Rescue Me: Saving the Vulnerable non-ICU Patient Population

Mary Kay Bader RN, MSN, CCNS, FAHA, FNCS
Mission Hospital – Mission Viejo CA
Badermk@aol.com
Disclosure

• American Association Neuroscience Nurses
  – President

• Medical Advisory Board
  – Brain Trauma Foundation
  – Neuroptics

• Honorarium
  – Bard/Neuroptics
Introduction

• Late 1990s: several studies found many hospital deaths were potentially preventable
  – Medical/Surgical units
  – Non-ICU patient care settings

• Observational studies suggest clinical deterioration occurs prior to a cardiac/respiratory arrest from 8 to 24 hours prior to the event

• Can the deployment of a “Early Warning System” (as The Cochrane Collaboration calls it) make a difference in patient outcomes??
## ROL: Preventable Deaths

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schein, Chest 1990; 98: 1388-92</td>
<td>70% (45/64) arrests with evidence of respiratory/neurologic deterioration with 8 hour</td>
</tr>
<tr>
<td>Franklin, Crit Care Med; 1994;22: 224-247</td>
<td>66% (99/150) abnormal signs and symptoms within 6 hours of arrest and MD notified 25% of cases (25/99)</td>
</tr>
</tbody>
</table>
| McQuillan, BMJ 1998;316:1853-1858.        | 39% of the patients sustaining acute emergencies were admitted to the ICU late in the clinical course  
                                             Major reasons for this phenomena included  
                                             • Failures in recognizing the clinical deterioration  
                                             • Failure to seek advice from an expert  
                                             • General lack of knowledge & supervision on the med-surg units  
                                             Delays in treatment/inadequate care on wards  
                                             • Unanticipated transfer to ICU  
                                             • Increase LOS  
                                             • Cardiac arrest  
                                             • Death |
| Goldhill et al Anesthesia 1999; 54: 853-860.| Physiological changes occur in the hours preceding a cardiac or respiratory arrest: Changes in BP, Pulse, Respiration, Pulse Ox and LOC signs often missed |
Incidence, location and reasons for avoidable in-hospital cardiac arrest in a district general hospital

Timothy J. Hodgetts\textsuperscript{a,*}, Gary Kenward\textsuperscript{b}, Ioannis Vlackonikolis\textsuperscript{c}, Susan Payne\textsuperscript{b}, Nicolas Castle\textsuperscript{b}, Robert Crouch\textsuperscript{d}, Neil Ineson\textsuperscript{b}, Loua Shaikh\textsuperscript{b}

- Laboratory findings not done or reported incorrectly
- Failure or inadequate response
- Delay by nurses to inform MD
- Delay be MD to respond
- Error in diagnosis
- Delay in Diagnosis
- X-ray interpretation missed
- Inadequate management

Resuscitation 54 (2002): 115-123
Other Contributing Factors

- Past 10-15 years in-patients are more seriously ill
  - Med Surg units have more acute patients
- Inefficient systems for bed management
  - #s of critical care beds (availability)
- Tighter RN staffing due (open beds-No RN)
- ED are backed up with patients and...
  - Emergent patients requiring ICU level of care
  - Sepsis, stroke, STEMI...
  - US – ED nurses have less critical care experience prior to working in the ED than those working in ED 1980s-1990s
What is a RRT?

• **RRT vs MET**
  – Medical Emergency Team
    • Led by a physician (intensivist, hospitalist or resident physician)
    • Critical Care Nurse
    • Respiratory Therapist
  – Rapid Response Team
    • Led by Critical Care nurse
    • Respiratory Therapist
    • Usually does not have a physician member
Studies on RRT/MET

• Explored the implementation of medical emergency teams (MET) aka Rapid Response Teams
  – Rapid assessment/stabilization
  – Optimal communication with physicians and staff
  – Education opportunities with floor staff
  – Assistance with acute patient and possible transfer to higher level of care
A prospective before-and-after trial of a medical emergency team

