

Medical Emergency Teams



Saved by the Cavalry?

Background

- **Context:** The in-hospital response to acute illness has been shown to be suboptimal (1)
- **Fact:** hospital patients with impending severe medical deterioration often have easily detectable warning signs (2),(3)
- **Premise:** intervention protocols based on timely recognition of these warning signs may improve outcomes (4), (5)

1. McQuinlan P et al "Confidential enquiry into quality of care before admission to intensive care" *BMJ* 1998 June 20; 316 (7148):1853-8

2. Hillman K M et al "Antecedents to hospital deaths" *Intern Med* 2001; 31(6): 343-8

3. Kaase J et al The ACADEMIA study *Resuscitation* 2004 Sep; 62(3); 275-82

4. DeVita et al "Use of Medical Emergency team responses to reduce hospital cardiopulmonary arrests" *Qual Saf Health Care* 2004; 13: 251-54

5. Bellomo R et al "A prospective before-and-after trial of a medical emergency team" *Med J Aust* 2003; 179: 283-87

Call a MET when.....

- **Airway** if threatened

- **Breathing**

All respiratory arrests

RR < 5/min

RR > 36/min

- **Circulation**

All cardiac arrests

HR < 40/min

HR > 140/min

Systolic BP < 90 mmHg

- **Neurology**

Sudden fall in GCS > 2 points

- **Worried about patient**

History

- Fire Brigades: the Vigils of Ancient Rome
- Police flying squads 1905
- Car accident flying squad 1955
- Cardiac Arrest teams 1960
- MET Teams 2000



The Evidence

- The **MERIT** Trial 2005; ANZICS Clinical Trials Group (6),(7)
- cluster-randomised trial
- 23 Australian hospitals (125,492 patients)

6. The MERIT Study investigators "Introduction of the medical emergency team (MET) system: a cluster-randomised controlled trial" *The Lancet* 2005; **365**: 2091-97

7. "Outreach and Early Warning Systems (EWS) for the Prevention of Intensive Care Admission and Death of Critically Ill Patients on General Hospital Wards" *Cochrane Database of Systematic Reviews* 2007, Issue 3 Art. No. CD005529

