



# Things that go bump in the night

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# Acknowledgements

- Hospital at night proposal
  - Mark Petty – executive director of acute operations
  - John Rogan – NUM ICU
- The MET EOLC investigators
- ICNC (Tammie McIntyre, Carmel Taylor)
- Andrew Shelton and Austin Health POST Investigators
- Quality Safety and Risk
- Intern deteriorating programme investigators and MEU
- ACCESS = Sam Radford, Steve Warrillow, Neil Glassford

# Overview

- The Austin Hospital
- Problems with HAN
  - Staffing at night
  - The MET overnight
  - Cardiac arrests overnight
- Perceptions of need – Surveys regarding ICNC / POST
- Hospital response:
  - The overnight MET Reg
  - Vital sign chart and education
  - The hospital at night

# Austin hospital



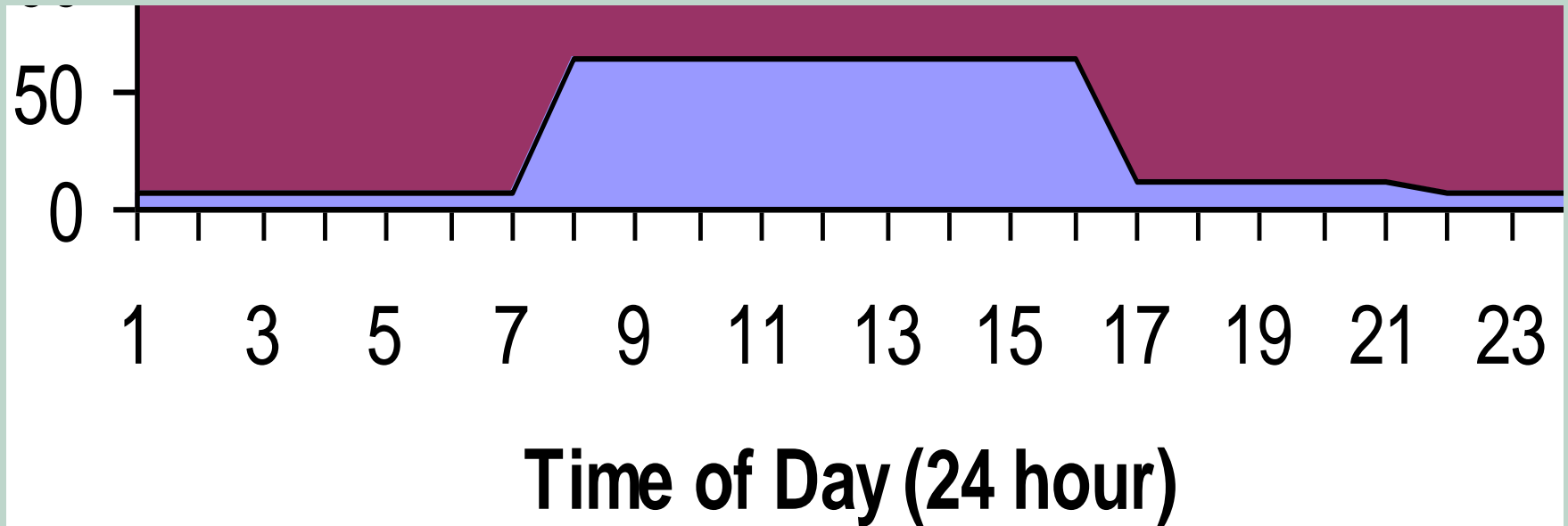


- 400 beds
- 31,000 admission > 24hr
- 82,000 admissions overall
- Surgery – major GIT, liver, neuro, vascular, urology, cardiac, thoracic, intestinal
- Medicine – spinal, LTU, resp, cardiol, renal, haem, onc, rheum

