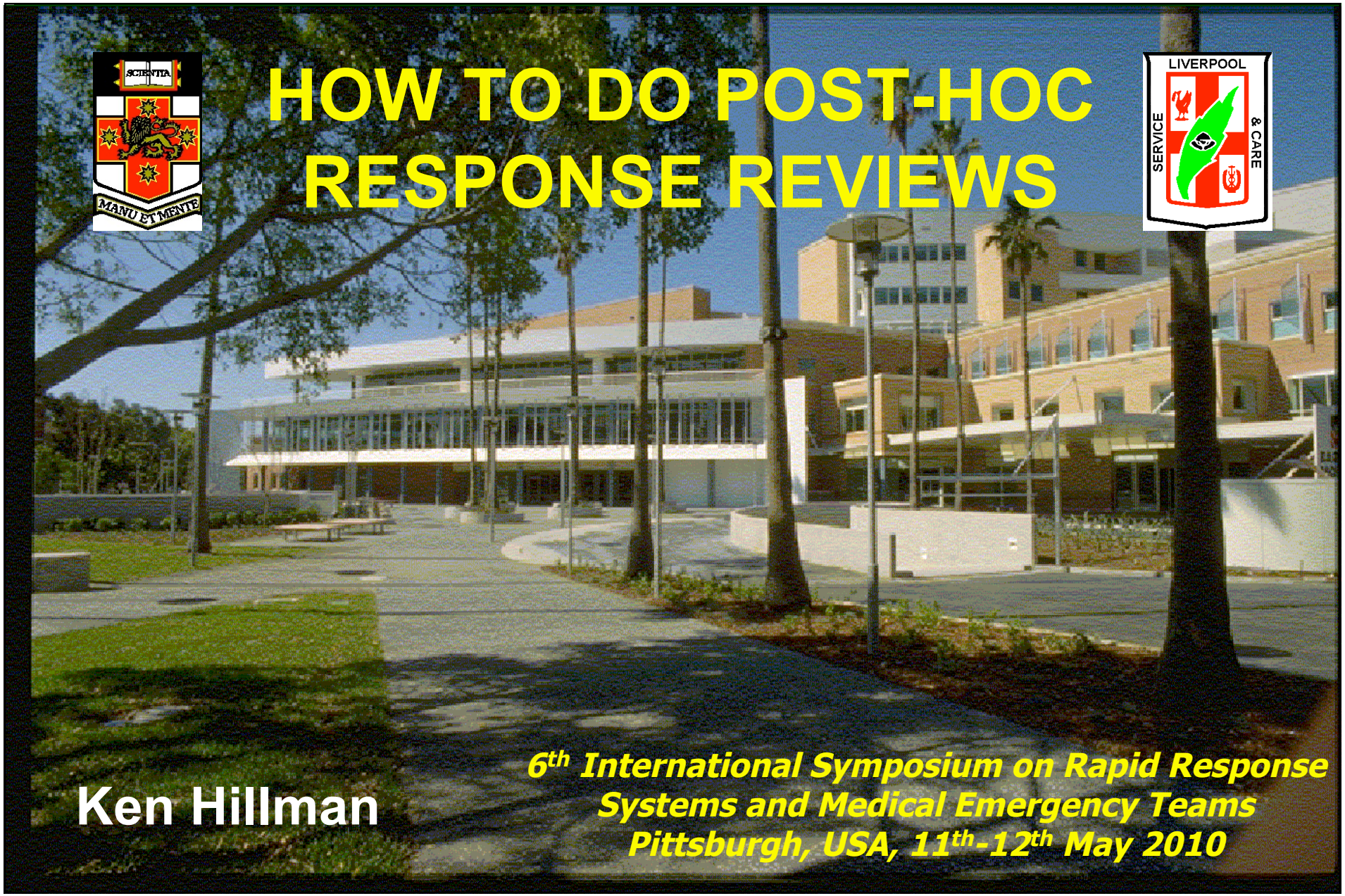


HOW TO DO POST-HOC RESPONSE REVIEWS

Ken Hillman

6th International Symposium on Rapid Response Systems and Medical Emergency Teams
Pittsburgh, USA, 11th-12th May 2010

