

# Proposed ANZICS-Core MET database

Dr Daryl Jones  
A/Prof Graeme Hart



# Overview

- ICU scoring systems
- The ANZICS-Core APD
- The Medical Emergency Team
- Uptake of the MET in ANZ
- Outcome of MET patients
- Magnitude and scope of service
- Proposed ANZICS-Core MET database

# ICU scoring systems

- ICU scoring systems well established
- Assess severity of illness
  - APACHE II / III / IV
  - SOFA
  - SAPS 2 / 3
  - MODS
  - ISS and RTS

- Applications

- Compare SMR between units / countries and across time
- Stratification and risk adjustment in research
- Comparison of predicted vs observed outcomes
- Predicting mortality / length of stay for cohort (***BUT NOT*** individuals)
- Relating resource allocation to severity of illness at presentation

# The ANZICS-Core APD

- Provide peer review mechanism for contributing ICUs
- Epidemiological research on ICU patients
- Promote research directed at greater understanding of critical illness, its management and outcome.
- Work with ANZICS-Core to permit resource planning

**ANZIC-Core terms of  
reference**

- Increasing observational research to guide RCTs
  - E.g. ARISE retrospective

ORIGINAL ARTICLES

The outcome of patients with sepsis and septic shock presenting to emergency departments in Australia and New Zealand

The Australasian Resuscitation in Sepsis Evaluation (ARISE) Investigators and the Australian and New Zealand Intensive Care Society (ANZICS) Adult Patient Database (APD) Management Committee

# Medical Emergency Team

- Reviews deteriorating ward patients
- Principles:
  - Deterioration is slow
  - Heralded by warning signs
  - Caused by common conditions
  - Ward staff lack expertise
  - ICU staff in hospital and have expertise
  - Early intervention improves outcome



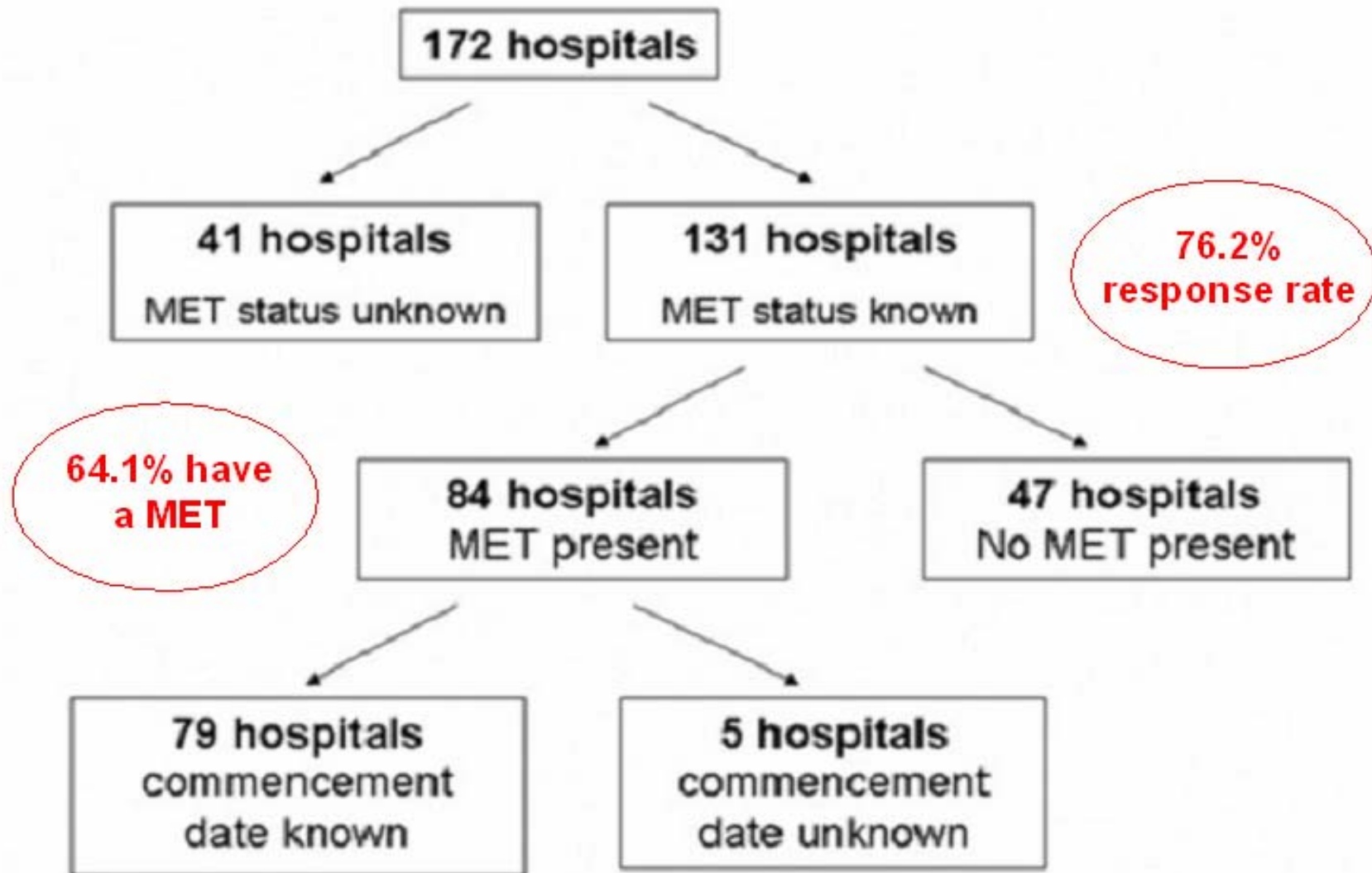
- Large burden on ICU
- Survey of ICU trainees
  - 78% ICU registrars participated in MET
  - 99% registrar led (3% involve consultant)
  - 77% little or no supervision of team duties
  - Serious concern expressed about negative impact of MET on:
    - *their ability to care for ICU patients*
    - *additional stress on ICU medical & nursing staff*