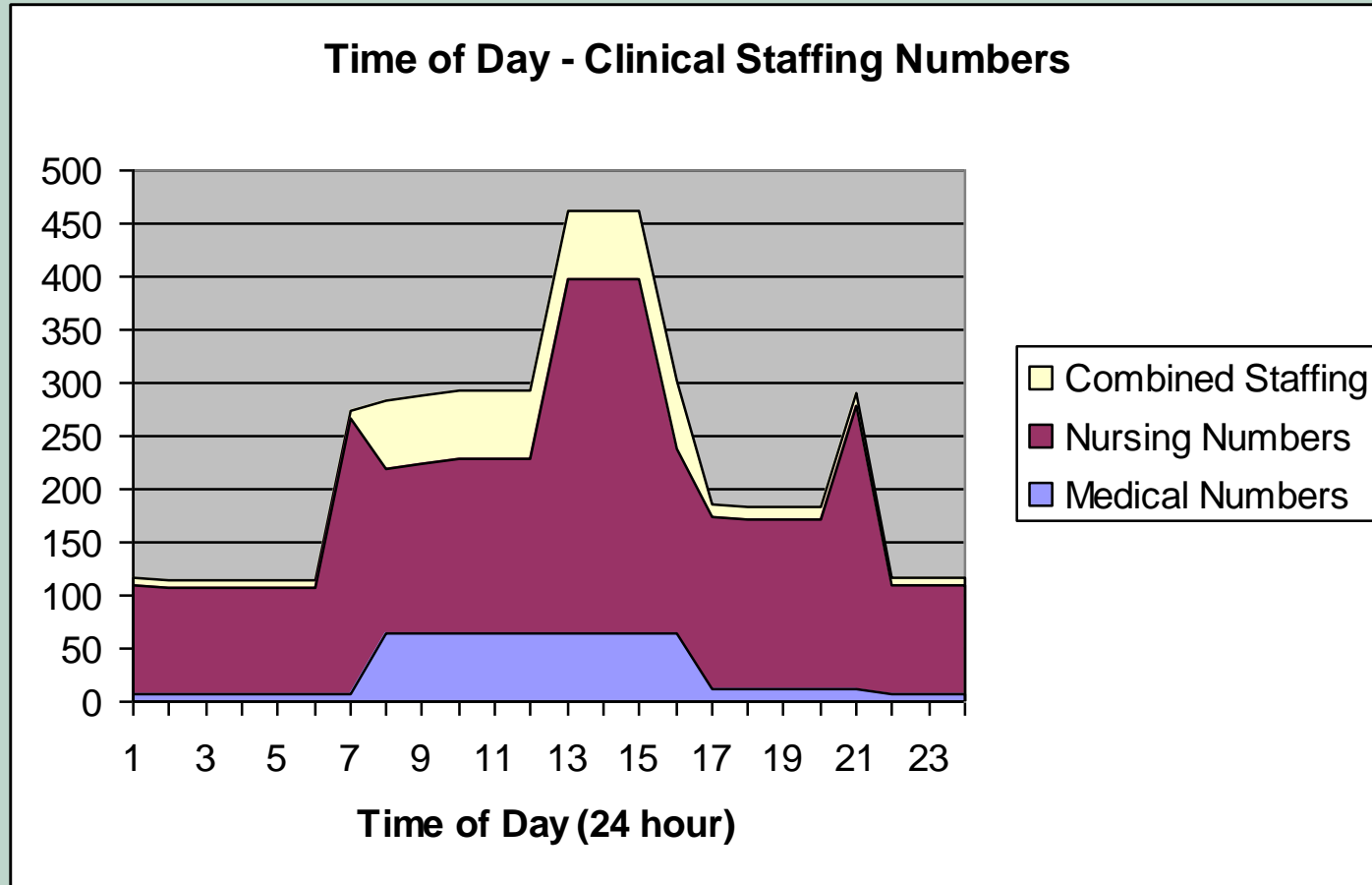
# Staffing at night

- During the day
  - Each unit: Reg, resident/intern  $\pm$  fellow
  - ICU: Reg, HMO and consultant on each pod
  - RNs = 1:4
- Overnight
  - General surg and general med
  - **NO**: specialty Reg, surgical/medical consultants
  - 3 HMOs
  - 2 ICU reg, one HMO, rarely consultant
  - RN 1:6

