

Rapid Response Team Impact on Mortality and Nursing Efficacy

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INTRODUCTION & PURPOSE

Cardiopulmonary arrests of hospitalized patients is associated with increased mortality. Once an arrest occurs, patients have a 17% chance of survival. As many as 84% of patients show signs of deterioration up to 8 hours prior to the arrest (1).

Failure to rescue, the inability to save a hospitalized patient's life when problems arise, is one of the factors that contributes to unnecessary deaths of patients who are hospitalized. In an effort to prevent unnecessary deaths, the Institute for Healthcare Improvement (2) has encouraged hospitals to implement **Rapid Response Teams (RRT)** to assist in the early treatment and prevention of cardiac and/or respiratory arrest (3).

In 2005, this non-teaching Magnet hospital established a **RRT** with the goals of identifying warning signs of deterioration and providing early treatment to prevent cardiopulmonary arrests (**Code Blue**). This study was designed to determine how an **RRT** impacted the number of **Code Blue** events as well as overall facility mortality. In addition, the perspectives of nurses involved **RRT** events were examined.

STUDY DESIGN & METHODS

Design

- Retrospective, comparison analysis
- IRB approved
- Informed consent obtained from **RRT**-initiating nurses surveyed

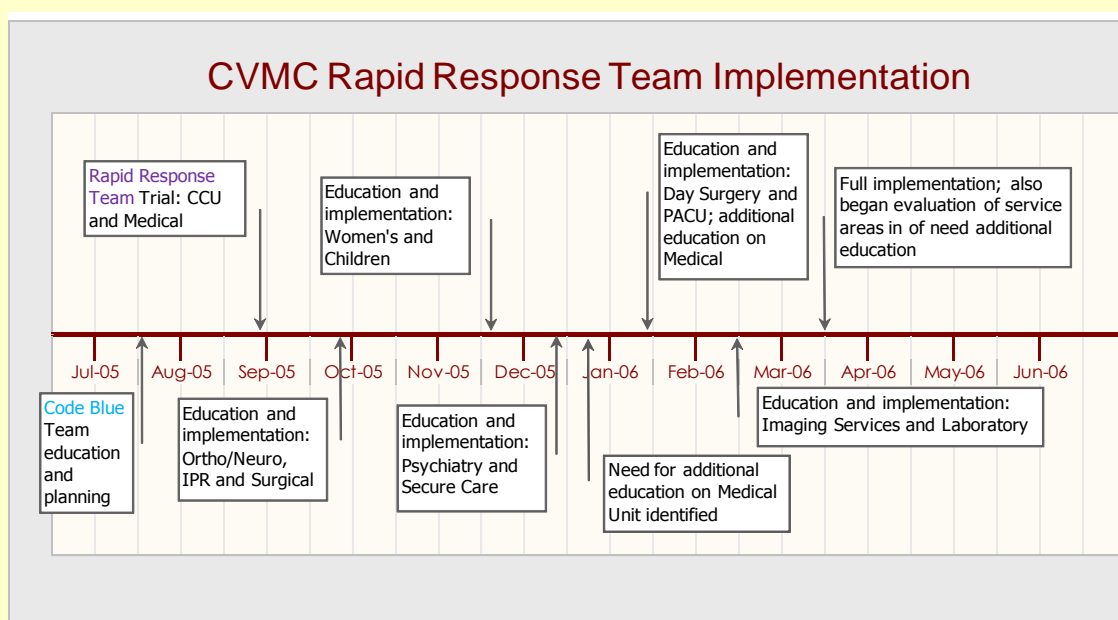
Methodology

- Chart review utilizing the archiving database, Chartmaxx™
 - Gender, age, time event initiated, primary reason for call, location, outcome, admission termination, etc.
- Facility mortality and comparison benchmarking data via Solucient® and Thomson Reuters®
- Statistical analysis included Students *t* Test and Chi Squared Goodness-of-Fit Test in addition to descriptive statistics
- Nursing **RRT** questionnaire
 - Perspectives, employment status, yrs of experience, etc.

