LETTER

Emergency medical admissions at weekends are older and more functionally dependent than those admitted on weekdays

The recent announcement by the UK’s Health Minister of the need for reform in the delivery of inpatient medical care has seemingly been triggered by evidence showing poorer outcomes for patients admitted to hospital at the weekend.1 While differences in staffing levels might have a part to play in this, other factors may also be important.

We analysed the characteristics of patients admitted to the Acute Medical Unit at the Royal Victoria Hospital, Belfast during November 2012. This is a large unit in a major teaching hospital. Data relating to 536 consecutive admissions were collected. The nature of patients admitted between the hours of 17:00 on Friday and 09:00 on Monday (weekend admissions) were compared with those admitted at other times (weekday admissions). Since weekends comprise proportionally more night shifts than working weeks (2 days and 3 nights vs 5 days and 4 nights), we also compared the characteristics of patients presenting on weekday and weekend ‘days’ (09:00–17:00) and ‘nights’ (17:01–08:59). T tests were used to compare continuous variables between groups and the Mann-Whitney U test was used to compare ordinal variables.

Patients admitted at the weekend were significantly older than those admitted on weekdays (mean 68.61 (SD 18.3) vs 65.07 (20.5) years, p=0.045), and had higher measures of global disability as assessed on the modified Rankin scale (median score 3 vs 2, p=0.013). In contrast there was no statistically significant difference in National Early Warning Score (a compound measure of physiological well-being), white cell count, haemoglobin concentration, total carbon dioxide concentration and albumin concentration between groups. Patients admitted during daytime hours at the weekend were significantly more functionally dependent than those admitted during a weekday (median score 3 vs 2, p=0.012), although no difference was noted at night. Data are shown in table 1.

These findings illustrate major differences in the age and functional dependence of patients admitted to hospital at weekends. This may fully or partially explain the increased mortality that has been publicised. Additionally, the lack of difference in physiological and laboratory markers of illness acuity presented here questions the plausibility of the inference that increased senior medical presence at the weekend would improve outcomes. Evidence used to guide major changes in hospital workforce planning must be robust and scrutinised for the effects of confounding factors such as those demonstrated here.

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Contributors PKH analysed and interpreted data. MVR conceived and designed the work. JD collected and analysed data. All authors revised the manuscript and approved the final version.

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Table 1 Differences in characteristics between patients admitted at weekends and during weekdays

<table>
<thead>
<tr>
<th></th>
<th>All weekday admissions</th>
<th>All weekend admissions</th>
<th>p Value for difference</th>
<th>Weekday day admissions</th>
<th>Weekday night admissions</th>
<th>Weekday day admissions</th>
<th>p Value for difference</th>
<th>Weekday night admissions</th>
<th>p Value for difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>65.07</td>
<td>68.61</td>
<td>0.045</td>
<td>67.07</td>
<td>70.60</td>
<td>0.147</td>
<td>62.42</td>
<td>66.92</td>
<td>0.104</td>
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<tr>
<td>Median modified Rankin score</td>
<td>2</td>
<td>3</td>
<td>0.013</td>
<td>2</td>
<td>3</td>
<td>0.012</td>
<td>2.5</td>
<td>3</td>
<td>0.487</td>
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<tr>
<td>Median National Early Warning Score</td>
<td>2.5</td>
<td>3.0</td>
<td>0.474</td>
<td>2.0</td>
<td>2.0</td>
<td>0.719</td>
<td>3.0</td>
<td>3.0</td>
<td>0.244</td>
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<tr>
<td>Mean white cell count (×10⁹/L)</td>
<td>10.6</td>
<td>10.7</td>
<td>0.884</td>
<td>10.4</td>
<td>10.5</td>
<td>0.892</td>
<td>10.9</td>
<td>10.8</td>
<td>0.962</td>
</tr>
<tr>
<td>Mean haemoglobin concentration (g/L)</td>
<td>127.5</td>
<td>129.3</td>
<td>0.364</td>
<td>128.7</td>
<td>127.5</td>
<td>0.724</td>
<td>125.9</td>
<td>130.8</td>
<td>0.053</td>
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<tr>
<td>Mean total CO₂ concentration (mmol/L)</td>
<td>24.1</td>
<td>23.7</td>
<td>0.271</td>
<td>24.5</td>
<td>23.7</td>
<td>0.142</td>
<td>23.5</td>
<td>23.7</td>
<td>0.763</td>
</tr>
<tr>
<td>Mean albumin concentration (g/L)</td>
<td>41.3</td>
<td>41.9</td>
<td>0.384</td>
<td>40.6</td>
<td>42.8</td>
<td>0.021</td>
<td>42.3</td>
<td>41.2</td>
<td>0.234</td>
</tr>
</tbody>
</table>

Bold indicates p<0.05.