# Medical staff



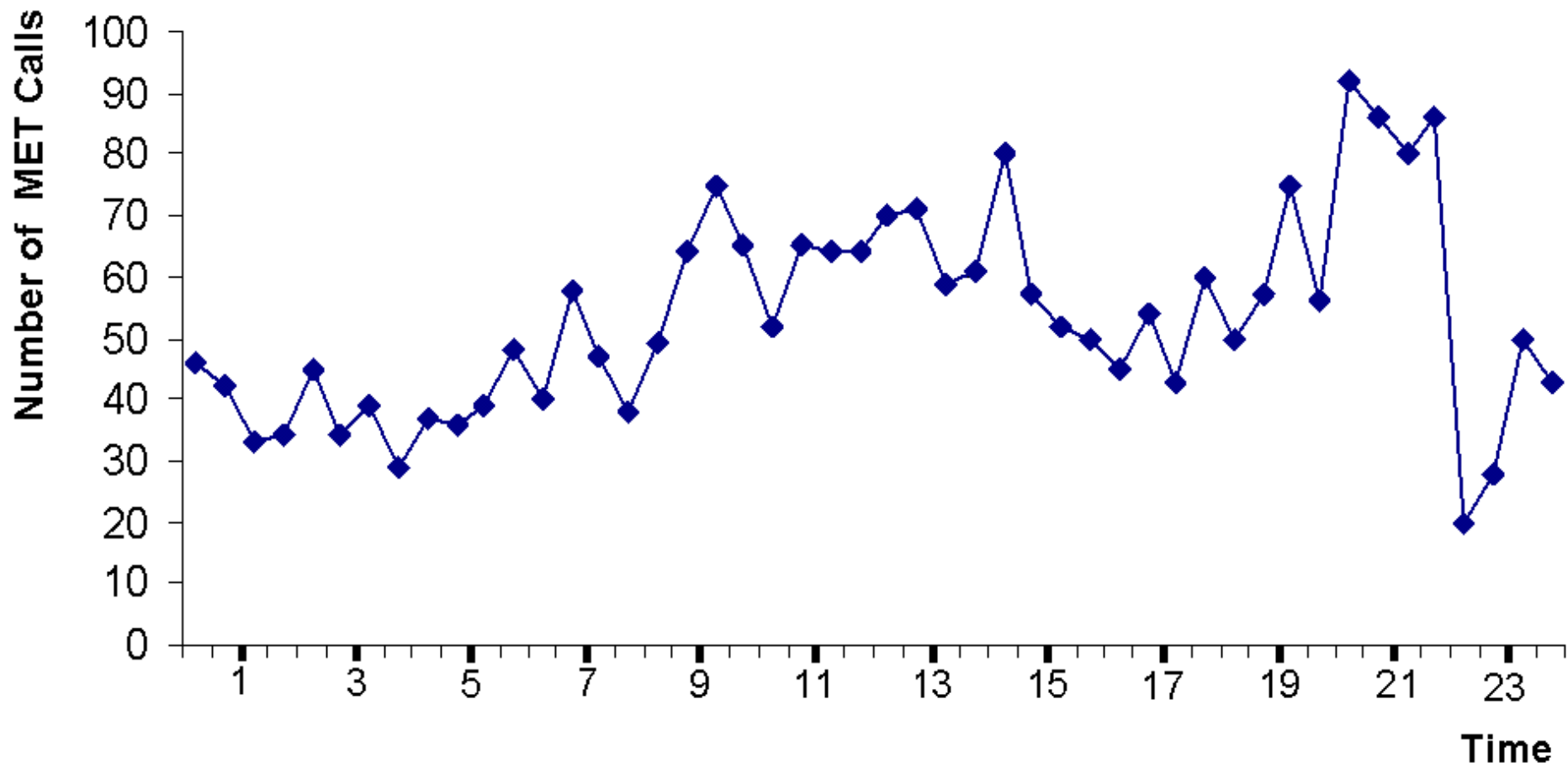
# Combined medical and nursing staff

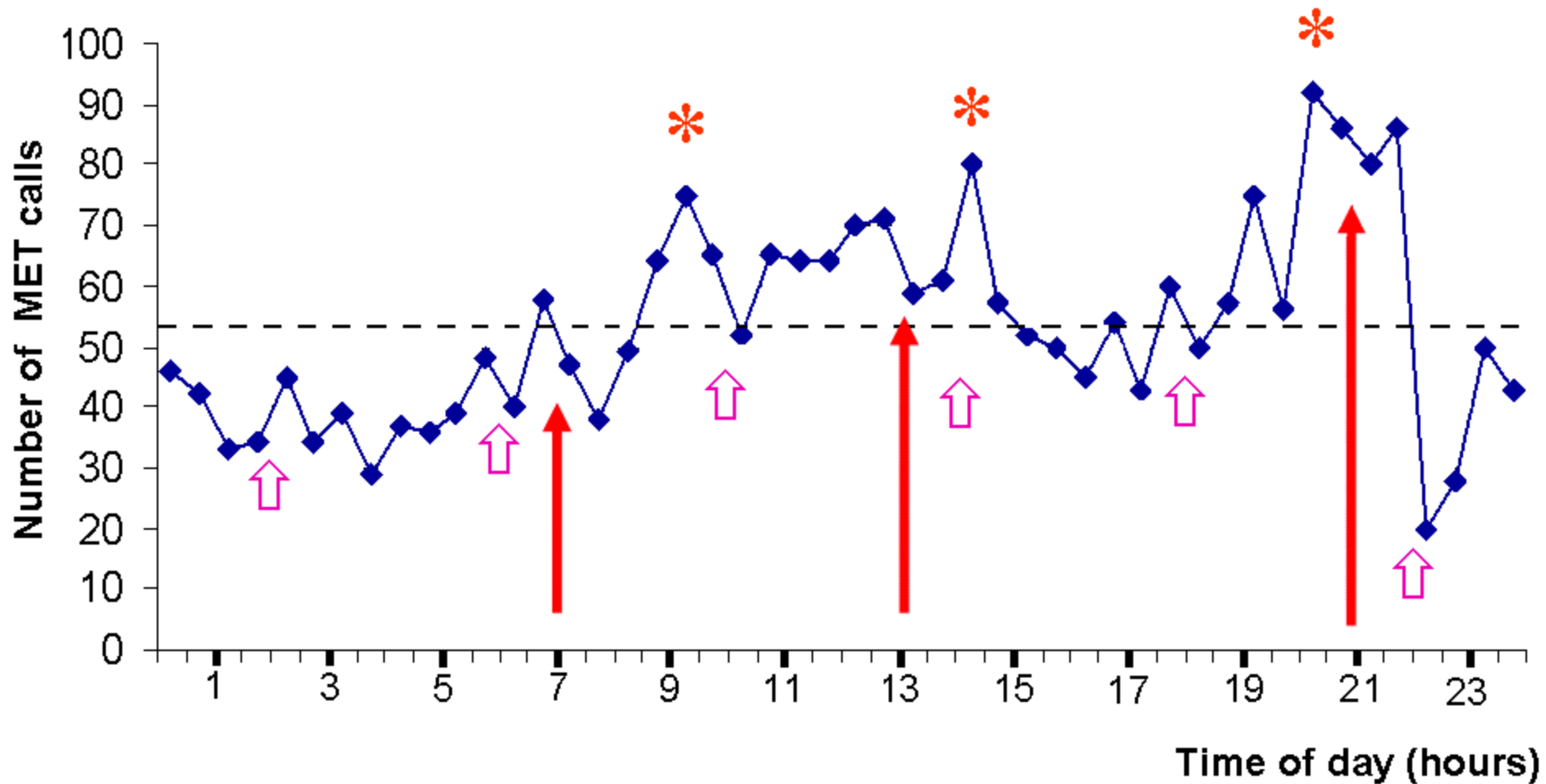


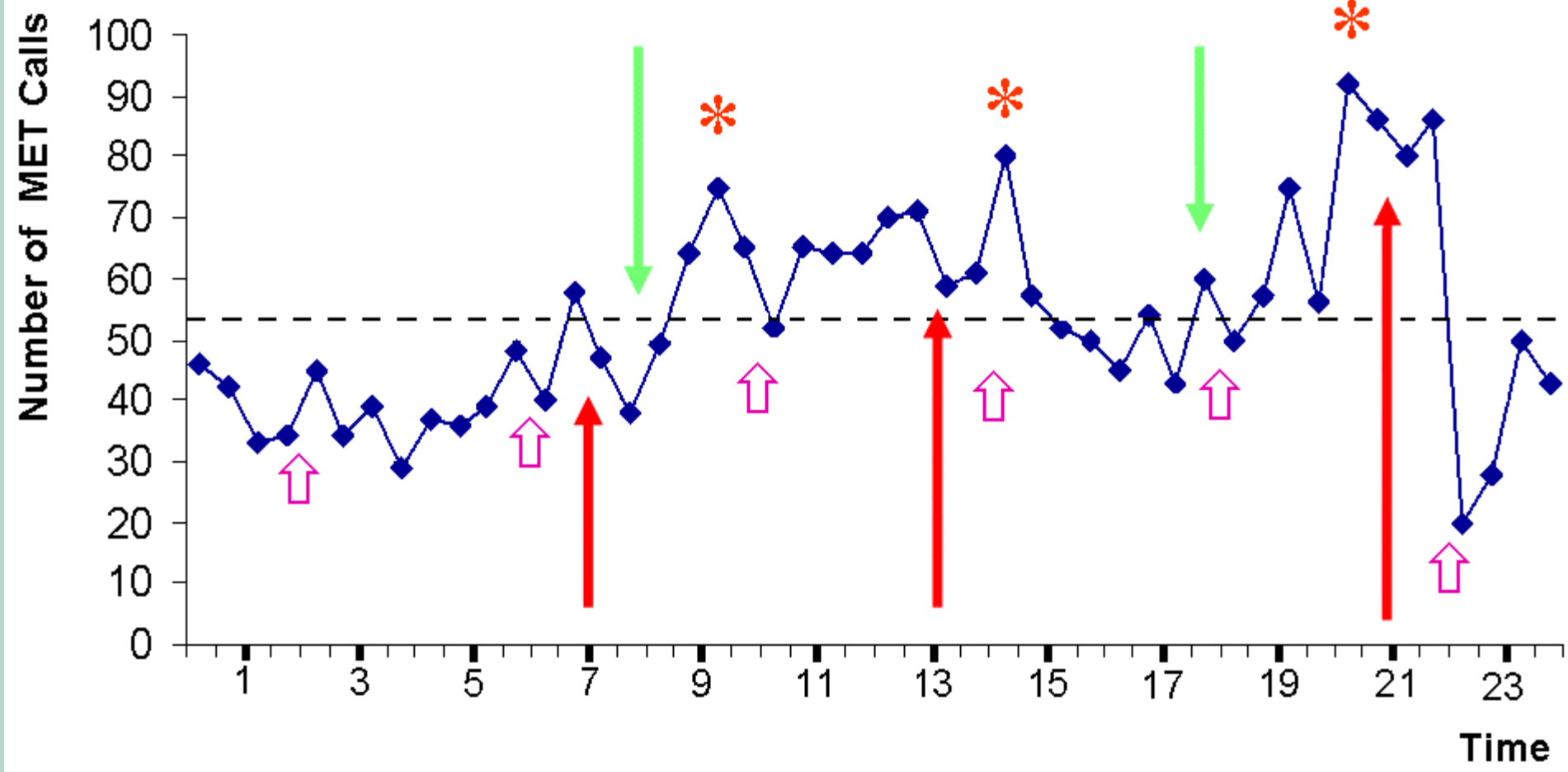
# The MET overnight

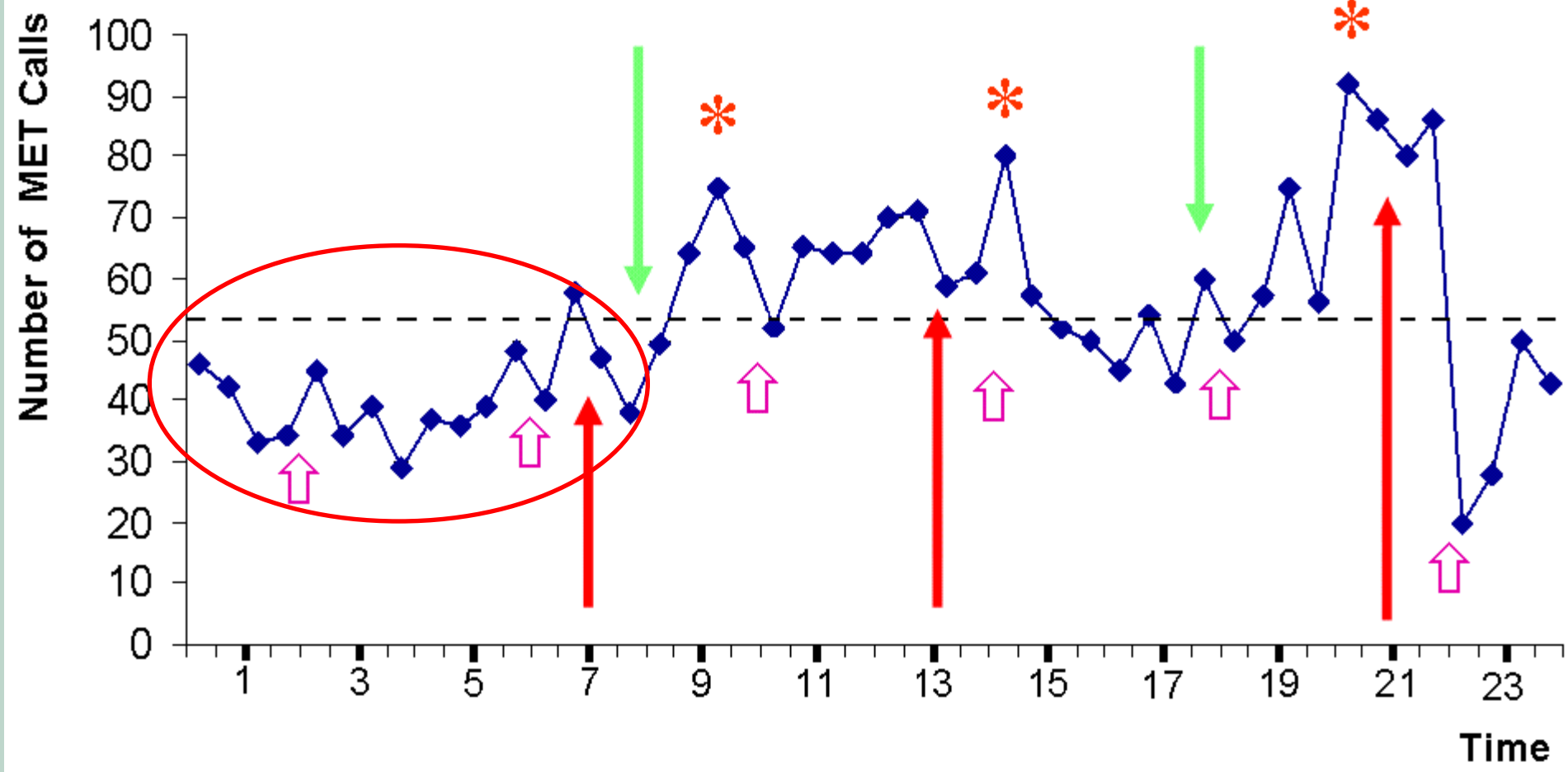
- Principles of the MET
  - Reviews patients in the early phases of deterioration
  - May prevent
    - » Unexpected ICU admission
    - » In-hospital cardiac arrest
    - » Unexpected in-hospital mortality
  - Activation criteria based on vital signs
    - » Need to be measured
    - » Reflection of attendance from care-givers
  - Mortality 10-20%: MET = detection of crisis

- Circadian variation MET calls Austin
- (August 2000 to September 2004)
- 2568 activations of MET service.
- Looked at time of activation over a 24 hr period







