Deteriorating adult patient evidence summary

What do we know?

Contents

Introduction

This is an evidence summary of three potential interventions relating to the deteriorating adult patient. It does not represent a full and comprehensive literature review.

The three interventions discussed are:

1. the detection of, and response to, patient deterioration, including:
    a. standardised vital sign charts and early warning score (EWS)
    b. guidance to district health boards (DHBs) on response options (within their local context)
2. goals of treatment planning
3. consumer and family/whānau escalation of care

This evidence summary has been prepared by the Health Quality & Safety Commission as part of the scoping of a deteriorating adult patient programme. The programme is limited to adult hospital inpatients, and excludes paediatric, neonatal and obstetric patients due to variations in normal physiology specific to their age or pregnancy.

This document also notes areas where questions remain, either in relation to the evidence, or to aspects of how to incorporate the evidence into programme implementation planning. These questions were highlighted for discussion with the Commission's expert advisory group on the deteriorating adult patient, experts with an interest in deteriorating patient safety systems who advised us during the scoping phase of the programme.

The following searches and studies were analysed for this evidence summary:

- Online searches performed within the US National Library of Medicine (PubMed) for related terms within each interventions.
- Studies specifically relating to a New Zealand or Australian context. If Australasian studies were deficient in specific intervention areas, the geographical scope was extended internationally. Where possible, we favoured more recent studies.

We also searched information repositories maintained by international patient safety organisations[1] for evidence supporting their improvement programmes in the relevant intervention areas. ●

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1   Such as the Australian Commission on Safety and Quality in Health Care and the Institute for Healthcare Improvement in the US.

Detection and response (part A): Standardised vital sign charts and early warning score

Status quo

A study undertaken in 2012 (published in 2014) found that, in response to a Ministry of Health directive, each of New Zealand's 20 DHBs had introduced an EWS system to assess clinical deterioration and determine when to escalate or intervene.[2] All DHBs used a system of either single extreme parameter (such as severe hypotension) or aggregate scores (obtained from multiple physiological derangements) to trigger escalation in treatment (review by a more senior nurse or doctor).

Key differences across DHBs are the values that trigger a response and the type of response to clinical deterioration. A total of nine different vital signs were assigned scores across the 21 systems identified (one DHB had two systems). Each system used between five and eight vital signs to determine when to respond. The values for each vital sign which triggered review by a rapid response team (RRT) differed by DHB. For example, bradypnoea triggered a response when it fell to eight breaths/minute in nine hospitals, but in three hospitals respiratory rate had to fall to four breaths/minute in order for a response to be triggered (assuming other vital signs were in an acceptable range). The range of values triggering a response is less variable for other vital sign measures, such as heart rate and blood pressure. There were also differences in the scoring systems to determine when a combination of vital signs triggered a response.

In 16 of the 21 systems, there was allowance for clinicians to alter the EWS score and thus when a response is required.

Evidence

The issue of whether or not hospitals should use an EWS system to detect patient deterioration early is not in question. Rather, planning for this intervention revolves around how to:

*   ensure scoring systems are in line with best evidence, including design implications of vital sign charts
*   improve the use of EWS
*   reduce the variation in use of EWS between hospitals, which could lead to variation in quality of care.

Several areas need to be considered:

*   The evidence for standardisation.
*   The evidence for particular clinical parameters and thresholds.
*   The human factors and design elements of the system.

Standardisation

It is recognised that, at present, a 'post-Babel' state exists within current inpatient vital sign scoring systems where no-one speaks the same language.[2] Each institution has developed its own solution to the 'EWS problem' with little evidence base. The national implementation of a standardised EWS would allow a common language to be spoken across and within all facets of New Zealand acute health care.[3]

Sapere Research Group, an independent expert services organisation commissioned to produce a cost–benefit report for the Commission's

2   Psirides A, Hill J, Hurford S. 2013. A review of rapid response team activation parameters in New Zealand hospitals. *Resuscitation* 84(8): 1040–4.

3   Psirides A, Pedersen A. 2015. *Proposal for a National New Zealand Early Warning Score & Vital Signs Chart*. The report is available on the Wellington ICU website URL: www.wellingtonicu.com (accessed 25 May 2016).

programme,[4] noted the following potential benefits of national standardisation:

- Standardised EWS based on evidence will likely increase the early detection of clinical deterioration.
- Future training requirements will reduce, avoiding repeated EWS orientation when staff move between hospitals.
- There will be increased local accountability by expecting clinicians to check whether systems for appropriate response are in place.

The report estimated standardising and improving EWS will lead to at least a 5 percent improvement in the detection of patients who will die, suffer a cardiac arrest or require an unanticipated intensive care unit (ICU) admission within 24 hours of deterioration being detected. This potential reduction is based on the documented strong performance of the evidence-based National Early Warning Score (NEWS) in the UK compared with other non-standard EWS systems.[5]

In addition, the interim evaluation of the New South Wales (NSW) Clinical Excellence Commission's 'Between the Flags' programme (see page 8) reported introducing a standardised EWS was associated with unexpected but significant changes of care processes. These processes included increased documentation of vital signs, improved patient safety culture and more proactive initiation of advance care planning and end-of-life care.[6]

Despite the evidence cited above, local evolution of individual EWS systems in New Zealand, along with a similar variance in vital sign charts upon which parameters are recorded (and the EWS is calculated), is likely to lead to considerable resistance to standardisation. Psirides and Pedersen[2] noted the difficulties faced within their own

institution when a standardised vital sign chart and EWS were introduced across a single two-site DHB. They recommended this factor should not be underestimated when planning a national system.

Clinical parameters and thresholds

Clinicians often have varying views on the physiological observations required to recognise clinical deterioration. Agreement on this issue is an important step towards identifying clinical deterioration. A growing body of evidence demonstrates the association between abnormal physiological observations and assessments, and critical illness and adverse events.[7] [8]

Core physiological observations

The Australian *Guide to Support Implementation of the National Consensus Statement* draws on evidence about the association between abnormal physiology and subsequent adverse outcomes.

The statement recommends the core physiological observations for recognising clinical deterioration are:

- respiratory rate
- oxygen saturation
- heart rate
- blood pressure
- temperature
- level of consciousness.[9]

The UK Royal College of Physicians recommends this group of six parameters. It also recommends additional weighting be given to any patient requiring supplemental oxygen (oxygen delivered by mask or nasal cannulae) to maintain normoxaemia.[10] The Between the Flags programme uses the above six, plus an assessed level of pain measure.

4 Moore D, Poynton M. 2015. *Business case for investing in a quality improvement programme to reduce harm caused by clinical deterioration.* Wellington: Sapere Research Group. URL: www.hqsc.govt.nz/our-programmes/other-topics/publications-and-resources/publication/2335 (accessed 25 May 2016).

5 Smith GB, Prytherch DR, Meredith P, et al. 2013. The ability of the National Early Warning Score (NEWS) to discriminate patients at risk of early cardiac arrest, unanticipated intensive care unit admission, and death. *Resuscitation* 84(4): 465–7.

6 Green M. 2013. *Between the Flags Program Interim Evaluation Report.* Sydney: New South Wales Clinical Excellence Commision. URL: www.cec.health.nsw.gov.au/__data/assets/pdf_file/0004/258151/btf-program-interim-evaluation-report-april-2013-v2.pdf (accessed April 2016)

7 NICE. 2007. *Acutely ill patients in hospital: Recognition of and response to acute illness in adults in hospital.* London: NICE.

8 Jacques T, Harrison GA, McLaws ML, et al. 2006. Signs of critical conditions and emergency responses (SOCCER): a model for predicting adverse events in the inpatient setting. *Resuscitation* 69(2): 175–83.

9 ACSQHC. 2011. *A Guide to Support Implementation of the National Consensus Statement: Essential Elements for Recognising and Responding to Clinical Deterioration.* Sydney: ACSQHC.

10 Royal College of Physicians. 2012. *National Early Warning Score (NEWS): Standardising the assessment of acute illness severity in the NHS. Report of a working party.* London: Royal College of Physicians.

Different types of systems

EWS systems can be categorised as single parameter systems, multiple parameter systems, blended systems or non-parameter-based systems. Each type of system has strengths and weaknesses. An overview of these systems is shown in the table below:[11]

	Single parameter system	Multiple parameter system	Blended system	Non-parameter-based system
Mechanism	Maximal system activation (such as RRT call) from an extreme derangement in a single vital sign derangement	Multiple vital signs assigned scores that increase with worsening physiological derangement. Aggregate early warning score (EWS) calculated and graded escalation is triggered by increases in the total score	Combines single and multiple parameter systems so graded escalation is triggered either by a single parameter **or** from an aggregate EWS	System activation based on non-physiological pre-identified criteria of 'at risk' patients
Examples	*RRT call for respiratory rate <6 breaths per minute*	*Junior doctor review for EWS 3–5, senior doctor review for EWS 6–9, RRT call for EWS 10 or above*	*Junior doctor review for EWS 3–5 **or** a single parameter in a 'medium risk' zone, RRT call for EWS 10 or above **or** single parameter in a 'high risk' zone*	*RRT call for threatened airway, seizures, uncontrolled bleeding, staff concern etc*
Advantages	Simple to use. Easy to teach and recognise. Valid even if vital sign set incomplete (assuming triggering vital sign is still measured)	Attuned to detect early deterioration and match this with an appropriate system response. Score detects multiple system derangement rather than relying on extreme derangement in a single vital sign	Combines simplicity of single parameter escalation with an earlier detection aggregate score both of which can be matched to a graded response	Does not require vital signs to be taken or calculation of EWS. Provides 'permission' for staff to escalate if concerned even if vital signs are within normal limits. Easier for staff to learn criteria than EWS trigger thresholds
Disadvantages	'All or nothing' response prevents graded escalation. Late response to deterioration as escalation delayed until extreme abnormality reached with potential increase in patient morbidity	Complexity. Requires assessment of multiple vital signs, reference to a scoring chart, and accurate calculation of aggregate score. Score & subsequent escalation invalid if vital sign set incomplete	Complex dual system that may be less intuitive for use by novices. This may contribute to calculation error and risk of failure to escalate	Requires regular patient observation for detection. Reliant on staff experience for recognition. Criteria may be more subjective so increased potential for deterioration to be undetected. Most criteria represent late deterioration
Impact of staff modifying scoring or escalation criteria	Increased risk of patient harm as activation parameters already represent extreme physiological derangement	May prevent over-triggering for patients for whom physiological abnormality is their norm (and may reflect chronic health state)	Modifications are possible to both scores assigned to individual parameters and the zones within which they fall. May allow adaptation of the system to the patient's normal physiology	Increased risk of patient harm as activation criteria already represent extreme physiological derangement
Charting	Compatible with both paper-based and electronic charts. Single parameter activation criteria can be clearly marked for physiological extremes with instruction for mandatory escalation	Better suited to electronic vital sign capture. EWS calculation can be automated with 'opt-out' system activation. Paper-based charts may appear complex and confusing for novice users	Better suited to electronic vital sign capture. EWS calculation can be automated with 'opt-out' system activation. Paper-based charts likely to appear complex and confusing for novice users	Does not require vital signs chart but can be used to augment its use. Posters listing appropriate escalation criteria can be displayed in clinical areas

11   Psirides A. 2016. Table taken from 'An Overview of the Afferent Limb' (in press).

Case studies

Two EWS system case studies are highlighted below, featuring Capital & Coast DHB (CCDHB), and the Australian Between the Flags programme. These examples were chosen because they represent respectively a New Zealand and Australian (statewide) solution to the same problem – how to improve detection of the deteriorating ward patient.

