

Patient Safety Tip of the Week

July 13, 2021

The Skinny on Rapid Response Teams

Failure to rescue (FTR) is a fairly frequent claim in malpractice and wrongful death suits. And one of the biggest reasons for failure to rescue is failure to recognize signs of clinical deterioration in a patient at a time when an intervention could be beneficial. So, health systems have often looked to early warning systems (EWS) and rapid response teams (RRT's) as an answer to this problem. But keep in mind that a good early warning scoring system is only as good as what you do with any alerts generated. The literature on early warning scoring systems and rapid response teams has shown mixed and inconsistent results in terms of actual patient outcomes. Our many columns on both those issues (listed below) have demonstrated our ambiguity and uncertainty about the value of these systems.

Our December 1, 2020 Patient Safety Tip of the Week “[An Early Warning System and Response System That Work](#)” discussed one successful implementation at the 21-hospital Kaiser Permanente Northern California (KPNC) system ([Escobar 2020](#)).

Fischer et al. ([Fischer 2021](#)) recently published a review on rapid response teams as a patient safety practice for failure to rescue. They acknowledge that the evidence to determine if RRT's decrease mortality or intensive care unit (ICU) transfer rate is inconclusive. Their review is based on a paper from the Agency for Healthcare Research and Quality ([AHRQ 2020](#)).

Two meta-analyses demonstrated decreased hospital mortality rates after RRT implementation: 1.93% vs 1.95% ([Maharaj 2015](#)) and 1.56% vs 1.62% ([Solomon 2016](#)) but a 2010 meta-analysis of 15 studies ([Chan 2010](#)) found no overall difference in mortality associated with RRT implementation. The heterogeneity and some methodological issues of prior studies have also clouded the interpretations. Fischer et al. note there is moderate evidence that RRT's are associated with reduced secondary outcomes, such as ICU transfer rate and non-ICU cardiac arrests.

Barriers included inadequate activation mechanisms, poor institutional culture, and lack of leadership support.

Facilitators included having physicians as RRT members. Also, because improvements were often delayed for a year or more after implementation, they felt this implies that education and time are necessary to achieve cultural change for meaningful use of an RRT system. Having staff members feel empowered to activate RRT's without concern for retribution was also considered a positive.

Are there **unintended consequences** of RRT's? Fatigue of RRT members due to overuse is one potential unwanted unintended consequence. Another is potential loss of non-RRT clinician skill to handle unstable patients. On the positive side, at least one study showed increased rates of DNR orders after RRT implementation, suggesting that earlier goals of care discussions had taken place.

One potential unintended consequence almost never looked at in studies on RRT's is whether activation of an RRT results in other adverse events due to focus on the case needing the RRT. Our February 2017 What's New in the Patient Safety World column "[BOGO Applies to Adverse Events, Too](#)" noted a study from the University of Chicago on 13 med-surg wards where rapid response teams were used ([Volchenboum 2016](#)). The researchers looked at cardiac arrests and urgent transfers to ICU's. They found that in the 6-hour window following a cardiac arrest or urgent transfer to ICU, the likelihood of a second similar event increased 18%. And if 2 events occurred the likelihood of a third event on that ward increased 53%. These results remained statistically significant when the time window was changed to 3 hours or 12 hours after the first event.

The authors explained the findings by likely diversion of resources to critically ill patients, resulting in less attention to other patients on the ward. Anyone who has observed all the events taking place on a ward when a patient has a cardiac arrest or other critical event would not be surprised that less attention gets paid to other patients on the ward. But this is the first time, to our knowledge, that anyone has formally quantified this phenomenon. The authors stress that although the absolute increased risk was small, these events were associated with high morbidity and mortality.

So, when key personnel from the unit are needed to work with the Rapid Response Team, you should always designate someone to maintain surveillance over the remaining patients on the unit. And that should be an element covered in your training for Rapid Response Teams.

It is highly unlikely that we will ever see a randomized clinical trial (RCT) on RRT's, so they are likely here to stay. They certainly make sense in theory and in practical terms. We suggest you go back to our December 1, 2020 Patient Safety Tip of the Week "[An Early Warning System and Response System That Work](#)" and use the lessons from the Kaiser Permanente Northern California (KPNC) implementation of both an early warning system and rapid response team system ([Escobar 2020](#)).

Cullinane et al. ([Cullinane 2021](#)) recently added another component connecting the early warning system and the rapid response team – **the surgical safety huddle**. The researchers introduced the surgical safety huddle to an acute general surgical ward in

March 2019. A multidisciplinary team (physiotherapists, staff nurses and clinical nurse managers of the ward, the on-call surgical registrar) plus the “deteriorating patient team” would “huddle” in front of the ward whiteboard. Huddles lasted no longer than 15 minutes. The primary focus was identification of the deteriorating patient to intervene early and prevent “failure to rescue.” Huddles began with a formalized script and a checklist-style “huddle observation tool” was used.

Their surgical safety huddle program was fine-tuned by multiple iterations of the PDSA cycle. A full 5 iterations were required before the full cooperation and attendance of the surgical registrar was achieved (see the full Cullinane article for details about the barriers involved). Similarly, 3 PDSA cycles occurred before the clinical nurse manager became fully committed. And 3 PDSA cycles resulted in refinement of the early warning system (as the study was done in the UK, the National Early Warning Score (NEWS) was used) and establishment of the “deteriorating patient service” to assist and educate nursing and medical staff with the management of acutely unwell patients.