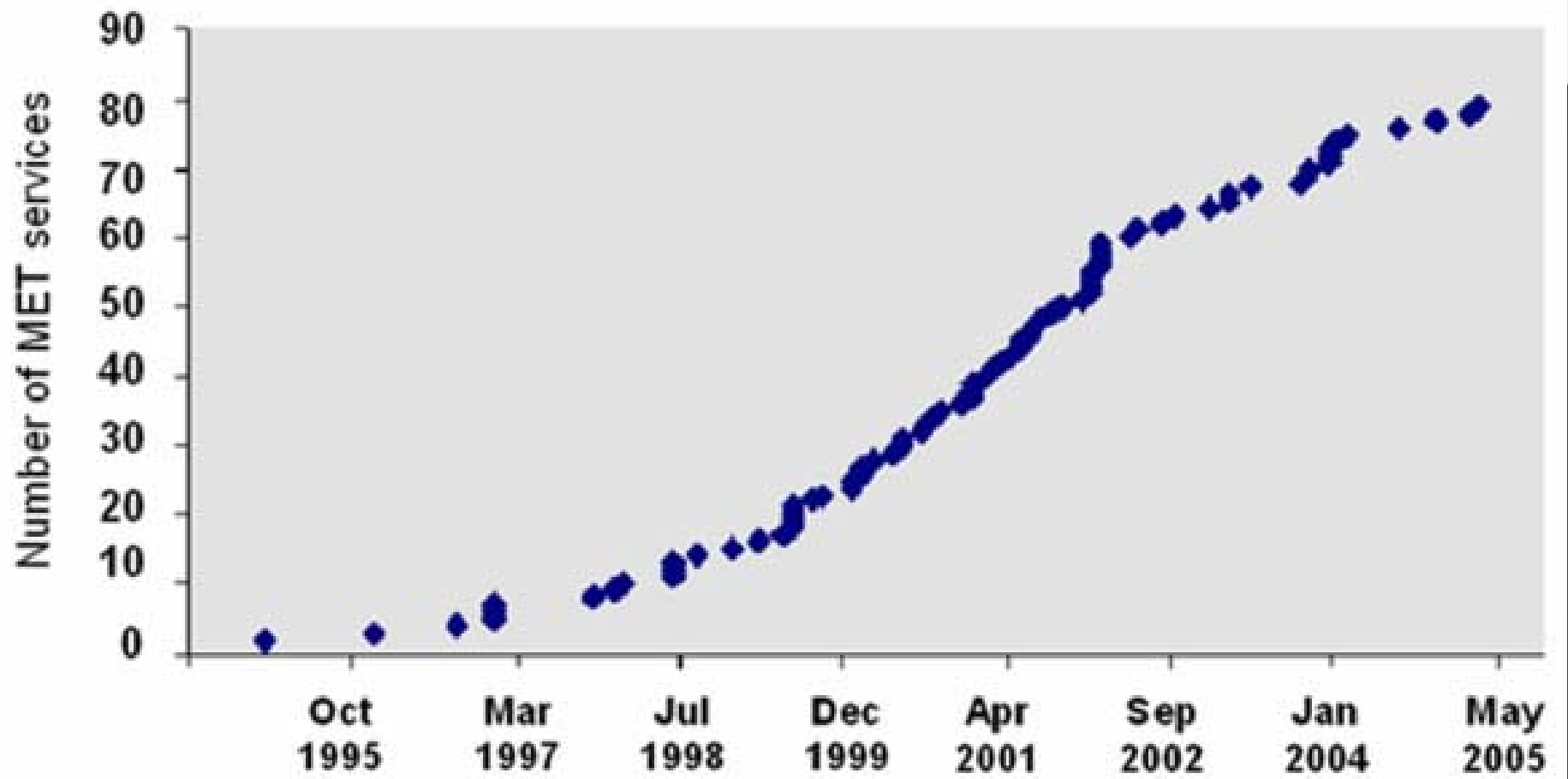
**Jacques etal AIC 2008**

- Mixed evidence of benefit
- Positive from single centre studies with staunch protagonists
  - Dandenong Buist etal BMJ 2002 Aus
  - Austin Bellomo etal MJA 2003 Aus
  - Pittsburgh DeVita QSHC 2004 USA
  - RCH Tibbals etal Arc Dis Child Aus
- MERIT study not positive