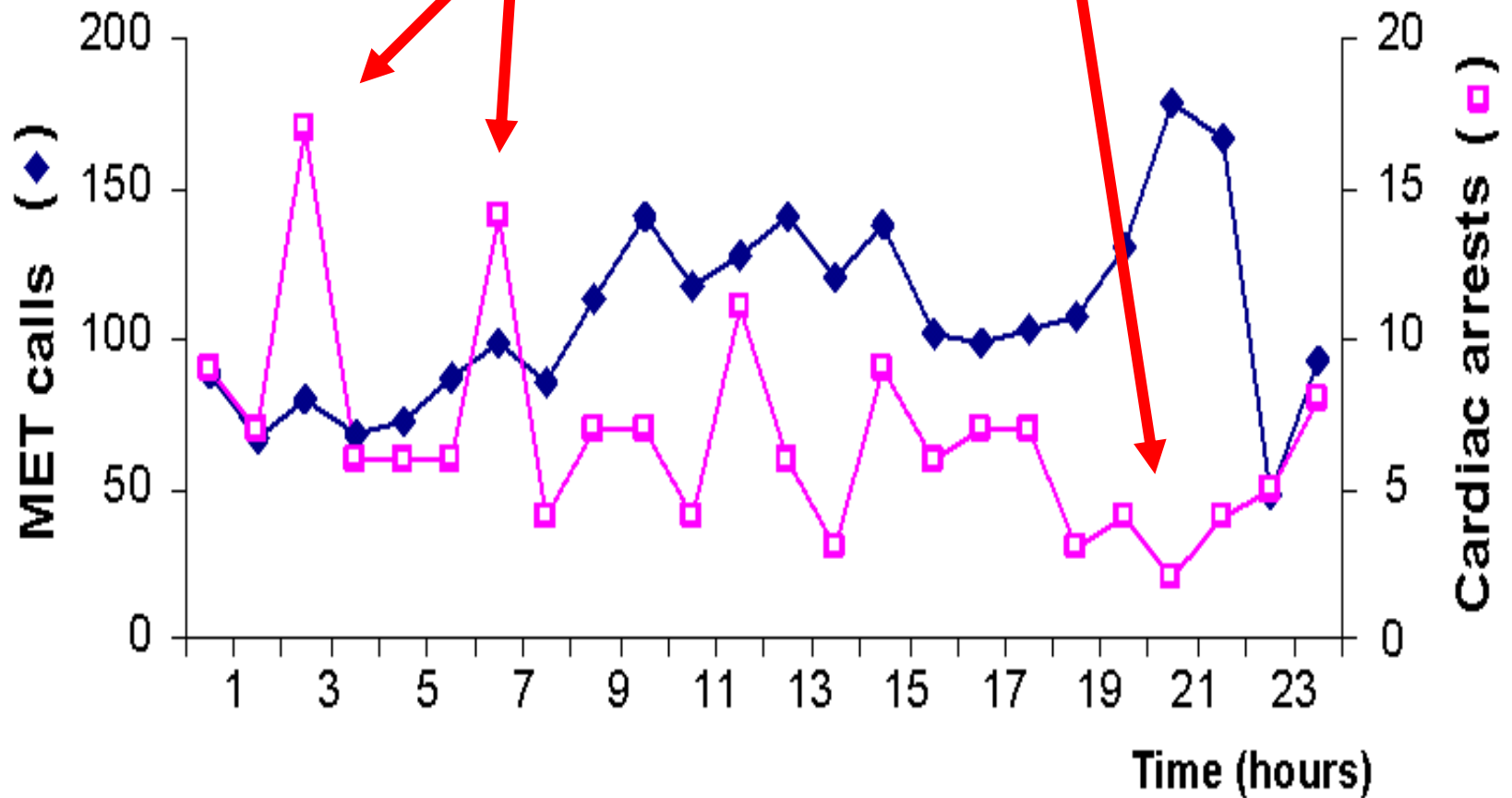


- Very few MET calls overnight
- Flurry of activity during day
- *“The more care givers that visit a patient, the more likely they are to detect patient deteriorations”*
  - Mike DeVita 2005

- Are we missing deterioration overnight ?
- There is a burst of MET calls after 8am
  - Its unlikely that there was a sudden burst of deteriorating patients
- The MET might reduce cardiac arrests
  - ? What is the relationship between MET calls and cardiac arrests

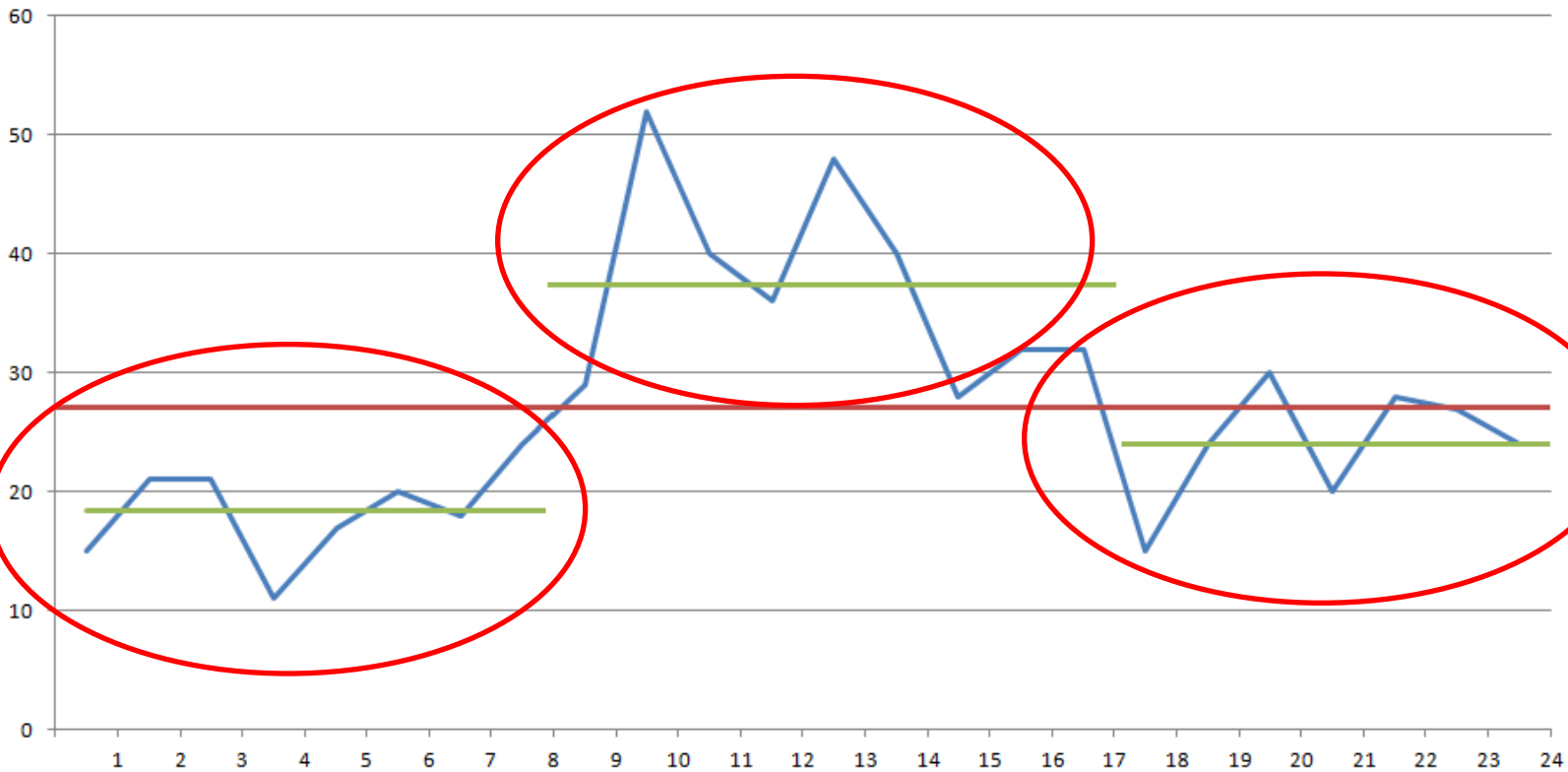
**Arrests highest when  
MET calls lowest**