Each uses slightly different methods. CCDHB uses a blended system, in that it requires calculation of a score, although this can be bypassed by any single score in the blue 'medical emergency team' (MET) zone. Between the Flags uses a single parameter system that does not require score-writing or calculation, which are believed to increase the cognitive load on the user.

Capital & Coast DHB

CCDHB developed an EWS system[12] that is now used across the three Greater Wellington DHBs (including Hutt and Wairarapa), two other regions and a third planned to follow shortly. It is based on the Royal College of Physicians' NEWS scoring system, but modified to include single extreme-parameter calling to activate a maximal system response (rather than relying on an aggregate scoring system alone). With this system, extreme bradypnoea or tachypnoea (respiratory rate <5 or >35 breaths per minute), hypotension (systolic blood pressure <70mmHg), bradycardia or

tachycardia (heart rate <35 or >140 per minute regardless of rhythm) or an unresponsive or fitting patient should receive a MET response or local equivalent. Extreme hypertension, hypothermia or hyperthermia, or hypoxaemia alone are not able to trigger a maximal system response.

Single extreme-parameter calling may add value because it does not rely on the calculation of an EWS, it can be easily indicated on the standardised vital sign chart and, over time, the values of the 'blue zone' parameters will become more familiar to medical and nursing staff.

At CCHDB, the attendance of the MET at the bedside of patients breaching these parameters has been a significant factor in the reduction of patients progressing to cardiac arrest and death.

Since the introduction of the EWS with a mandatory escalation pathway, the incidence of cardiac arrests has decreased by 30 percent each year for the last three years; inpatient cardiac arrests are now a relatively rare event.

The colours were chosen to reflect a progression of increasing severity from white (normal), through yellow and orange to red (indicating danger). The extreme parameters in blue (represented by the word 'MET' rather than a score) break this progression to indicate immediate action is required rather than an EWS calculation. Blue may also be associated with emergency states deemed 'code blue' in some centres, as well as reflecting the colour of critically ill hypoxic patients. The colours, parameters and their associated scores are shown below.

12 EWS & Vital Signs Charts Online Resource Library, http://ews.wellingtonicu.com.

SCORE	MET	3	2	1	0	1	2	3	MET
ZONE	BLUE	RED	ORANGE	YELLOW	WHITE	YELLOW	ORANGE	RED	BLUE
Resp Rate	<5	5-8		9-11	12-20		21-24	25-35	>35
SpO₂		≤91	92-93	94-95	≥96				
Supplemental O₂			YES		NO				
Temp				<35.0	35.0-35.9	36.0-37.9	38.0-38.9	≥39.0	
Sys BP	<70	70-89	90-99	100-109	110-219			≥220	
Heart Rate	<40		40-49		50-89	90-110	111-129	130-139	≥140
Level of Consciousness					Alert			Voice or Pain	Unresponsive or fitting

The corresponding vital sign charts were developed over progressive iterations to account for human factors design and provide prompts to aid intuitive vital sign recording. All vital signs are charted separately to avoid confusion (and allow different scoring on parameters with similar values, such as diastolic blood pressure and heart rate). Large white spaces are present to make it easier to see graphical trends. Visual cues are also presented to minimise variance in documentation.

Other features include non-cursive fonts sized appropriately for low-light conditions, colour schemes suited to colour-blind staff, the use of clear, unambiguous terminology and a simplified escalation pathway for staff to follow for patients requiring escalation. Areas of importance are highlighted in bold or with colour accenting. Instructions are presented adjacent to the vital sign recording area to minimise information loss from turning over. The landscape orientation also allows for 20 different vital sign sets to be recorded on a single-sided A3 chart. A preceding pilot study established this space would be sufficient for almost 80 percent of adult inpatient admissions. All extraneous information (not related to vital sign capture or associated information such as pain scores) was removed.

Between the Flags (BTF)

BTF is designed as a series of interventions that act synergistically. Governance is listed first, in recognition of its pivotal importance. The programme relies on leadership and governance by individuals whose roles and responsibilities are clear. Standard calling criteria, incorporated into a standard observation chart, grafts the BTF system into the fundamental clinical practice of taking and recording vital sign observations. The programme also covers universal clinical emergency response systems with minimum standards. Education on recognition of and response to deteriorating patients complete the safety net.

Calling criteria for early recognition of the deteriorating patient was standardised across NSW through widespread consultation with clinical experts. Information obtained from current research, together with the application of human factor principles, provided the basis for the yellow zone (clinical review) and red zone (rapid response) criteria and the overall design of the charts. The red and yellow zone criteria are triggers to activate the facility's clinical emergency response system, which mobilises clinicians to assess, treat and review patients who are deteriorating, or are identified as being at risk of deterioration.

An essential element of BTF is the incorporation of the calling criteria into the NSW health standard observation charts. The charts are 'track-and-trigger' tools, colour-coded with the yellow and red zone calling criteria described above.

The track-and-trigger tool refers to an observation chart that enables vital sign observations to be graphically recorded, with trigger zones clearly identified.

The NSW health standard observation charts allow trends in observations to be tracked. The visual threshold is identified in colour, triggering a response by the health professional to respond to a breach in the threshold (criteria), when the observations are taken and recorded.

Tracking of Observations

Trigger of Threshold
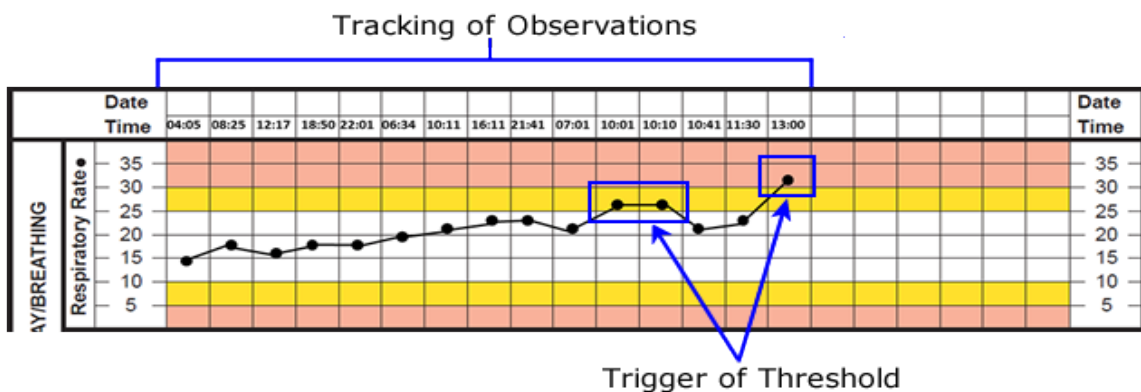
The key features incorporated into the NSW health standard observation charts are listed below:

- The most sensitive indicators of deterioration are represented on the chart. Respiratory rate, SpO$_2$, oxygen requirement, pulse, blood pressure and neurological assessment are therefore included.
- No overlapping of observations, to reduce confusion when recording or interpreting vital signs.
- Observations are displayed graphically so trends can be monitored (tracking).
- Where possible, during the transfer of care from one department to another, the observation charts are continued and therefore maintain the tracking.
- Trigger zones are colour-coded to draw attention to calling criteria parameters (at the time of recording or on review).
- Flexibility for variation to standard calling criteria for individual patient, as deemed clinically appropriate.
- Fewer available charts by combining the BTF standard observations with the more commonly recorded general observations into a single chart.
- Clear display and easy access to the calling criteria.
- Space allocated for recording of blood glucose level (BGL). Random BGL checks do not require a separate form, particularly if they are part of the assessment of a deteriorating patient.
- Ability of the chart to identify deterioration depends on the reliability and completeness of the observations.
- A clinical review or rapid response call can also be initiated under the 'serious concern by any staff member' criterion. For example, if a deteriorating trend in clinical observations is detected, even if the patient is not yet in a coloured zone, a clinician may initiate either a clinical review or rapid response.
- All additional clinical review and rapid response criteria not displayed within the graphed areas are listed in a yellow or red box.

Human factors and design elements

Observation chart design affects the recognition of abnormal vital signs

There is increasing evidence (including a growing body of research from Australia) to indicate the design elements of EWS systems impact on the accuracy of vital sign recording and response time to deterioration. This applies to both experienced health professionals and novices.[13] A 2012 Australian study indicated that more accurate decisions were made by health professionals when they used a well-designed, yet unfamiliar chart than decisions made (by the same users) when they used a familiar, yet poorly designed chart. The authors of that study concluded: '... superior observation chart design appears to trump familiarity. Hence, hospitals motivated to improve the detection of patient deterioration should implement charts designed from a human factors perspective, rather than simply maintaining the status quo of reliance on clinical experience.'[14]

Preece et al (2012) found user preference about design features does not always correlate with objective evidence on how accurate the chart design is. They cautioned it is dangerous to rely solely on subjective opinions – even those of experienced health professionals – when developing patient observation charts. This is because optimal design may be counterintuitive and some preferences may merely reflect familiarity.[15] A single centre study from 2004 showed an evidence-based redesign of the hospital vital sign chart, along with specific training in its use, 'significantly improved the detection of patient physiological deterioration'. For some parameters (such as hypoxaemia), detection improved by up to 45 percent ($p<0.05$).[16]

13 Preece MH, Hill A, Horswill MS, et al. 2012. Supporting the detection of patient deterioration: observation chart design affects the recognition of abnormal vital signs. *Resuscitation* 83(9): 1111–8.

14 Christofidis MJ, Hill A, Horswill MS, et al. 2013. A human factors approach to observation chart design can trump health professionals' prior chart experience. *Resuscitation* 84(5): 657–65.

15 Preece MH, Hill A, Horswill MS, et al. 2012. Designing observation charts to optimize the detection of patient deterioration: reliance on the subjective preferences of healthcare professionals is not enough. *Aust Crit Care* 25(4): 238–52.

16 Chatterjee MT, Moon JC, Murphy R, et al. 2005. The "OBS" chart: an evidence based approach to re-design of the patient observation chart in a district general hospital setting. *Postgraduate Medical Journal* 81(960): 663–6.

Recommendations on chart design elements and human factors

Researchers from the University of Queensland have created a *Developer's Guide for Observation and Response Charts*.[17] Their recommended evidence-based usability principles follow:

- Page layout: avoid including information that is rarely needed and would lead to clutter; lay out the page to match the user's task as naturally as possible; use a landscape layout to maximise the amount of information that the user can attend to.

- Information layout: present the exact information the user needs at the exact time and place it is needed; display the most important information at the top left of the page in decreasing order of importance. (For example, it has been suggested that tachypnoea is the most important predictor of cardiac arrest for inpatient wards yet it is often the vital sign that is least often recorded.)[18]

- Recording observations: ensure that data points for two observations cannot be confused; provide enough space to accurately record information and ensure trends are clear; use clear and descriptive labels.

- Integration of track and trigger systems (vital sign-based systems that track patient deterioration then trigger an appropriate escalated system response); include clear instructions for use of the track and trigger system; keep information relevant to the track and trigger system close together; ensure that the basic functionality of the system is understandable in one hour.

- Language and labelling: use clear expressions; avoid abbreviations that could be misinterpreted.

- Cognitive and memory load: avoid information that needs to be compared or transcribed over more than one area of a page or multiple pages; where possible, provide options to circle or tick rather than write information.

- Use of fonts: 11 point font is the ideal size; avoid fonts that can slow reading (such as serif fonts); only use one font throughout the document.

