To Empower or Disempower, THAT is the Question

The Implementation of a Clinical Emergency Response System
Our Old Clinical Response System Had 2 Levels

1. Clinical Problem
   - Paging System
   - Team RMO (or registrar)
     a. Manages problem
     b. Contacts their senior
     c. Refers for consult
     d. Other

2. Cardiac Arrest
   - ‘222’
   - Cardiac arrest team
   - ACLS
The Conventional MET Response System Has 2 Levels

1. Clinical Problem
   - Paging System
   - Team RMO (or registrar)
     - a. Manages problem
     - b. Contacts their senior
     - c. Refers for consult
     - d. Other

2. MET Trigger
   - Paging System
   - MET (ICU) team
     - a. Manages problem
     - b. Changes Treatment
     - c. Move to ICU
     - d. DNR
Characteristics of MET

- Derangement noted
- Problem is assessed
- Problem is treated
- Staff empowered to seek help
- High level resuscitation skills
- Deskilling of ward
- High rates of limitation of care
- Perhaps….
- Fantastic
- Different team treat
- Native or home team bypassed
- Even simple resuscitation supervised by outsiders
- ? Overwork of ICU
- ? Wrong team documenting
Characteristics of MET

- Escalation process documented
- Escalations audited
- Senior staff review patients at all hours of the day and night
- Appropriate education of calling staff
- Appropriate education of responding staff
- Senior clinicians responsible for running the system

Alternate systems must have these VITAL characteristics
Our New Clinical Response System is a Modified MET

• What is similar to a MET
  – Simple and widely disseminated criteria for automatic activation based on physiological derangement
  – Simple activation using a single extension number
  – An inclusive system which encourages all staff (medical, nursing) to activate the system
Our New Clinical Response System is a Modified MET

- What is different to a MET
  - The response has Multiple levels, not 2
  - The first level response is by the primary team registrar and not by external staff
  - The second level response (ICU-based) is activated by further patient deterioration and/or lack of satisfactory response 30 minutes after the first activation
Our New Clinical Response System Has 4 Levels

1. **Clinical Problem**
   - Method of Activation: Paging System
   - Responder: Team RMO (or registrar)
     - a. Manages problem
     - b. Contacts their senior
     - c. Refers for consult
     - d. Other

2. **Clinical Emergency**
   - Responder: Team/on-call registrar
     - a. Manages problem
     - b. Contacts snr, refers etc
     - c. Modifies future activations
     - d. Activates the next level

3. **ICU Assist**
   - Responder: ICU Registrar and RN
     - a. Manages problem
     - b. Contacts snrs/colleagues
     - c. Admit HDU/ICU
     - d. Other mgt

4. **Cardiac Arrest**
   - Responder: Cardiac arrest team
     - a. Manages problem
     - b. Contacts snrs/colleagues
     - c. Admit HDU/ICU
     - d. Other mgt

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**SYDNEY SOUTH WEST AREA HEALTH SERVICE**

**NSW HEALTH**
**RPA Clinical Emergency Response System**

**Cardiac Arrest**
- No signs of life
- Unresponsive
- Deteriorating rapidly

**Press Emergency Buzzer & Dial 222**
- State: Cardiac Arrest
- Ward and Bed Number
- Commence life support.

**Clinical Emergency**

- Patient has reached a calling criterion
- Is the patient deteriorating rapidly?
  - Yes: Call a Cardiac Arrest
  - No: Dial 222

1. **State:**
   - "Clinical Emergency"
   - (In Hours): Name and pager number of patient's Registrar
   - (Out of Hours): Registrar On-Call (medical/surgical/other)
   - Ward and Bed Number

2. Commence a Clinical Emergency Sticker in the progress notes.

In the next 30 minutes:
- If there has been no response from a registrar OR
- There has been a response but the situation is getting worse OR
- There has been a response, but you remain concerned about the patient

1. **State:**
   - "ICU Assist"
   - Ward and Bed Number
2. Start a Resuscitation Record and Prepare Arrest Trolley

**Sydney South West Area Health Service NSW Health**
A **Clinical Emergency** is defined when a patient achieves a Physiological Criterion