**Arrests lower when  
MET calls highest**



# Seven hospital study

- 7 centre study
  - Number of LOMT (not just NFR)
  - Five Australian, One each Canada and Sweden
  - 652 MET calls in 518 patients over one month
  - Also had time of MET call
  - Able to assess circadian variation



- Detection of crisis is not uniform over 24hr
- More likely when more staff around
- Detection of crisis less common overnight
- Cardiac arrests more common when
  - Staff ratios lowest
  - Monitoring levels lowest

# Surveys of critical care outreach

66.3%

- ICNCs – ICU liaison nurses

	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
7. The ICNC service is needed 24 hours per day (n=202)	0	9.4	24.3	39.1	27.2

- POST – high risk surgical patients

Nurses n=53 / doctors n=10 (% of 63)	Strongly Disagree	Somewhat Disagree	Disagree	Agree	Somewhat Agree	Strongly Agree
The POST in only needed between 8am and 5pm.	17 / 1 (29%)	16 / 3 (30%)	2 / 0 (3%)	0 / 1 (2%)	11 / 5 (25%)	7 / 0 (11%)

59.0%

# What is the Austin Hospital response

- Overnight MET registrar
- New Vital sign charts
- Education of JMOs
- Hospital at night

# The overnight MET registrar

- Participating in MET reviews on ward may be safety issue for ICU
  - During day
    - 2 consultants
    - 2-3 registrars
    - 2 HMOs
  - Overnight
    - Two registrar
    - One HMO
- } If one Reg on transport or referral MET call will leave ICU unattended

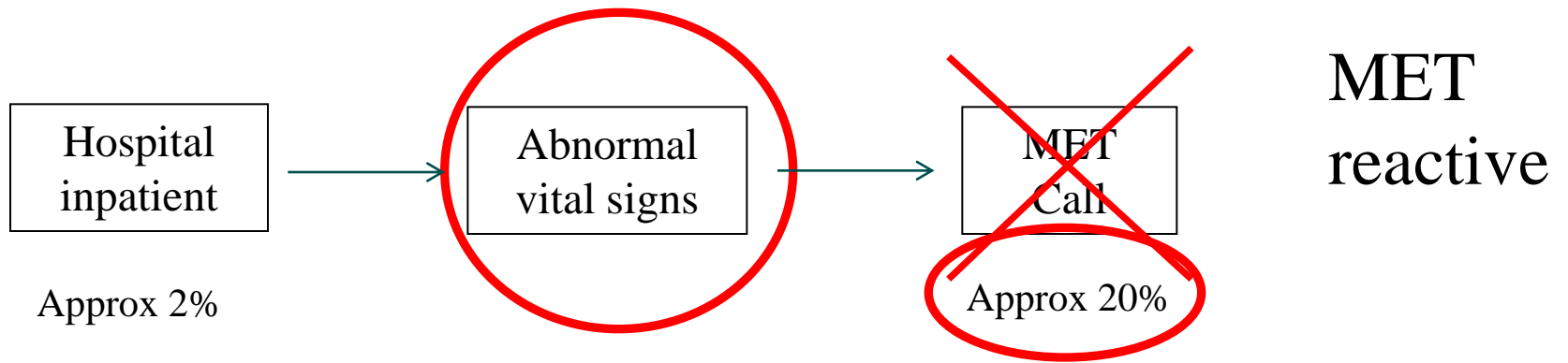
## • Rationale

- Increased calls
- Reduced ICU staff overnight
- Reduced chance of ICU being uncovered
- Increased follow-up of METs during the day → attempt to repeat MET calls
- Assist JMOs with unwell patients

## • Aims

- Prevent repeat MET calls
- Prevent ICU re-admissions
- Improve continuity care / follow-up some METs
- Support ward RNs / JMOs
  
- ? Aim to increase MET calls in certain areas
- ? Couple with electronic monitoring some areas