Method

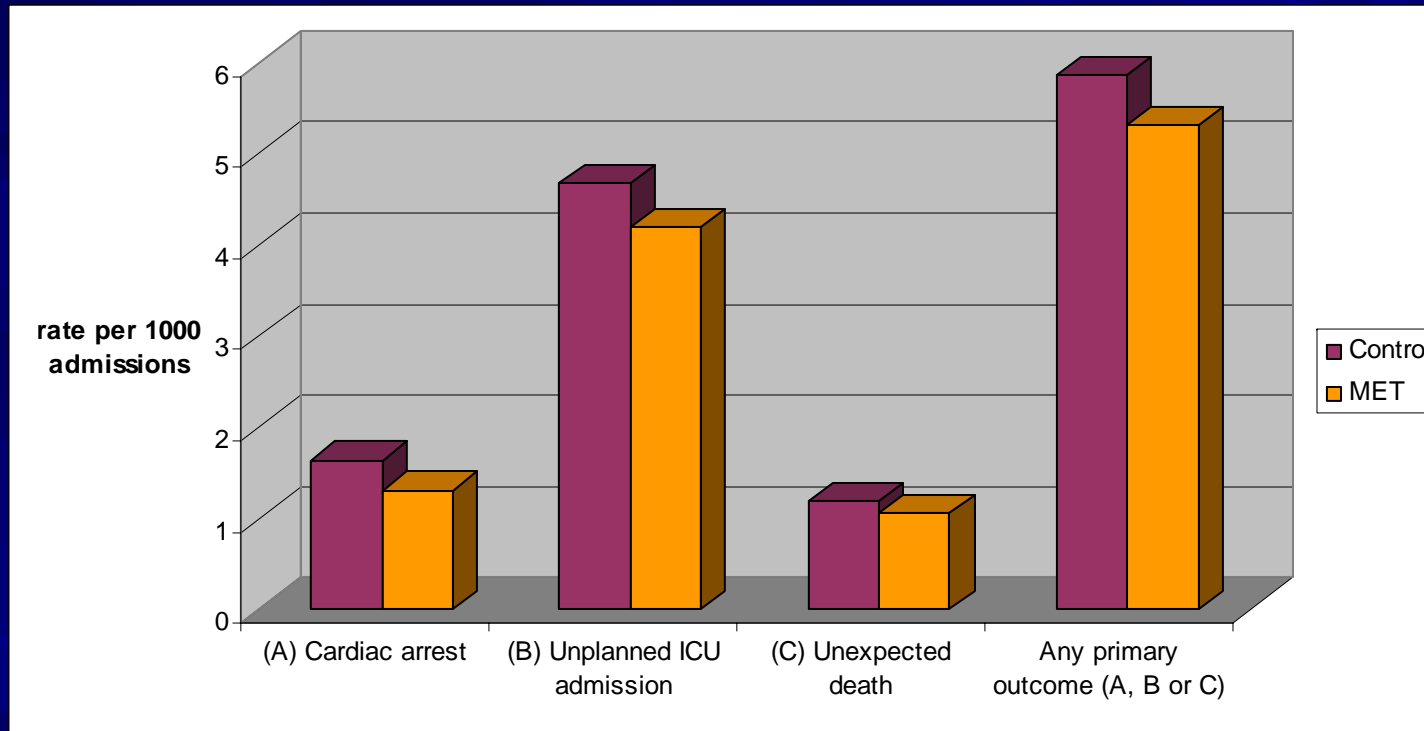
Intervention arm

- 12 hospitals
- Establish MET program
- Baseline observation (2 months)
- Training (4 months)
- Study (6 months)

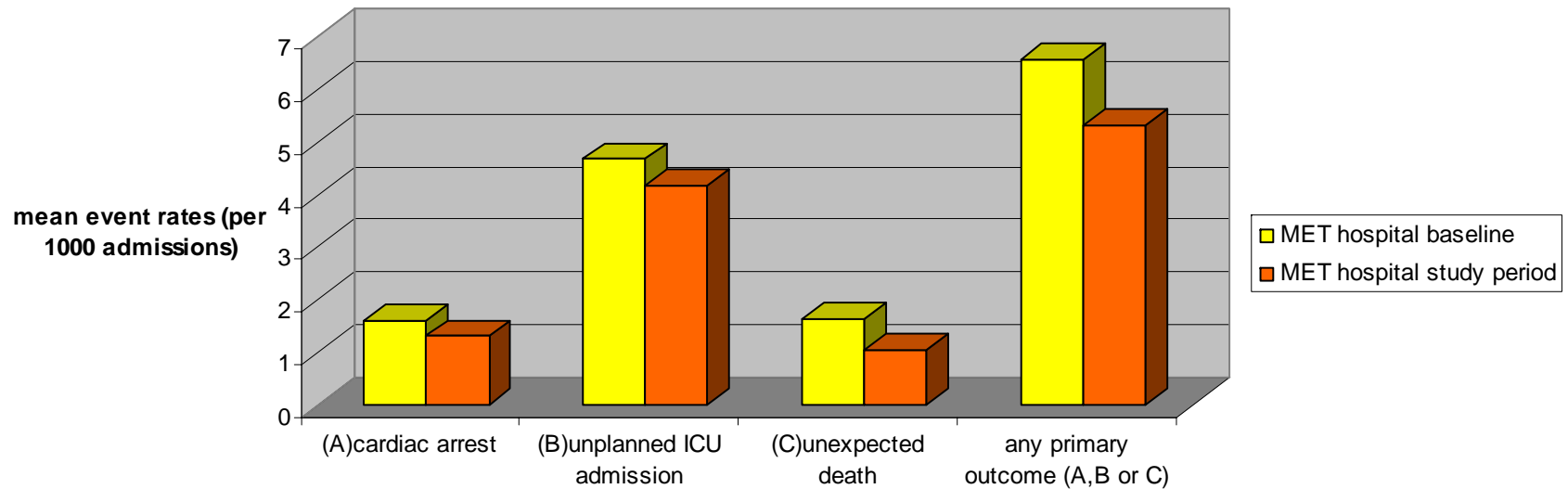
Control arm

- 11 hospitals
- No MET training
- Asked to delay introduction of a MET system during the study period

