

A retrospective cohort study of effect of medical emergency teams on limitation of medical therapy documentation in a New Zealand tertiary hospital

CI Knott*, PJ Young†, AJ Psirides†, D Sim‡

*Senior Intensive Care Registrar, Wellington Regional Hospital, New Zealand. †Intensivist, Wellington Regional Hospital New Zealand. ‡Biostatistician, Department of Mathematics, Statistics and Operations Research, Victoria University, Wellington, New Zealand

Introduction: Auditing, managing and documenting limitation of medical therapy escalation (LMT) has recently been targeted as a hospital quality and safety initiative in Australasia¹. Medical emergency calls attended by medical emergency teams (MET) do not change in hospital mortality, but may be associated with increased decision-making by MET^{2,3}. Mandatory pro-forma cardiopulmonary resuscitation (CPR) forms may incompletely increase documentation of resuscitation planning⁴. Wellington Regional Hospital policy requires the completion of a CPR pro-forma at admission⁵. The effect of MET and cardiac arrest calls on baseline CPR/LMT documentation is not known in this hospital.

Objective: To determine the documentation patterns and compliance for CPR/LMT in a New Zealand tertiary hospital and the effect upon documentation following MET attendance in adult inpatients.

Study design: Retrospective case-note audit for a one year period (1 October 2009 to 30 September 2010) for all medical, surgical and obstetric/gynaecology in-patient adults (18 years or over) attended by MET (including cardiac arrests).

Patient cohort studied at 450 bed Wellington Regional Hospital, a New Zealand regional tertiary medical centre.

Study data was collected by 3 un-blinded clinicians using a pre-coded form. CPR and LMT documentation was assessed for presence, type, quality and completeness during 4 periods: at hospital admission; admission to MET period; 24 hour period after MET; time from 24 hours after MET to hospital discharge.

Patient demographic and co-morbidity data and hospital length of stay and in-hospital mortality data were collected.

Descriptive statistics, tests of association and Kaplan-Meier survival analysis were applied.

Results:

Figure 1: Included and excluded patients

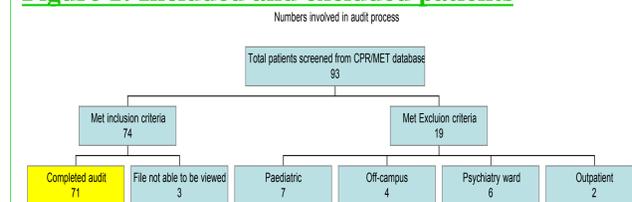


Figure 2: CPR documentation status changes

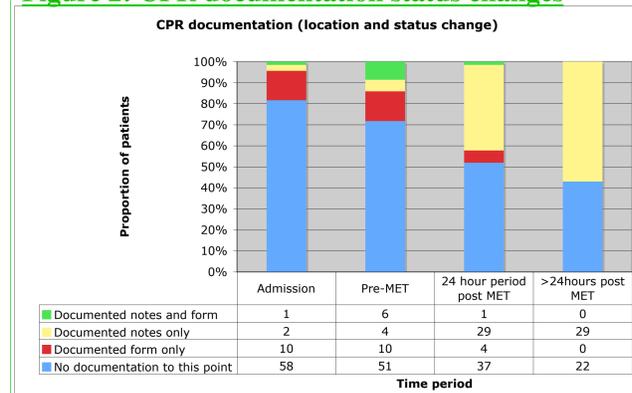


Figure 3: LMT documentation status changes

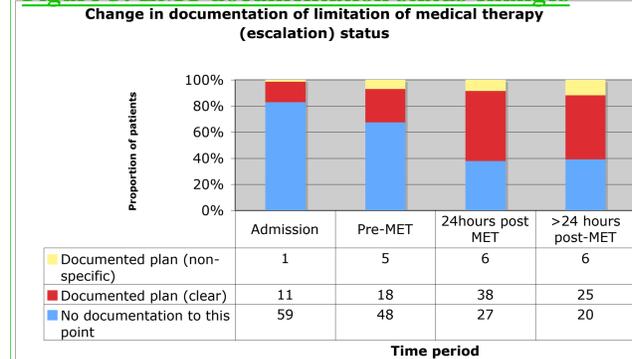
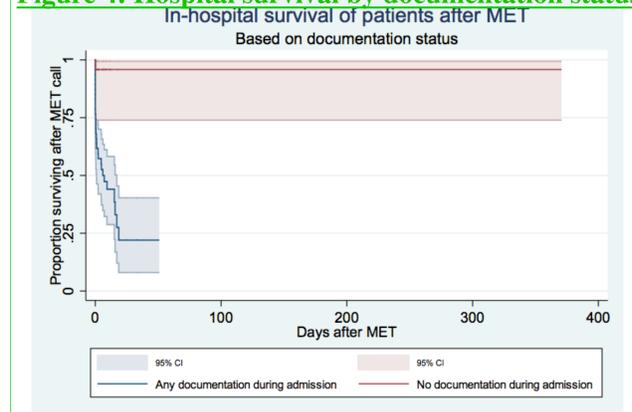