- Use of colour: use colour in a meaningful way; ensure that colours are distinguishable for colour-blind users; ensure that the chart does not look too busy by using no more than five colours (including white, text and logos).

- Photocopying legibility: ensure the chart (particularly the observation measurements) is legible at a range of photocopier settings.

- Low light legibility: ensure that the chart is legible in realistic low light settings. ●

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17   Preece MHW, Hill A, Horswill MS, et al. 2010. *Developer's Guide for Observation and Response Charts*. Brisbane: University of Queensland.

18   Cretikos, MA, Bellomo R, Hillman K, et al. 2008. Respiratory rate: the neglected vital sign. *Medical Journal of Australia* 188(11): 657–9.

Detection and response (part B): Guidance on response systems

Once patient deterioration has been identified and recognised, the clinical response needs to be rapid and appropriate to the level of deterioration in order to treat and prevent an adverse outcome. This rapid response by a team of clinicians is referred to as the 'efferent limb' of the rapid response system (RRS) (as opposed to the 'afferent limb', which is the identification and activation of the response).

Various systems are used to respond to patients with clinical deterioration, with some hospitals employing multiple systems. They are described here using the generic term of 'response team' (RT). Such teams differ in their staff make-up and in the range of work they do, such as post-ICU discharge follow-up. Some of the common terms in use follow:

- RRTs: non-ward-based clinical teams that are activated to respond to deteriorating ward patients. May be either nurse or physician led.
- METs: non-ward-based physician-led teams that can initiate intensive care-level support at the patient's bedside. Often include staff from ICU (where available) and general medical specialties.

- Critical care outreach teams (CCOTs) or patient at risk (PAR) teams: nurse-led teams that also provide education to ward staff and support patients and their families/whānau. May be ward-based but are often from a critical care area. Often also follow up patients recently discharged from the ICU.

Although the terms 'MET' and 'RRT' may refer to teams of different compositions, they are often used interchangeably in the literature. References in this document will use whichever terminology was preferred in the study being described. The term 'rapid response system' or 'RRS' will be used generically to refer to systems incorporating detection or recognition (the afferent limb), response (the efferent limb), governance and administration.

The 'best' composition of the RT is undetermined but should take into account the mix and availability of staff that is both appropriate and achievable for each site. Given the unpredictable nature of patient deterioration, a consistent response to patient deterioration should be available regardless of the time of day or day of week.

Status quo

A 2014 national census of New Zealand acute care public hospitals showed nine (45 percent) had some kind of CCOT team in place with significant variation in the size and scope of each service.[19] Of these, only four (44 percent) provided 24-hour clinical cover. Most referral requests were for ward-based reviews, with some routine follow-up of patients discharged from ICU. There was significant variation in the frequency with which CCOTs attended deteriorating patients as members of an RRT in their hospital (see the orange shaded area in the figure below). Such events represented a large range of 1–22 percent of their workload. This census did not report data on medical staff attending such emergencies.

A more recent survey (2016) of 90 percent of New Zealand DHBs described an expansion of the nursing response model with some centres providing funding for outreach services to cover 'at-risk' periods such as weekends and out-of-hours. The accompanying publication to this evidence summary describes the results of a national sector feedback exercise in more detail.[20]

The recent New Zealand MET study conducted over a two-week period in December 2014 described the members of the team who attended deteriorating patients in 11 New Zealand hospitals.[21] Outreach nurses attended the most (86.3 percent of all) calls, followed by an ICU junior doctor (83.2 percent) and a medical junior doctor (75.8 percent). The primary team doctor (junior or senior) was present at 21.7 percent of all calls. Other attendees included an emergency department doctor or nurse and an anaesthetist. In this data set, a total of 987 hospital staff attended 351 RRT calls, a median of 2 (interquartile range 2–3) staff per call.

Evidence

Evidence for RT effectiveness in reducing in-hospital cardiac arrests and mortality rates remains mixed. A 2010 systematic review and meta-analysis of 18 studies between 2000 and 2008 found implementation of RTs was associated with a 33.8 percent reduction in non-ICU-treated adult cardiac arrests. Despite this, hospital mortality rates in this group of patients did not reduce.[22] The authors of the systematic review did

Type of outreach work by hospital
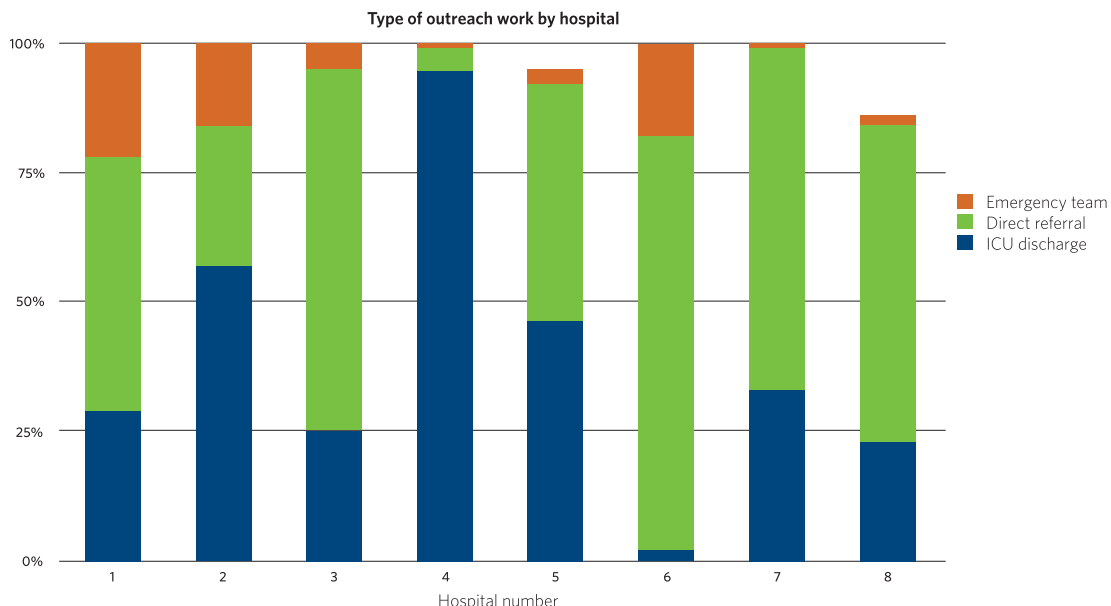
19   Pedersen A, Psirides A, Coombs M. 2014. Models and activities of critical care outreach in New Zealand hospitals: Results of a national census. *Nursing Critical Care* doi: 10.1111/nicc.12080.

20   Wailing J, Psirides A. 2016. *The deteriorating adult patient: Current practice and emerging themes.* Wellington: Health Quality & Safety Commission. URL: https://www.hqsc.govt.nz/assets/Deteriorating-Patient/PR/draft-deteriorating-patient-report-Feb-2016.pdf (accessed March 2016).

21   Psirides A, Hill J, Jones D. 2016. Rapid Response Team activation in New Zealand hospitals – A multicentre prospective observational study. *Anaesthesia Intensive Care* 44: 3.

22   Chan PS, Jain R, Nallmothu BK, et al. 2010. Rapid Response Teams: A Systematic Review and Meta-analysis. *Archives of Internal Medicine.* 170(1): 18–26.

note the study, while sufficiently powered to detect 'a modest reduction' in hospital mortality, was limited in its ability to detect smaller improvements. They also noted, since many of the studies in the meta-analysis took place in large teaching hospitals, the relatively greater access to medical house staff and specialist acute care physicians in these settings may have blunted the potential benefits of RT implementation.

More recently, Sandroni and colleagues found in their meta-analysis, which included more up-to-date evidence (including several new studies from Australia), there was an overall significant reduction in hospital mortality associated with the introduction of RRS (pooled RR = 0.88 [0.83–0.93].[23] They also pointed to the length of time required to adequately study the implementation of RTs, noting that one Australian study took two years to show a statistically significant reduction in cardiac arrest rates, and four years to show a reduction in hospital mortality rates after the implementation of an RRS.[24] A recent comparative study, also from Australia, showed hospitals with mature RRS performed better than similar hospitals where RRS were recently implemented.[25]

To date, the largest study to describe the effect of implementation of an RRS upon the composite endpoint of cardiopulmonary arrest, unplanned ICU admission or death was conducted in the Netherlands across 12 hospitals.[26] Assessment instruments were introduced for a seven-month period prior to a 17-month introduction of RRTs across surgical and non-surgical wards. The effects of implementation were then measured over a further five-month period, ending in November 2011. All adult patients (18 years or older) admitted to the study wards were included, resulting in a data set of 166,569 patients and covering 1,031,172 hospital admission days. The

introduction of RRTs significantly reduced the composite endpoint of cardiopulmonary arrest, unplanned ICU admission or death per 1000 admissions by 15 percent (adjusted odds ratio (OR) 0.847; 95% confidence interval (CI) 0.725–0.989; p=0.036) when compared with the before phase. In-hospital mortality was also significantly reduced (OR 0.802; 95% CI 0.644–1.0; p=0.05). The authors concluded implementation of RRS in hospitals reduces severe adverse events.

RT composition

The literature is unclear about the 'best' model of RT, with each appearing to have strengths and weaknesses. RRT models led by ICU medical staff may have the following disadvantages: de-skilling of ward staff is possible; and ICU medical staff, although the best credentialed to manage a critically ill patient, lack familiarity of the patient/family/whānau, their disease and management plans, and have limited sub-specialty knowledge. Pulling ICU medical staff away from critically ill patients can also disrupt ICU ward rounds and could jeopardise patient safety in the ICU.[27] [28]

In terms of patient outcomes, an initial medical RRT response from a ward-led team appears to be equally as safe as an ICU-led team.[29] Advantages of this model include better familiarity with the patient and their management plan, and better familiarity with the family/whānau, which may help support end-of-life discussions. These discussions tend to be conducted more frequently when led by the ward-based medical team.[30] [31]

23 Sandroni C, D'Arrigo S, Antonelli M. 2015. Rapid response systems: are they really effective? *Critical Care* 19: 104.

24 Santamaria J, Tobin A, Holmes J. 2010. Changing cardiac arrest and hospital mortality rates through a medical emergency team takes time and constant review. *Critical Care Medicine* 38: 445–50.

25 Chen J, Ou L, Hillman K, et al. 2014. The impact of implementing a rapid response system: A comparison of cardiopulmonary arrests and mortality among four teaching hospitals in Australia. *Resuscitation* 85: 1275–81.

26 Ludikhuize J, Brunsveld-Reinders AH, Dijkgraaf MGW, et al. 2015. Outcomes Associated with the Nationwide Introduction of Rapid Response Systems in The Netherlands. *Critical Care Medicine* 43(12): 2544–51.

27 Benin AL, Borgstrom CP, Jenq GY, et al. 2012. Defining impact of a rapid response team: qualitative study with nurses, physicians and hospital administrators. *Postgraduate Medical Journal* 88(1044): 575–82.

28 Cheung W, Sahai V, et al. 2014. Incidents resulting from staff leaving normal duties to attend medical emergency team calls. Concord Medical Emergency Team Incidents. *Medical Journal Australia* 201(9): 528–31.

29 Morris DS, Schweickert W, Holena D, et al. 2012. Differences in outcomes between ICU attending and senior resident physician led medical emergency team responses. *Resuscitation* 83(12): 1434–7.

30 O'Horo JC, Sevilla Berrios RA, Elmer JL, et al. 2015. The role of the primary care team in the rapid response system. *Journal of Critical Care* 30(2): 353–7.