Rinaldo Bellomo, Donna Goldsmith, Shige hiko Uchino, Jonathan Buckmaster, Graeme K Hart, Helen Opdam, William Silvester, Laurie Doolan and Geoffrey Gutteridge

### Changes in number of cardiac arrests, bed-days and mortality, before and after introducing the medical emergency team (MET)

<table>
<thead>
<tr>
<th></th>
<th>Before MET</th>
<th>After MET</th>
<th>Difference (95% CI)</th>
<th>Relative risk ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cardiac arrests</td>
<td>63</td>
<td>22</td>
<td>41 (23–59)</td>
<td>0.35 (0.22–0.57)</td>
</tr>
<tr>
<td>Deaths from cardiac arrest</td>
<td>37</td>
<td>16</td>
<td>21 (7–35)</td>
<td>0.43 (0.26–0.70)</td>
</tr>
<tr>
<td>No. of days in ICU after cardiac arrest</td>
<td>163</td>
<td>33</td>
<td>130 (110–150)</td>
<td>0.20 (0.13–0.33)</td>
</tr>
<tr>
<td>No. of days in hospital after cardiac arrest</td>
<td>1353</td>
<td>159</td>
<td>1194 (1119–1269)</td>
<td>0.11 (0.09–0.13)</td>
</tr>
<tr>
<td>Inpatient deaths</td>
<td>302</td>
<td>222</td>
<td>80 (37–123)</td>
<td>0.74 (0.70–0.79)</td>
</tr>
</tbody>
</table>

ICU = intensive care unit.
Table 4. Incidence of severe adverse events (SAEs) in the two study groups

<table>
<thead>
<tr>
<th>Type of SAE</th>
<th>Control Period, No. (%)</th>
<th>MET Period, No. (%)</th>
<th>Significance (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory failure</td>
<td>75 (6.7)</td>
<td>15 (1.4)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Stroke</td>
<td>19 (1.7)</td>
<td>4 (0.3)</td>
<td>.0026</td>
</tr>
<tr>
<td>Severe sepsis</td>
<td>18 (1.6)</td>
<td>4 (0.3)</td>
<td>.0044</td>
</tr>
<tr>
<td>ICU readmission</td>
<td>33 (2.9)</td>
<td>20 (1.8)</td>
<td>NS</td>
</tr>
<tr>
<td>Acute RRT</td>
<td>27 (2.4)</td>
<td>2 (0.02)</td>
<td>.0001</td>
</tr>
<tr>
<td>AMI</td>
<td>22 (1.9)</td>
<td>15 (1)</td>
<td>NS</td>
</tr>
<tr>
<td>PE</td>
<td>5 (0.04)</td>
<td>1 (0.01%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

MET, medical emergency team; ICU, intensive care unit; NS, not significant; RRT, renal replacement therapy; AMI, acute myocardial infarction; PE, pulmonary embolism.

Conclusions: The introduction of an intensive care unit-based medical emergency team in a teaching hospital was associated with a reduced incidence of postoperative adverse outcomes, postoperative mortality rate, and mean duration of hospital stay. (Crit Care Med 2004; 32:916–921)
Methods We randomised 23 hospitals in Australia to continue functioning as usual (n=11) or to introduce a MET system (n=12). The primary outcome was the composite of cardiac arrest, unexpected death, or unplanned ICU admission during the 6-month study period after MET activation. Analysis was by intention to treat.

Findings Introduction of the MET increased the overall calling incidence for an emergency team (3.1 vs 8.7 per 1000 admissions, p=0.0001). The MET was called to 30% of patients who fulfilled the calling criteria and who were subsequently admitted to the ICU. During the study, we recorded similar incidence of the composite primary outcome in the control and MET hospitals (5.86 vs 5.31 per 1000 admissions, p=0.640), as well as of the individual secondary outcomes (cardiac arrests, 1.64 vs 1.31, p=0.736; unplanned ICU admissions, 4.68 vs 4.19, p=0.599; and unexpected deaths, 1.18 vs 1.06, p=0.752). A reduction in the rate of cardiac arrests (p=0.003) and unexpected deaths (p=0.01) was seen from baseline to the study period for both groups combined.