ACUTE HOSPITAL SYSTEM – AUDIT OF ADVERSE EVENTS

Acutely ill patient

↓

REAL TIME INCIDENT MONITORING

↓

POST HOC KEY PERFORMANCE INDICATORS

EFFECTIVE IMPLEMENTATION OF RAPID RESPONSE SYSTEMS

1. Triggering criteria
2. Response – 24/7 of at least one person with advanced resuscitation skills
3. Ownership and administration within a hospital
4. Education
   - Awareness – EVERYONE
   - Basic resuscitation – NURSES AND ON-SITE MEDICAL STAFF
   - Advanced resuscitation – MINIMUM 1 PERSON 24/7
5. Key performance Indicators (KPIs)
   - Measure problem
   - Track implementation and maintenance
   - Measure effectiveness

ALL IMPLEMENTED SIMULTANEOUSLY

MERIT STUDY

The MET system reduces mortality

Crit Care Med 2009;37:148-153

RELATIONSHIP BETWEEN THE NUMBER OF MET CALLS AND THE RATES OF SERIOUS ADVERSE EVENTS

DOSE - No. MET calls/1000 admissions

RESPONSE - Deaths

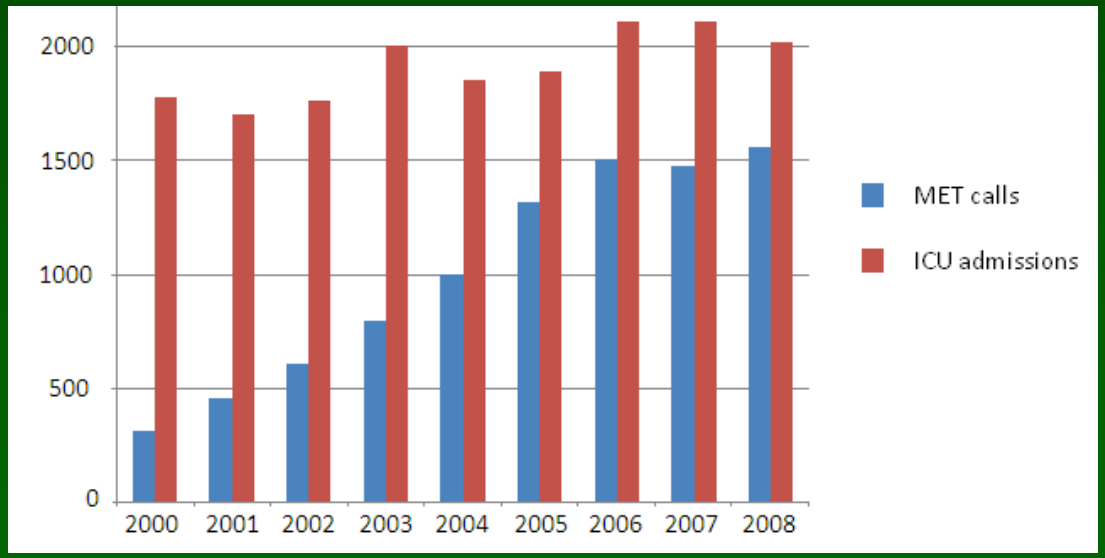
Cardiac arrests

$p<0.001$

Crit Care Med 2009;37(1):148-153

MET DOSE

- Definition = MET calls / 1000 admissions
- May take some time for “bedding in”



Courtesy of Rinaldo Bellomo & Daryl Jones

KEY PERFORMANCE INDICATORS

- Empower those running the system
- Inform those implementing the system
  - Universally accepted
  - Capture the “hearts and minds” of those who operate the system by feeding back relevant data in an aggregated and attractive form
  - Enables Hospital, Areas, Health Departments and Accreditation bodies to track the roll-out
  - Simple, inexpensive, intuitive, useful
  - Cultural drivers

KPIs – MINIMUM STANDARDS

IMPLEMENTATION AND MAINTENANCE

- Number of emergency calls (DOSE) strongly correlates with deaths/cardiac arrests (RESPONSE)
- Number of calls/1000 admissions