31 Howell MD, Ngo L, Folcarelli P, et al. 2012. Sustained effectiveness of a primary-team-based rapid response system. *Critical Care Medicine* 40(9): 2562–8.

Meta-analyses show no difference in hospital mortality rates when the response team is nurse led or doctor led.[32] [33] Nurse-led RRT models have several advantages. Nurses are well placed to triage RRT calls and obtain ICU resources if required. Ward nurses are more likely to call for help from another nurse[34] and are more receptive to feedback and education from nursing colleagues.[35] [36] [37] [38] While many nurses attending (outside a nurse practitioner role) may have limited scope of practice and technical abilities, many RRT calls do not require complex therapies (such as intubation or placement of central venous access). Potential development of nurse practitioner roles, however, may allow acquisition of these skills for use in an acute setting.

A recent single-centre New Zealand study described the 2542 interventions performed during 795 MET calls. These were split almost evenly into investigations (51.7 percent) and therapies (48.3 percent). The former included common tests such as obtaining an ECG (51.6 percent), venous and arterial blood sampling (36.4 percent and 29.3 percent respectively) and chest radiology (19.5 percent). The most common therapies administered were medication (42.5 percent), high-flow oxygen (26.4 percent) and volume resuscitation (26.4 percent).[39] The same study also expanded upon the 'MET syndrome', first described by Jones and colleagues in 2006,[40]

whereby RRTs can expect to encounter one of a small number of recurring scenarios from a small number of triggers. In this New Zealand data set, one of four underlying conditions was present in 99.2 percent of all MET calls. This predictability has implications for training RRT members in pattern recognition that could aid both diagnostic thinking and management planning.

With regard to the New Zealand evidence for ward nurse-led RTs, Pirret and colleagues at Middlemore Hospital found a PAR team comprised of experienced ward nurses was associated with reduced in-ward cardiac arrests, length of stay and direct ward admissions to ICU. It did not reduce the number of MET calls (note the PAR team response formed part of a staged response that also included an MET). The authors concluded that utilising ward-experienced nurses within a PAR team may be effective in providing care to the ward deteriorating patient. They noted, however, this was only possible once experienced ward nurses were brought under the umbrella of the critical care complex, and given educational, clinical and administrative support to achieve these outcomes.[41]

International examples

The Australian *Guide to Support Implementation of the National Consensus Statement* provides only high-level principles about what RRS should look like, rather than specific recommendations about RRT make-up or skills mix. The statement recommends 'the nature of the rapid response team [is] appropriate to the size, role, resources and staffing mix of the acute health care facility'. It goes on to recommend the clinicians providing emergency assistance as part of the RRS should:

- be available to respond within agreed timeframes
- be able to assess the patient and provide a provisional diagnosis
- be able to undertake appropriate initial therapeutic intervention
- be able to stabilise and maintain the patient pending definitive treatment (or transfer to a place where this can happen)

32   Maharaj R, Raffaele I, Wendon J. 2015. Rapid response systems: A systematic review and meta-analysis. *Critical Care* 19: 254. doi: 10.1186/s13054-015-0973-y.

33   Aitken LM, Chaboyer W, Vaux A, et al. 2015. Effect of a 2-tier rapid response system on patient outcome and staff satisfaction. *Australian Critical Care* 28(3): 107–14.

34   Bagshaw SM, Mondor EE, Scouten C, et al. 2010. A survey of nurses' beliefs about the medical emergency team system in a canadian tertiary hospital. *American Journal of Critical Care* 19(1): 74–83.

35   Pedersen A, Psirides A, Coombs M. 2014 Models and activities of critical care outreach in New Zealand hospitals: results of a national census. *Nursing Critical Care*. doi: 10.1111/nicc.12080.

36   McDonnell A, Esmonde L, Morgan R, et al. 2007. The provision of critical care outreach services in England: findings from a national survey. *Journal of Critical Care* 22(3): 212–18.

37   Aitken LM, Chaboyer W, Vaux A, et al. 2015. Effect of a 2-tier rapid response system on patient outcome and staff satisfaction. *Australia Critical Care* 28(3): 107–14.

38   Australian ICU liaison forum. 2012. Uptake and caseload of intensive care unit liaison nurse services in Australia. *Critical Care Resuscitation* 14(3): 221–6.

39   Mullins C, Psirides A. 2016. Activities of a Medical Emergency Team: a prospective observational study of 795 calls. *Anaesthesia Intensive Care* 44(1): 34–43

40   Jones D, Duke G, Green J, et al. 2006. Medical emergency team syndromes and an approach to their management. *Critical Care* 10: R30.

41   Pirret M, Takerei S, Kazula L. 2015. The effectiveness of a patient at risk team comprised of predominantly ward experienced nurses: A before and after. *Intensive and Critical Care Nursing* 31: 133–40.

- have authority to make transfer decisions and access other care providers to deliver definitive care
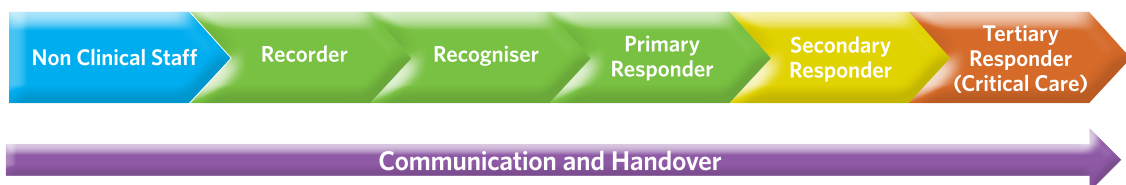- comprise of at least one clinician able to practise advanced life support.

Skill-mix, knowledge and competencies

The Australian Commission on Safety and Quality in Health Care undertook sector consultation between March and June 2014 to find out whether there is a core set of skills, knowledge and competencies for recognising and responding to deterioration that should be common to all clinicians providing acute patient care. The Commission notes in the consultation document there is a lack of definitive evidence on this subject.[42] The results of the consultation were intended to be used to inform the Commission's review of Standard 9: Recognising and responding to clinical deterioration in acute health care,[43] however insufficient consensus was achieved concerning core competency requirements.[44]

In 2009, the UK National Health Service (NHS) published a comprehensive competencies document for RRT responders. It specified the competencies required of different levels of staff, depicted in the diagram below.[45]

The document also lists competencies required for the RT as a whole:

- Accurate recording and documentation of vital signs on all adult wards.
- Recognition of abnormal values and the ability to interpret these values in the context of individual patients.
- Competence to assess patients and institute clinical intervention in a timeframe that reflects the risk of further clinical deterioration and at a level that is determined by the patient's clinical condition.
- Each level must recognise when a higher level of assistance is required.
- Have the necessary communication skills to convey the urgency of the situation and obtain immediate help from clinicians with appropriate knowledge and skills to ensure that the patient receives optimum care.

Non Clinical Staff → Recorder → Recogniser → Primary Responder → Secondary Responder → Tertiary Responder (Critical Care)

Communication and Handover →

42 ACSQHC. 2014. *National Safety and Quality Health Service Standards: Training and competencies for recognising and responding to clinical deterioration in acute care Consultation Paper*. Sydney: ACSQHC.

43 The intent of Standard 9 is to ensure a patient whose condition is deteriorating is recognised promptly, and appropriate action is taken. Criteria within Standard 9 relate to: establishing organisation-wide systems for recognising and responding to clinical deterioration; recognising clinical deterioration and escalating care; responding to clinical deterioration; and communicating with patients and carers. Within Standard 9, Action 9.6.1 requires that 'the clinical workforce is trained and proficient in basic life support'.

44 ACSQHC. 2014. *Training and Competencies for Recognising and Responding to Clinical Deterioration: Consultation Report and Options for Action*. Sydney: ACSQHC. URL: www. safetyandquality.gov.au (accessed 25 May 2016).

45 Department of Health. 2009. *Competencies for Recognising and Responding to Acutely Ill Patients in Hospital*. London: Department of Health.

Human factors – optimising the use of the RRS

Many studies have identified RRS are often underused by staff, thereby delaying patients' access to emergency assistance.[46] Moreover, there is evidence that RT activation from ward staff is often delayed, which is associated with increased hospital mortality.[47] [48] [49] Sandroni et al suggested reasons for this afferent limb failure include adherence to the traditional system of calling covering medical staff, a fear of creating false alarms or disagreement with the criteria for RT calling. Continuous education of ward staff, review of RT activation episodes and feedback from RT users may reduce those barriers and increase compliance with the RRS. Any negative feedback from RRT attenders to staff who call for help should also be addressed in a timely manner.[50]

A literature review of the factors that affect nurses' effective use of the MET suggested positive responses or behaviours by MET members towards nursing staff significantly encouraged effective use of the system. A friendly and approachable manner from MET members also improved ward nurses' recognition of the indicators of early deterioration, leading to earlier MET activation.[50]

Other factors that contribute to the success of RRS include:

- visible leadership, actively seeking input and addressing concerns about the RRS

- clear, unambiguous messages from leaders that the system was not optional, and should be activated whenever indicated by the patient's condition
- effective initial training about calling criteria and procedures
- emphasis on good communication and positive working relationships between rapid response providers and the patient's home team
- unconditional support from doctors for the system.[51]

Additionally, a recent Australian paper looked at the performance of the MET when team members were under stress. It recommended the development and use of shared mental models to improve performance and decision-making under such conditions.[52] Further to this, a recent UK study showed a combination of non-technical skill training, a standardised communication tool (ISBAR[53]) and specific clinical training based around the American College of Surgeons' advanced trauma life support course significantly improved the performance of a group of junior doctors in managing a deteriorating patient.[54] This was consistent across multiple modalities, including patient assessment skills, team communication, clinical management, non-technical skills, and detection of errors and omissions in care.

Feedback from participants on the study training was extremely positive. All participants stated they would translate the teaching into clinical practice on the wards. This suggests focused training can improve clinical competency, non-technical skills and perceptions of clinical relevance (by attendees). ●

46 Jones L, King L, Wilson C. 2009. A literature review: Factors that impact on nurses' effective use of the Medical Emergency Team. *Journal of Clinical Nursing* 18: 3379–90.

47 Trinkle RM, Flabouris A. 2011. Documenting Rapid Response System afferent limb failure and associated patient outcomes. *Resuscitation* 82: 810–4.

48 Calzavacca P, Licari E, Tee A, et al. 2010. The impact of Rapid Response System on delayed emergency team activation patient characteristics and outcomes – a follow-up study. *Resuscitation* 81: 31–5.

49 Barwise A, Thongprayoon C, Gajic O, et al 2015. Delayed Rapid Response Team Activation Is Associated With Increased Hospital Mortality, Morbidity, and Length of Stay in a Tertiary Care Institution. *Critical Care Medicine* 44: 54–63.

50 Santamaria J, Tobin A, Holmes J. 2010. Changing cardiac arrest and hospital mortality rates through a medical emergency team takes time and constant review. *Critical Care Medicine* 38: 445–50.

51 Donaldson N, Shapiro S, Scott M, et al. 2009. Leading successful rapid response teams: a multi site implementation evaluation. *Journal of Nursing Administration* 39(4): 176–81.

52 Fein EC, Mackie B, Chernyak-Hai L,et al. 2016. Six habits to enhance MET performance under stress: A discussion paper reviewing team mechanisms for improved patient outcomes. *Australian Critical Care* (article in press).

53 **I**dentify, **s**ituation, **b**ackground, **a**ssessment and **r**ecommendation.

54 Johnston M, Arora S, Pucher P, et al. 2015. Improving escalation of care: A double-blinded randomized controlled trail. *Annals of Surgery* 263(3): 421–6.