# Problems with this approach

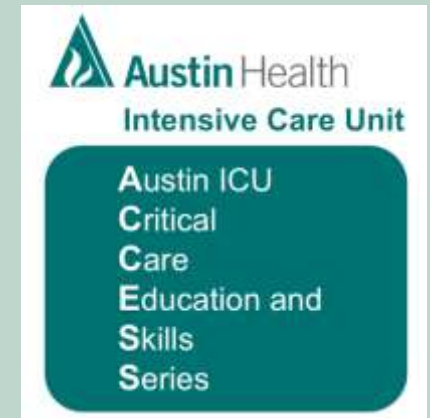


Need to be  
pro-active



# JMO education in “Acute care medicine”

- Interns
  - Deteriorating patients programme
  - Funded by DOH
  - Simulation and e-learning package
- HMO2/3
  - 10 interactive sessions = ACCESS
- BASIC

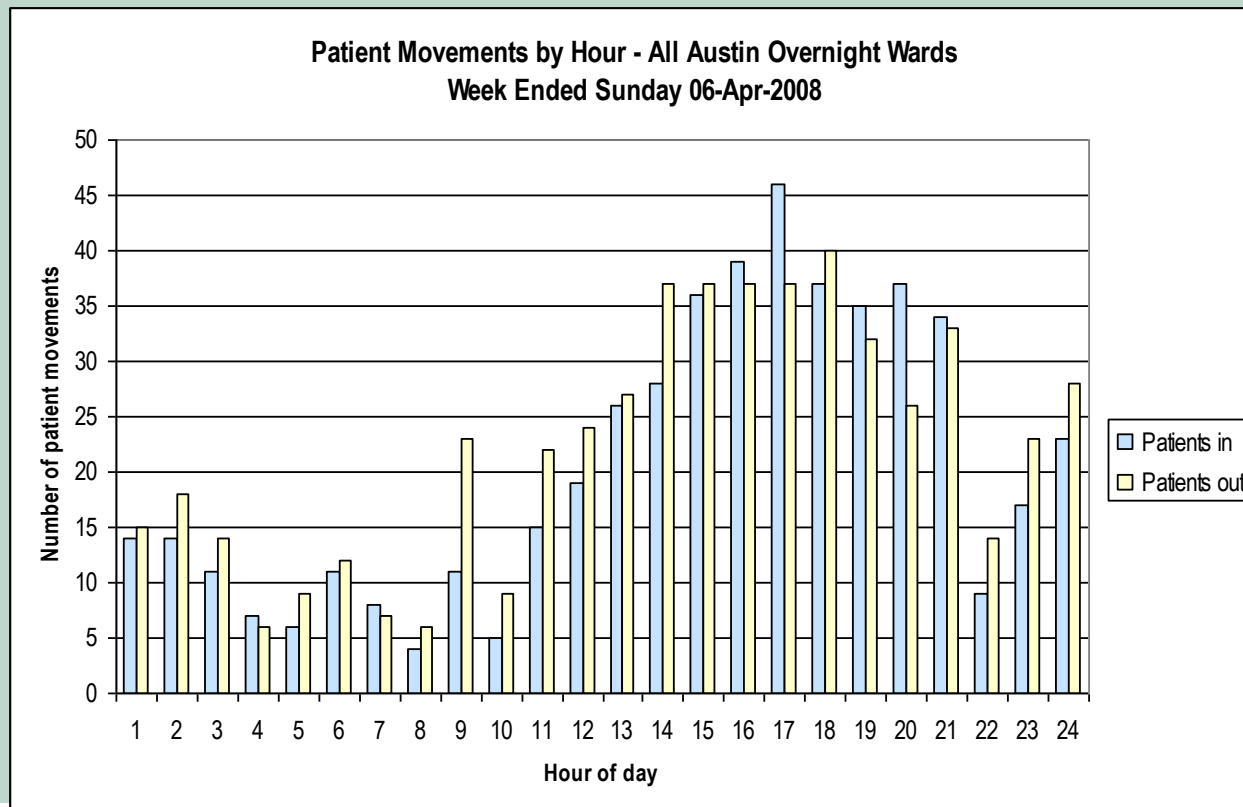


# Hospital at night

- **Background**

- Fewer & junior medical and nursing staff overnight
- Frequent paging interrupts work-flow
- Study by HMO services 2007 <sup>1</sup>
  - » Many calls for “trivial thing”
    - IV resite
    - Re-writing medication charts
  - » Poor learning opportunity
  - » 40% got no break

- Large proportion of admissions to wards occur out of hours



- **Model**

- Senior nurse coordinator

- » Senior nursing review / trouble shooting
    - » Clinical support for junior medical and nursing staff
    - » Triage pagers
    - » Coordinate handover
    - » Allocate tasks

- ? Add intern overnight to

- » Do all drug charts / IV resites
    - » Shadow HMO2/HMO3 to learn under supervision

## • Evidence

### – Christchurch

- » Marked improvement staff morale = feel support
- » Very well received
- » Indirect evidence of improved workflow patterns and planning
- » Improved ability HMOs to focus on tasks

### – NHS UK

- » Early evidence of improved morbidity and LOS
- » Empowers and educates nurses
- » HMOs =
  - reduced the intensity of their workload,
  - concentrate on specific patients without interruption

# Summary

- Patients get sick 24/7
- Staffing of the hospital does not reflect this
- Detection of deterioration in relation to MET calls least frequent overnight
- Need pre-emptive and pro-active strategies
  - ? Electronic monitoring in high risk patients )\_ detection
  - Clearer vital sign charts )
  - Better training for JMOs )\_ response
  - Hospital at night )