Interpretation The MET system greatly increases emergency team calling, but does not substantially affect the incidence of cardiac arrest, unplanned ICU admissions, or unexpected death.
RRT Review article Winter et al

  - Analysis of 10,228 articles, 8 were chosen

### Table 1. Characteristics of studies evaluated

<table>
<thead>
<tr>
<th>Study</th>
<th>Year, Country</th>
<th>Study Design</th>
<th>Hospital Size, Beds</th>
<th>Teaching Institution</th>
<th>Physician on Team</th>
<th>Study Length, mos</th>
<th>Sample Size</th>
<th>No. of Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristow (15)</td>
<td>2000, Australia</td>
<td>Concurrent</td>
<td>380–530</td>
<td>Yes</td>
<td>Yes</td>
<td>6</td>
<td>37,883</td>
<td>229</td>
</tr>
<tr>
<td>Buist (21)</td>
<td>2002, Australia</td>
<td>Historical</td>
<td>300</td>
<td>Yes</td>
<td>Yes</td>
<td>12</td>
<td>42,164</td>
<td>773</td>
</tr>
<tr>
<td>Bellomo (19)</td>
<td>2003, Australia</td>
<td>Historical</td>
<td>400</td>
<td>Yes</td>
<td>Yes</td>
<td>4</td>
<td>42,011</td>
<td>524</td>
</tr>
<tr>
<td>Bellomo (20)</td>
<td>2004, Australia</td>
<td>Historical</td>
<td>400</td>
<td>Yes</td>
<td>Yes</td>
<td>4</td>
<td>2,183</td>
<td>118</td>
</tr>
<tr>
<td>Kenward (23)</td>
<td>2004, U.K.</td>
<td>Historical</td>
<td>700</td>
<td>Yes</td>
<td>Yes</td>
<td>12</td>
<td>~107,000</td>
<td>2,124</td>
</tr>
<tr>
<td>Priestley (24)</td>
<td>2004, U.K.</td>
<td>Randomized</td>
<td>800</td>
<td>No</td>
<td>No</td>
<td>9</td>
<td>2,792</td>
<td>363</td>
</tr>
<tr>
<td>DeVita (22)</td>
<td>2004, U.S.</td>
<td>Historical</td>
<td>622</td>
<td>Yes</td>
<td>Yes</td>
<td>82</td>
<td>199,024</td>
<td>1,220</td>
</tr>
<tr>
<td>MERIT (13)</td>
<td>2005, Australia</td>
<td>Randomized</td>
<td>200–800</td>
<td>Yes</td>
<td>Yes</td>
<td>6</td>
<td>125,132</td>
<td>418</td>
</tr>
</tbody>
</table>

*Team was nurse led but medical consultant back-up was available; †control group had unused rapid response system program (26); ‡performed at 23 teaching and nonteaching hospitals with a wide range of beds. Study design: concurrent = observational with concurrent controls; historical = observational with historical controls; randomized = cluster randomized. Events are hospital death or cardiac arrest, whichever was higher.
Weak to moderate evidence in support of RRT
• Reduction in hospital-wide mortality after implementation of a RRT: Long term cohort study
  (Beitler, Link, Bails et al Critical Care 2011, 14: R269)
  - 77,021 admits prior to and 79,013 after RRT implementation
RRT Outcome Published Data

  - Decrease in ICU admission rates, hospital mortality, and hospital code rates
RRT Outcome Published Data

• The impact of MET on ICU admission rates, cardiopulmonary arrests and mortality in a regional hospital (Laurens & Dwyer Resuscitation 2011, 82:707-712)
  - Decrease in ICU admission rates, hospital mortality, and hospital code rates
Review of the Literature