Goals of treatment planning

Any system that detects deteriorating patients will inevitably also identify those who are actually dying. As such, RRTs will often encounter patients for whom invasive investigations or therapies may be inappropriate, irrelevant or even against the wishes of such patients or their families/whānau. In patients who are dying, palliative, rather than aggressive, care may be more appropriate.

Two factors contribute to this mismatch. Firstly, the default treatment for any acutely deteriorating patient, unless otherwise stated, is everything feasible should be done. Secondly, such patients are less likely to be able to interact with their attending team or participate in an informed discussion of their preferences. In larger hospitals, deteriorating patients are more likely to meet clinicians (as RRT members) who know neither their medical history nor their treatment preferences by the simple fact that out-of-hours (emergency) cover is present for two-thirds of any working day. Even if treatment plans have been discussed with the patient (that match their goals with those of their treating team) and are informed by likely outcomes, documentation of these preferences may be minimal or absent. Patients *in extremis* cannot, nor should be expected to, participate in informed consent around treatment options.

Treatment options have increased from the simple binary 'do' or 'do not resuscitate' orders from many years ago to include various modalities such as non-invasive ventilation, inotropes and dialysis. Most junior clinicians outside of critical care areas are unfamiliar with such interventions and are thus poorly placed to determine their appropriateness or ability to alter a deteriorating patient's trajectory. In addition, junior clinicians may lack the expertise to have the right conversation with patients so the right decision can be made.

Several programmes have been developed internationally and seemingly independently, suggesting this is a common and recurrent theme of concern in acute care. These use a variety of names (treatment escalation plans, goals of care, goals of treatment planning, AMBER care (discussed on page 20)) but are all focused on the same goal of proactively matching patient and clinician expectations during acute care episodes and reducing futile (and possibly harmful) interventions.

A 2014 Auckland study found it is possible to predict which inpatients are in their last year of life using a screening tool in an acute hospital setting.[55] This study involved screening 501 adult inpatients in a tertiary teaching hospital, of whom 99 were identified as meeting at least one of the criteria within a prognostic indicator tool predictive of a short life expectancy. The median survival for these patients was 114 days (see figure below). The 6-month and 12-month mortality in 'identified' patients was 56.6 percent and 67.7 percent respectively, compared with 5.2 percent and 10 percent respectively for 'non-identified' patients using the same tool. This work strongly suggests screening tools have some success in identifying patients at increased risk of death(in the acute care setting). Responding to such patients with an RRT at the time of their (predictable) deterioration may not be beneficial.

55 O'Callaghan A, Laking G, Frey R. 2014. Can we predict which hospitalised patients are in their last year of life? A prospective cross-sectional study of the Gold Standards Framework Prognostic Indicator Guidance as a screening tool in the acute hospital setting. *Palliative Medicine* 28(8): 1046–52.
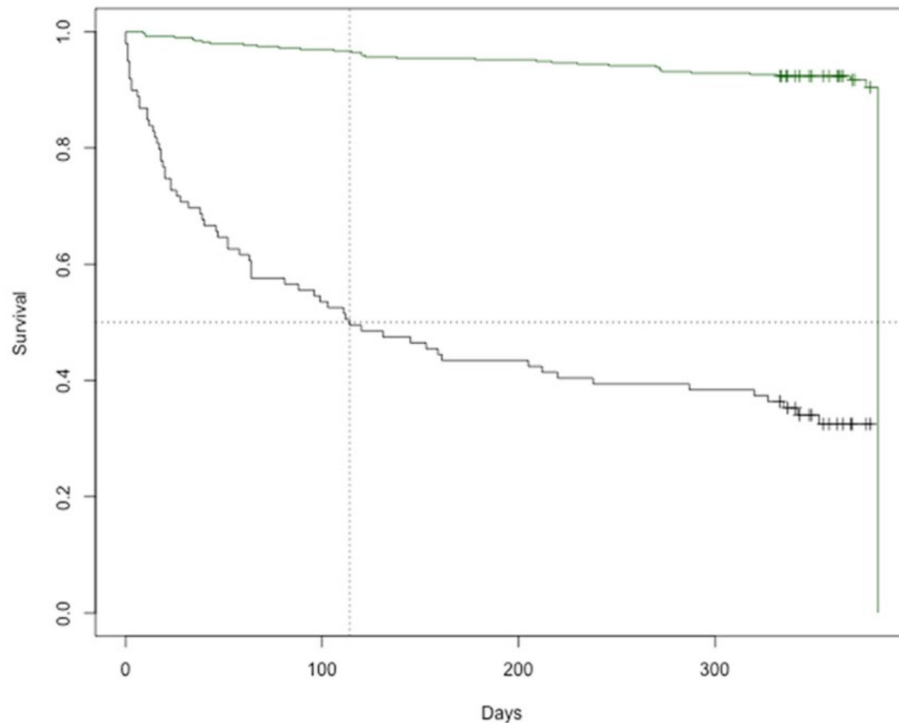
Figure showing survival for 'non-identified' patients (upper green line) and 'identified' patients (lower black line). Median time to death for 'identified' patients was 114 days. 'Identified' patients were those assessed using the Gold Standards Framework Prognostic Indicator Guidance screening tool in an acute hospital setting.

An Australian study found up to one-third of RT calls have issues around end-of life care.[56] A study at Wellington Hospital estimated around 30 percent of MET calls related to palliative care or end-of-life matters, where a MET call may not be appropriate. It also found the proportion of patients with documented treatment limitation orders doubled after review by the MET team from 32 percent (pre-MET) to 62 percent (post-MET).[57] As noted in the *Guide to Support Implementation of the National Consensus Statement* in Australia, there is increasing evidence that METs are playing a major role in end-of-life care planning (at least in Australia, and likely to be the case in New Zealand).

Several studies have identified that approximately 10 percent of MET calls result in the documentation of a new treatment limitation.[58] [59] [60]

One study of 713 MET calls to 559 patients over a 12-month period found a 'not for resuscitation' order would have been appropriate for 23 percent of patients.[61] The MET documented a 'not for resuscitation' order as part of the call in 4 percent of these cases. Another study found 35 percent of patients who died in hospital with a 'not for resuscitation' order in place had an MET call at

56   Jones D. 2014. The epidemiology of adult Rapid Response Team patients in Australia. *Anaesthetic Intensive Care* 42(2): 213–9.

57   Knott CI, Psirides A, Young P, et al. 2011. A retrospective cohort study of the effect of medical emergency teams on documentation of advance care directives. *Critical Care Resuscitation* 13(3): 167–74.

58   Calzavacca P, Licari E, Tee A, et al. 2010. Features and outcome of patients receiving multiple Medical Emergency Team reviews. *Resuscitation* 81(11): 1509–15.

59   Buist M, Moore GE, Bernard SA, et al. 2002. Effects of a medical emergency team on reduction of incidence of and mortality from unexpected cardiac arrests in hospital: Preliminary study. *British Medical Journal* 324: 1–6.

60   Casamento A, Dunlop C, Jones D, et al. 2008. Improving the documentation of medical emergency team reviews. *Critical Care and Resuscitation* 10(1): 24–9.

61   Parr MJA, Hadfield JH, Flabouris A, et al. 2001. The Medical Emergency Team: 12 month analysis of reasons for activation, immediate outcome and not-for-resuscitation orders. *Resuscitation* 50: 39–44.

some point in their admission.[62] The same study also suggested that METs are becoming involved in end-of-life care planning by default when active management has been unsuccessful, and when advance care planning has been delayed or suboptimal.

This problem can also arise because of difficulties in documenting treatment limits in the medical notes, and inherent lack of continuity as a result of on-call cover.[63] A recent case study from Scotland highlighted the communication problems underpinning this:

> Our failures centred on inadequate communication leading to discontinuity and inappropriateness of care. First, although the patient's notes documented that an end-of-life conversation took place, and that palliative treatments were to be given, they did not include the fact that certain treatments were NOT to be given, including non-invasive ventilation (NIV). [...] Similarly, the hand over to night staff did not include what was NOT to be done. Third, in the absence of this negative but nonetheless specific information, the default position for the junior doctor, unfamiliar with the patient, was to 'go by the book'. This resulted in interventions which were futile, burdensome and contrary to the patient's and family wishes.[64]

In some patients, cardiopulmonary resuscitation (CPR) is unlikely to improve survival but this does not preclude the use of other resuscitative treatment modalities, such as intravenous fluids and antibiotics, or more invasive measures like ventilator support and inotrope/vasopressor therapy. Patient factors, including premorbid function, influence the clinical benefit conferred by individual treatment modalities. Any pre-existing wishes and values will also help to determine which of these measures may be inappropriate.

A recent letter to the editor of the journal *Resuscitation* called 'Conversation prior to resuscitation: The new CPR' describes the current state of affairs: 'A culture that reflexively does "everything we can" without taking the time to elicit patient preferences creates harm and suffering. Informed choices come only through good conversations, and good conversations take training and practice.'[65]

Status quo

Most, if not all New Zealand DHBs use 'do not resuscitate' orders, however these represent the end of a spectrum of treatment options. To date, a few hospitals have adopted treatment escalation plans (TEPs) with at least a single centre trialling a 'ceiling of treatment' plan.

International examples

In patients unlikely to benefit from CPR, quality of care can be improved by documenting a TEP to guide management in the event of clinical deterioration. These can also be referred to as ceiling of treatment plans although this terminology may have more negative connotations. These differ from advance care plans (ACPs), which are pre-stated, patient-led decision-making tools to be used in the event of their originator losing capacity to make decisions about their own health care.[66] By contrast, TEPs are often clinician-initiated and informed by both the existence of an ACP and the individual patient's current clinical circumstances. This subsequently minimises the risk of on-call teams commencing treatments with limited benefit and that are not aligned with the patient's pre-stated wishes. TEPs can therefore ensure the treatments given are in the best interests of the patient.

The TEP is a form completed by medical staff soon after admission, ideally with the (competent) patient, or close relative, documenting what treatment options would be appropriate if that patient were to become acutely unwell. A TEP therefore has wider

62 Jones D, Opdam H, Egi M, et al. 2007. Long-term effect of a Medical Emergency Team on mortality in a teaching hospital. *Resuscitation* 74: 235–41.

63 Dahill M, Powter L, Garland L. 2013. Improving documentation of treatment escalation decisions in acute care. *British Medical Journal Quality Improvement Report.* doi:10.1136/bmjquality. u200617.w1077.