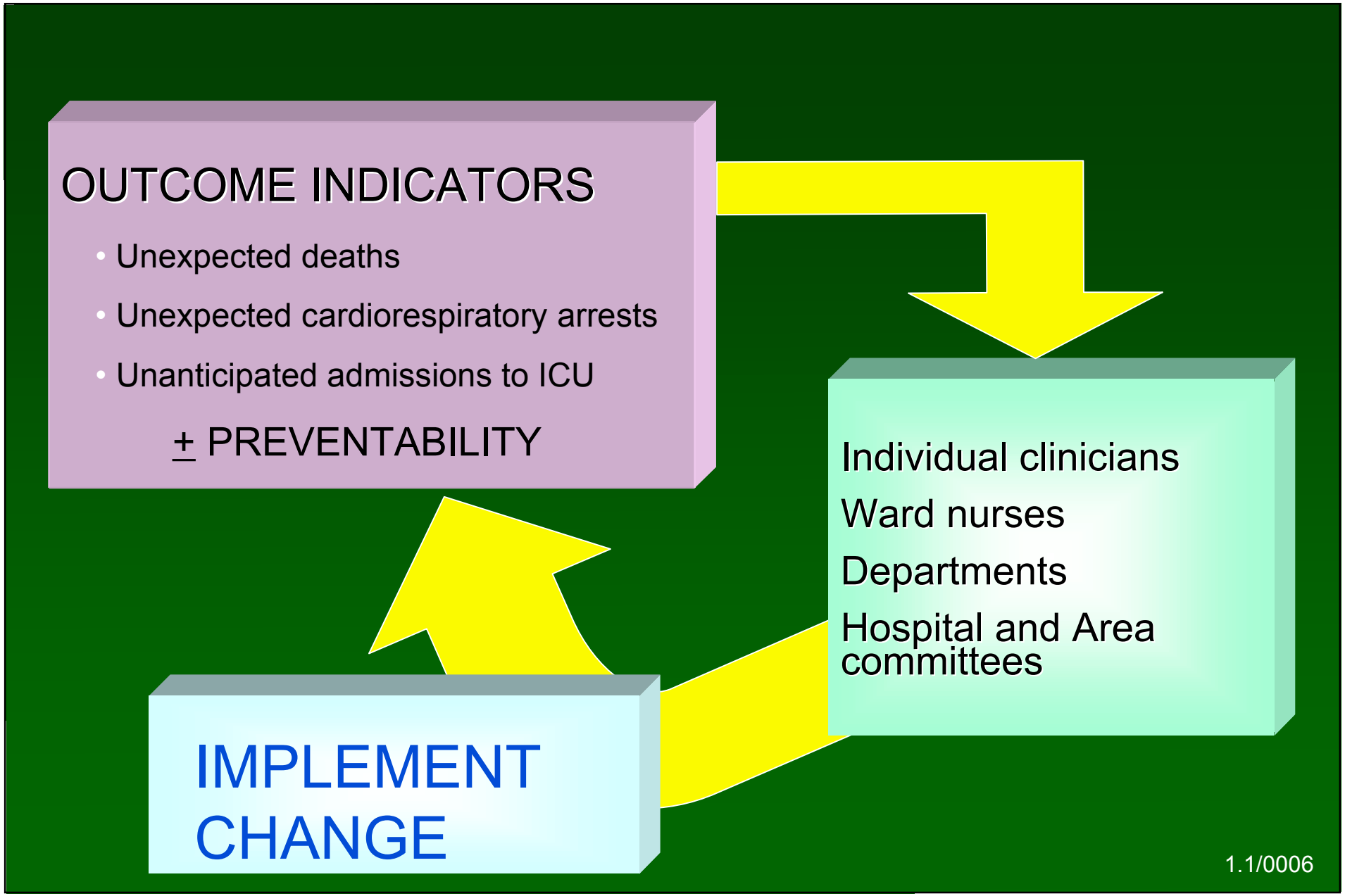
KPI EFFECTIVENESS – MINIMUM STANDARDS

UNEXPECTED, POTENTIALLY PREVENTABLE DEATHS/1000 ADMISSIONS

- Unexpected – no DNR
- Potentially preventable – calling criteria within 24 h of death not responded to

EVIDENCE BASED / INTERNATIONALLY ACCEPTABLE and MINIMUM STANDARD KPIs

- Urgent calls/1000 admissions
- Deaths/1000 admissions
- Unexpected (without NFR order), potentially preventable (criteria not responded to) deaths/1000 admissions
- Cardiac arrests/1000 admissions
- Unexpected (without NFCPR order), potentially preventable (criteria not responded to) cardiac arrests/1000 admissions


OUTCOME INDICATORS
• Unexpected deaths
• Unexpected cardiorespiratory arrests
• Unanticipated admissions to ICU
± PREVENTABILITY
Individual clinicians
Ward nurses
Departments
Hospital and Area committees
IMPLEMENT CHANGE
1.1/0006

MET Calls for Liverpool Hospital

The MET is a team trained in advanced resuscitation. It can be activated according to predetermined criteria.