Figure 4: Hospital survival by documentation status



Period of documentation	Cumulative documentation status & eventual in-hospital mortality			
	Documented discussion to end of period		No documented discussion to end of period	
At Admission (Period 1)	CPR: 13 In-hospital mortality: 6 (46.2%)	LMT: 12 In-hospital mortality: 6 (50.0%)	CPR: 58 In-hospital mortality: 24 (41.4%)	LMT: 59 In-hospital mortality: 24 (40.7%)
Pre-MET (Period 2)	CPR: 20 In-hospital mortality: 12 (60%)	LMT: 20 In-hospital mortality: 12 (60%)	CPR: 51 In-hospital mortality: 18 (35.3%)	LMT: 51 In-hospital mortality: 18 (35.3%)
24hrs post-MET (Period 3)	CPR: 51 In-hospital mortality: 26 (51.0%)	LMT: 47 In-hospital mortality: 29 (61.7%)	CPR: 30 In-hospital mortality: 4 (13.3%)	LMT: 24 In-hospital mortality: 1 (4.2%)
20 discharged in 24 hours post MET/cardiac arrest: 18 dead, 2 alive				
>24hrs post-MET (Period 4) (excluding 20 discharged (18 dead, 2 alive))	CPR: 29 In-hospital mortality: 12 (41.4%)	LMT: 30 In-hospital mortality: 12 (40.0%)	CPR: 22 In-hospital mortality: 0 (0%)	LMT: 21 In-hospital mortality: 0 (0%)
Entire hospitalisation	CPR: 45 In-hospital mortality: 28 (62.2%)	LMT: 47 In-hospital mortality: 29 (61.7%)	CPR: 26 In-hospital mortality: 2 (7.7%)	LMT: 24 In-hospital mortality: 1 (4.2%)

Other pertinent findings:

- 33.8% of patients never have any form of documentation during hospital admission.
- 57.5% of the 66.2% patients obtaining documentation in hospital have their first documentation event after MET attendance.
- Apart from notes and the CPR pro-forma, 8 different CPR forms were discovered.
- 1 person died without any form of documentation (1/30 (3.3% of all deaths)).

Discussion: There was a low background rate of CPR/LMT documentation at admission. Exposure to MET increased documentation of CPR and LMT from a low background rate. Documentation in the notes occurred more than the mandated pro-forma CPR form. LMT and CPR were mostly documented together in each time period. The overall CPR pro-forma documentation rate did not meet hospital policy objectives. Patients without documentation survived hospital, as 'recognised survivors'.

Discussion continued: Survival patterns after MET may indicate a recognition of dying. Documentation rates in early post-MET period did not increase in time-to-discharge. MET appears to be a stimulus for both CPR and LMT documentation.

- **Strengths:** Most patients involved in MET audited. Interpretation of case-notes by clinicians similar to that at time of MET. Uncovering of documentation policy compliance deficits.
- **Weaknesses:** This was a retrospective audit with auditor interpretation bias. No comparison was made with non-MET patients. It is unclear who initiated decision making. Audit size too small to make statistically significant statements.

Further study: Hospital-wide prospective evaluation of use CPR/LMT documentation patterns (MET and non-MET) could determine the need for review of current documentation forms and practice. Audit of this documentation culture could be considered in line with the ACQSHC guidelines. If an intervention is planned, this would provide pre-intervention data. Understanding of culture around LMT documentation of domiciliary oxygen patients may provide insights into pre-emptive documentation.

References:

1. Australian Commission on Safety and Quality in Health Care. *National Consensus Statement: Essential Elements for Recognising and Responding to Clinical Deterioration*. 2010, Sydney, ACSQHC.
2. K Hillman et al, *Introduction of the medical emergency team (MET) system: a cluster-randomised controlled trial*. *Lancet* 2005 Vol 365: pp 2091-2097.
3. DA Jones et al, *The medical emergency team and end-of-life care: a pilot study* *Critical Care and Resuscitation*; 2007 9(2): pp 151-156
4. N Castle et al, *Pre-printed "Do Not Attempt Resuscitation" forms improve documentation?* *Resuscitation*; 2003 Vol 59 pp 89-95
5. Wellington Regional Hospital Clinical Governance Unit. *Patient Admission to Discharge Plan Policy*, CPP-DOC02, Version 3, 22 July 2009.

Acknowledgements: Health Research Council of New Zealand Health and Disability Ethics Committee, Central division (Reference: CEN/10/EXP/46). My co-authors and Wellington Regional Hospital Intensive Care Department for providing valuable resources. Jenny Hill (RN) & Louise Johnson (RN) for assisting in data collection.