Irish Children’s Triage System (ICTS)

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On behalf of the Emergency Department team
Our Lady's Children's Hospital, Crumlin

April 14th 2016
Triage

- *Trier*, to separate, sort, sift or select

- Process of determining priority of patient treatment based on severity of condition

- Allocates patient treatment efficiently and safely when resources are insufficient for all to be treated immediately
Triage today

• Triage is an essential function of any Emergency Department where many patients attend simultaneously or in rapid succession

• It is a *dynamic* process of prioritising the order and urgency with which patients are seen by medical staff
Manchester Triage System

- **Advantage**
  - Education available in Ireland

- **Disadvantages**
  - Acknowledgement that general triage scales are less reliable at the extremes of age
  - Abnormal physiological definitions for children are subjective
  - **1996** MTS- 52 flowcharts with 6 child specific flowcharts
  - **2006** revised MTS-- 50 flowcharts with 7 child specific flowcharts
  - **2014** revised MTS- 55 flowcharts with 10 child specific flowcharts
What is the Irish Children’s Triage System (ICTS)?

- Quality improvement initiative

- Evidence based tool incorporating many discriminators developed by nurses and doctors including vital signs and pain scores

- Aims to deliver consistent reproducible triage to children regardless of location of the ED in Ireland
# General Discriminators

<table>
<thead>
<tr>
<th>Definition</th>
<th>Triage categories</th>
<th>General discriminators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Red</td>
<td>Airway compromise</td>
</tr>
<tr>
<td>Triage category</td>
<td>1</td>
<td>Inadequate breathing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exsanguinating haemorrhage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Currently seizing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age related abnormal pulse and respiratory rate *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GCS ≤ 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oxygen saturations ≤ 90%</td>
</tr>
<tr>
<td>Meaning of triage category</td>
<td>Orange</td>
<td>Severe pain (pain score 7-10)</td>
</tr>
<tr>
<td>Recommended time to be seen by doctor/reassessment</td>
<td>2</td>
<td>Uncontrollable major haemorrhage</td>
</tr>
<tr>
<td></td>
<td>Very urgent</td>
<td>GCS 13 or 14</td>
</tr>
<tr>
<td></td>
<td>≤ 10 minutes</td>
<td>Age related abnormal pulse and respiratory rate *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signs of compensated shock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oxygen saturations ≤ 92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ideal time targets</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Moderate pain (pain score 4-6)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Uncontrollable minor haemorrhage</td>
</tr>
<tr>
<td></td>
<td>Urgent</td>
<td>GCS 13 or 14</td>
</tr>
<tr>
<td></td>
<td>≤ 60 minutes</td>
<td>Age related abnormal pulse and respiratory rate *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signs of unconsciousness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>History of unconsciousness</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Mild pain (Pain score 1-3)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Problem &lt;48 hours</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>Problem &gt; 48 hours</td>
</tr>
<tr>
<td></td>
<td>≤ 120 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ideal time targets</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Problem &gt; 48 hours</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Non urgent</td>
</tr>
<tr>
<td></td>
<td>Non urgent</td>
<td>≤ 240 minutes</td>
</tr>
</tbody>
</table>
Physiological assessment

- Children often present with subtle signs and symptoms of illness/injury

- Abnormal respiratory rate and heart rate may be the only indication of underlying sepsis or impending shock

- Respiratory rate and heart rate have defined age related parameters in ICTS
Vital Signs Reference Grids

Respiratory Rate Values
Table 1.

<table>
<thead>
<tr>
<th>Age</th>
<th>≤ - 2 S/D</th>
<th>- 1 S/D</th>
<th>Normal</th>
<th>+ 1 S/D</th>
<th>+ 2 S/D</th>
<th>&gt; + 2 S/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 3 months</td>
<td>&lt; 20</td>
<td>21 – 30</td>
<td>30 – 60</td>
<td>60 – 70</td>
<td>70 – 80</td>
<td>&gt; 80</td>
</tr>
<tr>
<td>4 – 6 months</td>
<td>&lt; 20</td>
<td>20 – 30</td>
<td>30 – 60</td>
<td>60 – 70</td>
<td>70 – 80</td>
<td>&gt; 80</td>
</tr>
<tr>
<td>7 -12 months</td>
<td>&lt; 17</td>
<td>17 – 25</td>
<td>25 – 45</td>
<td>45 – 55</td>
<td>55 – 60</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>1 – 3 years</td>
<td>&lt; 15</td>
<td>15 – 20</td>
<td>20 – 30</td>
<td>30 – 34</td>
<td>35 – 40</td>
<td>&gt; 40</td>
</tr>
<tr>
<td>4 – 6 years</td>
<td>&lt; 12</td>
<td>12 – 16</td>
<td>16 – 24</td>
<td>24 – 28</td>
<td>28 – 32</td>
<td>&gt; 32</td>
</tr>
<tr>
<td>&gt; 7 years</td>
<td>&lt; 10</td>
<td>10 – 14</td>
<td>14 – 20</td>
<td>20 – 24</td>
<td>24 – 26</td>
<td>&gt; 26</td>
</tr>
</tbody>
</table>

Heart Rate Values
Table 2.