• Difference in MET/RRT models

• 3 Key features must be present: RRT must
  – Be available for immediate response
  – Be present on site
  – Possess the critical care skills necessary to assess and respond
Clinical Roles

Proactive and Reactive
Proactive Role

• Monitoring and surveillance
  – High risk populations trigger calls in-patient clinical units
  – Aggregate Screening tools
    • Purpose: facilitate prompt communication between nursing and medical staff when deterioration in ward patients condition 1st occurs

Table 1  Modified Early Warning Score

<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>Respiratory rate (min⁻¹)</td>
<td>≤ 8</td>
<td>9-14</td>
<td>15-20</td>
<td>21-29</td>
<td>&gt; 29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart rate (min⁻¹)</td>
<td>≤ 40</td>
<td>41-50</td>
<td>51-100</td>
<td>101-110</td>
<td>111-129</td>
<td>&gt; 129</td>
<td></td>
</tr>
<tr>
<td>Systolic BP (mmHg)</td>
<td>≤ 70</td>
<td>71-80</td>
<td>81-100</td>
<td>101-199</td>
<td>≥ 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine output (ml/kg/h)</td>
<td>Nil</td>
<td>&lt; 0.5</td>
<td>36.1-38</td>
<td>Alert</td>
<td>Reacting to voice</td>
<td>Reacting to pain</td>
<td>Unresponsive</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>≤ 35</td>
<td>35.1-36</td>
<td>36.1-38.5</td>
<td>38.1-38.5</td>
<td>≥ 38.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurological</td>
<td>Alert</td>
<td>Reacting to voice</td>
<td>Reacting to pain</td>
<td>Unresponsive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The scores for each parameter are recorded at the time that observations are taken. If the total is 4 or more then the ward doctor is informed.
Proactive Role

  - 334 patients prospectively studied of which 57 triggered calls
  - More likely to be Emergency admitted patients than elective pts
  - 75% sensitive and 83% specific for patients who required transfer to ITU or HDU
  - Significant factors: Older Age, % ED admit, certain diagnoses (malignancy/bowel surgery)

<table>
<thead>
<tr>
<th>Table 2: Comparison between the group of patients who triggered the call-out algorithm with the group that did not</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEWS &lt; 4</strong></td>
</tr>
<tr>
<td>Age (years mean ± SD)</td>
</tr>
<tr>
<td>Gender ratio (M:F)</td>
</tr>
<tr>
<td>Percentage that were emergency admissions</td>
</tr>
<tr>
<td>ASA grade (median and range)</td>
</tr>
<tr>
<td>Anastomosis during this admission</td>
</tr>
<tr>
<td>Diagnosis of bowel obstruction</td>
</tr>
<tr>
<td>Diagnosis of malignancy</td>
</tr>
<tr>
<td>Death</td>
</tr>
<tr>
<td>Length of hospital stay (median and range)</td>
</tr>
</tbody>
</table>

P 572
79% Pts managed stayed on floor
Proactive Role @ Mission Hospital

Rapid Response Rounding Criteria

- Transferred out of a critical care unit with LOS > 4 days and/or extubated with transfer out of ICU within 24 hours
- Any patient who sustained a cardiac/respiratory arrest in preceding 48 hours (patient located outside critical care)
- Readmission to ICU/CICU and subsequent transfer to the floor
- High risk diagnoses including hypoxic respiratory failure, inadequate ventilatory or pulmonary toilet, upper GI bleeding, neurologic impairments, congestive heart failure, unstable angina, arrhythmias, and severe sepsis
- Poor pulmonary function at time of ICU/CICU discharge
- Tracheostomy
- Altered mental status, inability to communicate needs, and/or Aphasia
- Designated 1:3 staffing on step-down unit
- Patients receiving/requiring high dose narcotics
- Patients on BIPAP with concurrent narcotics or significant cardiovascular or pulmonary disease
- Any infectious diagnosis, i.e., pneumonia, UTI, for 1st 24-48 hrs

