.02 (OR 2.56, CI 1.1 to 5.7)</td>
<td>p=0.001 (OR 2.0, CI 1.1 to 3.6)</td>
<td>p=0.01 (OR 2.0, CI 1.1 to 3.4)</td>
</tr>
<tr>
<td>Vaccination status (pneumococcal and influenza)</td>
<td>p=0.08 (OR 1.2, CI 0.58 to 2.4)</td>
<td>p=0.08 (OR 1.1, CI 0.61 to 1.9)</td>
<td>p=0.04 (OR 0.94, CI 0.55 to 1.6)</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.
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