<table>
<thead>
<tr>
<th>Age</th>
<th>≤ - 2 S/D</th>
<th>- 1 S/D</th>
<th>Normal</th>
<th>+ 1 S/D</th>
<th>+ 2 S/D</th>
<th>&gt; + 2 S/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 3 months</td>
<td>&lt; 65</td>
<td>65 – 90</td>
<td>90 – 180</td>
<td>180 – 205</td>
<td>205 – 230</td>
<td>&gt; 230</td>
</tr>
<tr>
<td>4 – 6 months</td>
<td>&lt; 63</td>
<td>63 – 80</td>
<td>80 – 160</td>
<td>160 – 180</td>
<td>180 – 210</td>
<td>&gt; 210</td>
</tr>
<tr>
<td>7 -12 months</td>
<td>&lt; 60</td>
<td>60 – 80</td>
<td>80 – 140</td>
<td>140 – 160</td>
<td>160 – 180</td>
<td>&gt; 180</td>
</tr>
<tr>
<td>1 – 3 years</td>
<td>&lt; 58</td>
<td>58 – 75</td>
<td>75 – 130</td>
<td>130 – 145</td>
<td>145 – 165</td>
<td>&gt; 165</td>
</tr>
<tr>
<td>4 – 6 years</td>
<td>&lt; 55</td>
<td>55 – 70</td>
<td>70 – 110</td>
<td>110 – 125</td>
<td>125 – 140</td>
<td>&gt; 140</td>
</tr>
<tr>
<td>&gt; 7 years</td>
<td>&lt; 45</td>
<td>45 – 60</td>
<td>60 – 90</td>
<td>90 – 105</td>
<td>105 – 120</td>
<td>&gt; 120</td>
</tr>
</tbody>
</table>

Adapted PaedCTAS 2008
Assessment during ICTS

• Presenting problem

• General appearance

• Physiological findings

• Age of the child

• Significant past medical history that may have an impact on the current attendance
ICTS
Step 1
(24 flow sheets)

- Abdominal pain / isolated abdominal injury
- Airway / breathing difficulty
- Altered blood glucose (to include patients with diabetes mellitus)
- Back pain / isolated neck and or back injury
- Burns / scalds
- Chest pain / isolated chest injury
- Dental problem
- Ear / nose problem
- Eye injury / problem
- Foreign body – not inhaled
- Genitourinary problem
- Head injury/ Headache / VP shunt
- Limb problem / limb injury
- Major trauma
- Overdose and poisoning
- Psychosocial problem (including self harm)
- Rashes (blanching/non blanching)
- Seizures/ Absent episode / Collapse
- Testicular pain
- Throat problem
- Unwell child (including pyrexia)
- Unwell infant (including pyrexia)
- Vomiting diarrhoea
- Wounds/Signs of local inflammation
Step 3

• Start at the top of the flow sheet and work down

• Allocate the highest category based on descriptors
Airway / Breathing Difficulty

- Airway compromise
- Respiratory failure / respiratory arrest
- $\text{SaO}_2 \leq 90\%$ in room air
- Unresponsive / Glasgow Coma Scale Score (GCS) ≤ 12
- Refer to Vital Sign Reference Grid
- Silent Chest
- Drooling
- ‘Tripod’ positioning
- Uncontrollable haemoptysis

1. YES

2. YES

3. YES

4. YES

5. YES
Step 4

- Allocate the patient to the appropriate area (waiting room, sub-waiting area, treatment room, etc)
- Implement appropriate post-triage monitoring
- Ensure appropriate handover of care
- Reassess
- Documentation
Modified Paediatric Triage System
(Our Lady’s Children’s Hospital, Crumlin - OLCHC)

1. Irish Children’s triage tool
2. Contingency Plan
3. Post-triage monitoring guidelines
4. Educational programme
5. Ongoing review and validation
ICTS
Step 1
(24 flow sheets)

- Abdominal pain / isolated abdominal injury
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- Unwell child (including pyrexia)
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- Vomiting diarrhoea
- Wounds/Signs of local inflammation
## Post-Triage Monitoring Guidelines