- Monitoring and surveillance: Clinical RRT Rounds
  - High risk populations screening of in-patient clinical units
  - Round average 15-20 patients/shift
  - Every shift until patient deemed lower risk
Proactive Role @ Mission Hospital

- Monitoring and surveillance: Clinical RRT Rounds
  - High risk populations screening of in-patient clinical units
  - Mission Hospital aggregate system triggers RRT assess
    - Using computer data base to generate high risk patient report
    - Parameters: Sepsis Score, CIWA, GCS, BP min/BP max, Pulse min/Pulse max, Resp min/Resp max, Temp max, WBC, Band, Hgb, Lactic Acid, K, Lipase, Procalcitonin, # Red Flags

<table>
<thead>
<tr>
<th>Sepsis Score</th>
<th>CIWA</th>
<th>GCS</th>
<th>BP min</th>
<th>BP max</th>
<th>SaO2 min</th>
<th>HR Min</th>
<th>HR Max</th>
<th>R Max</th>
<th>T Max</th>
<th>WBC</th>
<th>Band</th>
<th>Hgb</th>
<th>LA</th>
<th>K</th>
<th>Lipase</th>
<th>Procalcitonin</th>
<th># Red Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
<td>15</td>
<td>86/48</td>
<td>137/84</td>
<td>76</td>
<td>72</td>
<td>87</td>
<td>18</td>
<td>101</td>
<td>12</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>137/69</td>
<td>192/83</td>
<td>85</td>
<td>68</td>
<td>88</td>
<td>24</td>
<td>99</td>
<td>17</td>
<td></td>
<td>3.8</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>15</td>
<td>99/59</td>
<td>109/70</td>
<td>92</td>
<td>107</td>
<td>114</td>
<td>24</td>
<td>98</td>
<td>6</td>
<td>3.2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visit all patients with 4 flags or greater **but...visit all the 3s in sepsis (+sepsis screen) and all CIWA ≥ 8**
Reactive Role (MH): Moving a Critical Care Asset to ED

- Supporting ED Team & Trauma Services with 1:1 critical nursing care in the Emergency Dept
  - Code Blue: all arrests / initiate hypothermia
  - Code STEMI
  - Code SEPSIS
  - Code Stroke
  - Code Trauma
  - Hemodynamic instability or unstable

- In-Patient Units - Specific Triggers
Reactive Role
When to call RRT

Table 1. When to Call Rapid Response*

If the patient demonstrates any of the following signs/symptoms at any time:

- **Airway**
  - Respiratory distress and threatened airway

- **Breathing**
  - Acute change in
  - Respiratory rate > 30 or < 10
  - Pulse oximeter < 92%
  - Difficulty speaking due to shortness of breath

- **Circulation**
  - Acute change in
  - Systolic blood pressure < 90 mm Hg
  - Heart rate < 40 or > 130
  - Urine output < 50 mL in 4 hours
  - Color change of patient (pale, dusky, gray, or blue)
  - Complaint of nontraumatic chest pain

- **Neurologic**
  - Decrease in level of consciousness
  - Acute change in mental status
  - Seizure
  - New onset arm/leg weakness or droopy smile or problem talking

- **Sepsis**
  - Suspect infectious process with two or more SIRS criteria:
    - Temp > 38°C or 100.4°F
    - Heart rate > 90
    - Respiratory rate > 20
    - WBC > 12,000, < 4,000, or > 10% bands

- **RN is worried or concerned about patient**
  - Uncontrolled pain
  - Failure to respond to treatment
  - Unable to obtain prompt assistance for unstable patient

* WBC, white blood count; SIRS, systemic inflammatory response syndrome; RN, registered nurse.
Reactive Role – Mission Hospital

- **In-Patient Units**
  - Call for PCSU: 76 year old female with SOB and T 102.5
    - Breathing treatment just completed RR 32
      - RRT listens examines the pt
      - SpO2 92% on supplemental O2
    - Review of medical record reveals
      - History of Aortic stenosis & pulmonary hypertension
      - Possible sepsis
    - RRT calls Hospitalist, relays critical information
      - Orders for cultures – urine, sputum, blood & LA
      - Fluids & sepsis protocol orders
      - Antibiotics
General Interventions

