Appendices

Appendix 1: Christchurch Trauma Team Activation protocol.

1. Trauma Call Criteria:

   **ABNORMAL PHYSIOLOGY:**
   - A. Intubated or imminent airway loss
   - B. Respiratory distress: Respiratory rate > 30 or SpO2 < 90%
   - C. Shock: Systolic BP < 90 mmHg
     (consider pre-arrival request for O-Negative blood, up to six units)
   - D. Impaired consciousness: GCS < 13

   **SPECIFIC INJURIES:**
   - Penetrating injury to neck, head or torso
   - Paraplegia or quadriplegia (refer to Spinal Pathway)
   - ≥ 2 long bone fractures, complex pelvic fracture
   - Traumatic amputations proximal to knee or elbow
   - Flail chest
   - Burns > 20% (BSA) partial / full thickness or airway burns
   - Paediatrics Burns > 10% (Majol Burns Pathway)

2. Discretionary Activation:

   A discretionary trauma activation (either Call or Standby) may be made by the Emergency Medicine Specialist, Fellow, Senior Registrar or ACNM.

   A discretionary trauma activation is for a clinically concerning mechanism, physiology, or comorbidities, or a combination of those that do not meet the mandatory threshold but raise the possibility of significant injuries or an adverse outcome. Resource availability such as ED departmental overload can also be a factor in discretionary activation.

3. Trauma Standby Criteria:

   **MECHANISM OF INJURY:**
   - Fall greater than 3 metres (paediatrics 2 metres)
   - Pedestrian, cyclist or motorcyclist versus car
   - Ejection from vehicle, prolonged entrapment or rollover
   - Death on scene
   - Pregnancy > 20 weeks
   - Multiple casualties ≥ 4 (Consider Major Incident)
   - Trauma transfers from other centres

   If any one of these criteria are met:

   **TRAUMA CALL**
   Activate the trauma team by dialling 777 and stating:
   “Trauma Call” or “Paediatric Trauma Call” and give:
   ETA, N° of patients and age
   Plus any additional teams required e.g.
   Cardiothoracics, orthopaedics, neurosurgery

   Upgrade at any time if required

   **TRAUMA STANDBY**
   Inform the trauma team by dialling 777 and stating:
   “Trauma Standby” or “Paediatric Trauma Standby”
   Plus any additional teams required e.g.
   Cardiothoracics, orthopaedics, neurosurgery

   Consider

   **STANDBY**
   If surgical registrar review within 30 minutes not required (page direct on 8600)
Appendix 2: ISS and key performance indicators for major trauma patients who had a Trauma Team Activation vs those who didn’t, but met Trauma Team Activation criteria.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Trauma Team Activation Mean [SD] or n (%) (n=232)</th>
<th>No Trauma Team Activation, but meeting criteria n (%) (n=19)</th>
<th>Univariate statistical test</th>
<th>Multivariate statistical test</th>
<th>Multivariate model controlling for age and ISS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<tr>
<td>&lt;65</td>
<td>196 (84.5%)</td>
<td>15 (78.9%)</td>
<td>Odds Ratio</td>
<td>OR 0.69 (95% CI: 0.22–2.19)</td>
<td>NA</td>
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<tr>
<td>65+</td>
<td>36 (15.5%)</td>
<td>4 (21.2%)</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>Mortality</td>
<td>17 (7.3%)</td>
<td>2 (10.5%)</td>
<td>Odds Ratio</td>
<td>OR 0.67 (95% CI: 0.14–3.15)</td>
<td>Logistic regression OR 0.43 (95% CI: 0.07–2.73)</td>
</tr>
<tr>
<td>Time to CT (mins)</td>
<td>86.6 [97.3]</td>
<td>162.1 [144.7]</td>
<td>Mann-Whitney U test</td>
<td>p=0.001</td>
<td>Cox regression p=0.007§</td>
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<tr>
<td></td>
<td>Median=60</td>
<td>Median=116</td>
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<tr>
<td>ED LOS¶ (hours)</td>
<td>3.8 [2.8]</td>
<td>4.9 [3.4]</td>
<td>Mann-Whitney U test</td>
<td>p=0.119</td>
<td>Cox regression p=0.259§</td>
</tr>
<tr>
<td>Admission to ICU</td>
<td>83 (35.8%)</td>
<td>4 (21.1%)</td>
<td>Odds Ratio</td>
<td>OR 2.09 (95% CI: 0.67–6.50)</td>
<td>Logistic regression OR 1.42 (95% CI: 0.44–4.50)</td>
</tr>
<tr>
<td>ICU LOS¶ (days)</td>
<td>11.1 [12.7]</td>
<td>5.3 [3.4]</td>
<td>Mann-Whitney U test</td>
<td>p=0.410</td>
<td>Cox regression p=0.134§</td>
</tr>
<tr>
<td>Hospital LOS¶ (days)</td>
<td>12.8 [58.6]</td>
<td>6.4 [3.7]</td>
<td>Mann-Whitney U test</td>
<td>p=0.027</td>
<td>Cox regression p=0.012§</td>
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<tr>
<td>Surgery</td>
<td>136 (58.6%)</td>
<td>10 (52.6%)</td>
<td>Odds Ratio</td>
<td>OR 1.28 (95% CI: 0.50–3.26)</td>
<td>Logistic regression OR 1.38 (95% CI: 0.53–3.60)</td>
</tr>
<tr>
<td>Time to surgeryþ</td>
<td></td>
<td></td>
<td>Mann-Whitney U test</td>
<td>p=0.56</td>
<td>NA</td>
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<tr>
<td>&lt;24hrs</td>
<td>73 (53.7%)</td>
<td>6 (50.0%)</td>
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<td>24–48hrs</td>
<td>24 (17.6%)</td>
<td>2 (20.0%)</td>
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<td>48–72hrs</td>
<td>11 (8.1%)</td>
<td>2 (20.0%)</td>
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<td>&gt;72hrs</td>
<td>28 (20.6%)</td>
<td>1 (10.0%)</td>
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<td>NA</td>
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</tbody>
</table>

† p-values reported except in cases of odds ratios where 95% confidence intervals are reported; † Injury Severity Score available for 225 TTA and 19 no TTA, but meeting criteria; § Cox regression for continuous variables; ¶ LOS= Length of stay; þ % of those that had surgery.