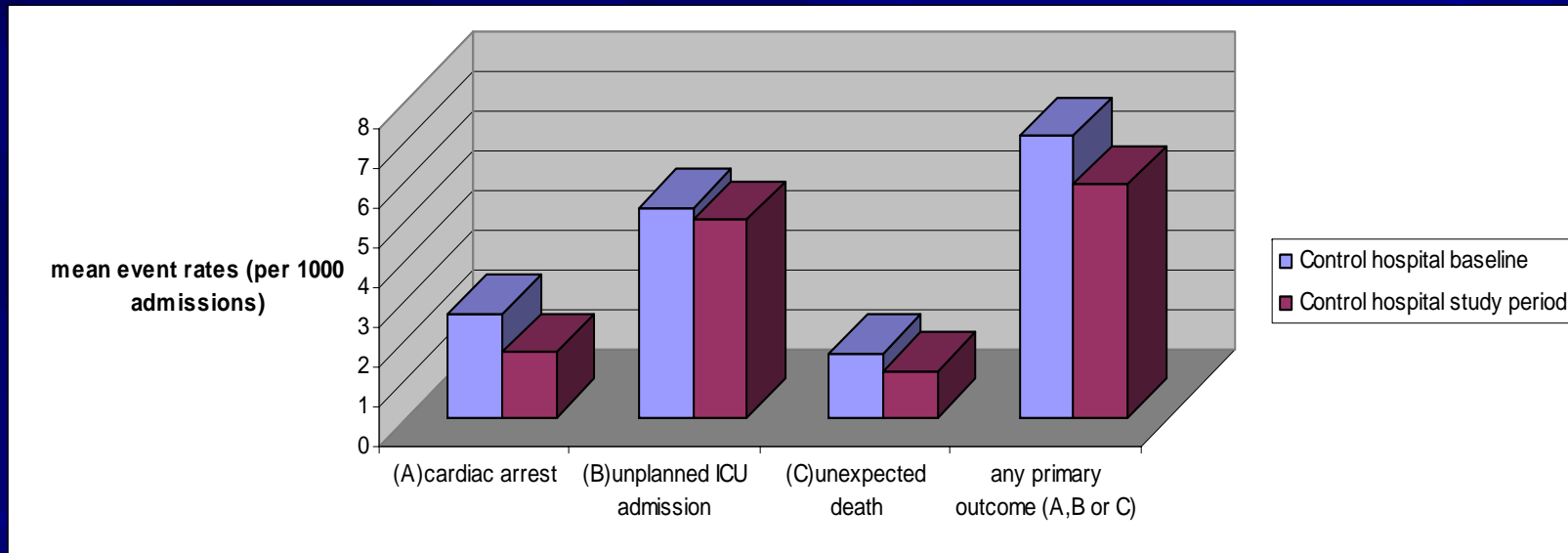
Outcomes during study period



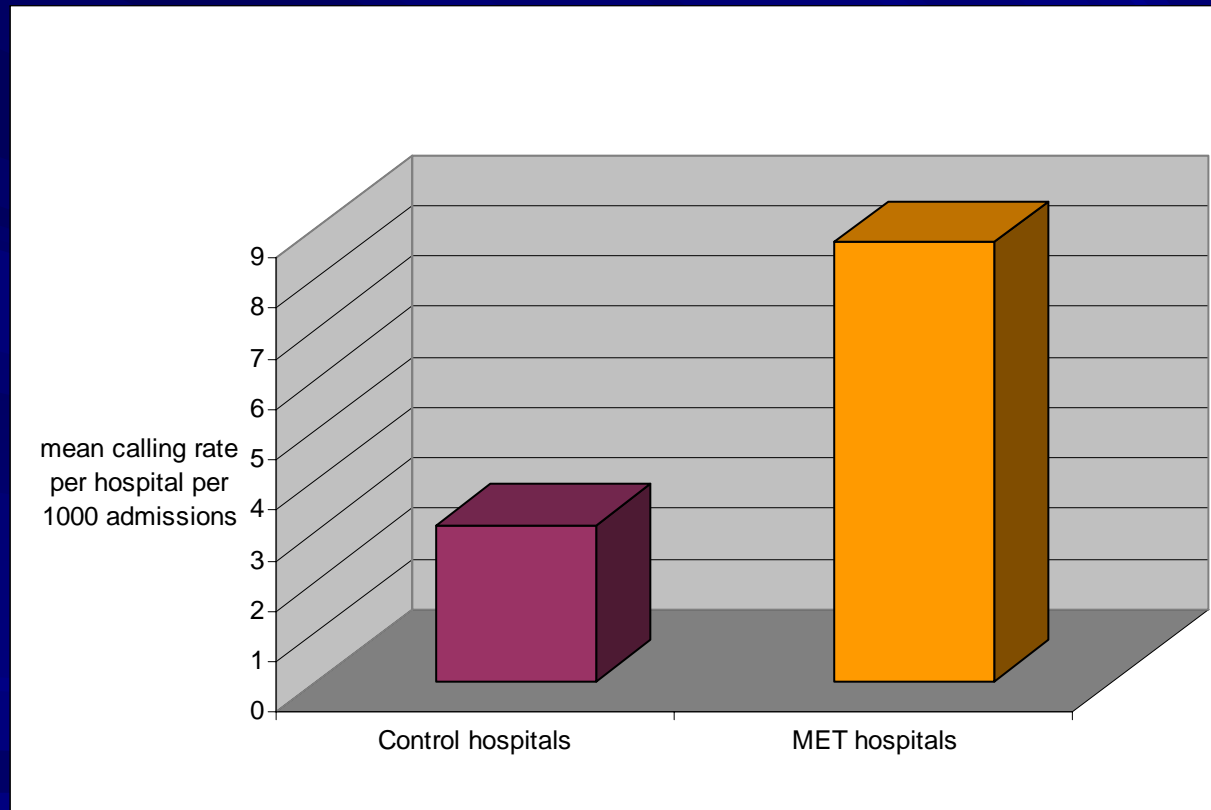
MET Hospitals



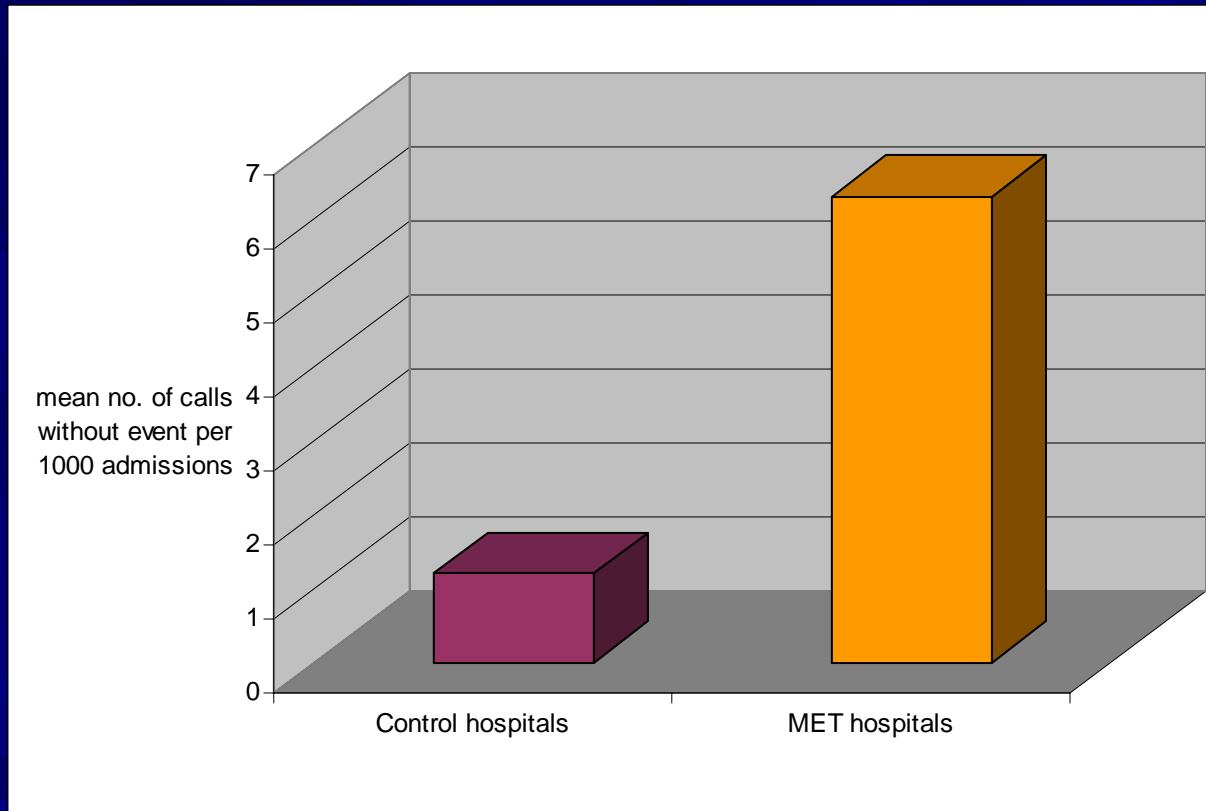
Control Hospitals



Calling rates



Calls without events



Problems with MERIT Trial

- “Contamination” of the control hospitals (?)
- Baseline rates of unexpected deaths were significantly lower than seen in previous studies
- Heterogeneity
- Erratic measurement/recording of MET trigger variables
- Erratic response to trigger variables (although emergency calls did increase)
- Study period too short (?)

RESPONSE?



No Change



Politically and medico-legally untenable?

Await the evidence

“Just as in the rest of medicine, we must pursue the solutions to quality and safety problems in a way that does not blind us to harms, squander scarce resources, or delude us about the effectiveness of our efforts”