- Respond to call - location/urgency only
  - Brief history of event/hospitalization from bedside staff
- Problem focused assessment
  - Vital signs, cardio-pulmonary, neurological
  - Review of H/P and recent diagnostics
- Utilize SBAR and decide initial diagnostics and interventions- What other team members needed?
- Contact physician for collaboration and additional orders
- Determine disposition- stay on unit, transfer,
- Give direction to staff
Engaging the Bedside Nurse

• Developing collaboration
  – What’s in it for you?
• Identifying role clarification
  – Adjunctive vs threatening
• Seeking support while offering assistance
  – Know when to ask for help
• Keeping it patient focused
  – Giving direction, expediting the process
• Mentoring and supporting bedside nurses
  – Strengthening clinical skills and confidence
Data Outcomes
Number of RRT Calls – 2006 to present

Rapid Response Calls 2013
Total Number of Minutes

Emergency Department Support is significant!
Percent of Calls With Significant Intervention

Non-ED Calls

Transfers to Higher Level of Care
Code Blue Non-ICU Clinical Areas

Number of Floor Cardiac/Respiratory Codes

Year

2006
2007
2008
2009
2010
2011
2012
2013

Number of Codes

RRT Started in 9/2006

Legend:
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
RRT Outcome Published Data

- Rescue Me: Saving the Vulnerable Non-ICU Patient Population

Figure 3. The mortality associated with non-ICU arrests decreased from 61% pre-RRT to 26% post-RRT (p < .05). UCL, upper control limit; LCL, lower control limit.
Clinical and Process Issues

Roving PI Point Person
System Issues identified

– #1 Critical Care CNS review and evaluation of all RRT calls and data every month

• Reports to ICU/EMS committees Trends & Issues identified

February PI Issues: 2/17-patient admitted to floor and transferred to CICU for sepsis on day of admission. Patient was admitted to Med Tele and transferred to CICU with severe sepsis.

2nd case: 87 yr old patient admitted to ED due to chief complaint of weakness, seen by NP. Patient admitted to floor 1930 and coded at 2129 on Cartel and died. This case being referred to EMS for review.

3rd case for review chief complaint of weakness - a patient on palliative care at home admitted to PCSUI where she deteriorated overnight. BG in the teens and septic shock transferred to CICU and intubated/mechanical ventilated. Family at first wanted DNR, then changed mind and wanted everything done. Patient was coded on Day 3 and died. Could have used Palliative Care.

4 patients with possible sepsis (calls to RRT) refer to sepsis coordinator; 1 patient call linked to narcotic refer to pain group (73 year old); 3 incidents of hypoglycemia requiring D50W...refer to Pharmacy to see if insulin related incident. 65 year old 3East and 45 year old male on Medtele x 2 episodes. Cluster of calls requiring transfer to higher level of care from patients admitted to hospital on 9/20---Red Flag - High census? Admit MD?

Sept: 4 patients with possible sepsis (calls to RRT) refer to sepsis coordinator; 1 patient call linked to narcotic refer to pain group (73 year old); 3 incidents of hypoglycemia requiring D50W...refer to Pharmacy to see if insulin related incident. 65 year old 3East and 45 year old male on Medtele x 2 episodes. Cluster of calls requiring transfer to higher level of care from patients admitted to hospital on 9/20---Red Flag - High census? Admit MD?
Just a reminder that any pt on the high alert report with a CIWA score should be evaluated further….I ran across a pt today on cartel with a CIWA ranging from 17-27 for the last 3 days, tucked away in the back, no 1:3, barely responsive with a strange resp pattern….I ended up drawing an ABG and sending her to the unit. I also had a little educational moment with 2 of the docs who needed to be reminded of the purpose of the CIWA and how to utilize it as a preventative tool. Thankfully, they were both open to hearing about it. I did run across the CIWA orders: new patient admission or transfer set. It recommends transferring to the unit if >25. It also covers the need for 1:3 staffing for a score >19. Please keep this in mind when rounding on this population…
System Issues