# Uptake of METs in ANZ

- Core / ANZICS-APD
- Survey of ICU resources and activity
  - up to May 2005
  - “Do you have a MET or equivalent”
  - “When was it introduced”
- Excluded hospitals in MERIT study

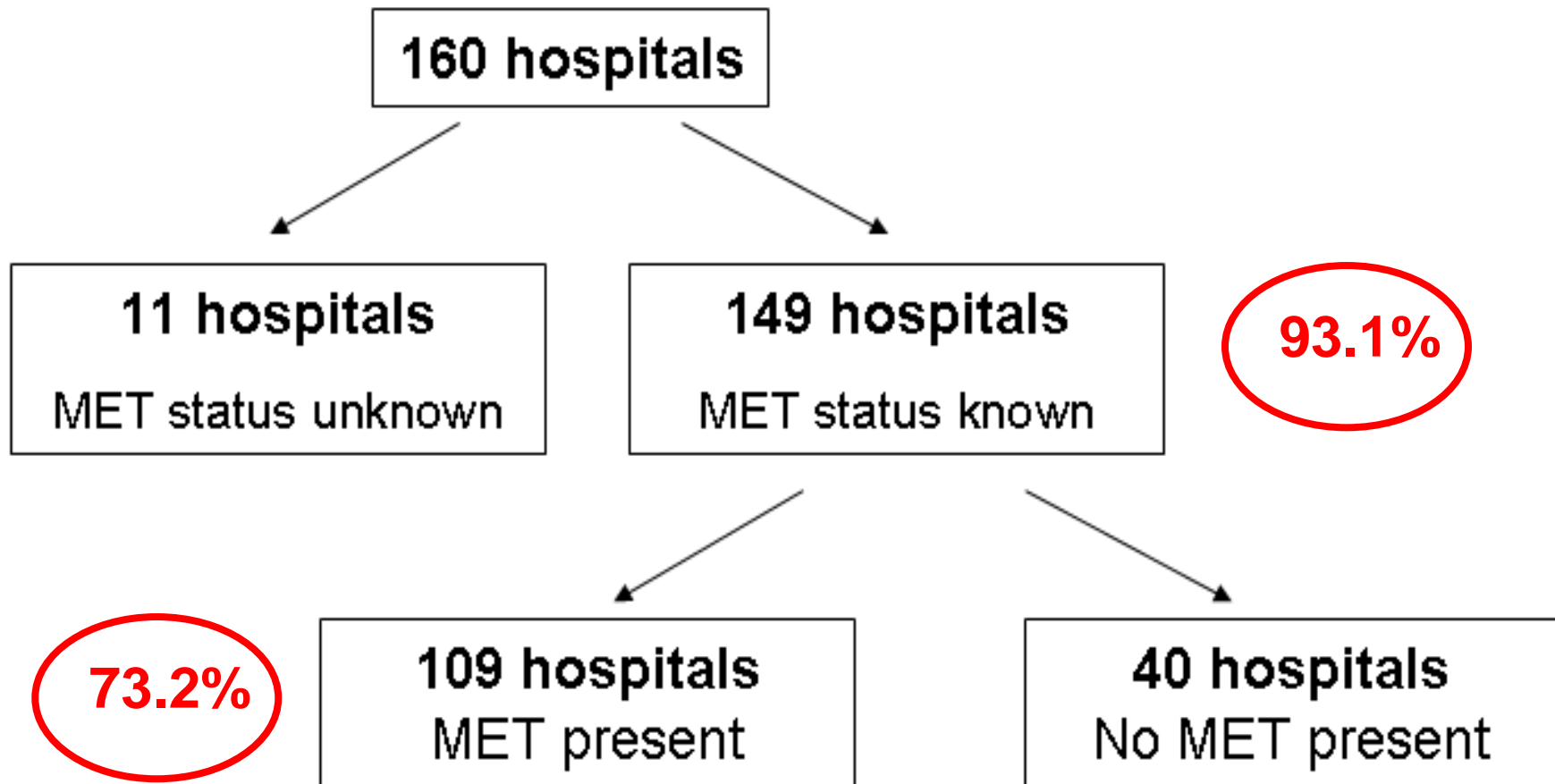


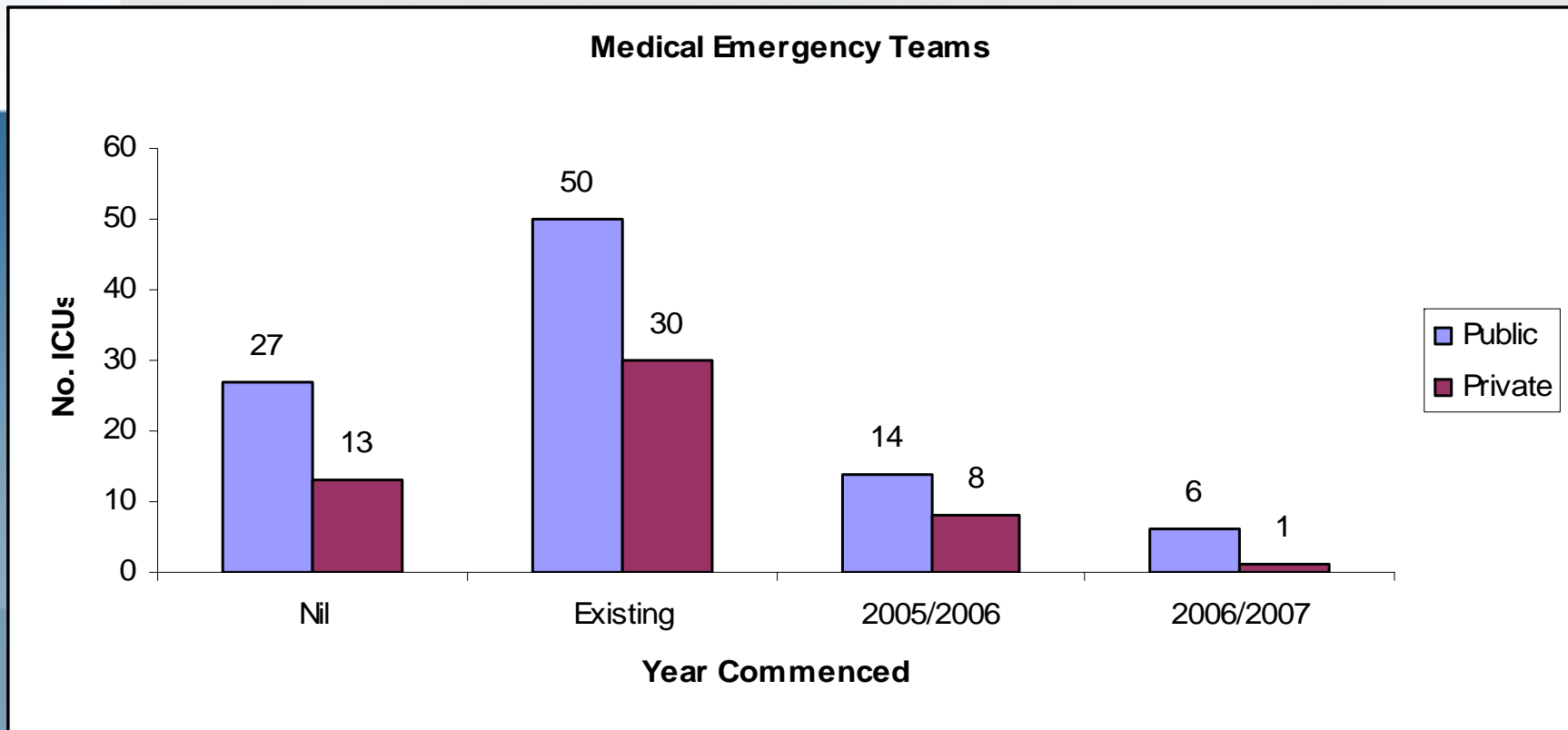


# MET uptake in ANZ post-MERIT

- Core survey 2007
  - Do you have a MET?
  - When was it introduced ?
- Included hospitals in the MERIT study
- Analyzed Australia and New Zealand separately
  