Establish MET program despite lack of supporting evidence

(The lack of supporting evidence) “...*leaves us undeterred in our confidence that the RRT (MET) process, well-implemented, can reduce in-hospital mortality*” (8)

8. Berwick D et al “The 100,000 Lives Campaign;The Institute for Healthcare Improvement” *JAMA* 2006; 295: 324-327

MET teams

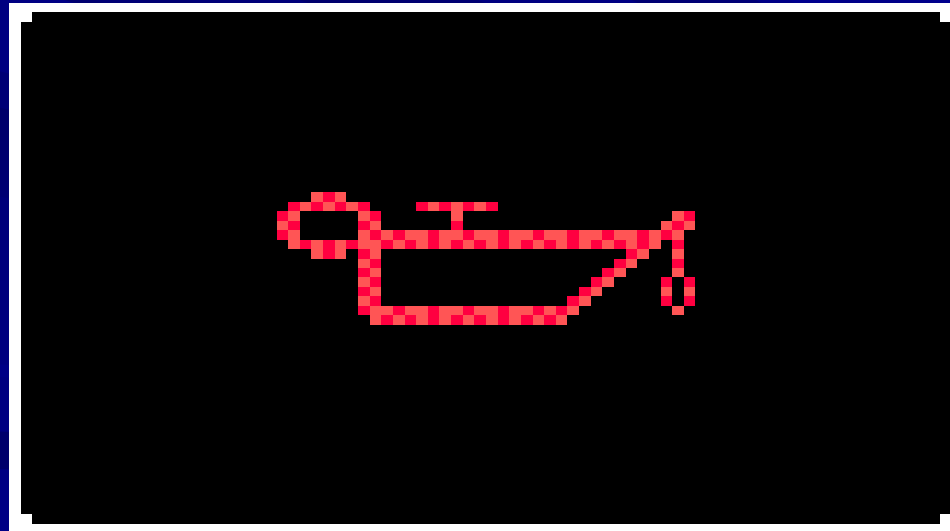
- Self- evident :many (most?) emergent medical problems have a better prognosis if treated aggressively and early (9)
- Unambiguous criteria
- Nursing and junior medical staff feel less vulnerable
- Easier to implement than a comprehensive overhaul of clinical systems

9. Rivers E et al "Early Goal Directed Therapy in the Treatment of Severe Sepsis and Septic Shock" *NEJM* 2001 Nov 8 ; 345: 1368-77

“Flying Squads”

- symptomatic of a system in crisis ?
(complexity, workloads, communication failures)
- A cheap and “visible” alternative to adequate funding and training of clinical staff in hospitals
- Exacerbate “skill atrophy” of clinical staff and weakens their clinical responsibility for patients in their care
- Increase demands on ICU staff

MET initiation relies on thresholds being exceeded rather than trends being recognized



High risk patients need to be identified early and monitored closely



Improve ward care

1. Increase *clinical* nursing staff numbers?
2. Improve communication?
3. Mandate/improve undergraduate and postgraduate training of medical staff in critical care
4. Streamline systems for rapid senior medical review/consultation (the “Hospitalist” model?) and early ICU review
5. Reduce hospital size?

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