Critical Care Outreach – the UK approach

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What is Critical Care Outreach?
A hospital-wide approach to critical care aimed at levels of patient need rather than location
- Identify patients developing or at risk of critical illness
- Educate and share critical care skills with ward staff
- Advise on management and follow up

DOH, Comprehensive Critical Care (2000)

The Continuum of Critical Care Outreach

Pre-ICU PERT team
Identify, Intervene
Support, Facilitate

Post-ICU Follow-Up
Communicate, Advise
Support, Monitor

Bereavement
Support

Follow-up Clinic
(post-discharge)

PERT = Patient emergency response team

The Outreach Model

Word Patients
Integrate
Skills and knowledge gap

Level 0
Level 1
Level 2
Level 3

HDU/ICU Patients

Level 0: Patients whose needs can be met through normal ward care in an acute hospital.
Level 1: Patients at risk of deteriorating or recently relocated from higher levels of care. Needs can be met on ward with advice & support from critical care team.
Level 2: Patients requiring more detailed observation or intervention, single organ support, post-op care, step-down from level 3.
Level 3: Patients requiring respiratory support +/- 2 other organ support.

UCH Critical Care Outreach Team

Nurse Consultant
2 Critical Care Outreach Specialist nurses
8 Outreach Nurses
24 hrs/day, 7 days/week

Medical Back Up – ICU SpR/Consultant Anaesthetist 1 session/week

ICNARC Evaluation of Outreach Services 2005

- 139 of 191 (73%) Acute hospitals surveyed in England provided Outreach

<table>
<thead>
<tr>
<th>Service component</th>
<th>Selected days only</th>
<th>&lt;12 hours per day</th>
<th>24 hours per day, 7 days per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow-up of discharged level 2 and 3 patients on general wards</td>
<td>48.9%</td>
<td>71.2%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Direct bedside clinical support service to wards</td>
<td>45.7%</td>
<td>66.7%</td>
<td>14.5%</td>
</tr>
</tbody>
</table>
Antecedents to Cardiac arrest/death/emerg ICU admission

- Threatened airway
- Respiratory rate <5
- Respiratory rate > 36
- Pulse rate <40
- Pulse rate >140
- Systolic blood pressure <90 mmHg
- Fall of GCS by two points or more
- Prolonged seizure activity

Time between first physiological instability and referral to ICU.

<table>
<thead>
<tr>
<th>In hospital &gt; 24hrs prior to ICU admission</th>
<th>In hospital &lt;24hrs prior to ICU admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than 12 hours</td>
<td>34%</td>
</tr>
<tr>
<td>66%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Monitoring is not enough

- Watkinson et al 2006
- 402 patients – 201 monitored, 201 usual care
- Alarms set on monitor
- No sig. diff. for number of major events between groups
- No sig. diff. for cardiac arrests or mortality at 96h

Changing behaviour……..

- Odell et al (Resuscitation 2007)
- Critical care outreach increased respiratory rate recording from 6% to 77.9%
- What about a response?

How do Nurses ensure a response?

- Packaging - effective reporting of deterioration by ward nurses
  - Subtle signs of clinical deterioration (intuition)
  - Contextualisation - diagnosis, rate of change, patient specifics etc.
  - Credibility package
- Empowering Nurses
- Successful Response
- Persuasive referral


Watkinson et al. Anaesthesia, 2006, 61, pages 1031–1039

NCEPOD report - An acute problem? May 2005
National Confidential Enquiry into Patient Outcome and Death

Andrews and Waterman – JAN 2005
Sheila K. Adam

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Call criteria used to call PERT

Education, Education, Education

- The primary need is education of ward staff
- Proactive management – early recognition, appropriate response,
  - eg. sepsis care bundles,
- Prevention of Critical Deterioration
- Decisions re. End of life

Observed Changes in Behaviour - Hypoxaemic patients

Previously – nasal cannulae (with flow turned up to 15 L/min)
Non-rebreath bag – Able to deliver 85% - 90% O₂

Rapid Response/MET or Crit Care Outreach

<table>
<thead>
<tr>
<th>MET</th>
<th>CCOT (UCLH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiorespiratory arrest</td>
<td>Arrest team</td>
</tr>
<tr>
<td>Threatened airway</td>
<td>Arrest team</td>
</tr>
<tr>
<td>Respiratory rate ≤ 5 b/min &gt; 25 b/min</td>
<td></td>
</tr>
<tr>
<td>Pulse rate ≤ 40 b/min ≥ 50 b/min</td>
<td></td>
</tr>
<tr>
<td>Systolic BP ≤ 90 mmHg &gt; 120 mmHg</td>
<td></td>
</tr>
</tbody>
</table>

Concern about patient call

The Modified early warning system

<table>
<thead>
<tr>
<th>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>Pulse (bpm)</td>
<td>&lt;40</td>
<td>40-50</td>
<td>51-100</td>
<td>101</td>
<td>110</td>
<td>111-129</td>
<td>≥130</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>≤8</td>
<td>9-14</td>
<td>15-20</td>
<td>21-29</td>
<td>≥30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp (°C)</td>
<td>≥35</td>
<td>≥35.5</td>
<td>≥36</td>
<td>≥36.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS level</td>
<td>Alert</td>
<td>Voice</td>
<td>Pain</td>
<td>Unresponsive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GCS</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>≤12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine output</td>
<td>nil</td>
<td>&lt;1mL/kg/h</td>
<td>&lt;1mL/kg/h</td>
<td>≥3mL/kg/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP</td>
<td>≤95</td>
<td>≤140</td>
<td>≥141</td>
<td>≥145</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Alert level = total score of 4 or more
or increase in score of 2 or GCS drops by 2 points

Algorithms to guide practice

ACUTE DYSPIAEOEA

-Contact ICU/Anaesthetists, Acute management includes antibiotics

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Benefits:
Reduction in Hospital Mortality

Critical Care Outreach benefits for Ward patients
- Matched randomised trial - 16 Wards (medical, surgical, elderly care) over 32 weeks (N=7450 pts)
- Sequential introduction of Outreach service
- Used matched wards as controls/intervention and before – after in 2 different data sets

Result - stat. significant reduction in mortality for patients within the intervention wards
(two-level odds ratio: 0.70; 95% CI 0.50–0.97)

Priestley et al. (2004). Intensive Care Medicine, 32, 1396-1404

PERT calls and survival to hospital discharge
2001-5 at UCLH

Incidence of Inpatient cardiac arrest calls
2000-2004

Ward staff opinion of Critical Care Outreach

Survey of 134 staff (47% response rate from 288 questionnaires)

Richardson et al (2004) Nursing in Critical Care, 9, 26-33

National Institute for Clinical Excellence (NICE) guideline – Acutely ill patients in hospital (consultation document) April 2007

High (MET)
Emergency call to the team with critical care competencies and diagnostic skills. This team should include an experienced medical practitioner

Low (ward managed)
Increased frequency of observations and alert nurse in charge

Medium (CCOT etc)
Urgent call to team with primary medical responsibility For the patient with simultaneous call to personnel with Core competencies for acute illness. Eg. Critical Care Outreach team

95% say "We love Outreach"

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