- Kelly Drennan

# Australia



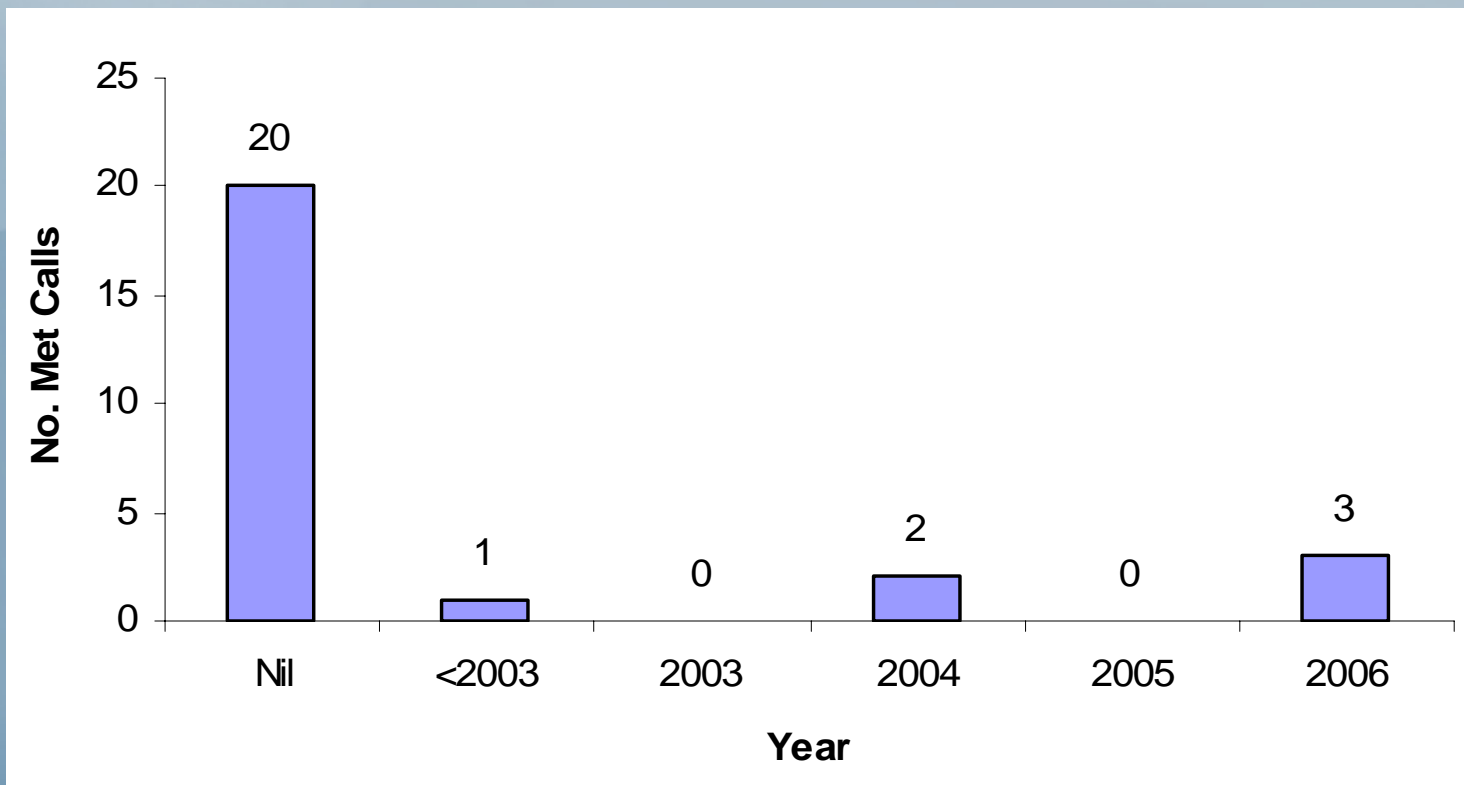


Australia → Hospitals still introducing MET services in 2006 and 2007

(MERIT published June 2005)

## New Zealand

- Status known for 26/27 hospitals = 96.3%
- Only 6 ICUs had a MET (23%)



# The outcome of MET patients

- Casamento et al CCR 2008 (TNH Vic.)
  - 195 calls over 9 months
