A cold truth about ‘winter pressure’.
A retrospective analysis of mortality by month of admission to a District General Hospital Acute Medical Unit.

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Introduction & Method

Blackpool Victoria Hospital’s Acute Medical Unit (AMU) has 36 beds. In 2017, 18374 unscheduled medical patients were admitted, and 284 (1.5%) died whilst on AMU. We built on work presented at SAM Belfast 2016, exploring differences in the overall mortality of monthly admissions, whilst examining any correlation with total monthly admissions or patient acuity. Our digital patient tracking system was filtered for all 2017 admissions, and the data was analysed using appropriate statistical tests. Data was weighted to correct for an unequal numbers of days in each month and calendar quarter.

Results

Monthly mortality was grouped by calendar quarter (Table 1), which spiked in Q1 (2.0%, P<0.000125) compared with indifferent mortality of remaining quarters. Q1 and Q3 had middling admissions (Figure 1) contrasted against the lowest in Q2 (P<0.01), and highest in Q4 (P<0.01). Acuity by NEWS2 on admission (RAG, Figure 2) demonstrates variance: the highest acuity proportion remained similar, whilst middle acuity increased in Q3 (P<0.01), but was indifferent in all others. Q4 had most lowest acuity (P<0.01), and Q3 the least (P<0.01). No variance was found in acuity between Q1 and Q2 (P>0.1).

Table 1: Quarterly Comparison

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions</td>
<td>4512</td>
<td>4226</td>
<td>4741</td>
<td>4895</td>
</tr>
<tr>
<td>Deaths on AMU</td>
<td>90</td>
<td>60</td>
<td>60</td>
<td>74</td>
</tr>
<tr>
<td>(2.0%)</td>
<td>(1.4%)</td>
<td>(1.3%)</td>
<td>(1.5%)</td>
<td></td>
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Discussion

A 43% increase in Q1 mortality is consistent with a ‘winter-effect’, seemingly unrelated to admission rate or patient acuity. This contravenes conventional assumptions. This is an area that clearly requires elucidation, as no thesis can be offered from this data as to why mortality varies so greatly during Q1.

Key stakeholders agree that a monthly stratification of age of admissions, and an analysis of frailty by Rockwood Score would be useful sequels to identify further themes. Both elements will have consequences on downstream length of stay, and thus flow from AMU. This could result in deaths attributed to AMU that would, in the summer, have been attributed to the wards, and would have been removed from this dataset.

Perhaps survival to discharge would be a better metric, rather than deaths on AMU.

Figure 2: Average Triage - Monthly & Quarterly

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