- Identified via
  - #2 RRT PI Tracking Form

Mission Hospital
Rapid Response PI Tracking Form
Specific Patient Clinical Concern

Location of patient (when incident recognized or occurred) ________

Describe event
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Clinical Concern
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

RRT nurse completing form ________________________________

Date ___________

QRE completed  yes  no

Date of review ________________________________
Corrective Action ________________________________
System Issues Leading to Populations at Risk

• Specific sub-populations addressed
  – Sepsis admits to non-ICU beds from ED
  – PCA narcotics and respiratory depression
  – Pancreatitis admits to floor
  – End of Life discussion and decision making

• Recognizing what is missing for nursing/patient clinical support and bridging the gap
  – Bringing care to patient not patient to care
  – Equipment and medication availability

• Triaging Beds, Resources & Unit needs
  – Bed availability and patient acuity (ED)
  – Triaging patients internally (Inpatient)

• Physician SBAR report provides clinical clarity
## Qualitative Issues

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<tr>
<th>Date/Issue</th>
<th>Background/Action</th>
<th>Outcome</th>
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<td><strong>Dec 06 Clinical:</strong> Increase in RRT calls related to sepsis in floor patients</td>
<td>In the quarter preceding RRT deployment, 6 floor codes occurred in which all patients died (4 of 6 within 24 hrs of admit) and all had sepsis. Post RRT: RRT responded to a high # of calls low BP; 80% determined to be undetected sepsis. Cases reviewed by ED MD who was interested in championing a sepsis initiative. Issue taken to Nursing leadership, EMS, and QLC. Initiated RRT screens on all patients with infectious diagnoses 1st 48 hours of patient floor admission</td>
<td>Review of sepsis diagnoses quantified a 41% mortality. RN &amp; ED MD presented data and review of RRT data to QLC. A sepsis initiative was formally approved. Sepsis Coordinator appointed and initiative began</td>
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| 7/2008      | RC reviewed all arrests on quarterly basis. Increase in arrests seen May-July in Cartel. Most codes occurring at night. Immediate meeting held with Cartel leadership/RRT nurses. Detail review of each case completed. Upon review, half of the patients demonstrated clinical signs of deterioration in hours prior to code. Arrests occurred in elderly complex cardiac disease/chronic CHF patients. | 1) RRT 7p-7a RN attended shift report nightly to help cartel team ID high risk pts.  
2) Remedial education to RN and charge RNs on cartel criteria for RRT rounds/calls  
3) Signs “When to call RRT” posted in all patient rooms. |
# Qualitative Issues

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<td><strong>2009-2010</strong>&lt;br&gt; Clinical Increase in respiratory depression related to PCA/pain medication</td>
<td>- RRT calls related to narcotic resp depression with ↑dilaudid dosing&lt;br&gt;- Investigated further and found vulnerable patients include elderly with co-morbidities and patients on BIPAP.&lt;br&gt;- Reported to Pharmacy, EMS, ICU, QLC committees</td>
<td>- Issue referred to Pain Comm.&lt;br&gt;- Revised Pain policy&lt;br&gt;- Instituted CO2 devices in ↑risk patient populations&lt;br&gt;- Education to RN staff</td>
</tr>
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Identifying Educational Opportunities

• In-the-moment teaching and mentoring
  – Staff
  – Physicians
  – Leadership
  – Patients and Families

• RRT Role Development
  – Heart failure management
  – Pancreatitis
  – Sepsis Protocol
  – Stroke management
  – High risk L&D
  – Individual need
Outcomes

• Nov 2008 Joint Commission Ernest A. Codman Award for Excellence in PI
Conclusion – Effectiveness of RRT