    - 17.9% admitted ICU, 7.2% HDU, 5.6% CCU (30.7% “step-up” of care)
    - In-hospital mortality
      - 31.8% overall
      - 10.3% if no limitation medical treatment

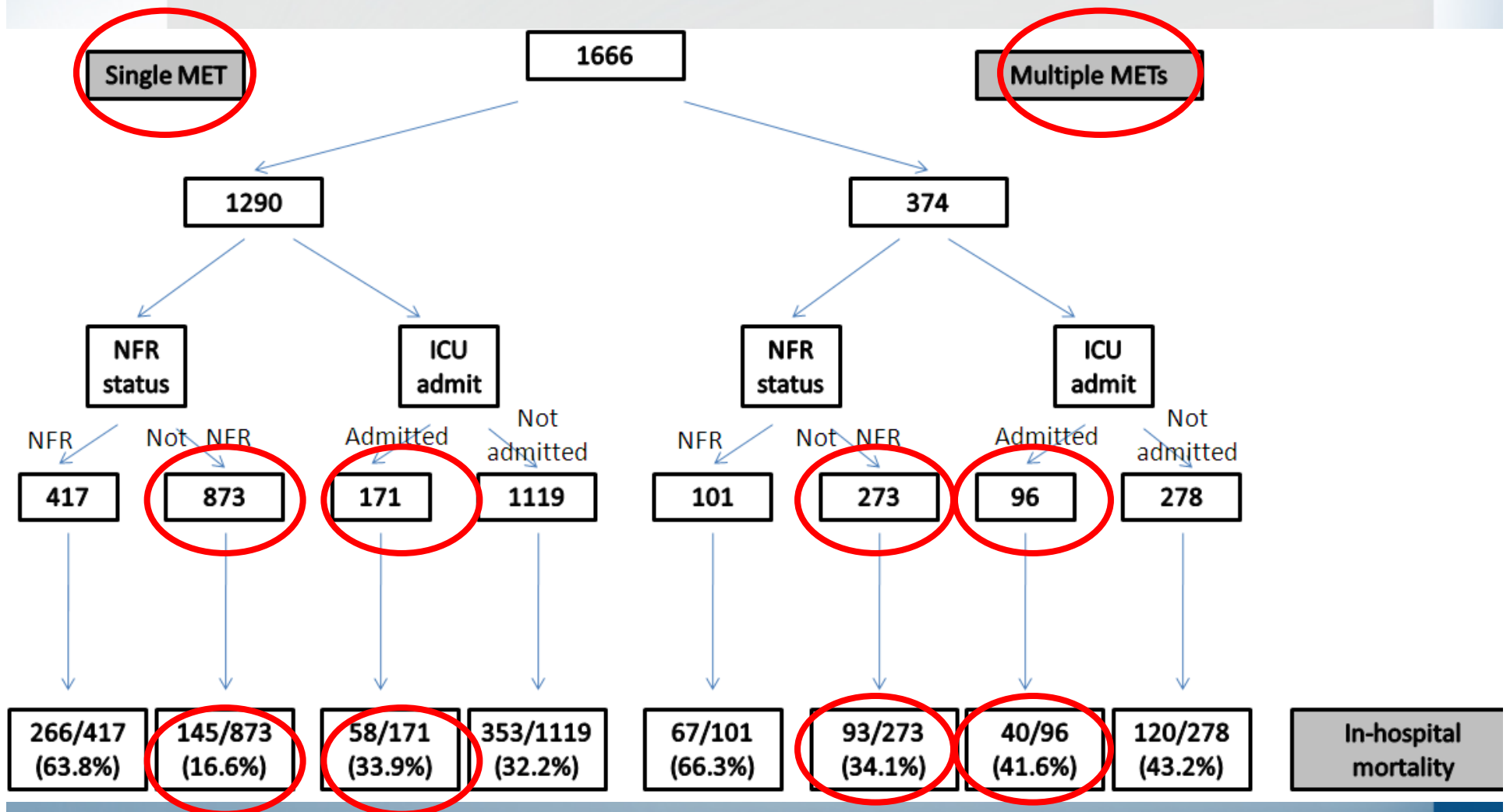
- Buist et al BMJ (2002)
  - During 1999 152 MET calls for 124 patients
    - Mean age 60 (SD 17.4) years
    - 40 died (32.3%)
    - 13 NFR (10.5%)
    - Approx mortality (non-NFR) = 21.8%