64 Taylor DR. 2014. COPD: End of life and Ceiling of Treatment. *Thorax* 69: 497–9.

65 Stupple A, Geocadin R, Celi L. 2016. Conversation prior to resuscitation: The new CPR. *Resuscitation* 99: e3. doi: 10.1016/j. resuscitation.2015.12.006

66 Paes P, O'Neill C. 2012. Treatment escalation plans - A tool to aid end of life decision making? *British Medical Journal Support Palliative Care.* Supplement 1 A60.

application than a 'do not resuscitate' order. Evidence suggests TEPs should ideally be discussed with the patient early in their illness while their capacity to make specific decisions about future life-sustaining treatments is still preserved.[67] Ideally such plans should be constructed and documented at the time of hospital admission (for both acute and elective procedures), alongside the medical plan. For moderate–high-risk elective surgical admissions, such conversations could be initiated during a pre-admission clinic.
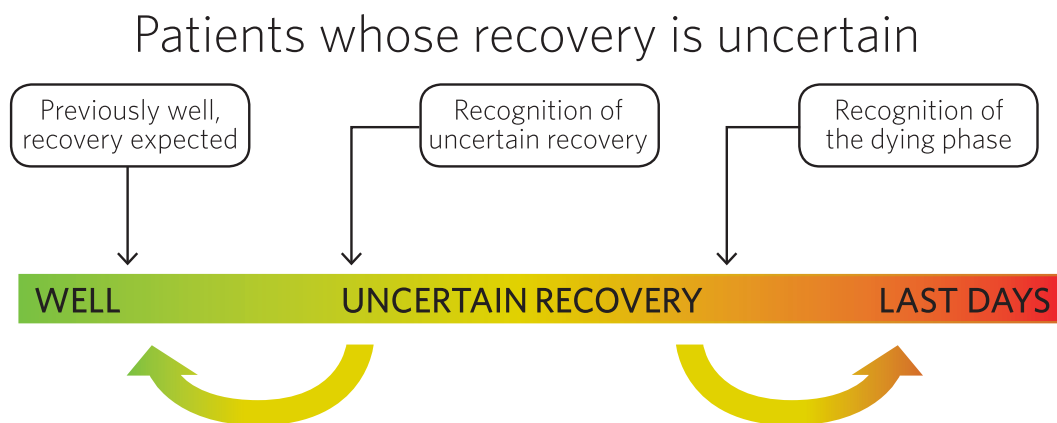
Several plan models are in use around the world, most prevalently in the NHS. Some examples of these can be found in Appendix A. Most plans include whether:

- various listed treatment options (such as intravenous fluids, non-invasive ventilation, antibiotics, etc) would be appropriate in the event of clinical deterioration
- the patient and/or family have been party to the discussion
- the patient has an ACP, and where this is located.

A variation of the plan in use in Tasmania is the medical goals of care plan (see Appendix A).[68] While this model also describes treatment limitations, it does so within the context of specifying whether the overall medical goal of care for the patient is curative, restorative or palliative. These categories then determine the appropriateness of various treatment options. Although the model of the planning tool is different, it has the same goal as the TEP; that is, to ensure patients who are unlikely to benefit from medical treatment aimed at cure receive care appropriate to their condition and are not subjected to burdensome or futile treatments.[69]

AMBER care

An alternative approach is that of AMBER care, which has been adopted in parts of the UK and Australia. It is part of the Clinical Excellence Commission's End of Life Care programme in NSW. The AMBER care bundle is a clinical care bundle developed at the Guy's and St Thomas' NHS Foundation Trust in the UK.[70] It is a systematic approach for multidisciplinary teams to follow when clinicians are uncertain whether a patient may recover and are concerned they may only have a few months to live. The 'AMBER' in the title is in reference to a traffic light image, as shown below:[71]

Patients whose recovery is uncertain

| Previously well, recovery expected | Recognition of uncertain recovery | Recognition of the dying phase |

WELL   UNCERTAIN RECOVERY   LAST DAYS

67 Stockdale C, et al. 2013. BMJ Quality Improvement Programme. Implementation of a combined Cardiopulmonary Resuscitation and Treatment Escalation Plan document in a District General Hospital. *British Medical Journal Quality Improvement Report.* doi:10.1136/bmjquality.u202653.w1236.

68 Thomas R, Zubair M, Hayes B, et al. 2014. Goals of care: a clinical framework for limitation of medical treatment. *Medical Journal of Anesthesia* 201(8): 452–55.

69 Tasmanian Department of Health and Human Services. Medical Goals of Care Plan. URL: www.dhhs.tas.gov.au/palliativecare/health_professionals/goals_of_care (accessed 13 October 2015).

70 Guy's and St Thomas' NHS Foundation Trust. The AMBER care bundle. URL: www.ambercarebundle.org/forprofessionals/for-professionals.aspx (accessed 13 October 2015).

71 Clinical Excellence Commission AMBER care website. URL: www.cec.health.nsw.gov.au/programs/amber-care (accessed 13 October 2015).

The term 'AMBER' also stands for:

- **A**ssessment
- **M**anagement
- **B**est practice
- **E**ngagement
- **R**ecovery uncertain.

AMBER care encourages clinicians, patients and families to continue with treatment, if they wish, in the hope of a recovery, while talking openly about preferences and wishes, and putting plans in place in preparing for end of life. A key component is that any member of the health care team can initiate AMBER care, from the health care assistant through to the consultant, flattening the hierarchy and making everyone's perspective valid.

The AMBER care bundle is a broader approach than TEPs in that, once suitability for the bundle has been confirmed,[72] there are four interventions with clear timeframes.

Within four hours:

- Medical plan documented in patient record.
- Escalation decision documented.
- Medical plan discussed and agreed with multidisciplinary team.

Within 12 hours:

- Patient and carer discussions or meeting held and clearly documented.

Evidence

As these interventions are relatively new, there is currently only a small body of published studies reporting clinical outcomes. No studies could be found comparing the different models described above. It remains unclear whether completing documentation for all patients or a subset of those whose recovery is uncertain is the most effective approach.

A recent editorial in the *British Journal of Anaesthesia* suggested AMBER care-type conversations take place while the patient attends their pre-operative assessment clinic. The rationale is that this 'would capture those who should be considered high risk, but there may also be a role for highlighting these issues to as large a number of people as possible'.[73] The anaesthetist may be well placed to facilitate these discussions as pre-assessment involves a systemic review of co-morbidities and review of what, if anything, could be optimised prior to elective anaesthesia. This process is informed by perceived risk and likely outcomes, the same rationale that underlies goals of treatment planning. Patients selected for pre-assessment are those deemed to be at higher anaesthetic risk; low-risk patients are less likely to require treatment limitation discussions. Although training anaesthetists to have these conversations may yield some benefits, they are less likely to be involved in the management of medical patients except in emergency situations as part of an RRT.

TEP-specific evidence

TEPs have been piloted and studied in several NHS Trusts in the UK.

A 2013 study found 78.4 percent of inpatients had no documentation of the appropriate level of escalation of treatment, should they deteriorate. The majority of junior doctors had experienced cases where they felt inappropriate treatment had been given in situations where no escalation plan was documented. At the end of the study period, questionnaire feedback indicated 11.1 percent of patients in the group with the new TEP document had received inappropriate out-of-hours care compared with 44.4 percent of patients in the group without the document. The authors concluded that using the TEP alongside resuscitation documentation prompts the responsible clinician to consistently consider and document the appropriate escalation of care for their patient, improving communication with the out-of-hours team and appropriate escalation of care in the event of patient deterioration. They

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72 Patients who meet the following criteria are suitable for the AMBER care bundle:
- The patient is deteriorating, clinically unstable and with limited reversibility; and
- The patient is at risk of dying within the next 1–2 months.

73 Blackwood D, Santhirapala R, Mythen M, et al. 2015. End of life decision planning in the perioperative setting: the elephant in the room? *British Journal of Anaesthesia* 115(5): 648–50.

recommended incorporating the TEP into existing documentation, such as the CPR form, to reduce the perceived negative impact of the change.[74]

Another UK study in 2015 recommended combining the TEP with 'not for CPR' paperwork. The main outcome measure for this study was improved documentation of treatment escalation decisions. This rose from 30 percent to 90 percent during the study. The authors suggested improvement in documentation implies more patients will receive an appropriate level of care in a timely manner. The intervention was noted to have a lasting effect on patient care as out-of-hours doctors now have consultant-endorsed treatment plans for most patients. The intervention was also appreciated by junior doctors, as it reduced their anxiety while on call.[75]

A 2010 study in Plymouth in the UK evaluated the experiences of patients and relatives with the TEP. Of those interviewed, 96 percent thought the TEP was a good idea. Freetext comments were all positive and only 34 percent of patients claimed to feel anxious when completing the form.[76]

Medical goals of care evidence

Medical goals of care (GOC) documentation has been studied in Tasmania and Northern Health, Victoria.

On 1 March 2011, the GOC form and protocol came into effect at Royal Hobart Hospital; it replaced the not for resuscitation (NFR) procedure and form, which were withdrawn.

A retrospective audit of admissions after implementation showed that GOC forms had been completed for 75 percent of admitted patients. This was compared with a previous retrospective audit of admissions, which showed

that NFR forms had been completed for only 34 percent of admitted patients.[77] The authors recommended that all health care providers consider replacing their NFR procedures with the GOC approach. They stated: 'GOC is a solid framework for limiting medical treatment that meets the challenge for medical leadership to address the culture of death avoidance in medical decision making. It also has the potential to help address widespread professional and public concerns about bad dying.'

AMBER care evidence

Several small studies of the AMBER care bundle were published in 2014–15. None appear to have included clinical outcomes in the study design; calls have been made for this to be rectified in further research.

Results from these evaluations seem to be mixed. In a London study, the AMBER care bundle was associated with increased frequency of discussions about prognosis between clinicians and patients, and higher awareness of their prognosis by patients, but lower clarity in the information received about their condition.[78] In a further study by the same group, the authors concluded:

> It has been possible to develop a care bundle addressing a complex area of care which can be a lever for cultural change. The implementation of the AMBER care bundle has the potential to improve care of clinically uncertain hospital patients who may be approaching the end of life by supporting their recognition and prompting discussion of their preferences. Outcomes associated with its use are currently being formally evaluated.[79] ●

74   Stockdale C, Trivedi B, Jerome E, et al. 2013. BMJ Quality Improvement Programme, Implementation of a combined Cardiopulmonary Resuscitation and Treatment Escalation Plan document in a District General Hospital. *British Medical Journal Quality Improvement Report.* doi:10.1136/bmjquality.u202653. w1236.

75   Dahill M, Powter L, Garland L, et al. 2013. Improving documentation of treatment escalation decisions in acute care. B*MJ Quality Improvement Reports* u200617.w1077 doi: 10.1136/ bmjquality.u200617.w1077.

76   Obelensky. 2010. A patient and relative centred evaluation of treatment escalation plans: a replacement for the do-not-resuscitate process. *Journal of Medical Ethics* 36: 518–20. doi: 10.1136/jme.2009.033977.

77   Thomas R, Zubair M, Hayes B, et al. 2014. Goals of care: A clinical framework for limitation of medical treatment. *Medical Journal Australia* 201(8): 452–5.

78   Bristowe K, Carey I, Hopper A, et al. 2015. Patient and carer experiences of clinical uncertainty and deterioration, in the face of limited reversibility: A comparative observation*al study of the AMBER care bundle. Palliative Medicine* 29(9): 797–807. doi: 10.1177/0269216315578990.

79   Carey I, Shouls S, Bristowe K, et al. 2014. Improving care for patients whose recovery is uncertain. The AMBER care bundle: design and implementation. *British Medical Journal Supportive Palliative Care.* URL: http://spcare.bmj.com/content/ early/2014/09/02/bmjspcare-2013-000634.abstract (accessed 25 May 2016).

Consumer and family/whānau escalation of care

Over the last decade, hospitals internationally have introduced mechanisms by which concerned family members or patients themselves can escalate care. The introduction of such systems overseas has usually been precipitated by tragic events, often the deaths of children in hospital where parents were unable to have their concerns about the deterioration of their child acted upon.

