Reflections on the use of track and trigger scores for recognising clinical deterioration

Irina Angyal: aangyal@umcutrecht.nl BSN, RN Critical Care &
Desiree Tait: dtait@Bournemouth.ac.uk DNSc, RN NMS Principle Academic Nursing
Disclosure

- Irina Angyal has no conflict-of interest
- Desiree Tat has no conflict-of interest
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Table of contents

• Suboptimal Care
• Track and Trigger score (TTS)
• Difficulties of TTS
• Research in The Netherlands & The UK (and more)
• Way Forward
• References
Suboptimal care
or adverse events (AE’s)

• Evidence of suboptimal care has existed internationally since 1990’s (Ludikhuize et al, 2014; Tait 2010)

• Proposed solutions have included:
  • Measuring levels of acuity (Mark and Harless, 2011)

  • Physiological track and trigger and weighted response systems
    (Early Warning Scores / Sepsis screening (Royal College of Physicians, 2017, 2012; NIVEL, 2013)

  • Communication tools (SBAR) (Ludikhuize, 2011; Merten et al, 2017)

  • Critical care outreach or medical emergency teams (MET)
    (Ludikhuize, 2011; Tirkkonen et al, 2017)

• Rapid Response Systems (RRS)
Track and trigger score (TTS)

<table>
<thead>
<tr>
<th>MEWS score</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td></td>
<td>&lt;40</td>
<td>40-50</td>
<td>51-100</td>
<td>101-110</td>
<td>111-130</td>
<td>&gt;130</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>&lt;70</td>
<td>70-80</td>
<td>81-100</td>
<td>101-200</td>
<td>&gt;200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>&lt;9</td>
<td>9-14</td>
<td>15-20</td>
<td>21-30</td>
<td>&gt;30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;35.1</td>
<td>35.1-36.5</td>
<td>36.6-37.5</td>
<td>&gt;37.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVPU score</td>
<td></td>
<td>A (Alert)</td>
<td>V (Response to Voice)</td>
<td>P (Reacting to Pain)</td>
<td>U (Unresponsive)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worried about patient’s condition: 1 point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Urine production below 75 ml during previous 4 hours: 1 point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturation below 90% despite adequate oxygen therapy: 3 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Upon reaching 3 or more points → call resident in charge

Tabel 1: MEWS (Ludikhuize, 2014 in Subbe et al., 2001)
Difficulties of TTS

• The sensitivity and clinical effectiveness has been difficult to validate due to:


2. The impact on patient outcomes difficult to determine. (Churpek et al, 2017; Downey et al, 2017; Smith et al, 2013)

3. Roles and responsibilities remain blurred (Dalton et al, 2018; Ludin et al, 2018)

4. The challenge of recognising deterioration in specific client groups
The Netherlands & The UK

- The Netherlands
  - Research
  - Use of Rapid Response Systems

- Research UK
  - conditions
  - Professional gaze and model
The conditions:

- Clinical experience general and related to the specialist practice area
- Knowledge: situational, historical, theoretical, clinical
- Ability to perceive and utilise cues, pattern recognition, tacit knowing
- Emotional intelligence
- Professional practice skills
- Feeling in control: human and technical resources, self
- Mutual respect and support for colleagues
The professional gaze

- Professional practice of recognizing clinical deterioration.

- Professionals use complex decision making processes (Clinical gaze) that can be *supported* by track and trigger, weighted response and acuity assessment, MEWS, Sepsis Screening etc. RRS (White and Tait, 2019; Tait, 2009)
Model of professional gaze (Tait 2009)
Developments

• NEWS:
  • Reviewed system: specific client groups and “New Confusion” to the ACVPU

<table>
<thead>
<tr>
<th>Physiological parameter</th>
<th>Score 0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiration rate (per minute)</td>
<td>≤ 8</td>
<td>9–11</td>
<td>12–20</td>
<td>≥ 21</td>
</tr>
<tr>
<td>SpO₂ Scale 1 (%)</td>
<td>≤ 91</td>
<td>92–93</td>
<td>94–95</td>
<td>≥ 96</td>
</tr>
<tr>
<td>SpO₂ Scale 2 (%)</td>
<td>≤ 83</td>
<td>84–85</td>
<td>86–87</td>
<td>≥ 88</td>
</tr>
<tr>
<td>Air or oxygen?</td>
<td>Oxygen</td>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>≤ 90</td>
<td>91–100</td>
<td>101–110</td>
<td>111–121</td>
</tr>
<tr>
<td>Pulse (per minute)</td>
<td>≤ 40</td>
<td>41–50</td>
<td>51–90</td>
<td>91–110</td>
</tr>
<tr>
<td>Consciousness</td>
<td>Alert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>≤ 35.0</td>
<td>35.1–36.0</td>
<td>36.1–38.0</td>
<td>38.1–39.0</td>
</tr>
</tbody>
</table>

• Systematic Review 2017
Way forward

• International standardisation of a TTS
• Stronger focus on developing rapid clinical decision making skills and education.
• Address other cultural and origination problems
• Economic evaluation of the use and effectiveness of:
  • TTS
  • SBAR
  • Rapid response teams

• More research
References 1


References 2


End