- Austin hospital
  - 1664 patients
    - 2237 MET reviews over two years (Aug 05-07)
  - 1290 (77.5%) single MET review
  - 374 (22.5%) multiple METs



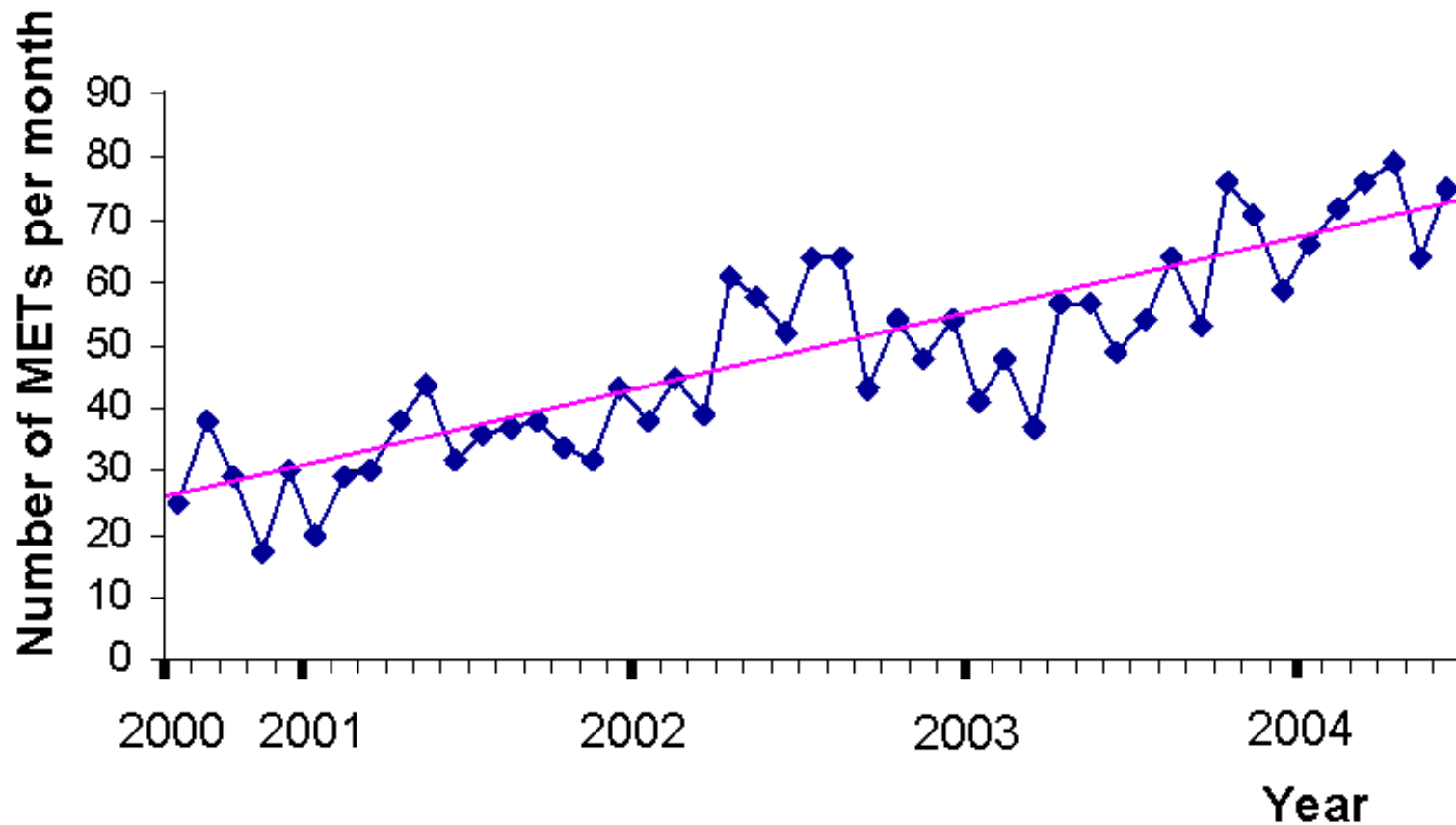
**(Dr Paolo Calzavacca)**

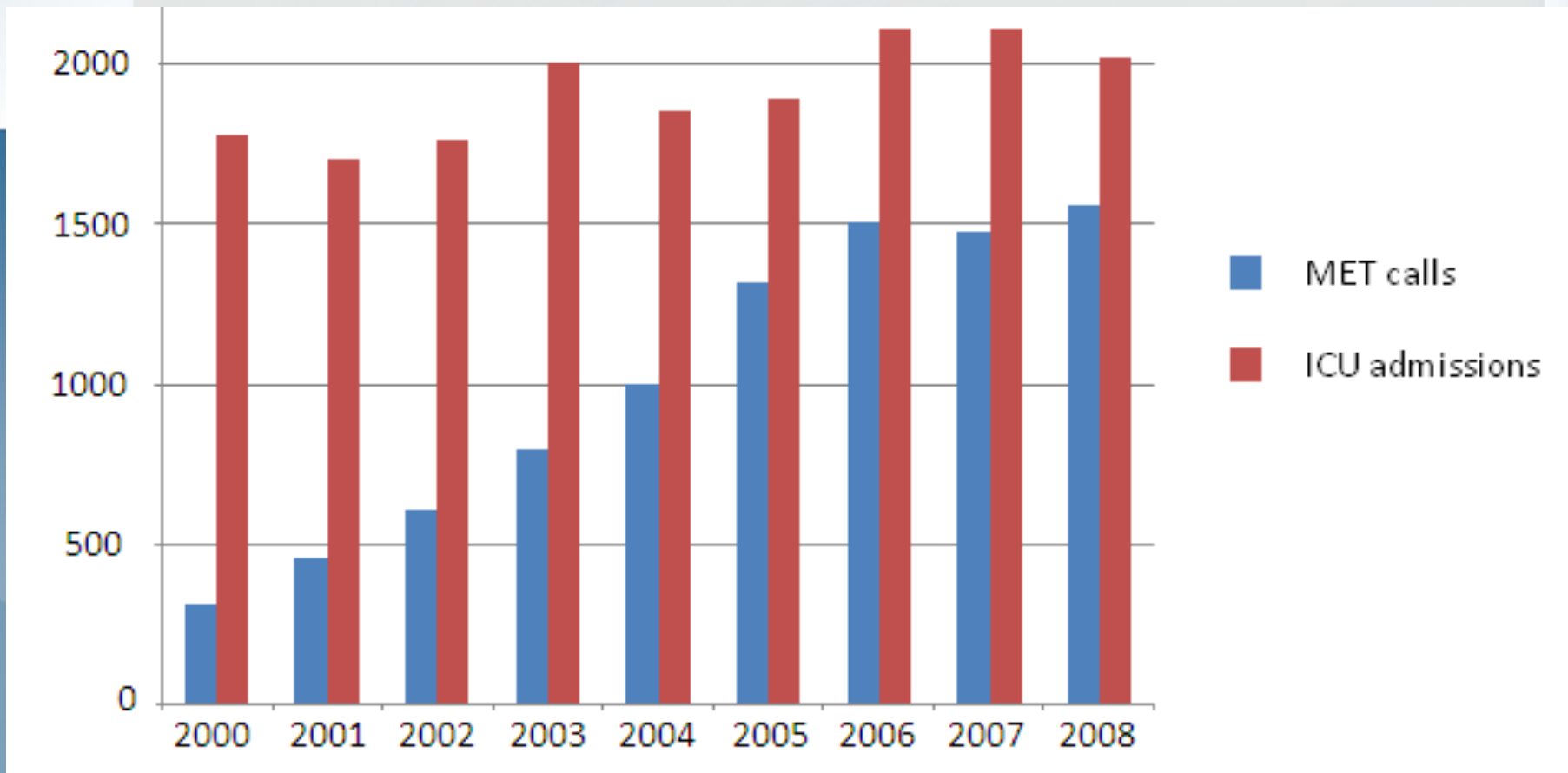
- Multiple MET review patients:
  - surgical patients ( $p < 0.001$ )
  - reviewed for arrhythmias ( $p = 0.016$ ).
  - admitted for gastrointestinal diseases ( $p < 0.001$ )
- 50% longer hospital stay ( $p < 0.001$ )
- 34.6% increase in mortality ( $p < 0.001$ )