<table>
<thead>
<tr>
<th>CATEGORY 1</th>
<th>CATEGORY 2</th>
<th>CATEGORY 3</th>
<th>CATEGORY 4</th>
<th>CATEGORY 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abdominal Pain / Isolated Abdominal Injury</strong></td>
<td>Continuous Monitoring</td>
<td>Record NEURO 1/2-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record PAIN 1-hourly</td>
</tr>
<tr>
<td><strong>Acute Testicular Pain</strong></td>
<td>Continuous Monitoring</td>
<td>Record TPRBP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Airway / Breathing Difficulty</strong></td>
<td>Continuous Monitoring</td>
<td>Record RESP 1-hourly</td>
<td>Record RESP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Altered Blood Glucose</strong></td>
<td>Continuous Monitoring</td>
<td>Record NEURO 1-hourly</td>
<td>Record BUN 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Asthma / Wheeze</strong></td>
<td>Continuous Monitoring</td>
<td>Record RESP 1-hourly</td>
<td>Record RESP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Back Pain / Isolated Neck and / or Back Injury</strong></td>
<td>Continuous Monitoring</td>
<td>Record NEURO 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record PAIN 1-hourly</td>
</tr>
<tr>
<td><strong>Burns / Scalds</strong></td>
<td>Continuous Monitoring</td>
<td>Record NEURO 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record PAIN 1-hourly</td>
</tr>
<tr>
<td><strong>Chest Pain / Isolated Chest Injury</strong></td>
<td>Continuous Monitoring</td>
<td>Record TPRBP 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Dental Problem</strong></td>
<td>Continuous Monitoring</td>
<td>Record NEURO 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record PAIN 1-hourly</td>
</tr>
<tr>
<td><strong>Ear / Nose Problem</strong></td>
<td>Continuous Monitoring</td>
<td>Record TPRBP 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
<tr>
<td><strong>Eye Injury / Problem</strong></td>
<td>Continuous Monitoring</td>
<td>Record TPRBP 1-hourly</td>
<td>Record TPRBP 1-hourly</td>
<td>Record IN / OUT 1-hourly</td>
</tr>
</tbody>
</table>

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Post triage monitoring guidelines

• **Benefits staff/children/ parents**
  - Recommendations for frequency and type of observations
  - Triage nurse available to triage new children as they present
  - One sheet for easy reference
  - Improves patient safety and contact
  - Assists in the development of care pathways

• **Challenge**
  - Significant increase in nurses workload
<table>
<thead>
<tr>
<th>CATEGORY 1</th>
<th>CATEGORY 2</th>
<th>CATEGORY 3</th>
</tr>
</thead>
</table>
| Abdominal Pain / Isolated Abdominal Injury | Continuous Monitoring  
Record NEURO ½-hourly  
Record PAIN ½-hourly  
Record IN / OUT ½-hourly | ± Continuous Monitoring  
Record TPRBP ½-hourly  
Record PAIN ½-hourly  
Record IN / OUT ½-hourly |
| Acute Testicular Pain | Continuous Monitoring  
Record NEURO ½-hourly  
Record PAIN ½-hourly  
Record IN / OUT 1-hourly | Record TPRBP ½-hourly  
± Record NEURO ½-hourly  
± Record PAIN ½-hourly  
± Record IN / OUT 1-hourly |
| Airway / Breathing Difficulty | Continuous Monitoring  
Record RESP ½-hourly  
Record NEURO ½-hourly  
± Record PAIN ½-hourly  
± Record IN / OUT 1-hourly | ± Continuous Monitoring  
Record RESP ½-hourly  
± Record NEURO ½-hourly  
± Record PAIN ½-hourly  
± Record IN / OUT 1-hourly |
| Altered Blood Glucose | Continuous Monitoring  
Record NEURO ½-hourly  
Record BM 1-hourly  
Record KETONES 1-hourly  
Record IN / OUT 1-hourly | ± Continuous Monitoring  
Record NEURO ½-hourly  
Record BM 1-hourly  
Record KETONES 1-hourly  
Record IN / OUT 1-hourly |
| Asthma / Wheeze | Continuous Monitoring  
Record RESP ½-hourly  
± Record PAIN ½-hourly  
± Record IN / OUT 1-hourly | ± Continuous Monitoring  
Record RESP ½-hourly  
± Record PAIN ½-hourly  
± Record IN / OUT 1-hourly |
| Back Pain / Isolated Neck | Continuous Monitoring | ± Continuous Monitoring |
Thank you

Questions and comments