Table 1
Number of Hospital Admissions, MET Calls and MET Antecedents

Clinical Category	Admissions	MET Calls	MET Criteria present in 24 hrs of event (MET Antecedents)
Surgery	964	29	8
Medicine	2160	60	22
Womens and Childrens Health	957	2	1
Mental Health	83	1	0
Totals for Liverpool Hospital	4164	92	31

Table 2
Number of MET Calls by outcomes

Outcome of MET Calls by Clinical Category	Surgery	Medicine	Womens and Childrens Health	Mental Health	Total
Unplanned ICU admission	6	11	1	0	18
Death with no NFR	1	5	0	0	6
Remained on Ward	16	42	1	1	60
Remained in Critical Care	6	2	0	0	8
Total MET calls	29	60	2	1	92

Discussion

•May/Jun/Jul'01 and Jul/Aug'00 shows that the winter season results in higher MET Call activity.

•b

•c

Chart 1
Number of MET Calls for last 13 months

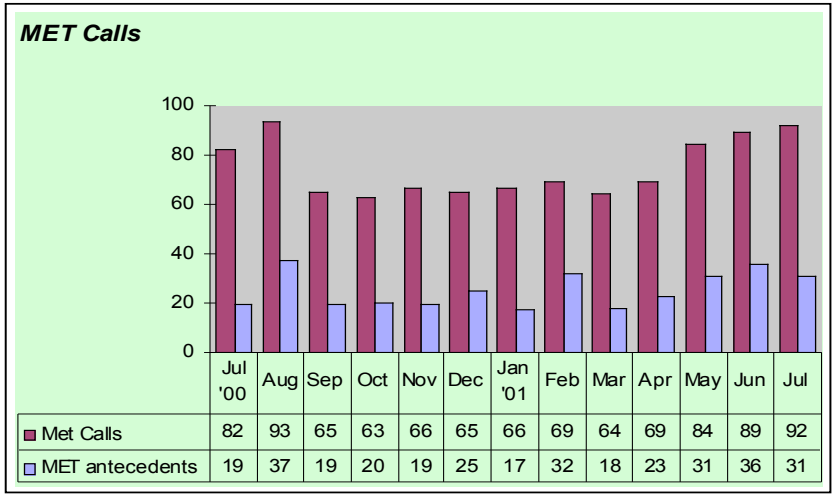
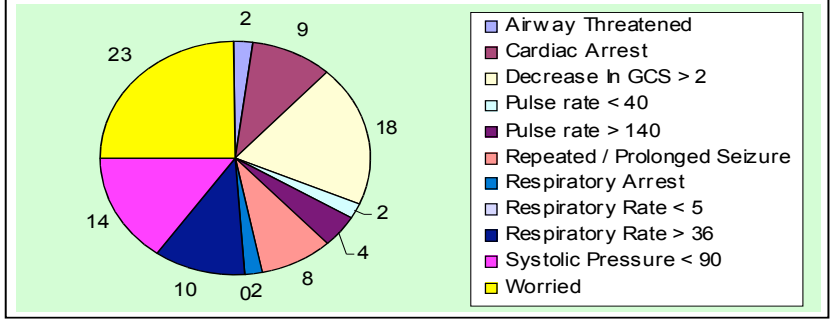


