Ramp Up or Ramp Down?

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WHAT ARE WE HERE FOR?

- Improving Patient Outcome (Saving lives)

Prevention of Cardiac Arrest!

UK and US studies of outcome for in-hospital cardiac arrests (N=1368 pts, N= 14720 pts)

Overall Survival is 17.6% (UK) and 17% (US)

WHAT DO WE WANT RRS TO DO?

**Afferent** (event detection and response triggering) component
- Selection/diagnostic criteria
- Human and technologic monitoring with alarm limits
- Mechanism for triggering response

**Efferent** (crisis response) component
- Resources arrive quickly (first response 15 mins)
  - Personnel (possess a defined set of competencies)
  - Equipment

**Education**
- Nurses are the common strand that make RRS function

Nurse | Nurse | Nurse | And a Doctor | And a Doctor | And a Doctor | And a Doctor

Nurse training
WE JUST WANT TO BE CALLED FOR THE RIGHT PATIENT, AT THE RIGHT TIME............
Nurses used Social, non-medical language causing Doctors to seek further information which was interpreted as stalling or antagonistic by the nurses........

(Andrews & Waterman, 2005, JAN, 52, 473-81)

Nurses would wait to see if patient’s condition worsened before calling

(Cioffi, 2000, Heart&Lung, 29, 262-268)

The Doctor/Nurse interface is a source of conflict

(Cutler, 2002 Intensive and Critical Care Nursing, 18, 280-291)
Workload vs. Specificity

- Wouldn’t we rather see more patients and reduce the risk of missing those with real need?
- Bell et al. (2006) - see 3 X as many patients to identify 2 X as many patients at risk.
- Nurse-led teams with experienced critical care staff can pick up and/or monitor
WHAT CAN NURSE-LED TEAMS DO?

- ABCDE assessment
- ABCDE response based on the above
- Early advice and preventive measures - challenge management
- Support of ward (floor) staff
- Liaison with critical care
- Pull in and coordinate primary medical team/crit care team/ others as necessary
- Transfer to critical care
- OR if the patient stays on the ward......
- Education of ward (floor) staff
- Follow up and preventive interventions
Figure 1  Number of medical emergency team (MET) responses and cardiopulmonary arrests per month before and after objective criteria for MET activation were instituted. Note the rise in emergency events and the decline in cardiac arrests after implementation of criteria.

NUMBER OF CALLS/1000 ADMISSIONS - NURSE LED

48.5 calls/1000 admissions

1.6 cardiac arrests/1000 admissions

Unpublished data  Adam  – UCLH hospitals
Nurse-Led
(avg. length of call - 1hr)
- RRT or Crit care nurse
- Floor nurse
- ICU physician (as needed)

Salary cost/call - €31.05 ± ICU physician at 15 mins - €7.60

Based on Salaries at
S/N - €12.55/hr, £11.22/hr, DKK 93.69/hr
Sister -Team lead – €18.50/hr, £16.54, DKK138.11/hr
Specialist Dr - €30.5/hr, £27.28, DKK 227.79/hr
Airway asst. - €15.44/hr, £13.80, DKK115.23/hr

Cost/cardiac arrest call £195 (in 1999)

Medically-Led
(avg. length of call - 30 mins)
- ICU physician Team leader
- ICU nurse
- Floor nurse
- Anaesthesia or critical care
- Airway assistant
- Pts own Junior Doctor

Salary cost/call - €67.04

Training cost/call - ?
Cost per life saved in cardiac arrest =$406605/life saved
NURSE-LED TEAMS ARE BETTER AT THIS BECAUSE.....

- Ward nurses will call them
- Nurse-led teams encourage calls and have a positive call culture
- Nurses are the ones doing all the nurse education
- Nurses can do most of what is needed in collaboration with the ward staff
- Nurses will call for help when they need it
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
But conversely more calls can be a success story

Table 6  Serious adverse events during the first three days on the general wards and 30-day mortality (expressed as absolute numbers and as events per 100 patients in brackets).

<table>
<thead>
<tr>
<th>Event</th>
<th>Surveillance phase</th>
<th>Intervention phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sepsis</td>
<td>19 (6.0)</td>
<td>14 (4.1)</td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>13 (4.1)</td>
<td>25 (7.3)</td>
</tr>
<tr>
<td>Renal impairment</td>
<td>11 (3.5)</td>
<td>6 (1.7)</td>
</tr>
<tr>
<td>Unplanned ICU admission</td>
<td>10 (3.1)</td>
<td>10 (2.9)</td>
</tr>
<tr>
<td>Return to operating theatre</td>
<td>8 (2.5)</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>Reintubation</td>
<td>4 (0.9)</td>
<td>2 (0.6)</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>3 (0.9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Acute pulmonary oedema</td>
<td>3 (0.9)</td>
<td>2 (0.6)</td>
</tr>
<tr>
<td>Death</td>
<td>2 (0.6)</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>Stroke</td>
<td>0 (0)</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>Pulmonary embolus</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>30-day mortality</td>
<td>29 (9.1)</td>
<td>24 (7.0)</td>
</tr>
</tbody>
</table>

Story et al Anaesthesia 2004; 59: 762-766

Unexplained tachycardia (>130 beats/min × 15 mins)
Unexplained bradycardia (<50 beats/min × 15 mins)
Elevated respiratory rate (>30 breaths/min)
Depressed respiratory rate (<8 breaths/min associated with altered mental status × 15 mins)
Unexplained alteration in mental status
Seizures
Hypotension
Chest pain
Unexplained subjective dyspnea
Bedside nurse concern about overall deterioration in patients' condition without any of the above criteria

3 cardiac arrest/1000 discharges
CONCLUSION

- Early intervention/prevention (story et al 2004)
- Education and support of ward (floor) staff (Richardson et al 2004)
- Experts in managing sick patients in wards
- Excellent relationships between ward and nursing team (Richardson et al 2004)
- Experts in ward (floor) capability
- Ability to challenge patient management
- Excellent role models
- Ability to enhance standards of care (Ryan et al 2004)
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).

23 Hospitals in Australia

No MET (N=11) vs. MET (N=12) for 6m

No significant difference in:
- cardiac arrest, unexpected deaths & emergency ICU admission

Decline in:
- rate of cardiac arrests and unexpected death (from baseline)
- increase in emergency calls

MET group showed increased unplanned ICU admissions from baseline

Hillman and MERIT inv. Lancet 2005;365:2091
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, 28-33