One of the most well-known examples from the USA is that of Josie King, an 18-month-old girl who died in a paediatric ICU due to incorrect administration of medication. Concerns raised by Josie's mother were not acted on. Following Josie's death, the King family worked with hospitals to develop processes for patient, family and carer escalation of care.[80]

Another US case is that of Lewis Blackman, a 15-year-old boy admitted for elective surgery. He died following clinical deterioration, despite repeated requests by his mother to contact a senior clinician. Following Lewis's death, the Lewis Blackman Hospital Safety Act 2005 was enacted in South Carolina. The Act requires hospitals to provide mechanisms to enable patients to access assistance promptly and independently if they have concerns about their medical care.[81]

Although families do not have responsibility for formal assessment of physiological change, their familiarity with their loved one places them at an advantage in recognising early subtle changes in a patient's clinical condition that might suggest early stages of deterioration. As highlighted in the examples above, this is especially relevant in the paediatric setting, where parents are frequently at the bedside and well positioned to notice their child's condition is worsening or not improving, and communicate their concerns to health professionals.

The involvement of family as partners in recognising and responding to clinical deterioration is emphasised by leading international health care organisations. In Australia, the National Safety and Quality Health Service Standards provide a specific criterion and actions stipulating 'patients, families and carers are informed about, and are supported so that they can participate in recognition and response systems and processes' (9.7). This criterion is consistent with the overarching approach to safety and quality which emphasises the need to partner with consumers (Standard 2). In Standard 9, specific communication systems include the initiation of escalation of care in the deteriorating patient.[82]

Likewise, in the 2011 Australian *Guide to Support Implementation of the National Consensus Statement,* the following item is listed as an essential feature of a clinical deterioration recognition and response system: 'The escalation protocol should allow for the concerns of the patient, family or carer to trigger an escalation of care' (page 10). See also pages 116–7 of the guide.

Most good health care professionals and services already listen and respond to patient and family/whānau concerns when patients feel care needs to be escalated. Putting in place a process for patients and families/whānau formalises this avenue and empowers them to act. It helps to 'cast the safety net further'.[83]

80 For more information, see www.josieking.org.
81 For more information, see www.lewisblackman.net.

82 Gill F, Leslie G, Marshall A. 2015. *The impact of implementation of family initiated escalation of care for the deteriorating patient in hospital: a systematic review protocol.* PROSPERO 2015:CRD42015020183. Available from www.crd.york.ac.uk/ PROSPERO/display_record.asp?ID=CRD42015020183.
83 Luxford K, Lee A (eds). 2013. *REACH Toolkit.* Sydney: Clinical Excellence Commission.

Status quo

To date, few hospitals in New Zealand have adopted a patient and family/whānau escalation intervention. Middlemore Hospital is currently looking at the need for such a system, exploring perceived barriers among patients and families/whānau before piloting anything.

Evidence

This intervention has the potential to promote patient engagement and empower patients and their families/whānau to advocate for safer health care practices.[84] [85] The intervention is also in line with fostering partnership with patients and families/whānau, which is 'an important characteristic of a culture of safety'.[86] Studies suggest the intervention can improve communication between patients, families/whānau and clinicians, produce high levels of satisfaction among staff and families[87] and improve the patient experience.[88]

However, published evidence is still emerging about how effective patient/family/whānau-initiated calls to the RT are in terms of reducing mortality. One 2010 study in a Florida adult trauma centre reported improvements in outcomes such as reduction in mortality rates and non-ICU codes, without an overload of false positive calls.[89]

What studies have been able to show is that, in hospitals where such interventions have been implemented, the number of calls by patients, families and carers has not resulted in an unmanageable increase in calls to the RRT. Examples of the number of calls reported include 25 in two years,[90] 42 in 23 months,[91] 12 in six months[92] and 69 in six months.[93] One study found family concern was the reason for an MET call in 5 percent of calls, and families directly activated only two calls in one 12-month study period.[94]

Interestingly, Vowerk and King found in their literature review that, in four studies, staff-activated calls increased after the family-activated components of RRS programmes were implemented.[95]

International examples

There are now many international examples of patient and family escalation processes.

The Australian *Guide to Support Implementation of the National Consensus Statement* (page 121) notes that giving the patient and family escalation system a specific name may help patients and families understand the purpose of the system.

In NSW, Between the Flags has introduced a system called REACH.[96]

84 Berger Z, Flickinger T, Pfoh E, et al. 2014. Promoting engagement by patients and families to reduce adverse events in acute care settings: a systematic review. *British Medical Journal of Quality and Safety* 23: 548–55.

85 Brady, P, Zixx J, Brilli R, et al. 2014. Developing and evaluating the success of a family activated medical emergency team: a quality improvement report, *British Medical Journal of Quality and Safety.* 24: 203–11.

86 Van Voorhis K, Willis T. 2009. Implementing a Pediatric Rapid response System to improve Quality and Patient Safety. *Pediatric Clinics of North America* 56(4): 919–33. doi: 10.1016/j.pcl.2009.05.017.

87 Odell M, Gerber K, Gager M, et al. 2010. Call 4 Concern: Patient and relative activated critical care outreach *British Journal of Nursing* 19: 1390–5.

88 Bogert S, Ferrell C, Rutledge D. 2010. Experience with Family Activation of Rapid Response Team. *Journal of the Academy of Medical Surgical Nursing* 19(4): 215–23.

89 Gerdik C, Vallish RO, Miles K, et al. 2010. Successful implementation of a family and patient activated rapid response team in an adult level 1 trauma center. *Resuscitation* 81(12): 1676–81.

90 *Ibid.*

91 Dean BS, Decker MJ, Hupp D, et al. 2008. Condition HELP: A pediatric rapid response team triggered by patients and parents. *Journal for Healthcare Quality* 30(3): 28–31.

92 Odell M, Gerber K, Gager M, at el. 2010. Call 4 Concern: Patient and relative activated critical care outreach. *British Journal of Nursing* 19: 1390–5.

93 Baird SK, Turbin LB. 2011. Condition concern: An innovative response system for enhancing hospitalized patient care and safety. *Journal of Nursing Care Quality* 26(3): 199–207.

94 Ray EM, Smith R, Massie S, et al. 2009. Family alert: Implementing direct family activation of a pediatric rapid response team. *Joint Commission Journal on Quality and Patient Safety* 35(11): 575–80.

95 Vorwerk J, King L. 2015. Consumer participation in early detection of the deteriorating patient and call activation to rapid response systems: a literature review. *Journal of Clinical Nursing* 25(1-2): 38–52. doi: 10.1111/jocn.12977.

96 Luxford K, Lee A (eds). 2013. *REACH Toolkit.* Sydney: Clinical Excellence Commission.

R	Recognise
E	Engage
A	Act
C	Call
H	Help is on its way

The REACH model is a graded approach to patient and family activated escalation:

- **Recognise:** acknowledge that patients and families can often recognise signs of deterioration before they are clinically evident. Evidence indicates patients themselves or families can act as effective initiators of escalation.

- **Engage:** encourage patients and families to engage with their treating team if they are concerned that 'something is not right'.

- **Act:** enable patients and families to act by requesting a 'clinical review'.

- **Call:** provide patients and families with an independent avenue to call for a rapid response if still concerned and other avenues are exhausted.

- **Help:** patients and families should be assured that help will be on its way in the form of a rapid response team.

Other systems include, from the US: Family Activated Safety Team (FAST), Family Initiated Rapid Response and Safety Team (FIRRST), Condition Help/Condition H;[97] and from the UK: Call 4 Concern. While some of these programmes have been evaluated, the evaluations have tended to focus on how well the pilot system was implemented, how many calls were activated by patients/family members and qualitative responses to the system (eg, whether families found it easy to use).

Summary of outcomes and barriers

Based on this rapid review, all systems have had similar results.

- Patients and families/whānau gave positive feedback on the system; it empowered them to be more involved in care decisions and made them feel safer.
- Patient and family/whānau escalation systems are a natural extension of patient- and family/whānau-centered care.

97   LaVelle BE. 2011. *Patient and Family Activation of Rapid Response Teams.* Minnesota: Society of Critical Care Medicine.

- Communication between patients, families/whānau and clinicians improved.
- Calls from patients and families/whānau were generally made for the same reasons they would be by staff.
- The systems have the potential to prevent life-threatening situations.
- System resources were not overwhelmed, ie, staff concerns about frivolous or time-wasting calls did not eventuate.

The main barrier identified by many of the studies was staff concerns, as above. The following section on implementation recommendations suggests potential ways to overcome this barrier.

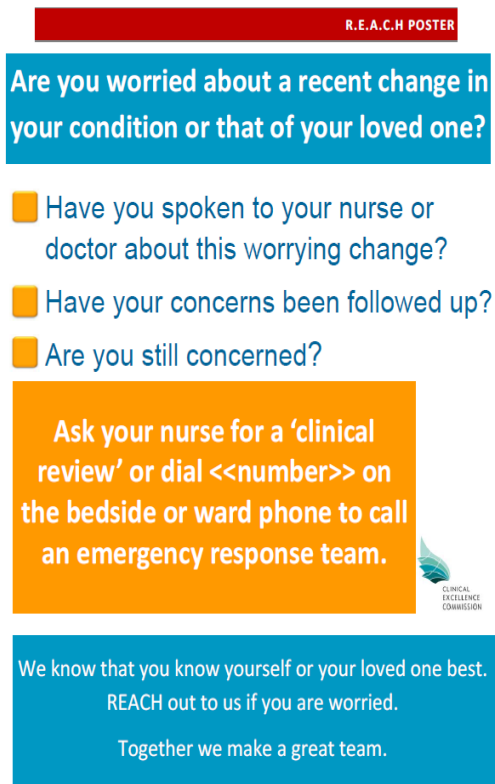## Implementation recommendations

Based on its review of the literature, coupled with the agreed views of experts in the field, the 2011 Australian *Guide to Support Implementation of the National Consensus Statement* provides clear guidance on how to implement a patient- and family-activated escalation of care system. The NSW Clinical Excellence Commission's REACH system has also published an implementation toolkit. The following section draws heavily from those publications.

1. At a minimum, the trigger to allow patients, families/whānau and carers to escalate care should occur:
    - if there is a belief a patient is not receiving the medical attention they feel is necessary
    - if there is concern with what is happening
    - when there is confusion over what needs to be done in a critical situation.[98]

2. The system should be simple and easily accessed. Patients, families/whānau and carers should not need to request information or assistance to obtain help. Methods for activating the system may include calling an emergency number from the patient's bedside telephone or any internal hospital telephone, or using the emergency call button or similar

mechanism located in the clinical area. In some cases, a designated telephone used only for patient and family/whānau escalation calls has been established.

3. Provide information on how to use the escalation system to patients and families/whānau on admission to the facility and reinforce the information throughout the patient's stay. Strategies for informing patients, families/whānau and carers of escalation processes include:[99]
    - educating all patients and family/whānau members about the escalation process on admission, and providing a brochure outlining how care is escalated
    - reinforcing messages during daily health care team rounds
    - displaying signs or posters that describe how to escalate care in all patients' rooms
    - displaying signs or posters in public areas to remind patients and visitors about the escalation process
    - displaying stickers that show the number to call on telephones (if this method is used to call the responders)
    - broadcasting information about the system on patient television and audio services.

4. Patient, family/whānau and carer escalation is triggered because of concerns regarding a patient's condition, current treatment or care. Therefore, an important part of the escalation response is to facilitate communication between the health care team and the patient, family/whānau or carer. This may include organising for the patient or family/whānau to meet with the attending medical officer or team to discuss care and treatment options.

5. Educate clinicians about the purpose of such initiatives, as well as information on their roles and responsibilities when a patient, family/whānau member or carer triggers escalation of care. Provide evidence to allay concerns about time-wasting calls.

98 Institute for Healthcare Improvement. 2002. *The Josie King Story*. Boston: Institute for Healthcare Improvement.

99 Vorwerk J, King L. 2015. Consumer participation in early detection of the deteriorating patient and call activation to rapid response systems: a literature review. *Journal of Clinical Nursing* 25(1-2): 38–52. doi: 10.1111/jocn.12977.