Chart 2
Reasons for MET Calls



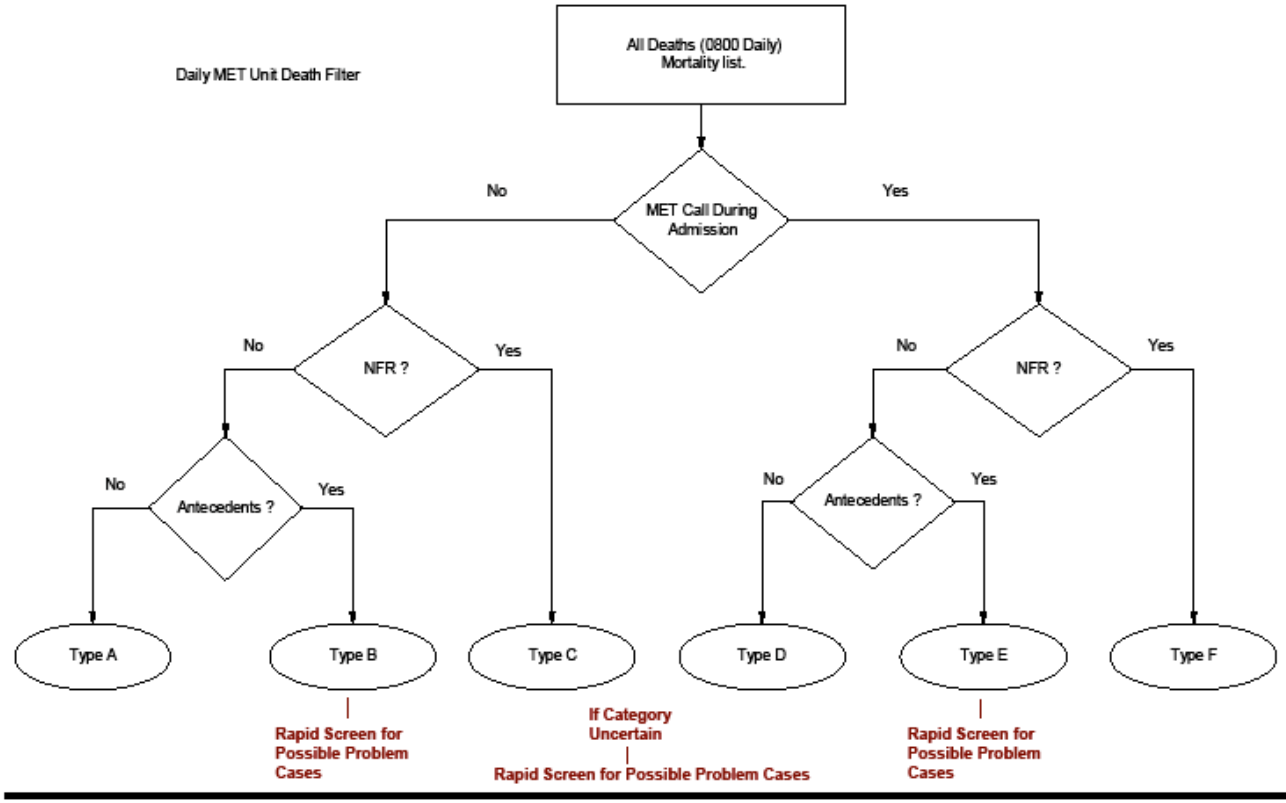
Important Note: MET Antecedents means that MET Criteria was present within 24 hrs of event, BUT no MET was called or was not called in time.

OUTCOME OF MET PATIENTS

- In hospital mortality
  - Austin Hospital
    - One MET call (not NFR) → mortality = 16.6%
    - > One MET (not NFR) → mortality = 34.1%
    - Mortality of other patients
      - All ICU patients = 12%
      - All hospital patients < 4%

D. Jones, Austin Hospital

Liverpool Hospital Daily Mortality Review



URGENT CALL DETAILS

- MRN
- Responder status
- Where call to?
- Why call?
- Intervention?
- Outcome?
- NFR status

DEATH

- NFR Yes/No
- Criteria within 24 hrs Yes/No
- Appropriate response Yes/No

END-OF-LIFE CARE

23% of Medical Emergency Team calls over a 12 month period were appropriate for an NFR order

Parr, et al. Resuscitation 2001;50(1):39-44.

KPIs

- Inexpensive
- Easy to collect
- Meaningful
- Standardised
- Linked to other patient safety activities, eg death reviews

MUST BE AGGREGATED AND FED DOWN AS WELL AS UP

MOST IMPORTANT DRIVER OF SYSTEM

OTHER KPIs

EFFERENT LIMB FAILURE

- Medical Emergency Team Call
- Patient left on ward without NFR orders
- Cardiac arrest or death within 24 hours

PARTIAL EFFERENT LIMB FAILURE

- Medical Emergency Team call
- Patient left on ward without a NFR order
- Patient admitted to the Intensive Care Unit within 24 hours

DISPOSAL FAILURE

- Patient admitted to the general wards
- Medical Emergency Team call
- Cardiac arrest/dies and does not get admitted to the Intensive Care Unit within 24 hours.

PARTIAL DISPOSAL FAILURE

- Admitted to the general wards
- Medical Emergency Team call
- Admitted to the Intensive Care Unit

YOU WONT KNOW YOUR HOSPITAL HAS A PROBLEM UNLESS YOU MEASURE IT