Prior to the introduction of the surgical huddle, 110 patients with NEWS >7 were audited. Twenty-eight of these patients (25%) had a poor outcome at 72 hours. Three patients had a delayed transfer to the intensive care unit (ICU) and 25 patients had persistently elevated NEWS after 72 hours. A Pareto chart was used to show the main factors contributing to poor outcomes. Lack of compliance with NEWS recording by nursing staff and lack of escalation to the appropriate medical team, as well as delays in medical review, were some of the factors leading to a poor outcome for patients.

After introduction of the surgical huddle and the deteriorating patient team, the interval between cardiac arrests increased more than sixfold. Six months after introduction of the surgical huddle, 64 patients with NEWS >7 were reviewed, and only 3 of these patients (4.7%) had a poor outcome at 72 hours. That reduction from 25% to 4.7% more than surpassed their original target reduction of poor outcomes of 50%.

Changes or concerns in patients’ clinical conditions were voiced at the huddle and interventions were proactive rather than reactive. The “**watcher**” concept was introduced to highlight patients at risk of deterioration that might not be reflected in their NEWS score (such as high risk of falls, preoperative patients, or patients for whom their family had expressed significant concern). Preemptive postoperative chest physiotherapy and identification of patients at risk of venous thromboembolism were other proactive measures adopted. If there was a clinical concern regarding a deteriorating patient, a medical review and/or sepsis screen were usually warranted. A management plan was conveyed to the intern and the primary team responsible for the patient. The initial concerns and recommended outcomes were recorded using the huddle observation tool. Later in the day, the deteriorating patient team would review the patient to ensure those clinical actions were implemented and the patient was responding accordingly. Data recorded in the huddle observation tool and deviations or noncompliance with the recommended actions were used in monthly reviews by a member of the deteriorating patient team and shared with relevant stakeholders.

Though no formal cost-effectiveness analysis was done, the researchers predicted it would be very cost effective because of likely reductions in both hospital LOS and ICU LOS.

This was not an easy project to carry out. Cullinane et al. detail the many barriers encountered along the way. But their results are pretty impressive and the concept of the “surgical safety huddle” is worthy of your consideration.

Our other columns on rapid response teams:

- August 2007 “[Responding to Patients with Clinical Deterioration](#)”
- November 27, 2007 “[More on Rapid Response Teams](#)”
- August 2008 “[AHRQ's New Patient Safety Primers](#)”
- December 2008 “[Rapid Response Teams Don't Live Up to Expectations](#)”.
- April 2009 “[Early Emergency Team Calls Reduce Serious Adverse Events](#)”
- December 29, 2009 “[Recognizing Deteriorating Patients](#)”.
- February 2010 “[Rapid Response Teams Still Not Cutting It](#)”
- November 11, 2014 “[Early Detection of Clinical Deterioration](#)”
- April 28, 2015 “[Failure to Escalate](#)”
- February 2017 “[BOGO Applies to Adverse Events, Too](#)”
- May 26, 2020 “[Early Warning Scores](#)”
- December 1, 2020 “[An Early Warning System and Response System That Work](#)”

Some of our other columns on MEWS or recognition of clinical deterioration:

- February 26, 2008 “[Nightmares: The Hospital at Night](#)”
- April 2009 “[Early Emergency Team Calls Reduce Serious Adverse Events](#)”
- December 15, 2009 “[The Weekend Effect](#)”
- December 29, 2009 “[Recognizing Deteriorating Patients](#)”
- February 22, 2011 “[Rethinking Alarms](#)”
- March 15, 2011 “[Early Warnings for Sepsis](#)”
- October 18, 2011 “[High Risk Surgical Patients](#)”
- March 2012 “[Value of an Expanded Early Warning System Score](#)”
- September 11, 2012 “[In Search of the Ideal Early Warning Score](#)”
- May 2013 “[Ireland First to Adopt National Early Warning Score](#)”
- September 17, 2013 “[First MEWS, Now PEWS](#)”
- January 2014 “[It MEOWS But Doesn't Purr](#)”
- March 11, 2014 “[We Miss the Graphic Flowchart!](#)”
- July 15, 2014 “[Barriers to Success of Early Warning Systems](#)”
- November 11, 2014 “[Early Detection of Clinical Deterioration](#)”
- February 2015 “[Detecting Clinical Deterioration: Don't Neglect Clinical Impression](#)”
- April 28, 2015 “[Failure to Escalate](#)”

- September 8, 2015 “[TREWScore for Early Recognition of Sepsis](#)”
- October 2015 “[Even Earlier Recognition of Severe Sepsis](#)”
- December 15, 2015 “[Vital Sign Monitoring at Night](#)”
- June 2016 “[An EMR-Based Early Warning Score](#)”
- May 2018 “[Pediatric Early Warning System Fails](#)”
- May 26, 2020 “[Early Warning Scores](#)”
- December 1, 2020 “[An Early Warning System and Response System That Work](#)”

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