<table>
<thead>
<tr>
<th>GENERIC CALL CRITERIA FOR THE DETERIORATING PATIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRWAY</td>
</tr>
<tr>
<td>• IF THREATENED “222 CARDIAC ARREST”</td>
</tr>
<tr>
<td>BREATHING</td>
</tr>
<tr>
<td>• Respiratory Rate  &lt; 8 or &gt; 24</td>
</tr>
<tr>
<td>• Oxygen Saturation  &lt; 90%</td>
</tr>
<tr>
<td>• Subjective: Increased respiratory effort, states “can’t breath”, talking in short sentences, looks distressed</td>
</tr>
<tr>
<td>CIRCULATION</td>
</tr>
<tr>
<td>• Heart rate  &lt; 40 or &gt; 130</td>
</tr>
<tr>
<td>• Systolic Blood Pressure  &lt; 90 or &gt; 200</td>
</tr>
<tr>
<td>• Subjective: Looks unwell/distressed, pale, diaphoretic, clammy skin.</td>
</tr>
<tr>
<td>NEUROLOGICAL</td>
</tr>
<tr>
<td>• Decreased level of consciousness (from previous) (Use AVPU scale)</td>
</tr>
<tr>
<td>• Limb weakness or difficulty speaking (new onset)</td>
</tr>
<tr>
<td>• Seizures (new) (Have you done a BSL?)</td>
</tr>
<tr>
<td>OTHER</td>
</tr>
<tr>
<td>• Any patient you are worried about (Examples: low urine output, febrile, increased drain output, chest pain, increasing pain)</td>
</tr>
</tbody>
</table>
**Plus,**
Each Ward Has
Some
Additional Specific Criteria

### 6E1 CALL CRITERIA FOR THE DETERIORATING PATIENT

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AIRWAY</strong></td>
<td>IF THREATENED “222 CARDIAC ARREST”</td>
</tr>
<tr>
<td></td>
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</tr>
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<td>Oxygen Saturation &lt; 90%</td>
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<td></td>
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<td></td>
</tr>
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<td>Heart rate &lt; 40 or &gt; 130</td>
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<td></td>
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<td></td>
<td>Limb weakness or difficulty speaking (new onset)</td>
</tr>
<tr>
<td></td>
<td>Seizures (new)</td>
</tr>
<tr>
<td><strong>OTHER</strong></td>
<td>Any patient you are worried about</td>
</tr>
<tr>
<td><strong>6E1 SPECIFIC</strong></td>
<td>BSL &lt; 2.5mmol/L or BSL &lt; 4mmol/L with altered level of consciousness and no IV access</td>
</tr>
<tr>
<td></td>
<td>Urine output:</td>
</tr>
<tr>
<td></td>
<td>• In catheterised patient: new onset of anuria or oliguria</td>
</tr>
<tr>
<td></td>
<td>• In non-catheterised patient: UO &lt; 200mls over 8 hours unless patient is dialysis dependent.</td>
</tr>
<tr>
<td></td>
<td>Unrelieved chest pain &gt; 10 minutes</td>
</tr>
<tr>
<td></td>
<td>Severe, sustained or uncontrolled pain</td>
</tr>
</tbody>
</table>
Implementation Change Process
The RPA New Observation Chart Supports Monitoring and Decision Making

- Generic call criteria added to left of chart for easy reference
- All vital signs are now on the same page
- The call criteria are clearly visible to help facilitate easy recognition
- Addition of A.V.P.U neurological assessment to help guide nursing staff on when to perform a GCS
Risk Management

• Development of a risk register enabled us to identify organisational hotspots.

• Main risks identified:
  • Switchboard Staff
  • Residents
  • Surgical departments
  • Casual workforce
  • Outlying patients
Clinical Leadership

• Engagement with key stakeholders
  – Department Heads
  – Senior clinicians
  – Local clinical staff

• Steering committee membership essential for success of project
  – Executive support - Patient Safety Officer
  – Senior medical support
  – Project officer
Education - Nursing

• Development of education programs for:
  – System rollout
  – Graduate Nurses
  – Clinical Nurse Educators - Train the Trainer
  – Senior Nurses workshop.
• Utilisation of high fidelity simulation
• Workshops - mixture of theory, small workshops and simulation
• Resource intensive
Education - Nursing

• Education principles:
  – Back to basics approach
  – Importance of manual observations
  – How to perform a basic systematic physical assessment (A-E assessment)
  – How to communicate abnormal findings to other staff members
  – Deteriorating patient education requirement for monthly ward inservice calendar
Education - Medical

• Organisational support required to free medical staff from clinical duties to attend training
• Experiential and theoretical components essential
• Emphasis again on basic physical assessment techniques and communicating concerns
Clinical Governance

• Auditing essential
  – Observation charts pre and post implementation
  – Clinical case review following each CERS call

• Audit informs future education requirements

• Ability to provide a feedback loop to clinicians following each call - learning organisation
Implementation Schedule
Write Escalation Plans

• Each rollout requires:

  Phase 1
  • 6 weeks intensive education - system, observation chart, rapid core assessment of deteriorating patient
  • Intensive key stakeholder engagement
    – Department Heads, Departmental Teams, NUM’s, CNC’s, CNE’s

  Phase 2
  • 2 weeks of close monitoring post implementation
Clinical Emergency Data
Clinical Emergency Calls per Day

<table>
<thead>
<tr>
<th>Month</th>
<th>Calls per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>1.19</td>
</tr>
<tr>
<td>Feb</td>
<td>1.6</td>
</tr>
<tr>
<td>Mar</td>
<td>1.87</td>
</tr>
<tr>
<td>Apr</td>
<td>2.33</td>
</tr>
<tr>
<td>May</td>
<td>3.48</td>
</tr>
<tr>
<td>June</td>
<td>5.1</td>
</tr>
<tr>
<td>July</td>
<td>3.8</td>
</tr>
<tr>
<td>Aug</td>
<td>4.7</td>
</tr>
<tr>
<td>Sept</td>
<td>4.2</td>
</tr>
<tr>
<td>Oct</td>
<td>6.3</td>
</tr>
</tbody>
</table>
Clinical Emergency and ICU Assist Calls
Jan - October 2009

Clinical Emergency
ICU Assist
Cardiac Arrest, Pre-Arrest, ICU Assist, Clinical Emergency Calls by Specialty. October 2009

Geriatric Medicine: 32
Cardiology: 27
Respiratory: 18
Gastroenterology: 17
Neurology: 15
Neurology: 12
Oncology: 10
Cardiothoracic Surgery: 9
Colorectal Surgery: 8
General Medical: 8
Renal Medicine: 7
Haematology: 7
Orthopaedics: 6
Vascular: 6
Transplant: 6
UGIT Surgery: 6
D & A: 2
Gynaecology: 2
Immunology: 2
Ophthalmology: 1
ENT: 1
Urology: 1
Plastics: 1
Clinical Emergency Calls by Day of Week.
Jan - Oct 2009

<table>
<thead>
<tr>
<th>Day</th>
<th>Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>127</td>
</tr>
<tr>
<td>Tuesday</td>
<td>154</td>
</tr>
<tr>
<td>Wednesday</td>
<td>156</td>
</tr>
<tr>
<td>Thursday</td>
<td>171</td>
</tr>
<tr>
<td>Friday</td>
<td>146</td>
</tr>
<tr>
<td>Saturday</td>
<td>129</td>
</tr>
<tr>
<td>Sunday</td>
<td>119</td>
</tr>
</tbody>
</table>
Time of Calls
(Clinical Emergency and ICU Assist)

<table>
<thead>
<tr>
<th>Month</th>
<th>In-Hours</th>
<th>After-Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1</td>
<td>72%</td>
</tr>
<tr>
<td>February</td>
<td>1</td>
<td>28%</td>
</tr>
<tr>
<td>March</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Initial Outcomes. October 2009

- Stabilised on ward: 164
- T/F to ICU: 16
- T/F to CCU: 9
- Escalated to Cardiac Arrest: 5
Major Achievements
Major Achievements

Patient Outcomes

• Sustained reduction in IIMS relating to patient deterioration on levels that have systems implementation

• Rollout of system has not over-ridden primary care team involvement

• Re-engineered escalation process with some novel inclusions:
  • Ability to alter the call criteria

• Sustained change on auditing and case review - system is working as designed
Major Achievements

Engagement

• Buy in from key stakeholders throughout process - widely supported
• Commenced research on the new observation chart and the documentation of vital signs
Major Achievements

Workload + Documentation

• Ability to identify wards / teams under stress.
• Ability to review relative work loads - day vs night vs weekend.
  – Redeploy staff.
  – Target education.
• Escalation plans documented and promulgated.
• Staff satisfaction/ security.
To Empower or Disempower, THAT is the Question

- The answer is: **EMPOWER**
  - Empower staff on the ward
    - To call and to TREAT
  - Educate staff
    - In recognition and treatment of the deteriorating patient
  - Escalate
    - Problems unable to be treated on ward
  - Evaluate
    - Outcome, timeliness, staff satisfaction, safety
  - Evolve the system
    - Ensure you are on the right course
Cardiac Arrests (VT, VF, PEA, A)
January - October 2006 - 2009

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>68</td>
<td>72</td>
<td>87</td>
<td>66</td>
</tr>
</tbody>
</table>

Total: 273
Jan-May 2008 v 2009: cardiac arrest outcomes

- Survived to Discharge: 30% in 2008, 22% in 2009
- Died In hospital: Decrease from 2008 to 2009

[Bar graph showing number of patients discharged alive in 2008 vs 2009]