An example of a patient poster from the REACH
system in NSW is shown below:[100] ●

100 Luxford K, Lee A (eds). 2013. *REACH Toolkit.* Sydney: Clinical
Excellence Commission.

Appendix A: Treatment escalation plan examples

Trial document: 1 July 2014 - 1 September 2014

WHANGANUI
DISTRICT HEALTH BOARD
Te Poari Hauora o Whanganui

Patient Label	
Surname:	NHI:
First names:	Ward:
Address:	DOB:
	ACC No:
GP:	
Consultant:	

☐ Only for this admission   **or**   ☐ To stay in effect for future admissions

Name of patient *(please print legibly)*

NHI

Discussions with the patient

Has the patient agreed to these discussions?   ☐ yes   ☐ no

If yes, please discuss the questions below with the patient regarding what might happen, in terms of treatment escalation, if their medical condition were to deteriorate.

If no, why not (circle one)?   Patient declined   Patient not competent

If the patient is not competent discuss this form with any of relatives/next of kin/close friend/EPOA if at all possible

Please answer the following questions

Would intravenous fluids be appropriate?	yes	no
Would nasogastric/enterostomy feeding be appropriate?	yes	no
Would antibiotics be appropriate?	yes	no
Would blood transfusions be appropriate?	yes	no
Would surgery be appropriate?	yes	no
Would transfer to the Critical Care Unit be appropriate?	yes	no
Would invasive ventilation (intubation) be appropriate?	yes	no
Would transfer to a tertiary hospital be appropriate?	yes	no
Would defibrillation be appropriate?	yes	no

Is this patient:

For a cardiac arrest call?   (NO = Not for CPR)   ☐ yes   ☐ no

TREATMENT ESCALATION PLAN (TEP)

Page 1 of 2

Catalogue number: ****
STAT ****

Reviewed: July 2014
Review date: September 2014

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NHS

Treatment Escalation Plan (TEP) and Resuscitation Decision Record

This form is for clinical guidance and it does not replace clinical judgement

Surname:
First Name:
Hospital Number:
NHS Number:
DOB:
Affix patient label here or write patient details
Address:

Mental Capacity Do you have reason to doubt the capacity of the individual to be involved in making these decisions? Circle: **Yes/No**	**Yes** →	If Yes you **must** complete the 2 stage Mental Capacity Assessment overleaf. Mental Capacity Act (2005)

If the patient is currently very unwell or in the event their condition deteriorates

Is admission to an acute hospital appropriate?	Yes	No	**Acute setting only**		
Are IV fluids appropriate?	Yes	No	Is ward non-invasive ventilation appropriate?	Yes	No
Are antibiotics appropriate?	Yes	No			
Is artificial feeding appropriate?	Yes	No	Is a referral to critical care appropriate?	Yes	No
Is deactivation of Implantable Cardioverter Defibrillator (ICD) appropriate?	Yes	No	Is a referral for dialysis appropriate?	Yes	No

In the event of a cardiorespiratory arrest this patient is:

FOR RESUSCITATION	Tick

DO NOT ATTEMPT RESUSCITATION (DNACPR)	Tick

Sign: ....

Date: .... **Time:** ....

Name: ....

Role: .... GMC No: ....

Document rationale/ Best Interest for treatment decisions and resuscitation status (be as specific as possible).

Has the Treatment Escalation Plan and resuscitation decision been discussed with the patient? Circle: **Yes/ No**
If no, document reason: ....

Have the treatment decisions been discussed with the patient's relatives/ NOK / carers? Circle: **Yes/ No**
If no, document reason: ....

Provide a brief summary of what was discussed and with whom:
....

Date: .... Time: ....

All treatment decisions above should be reviewed as the patient's clinical condition changes

Documentation that TEP form has been completed in medical notes. Circle: **Yes/ No**

If appropriate, has the Electronic Palliative Care Coordination System (EPaCCS) register been updated? Circle: **Yes/ No**

Date this document was discontinued: ....
Signed: ....
Role: .... GMC No: ....

"On discharge, if appropriate and the patient and or family have been informed of the decisions, then the original form should accompany the patient and a photocopy should remain in the patient's medical notes"

TEP and Resuscitation Decision Record/Version 10. Review 07/16

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Mental Capacity Assessment

The Mental Capacity Act (2005) requires you to assume that individuals have capacity, unless you suspect the person has an impairment or disturbance of the mind or brain. It also requires any assessment to be decision specific. If you suspect someone lacks capacity you are required to complete the 2 stage Mental Capacity Assessment.

Stage 1:

Document the reason you believe the individual has an impairment or disturbance of the functioning of the mind or brain.

Reason;……

Stage 2: Can the individual:	Yes	No
1. Understand information about the decision to be made?		
2. Retain that information in their mind?		
3. Use or weigh that information as part of the decision making process?		
4. Communicate their decision (by talking, using sign language or any other means)?		

Is the response yes to all four Stage 2 questions?

No → Is this loss of capacity likely to be temporary and can the decision wait? → If Yes → Set decision review date: ……........………………

Yes → Complete TEP form as part of discussion with patient.

If No → Is there a valid ADRT? (Advance decision to refuse treatment) → If Yes → Incorporate into TEP form or Best Interests Decision

If No → Is there a Personal Welfare Lasting Power of Attorney (PW-LPA) registered with the Office of the Public Guardian? → If Yes → Ensure that the PW-LPA is consulted and incorporated in any decisions regarding TEP

If No →

Proceed with completing TEP in line with Best Interest principles (please note if the person has no friends, relatives or unpaid carers then you must include IMCA services). **Please document rationale/Best Interest principles for treatment and discussion in boxes overleaf**

This form should be completed legibly in black ball point ink
- Complete patient details or affix the patient's identification label to the top right hand corner
- The date and time of writing the form should be entered
- This form will be regarded as 'INDEFINITE' unless it is clearly cancelled
- The form should be reviewed whenever clinically appropriate or whenever the patient is transferred from one healthcare setting to another, and admitted from home or discharged home
- The TEP V10 Guidance can be found on the Devon TEP website (www.devontep.co.uk)

If following clinical review, treatment decisions are changed:
- Clearly score through this form, then sign and date the discontinuation box overleaf
- File at the back of the patient's medical notes
- Document the change of decision in the patient's medical notes
- Complete a new form and insert in the patient's medical notes

"On discharge, if appropriate and the patient and or family have been informed of the decisions, then the original form should accompany the patient and a photocopy should remain in the patient's medical notes"

MEDICAL GOALS OF CARE (GOC) PLAN

Tasmania
Explore the possibilities

TASMANIAN HEALTH ORGANISATION
☐ North ☐ North West ☐ South

PT ID ☐☐☐☐☐☐☐☐☐☐☐☐

FAMILY NAME.................................... D.O.B. ....
OTHER NAMES ....
ADDRESS ....
SEX ☐
MARITAL STATUS ☐
REL. ☐

This form is to communicate the medical decision for appropriate treatment goals of care for this patient. Chose A, B, C or D. If changes are made, this form must be crossed through, marked void and a new form completed.

DIAGNOSIS:

NO LIMITATION OF TREATMENT:	Hospital	Community
A. The goal of care is CURATIVE or RESTORATIVE. Treatment aim is PROLONGING LIFE ☐ For CPR and all appropriate life-sustaining treatments →	CODE BLUE	For full resuscitation

LIMITATION OF MEDICAL TREATMENT:		
☐ Patient has an advanced care directive and / or has requested the following treatment limitations: *Please specify:*		
B. The goal of care is CURATIVE or RESTORATIVE with limitations: ☐ **NOT FOR CPR** but is for all respiratory support measures →	For CODE BLUE and MET calls	For treatment and transfer to hospital
☐ **NOT FOR CPR or INTUBATION** but is for other active management *Specific notes:* →	For MET calls NOT for CODE BLUE	
C. The goal of care is PALLIATIVE. Treatment aim is quality of life ☐ **NOT FOR CPR OR INTUBATION** → *Specific notes:*	MET call ☐ YES	Contact GP for planning
	MET call ☐ NO	
D. The goal of care is COMFORT DURING THE DYING PROCESS ☐ **NOT FOR CPR or INTUBATION** →	For terminal care NOT for CODE BLUE NOT for MET	

Reason for limitation of medical treatment:	☐ medical grounds	☐ patient wishes
Discussed with:	☐ patient	☐ person responsible
PRINT DOCTOR'S NAME:	**DESIGNATION:**	
SIGNATURE:	**DATE:** DD / MM /YYYY	
GP / consultant responsible:: PRINT NAME	GP / consultant informed: ☐ YES ☐ NO	

This form is endorsed for ambulance transfer, and for the home or care facility.

Abbreviation key:	CPR = cardio-pulmonary resuscitation	GP = general practitioner	MET = medical emergency team

GOALS OF CARE PLAN

THO-S 97748 09/14 F&P 38894 – FEB14-M1

FT176800

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PROCEDURE FOR COMPLETING A GOALS OF CARE (GOC) FORM

MEDICAL ASSESSMENT

A clinical evaluation of the patient's situation to one of the three goals of care categories: curative / restorative, palliative or dying (terminal). The following may be helpful to ask, especially if limitations are being considered (after MJA 2005; 183:230-1):

1. Is the diagnosis correct?

2. Does the patient have capacity and not wish to have certain or all treatments, or if lacking capacity, has an advance directive or person responsible stating this?

3. Is medical treatment likely to prolong life or improve quality of life? Does the treatment carry a far greater risk of complications than possible benefits?

4. Has sufficient time elapsed to be reasonably confident that there is no reasonable prospect of substantial improvement or recovery?

5. Should another medical opinion be obtained?

6. Has the patient or the person responsible been advised of the above? Have they had a chance to express their opinions?

7. Has the patient's general practitioner been involved?

IMPLEMENTATION

1. Tick the box on the form that best describes the goals of care for the patient at this time.

   A. **CURATIVE or RESTORATIVE** – if no treatment limitations are required tick box A. Refusal of a single treatment, such as blood products, in the context of otherwise full active treatment should be documented in the first line under limitations of medical treatment.

   B. **CURATIVE or RESTORATIVE** with limitations – If in hospital, limitations to code blue or MET calls can be further documented. If in the community, the patient is for active treatment and transfer to a hospital if appropriate.

   C. **PALLIATIVE** – The treatment aim is quality of life. If in hospital limitations to MET calls can be further documented. If in the community the GP can be contacted for further direction in management.

   D. **DYING** – The treatment aim is comfort while the patient is dying. The prognosis is hours to days.

2. The details of the GOC discussions should be clearly documented in the patient's current progress notes.

3. The ultimate responsibility for treatment decisions including cessation of life-prolonging medical treatment and deployment of palliative and terminal care is a medical one and not the responsibility of the patient or person responsible.

4. The GOC form should not be completed by an intern.

5. The completed GOC form is filed in the current admission record, in the alerts section.

6. If the GOC change, the old form should be crossed out, marked VOID and a new form signed.

7. On discharge, a copy of the form can be sent with the patient or to the GP with the discharge summary if appropriate.

8. On discharge, the GOC form is scanned into the alerts section of the Digital Medical Record.

9. The Tasmanian Ambulance Service will recognise and act in accordance to the GOC form.

10. General practitioners or specialists may complete a GOC plan for ongoing care in the community and this form can be sent with the patient to the hospital if required.

11. Day patients who are low risk are not required to have a GOC form completed.