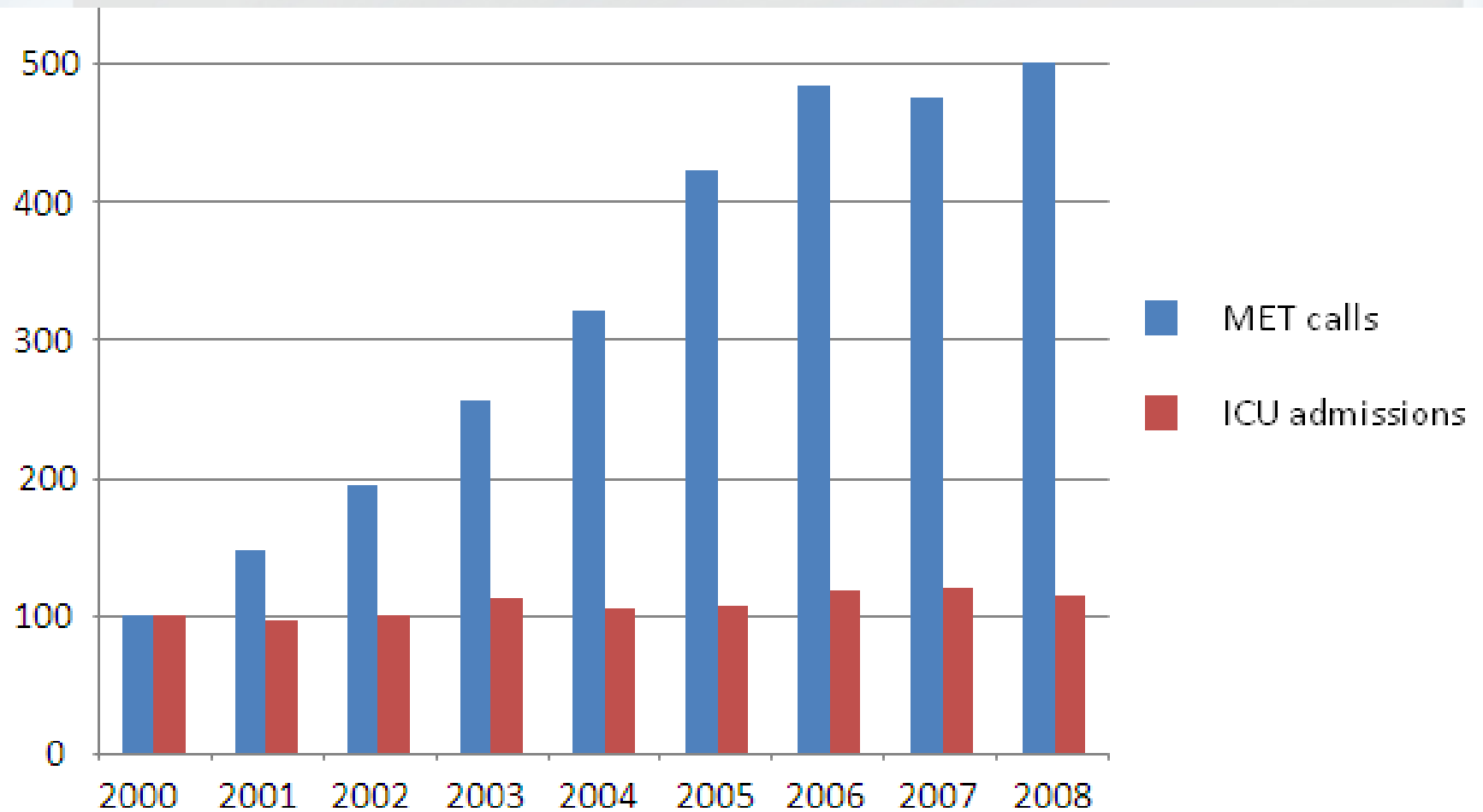
# The size of the problem

- MET call numbers at Austin Health





**Steady increase in MET calls**



↑ ICU admissions 19%  
↑ MET calls 500 %

- ANZIC-Core data on “MET dose”
  - Intensive Care Resources and activity ANZ 2006/2007
  - Public hospital sector Australia
  - 64/97 (66.6%) of hospitals provided data
  - Mean number MET calls per year ranged from 212 (Qld) to 589 (SA)

# The need for a MET database

- This is a big ticket item
  - $\frac{2}{3}$  thirds hospitals have a MET
  - Significant burden on ICU resources
  - ? MET patients at  $\uparrow$  risk adverse outcome
  - ? Number of reviews increasing

# Advantages of the database

- Quantify number of calls across sites
  - Recognition of problem = “call to arms”
  - Advocate for increased resources

- Assess results shown in single centre studies
  - MET patients are “at-risk” patients
    - Increased morbidity and mortality
  - Identify characteristics that increase risk
    - ? MET patient scoring systems
  - Assess disposition after MET
    - ICU resourcing implications

- Quality improvement implications
  - Early METs = incorrect disposition from ED and post-OR
  - Late METs = EOLC planning
  - Delayed METs = afferent limb failure
  - SAEs following MET = efferent limb failure

- Factors leading to MET
  - Patient factors = demographic / co-morbidity
  - Disease factors
  - System factors

# Proposal

- Multi-centre database of patients who receive MET
- Identical in principle to ANZICS-APD
  - Web portal
  - Aims / objectives
  - Terms of reference
- Will need funding and infrastructure

- Minimum data set
  - Patient demographics
  - Details of MET call
    - Timing in relation to
      - Admission dates
      - Day of week / time of day
    - Physiological trigger for MET
  - Disposition after MET
  - Outcome (MET and hospital)

# Conclusions

- In ICU there are well established
  - Severity of illness scoring systems
  - Databases for audit of characteristics and outcomes of patients
  - Avenues for QI
- Increasing role of ICU = Liaison with rest of hospital
  - Registrars flying solo
  - Significant use of limited resource

- MET patients (ward) may have worse outcomes than those in ICU
- Need to confirm findings of single centres studies
- May allow adequate resourcing, quantification, recognition of problem
- ANZICS-Core is well positioned to coordinate this