Sample Population (N= 410 events)

- Inclusion Criteria: **Code Blue** (n=336) and **RRT** (n=74) events occurring between July 1, 2004 and December 31, 2008
- Exclusion Criterion: Chart review of Department of Correction patients involved in **RRT** events

RRT IMPLEMENTATION TIMELINE



SUBJECT DEMOGRAPHICS

Characteristic	Code Blue n=336	RRT n=74	p value*
Age			0.271
Mean (yrs)	63.18	60.47	
Age Range	1 day-97	23-94	
Gender			0.342
Female	162	34	
Male	174	40	

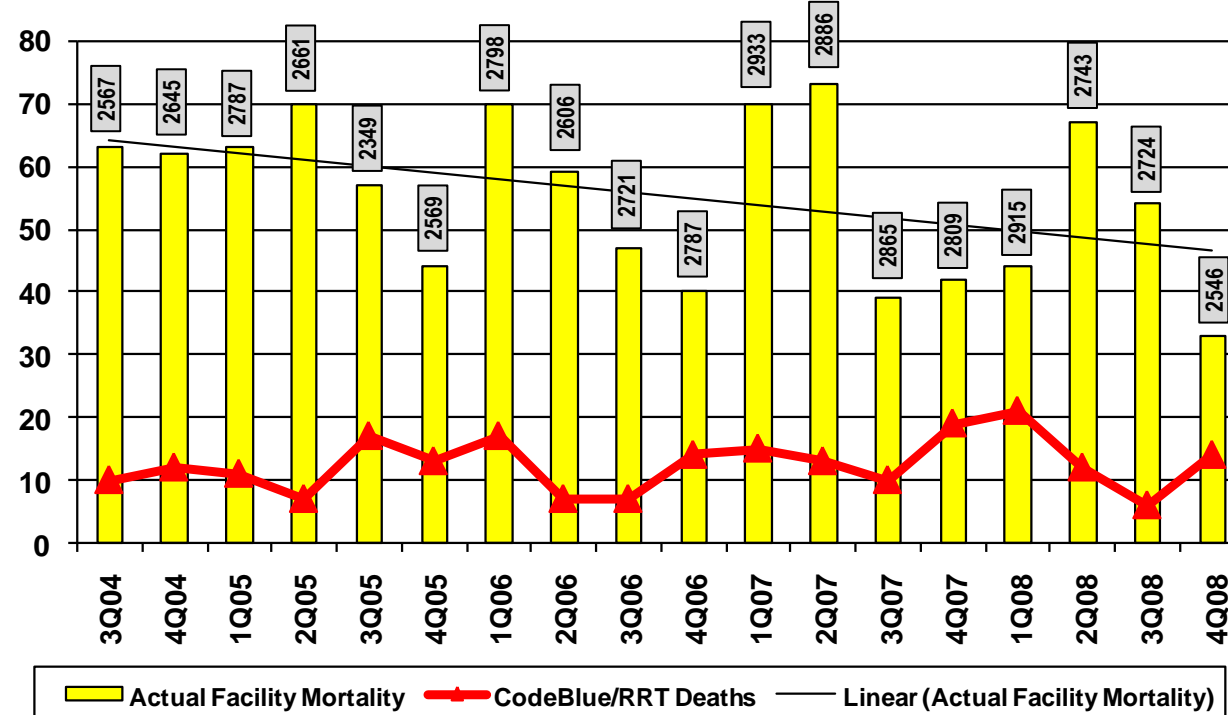
*Significance (p≤0.05) determined at CI= 95%

- Statistical analysis revealed no significant difference in subjects experiencing **Code Blue & RRT** events with regard to age or gender

RRT SUMMARY FINDINGS

- Distribution of **RRT** events included 11 service areas, all non-intensive care areas, as expected
- Highest frequency of reported events occurred in
 - Medical (n=22), Psychiatry (n=14), Surgical (n=12), Ortho/Neuro (n=10)
- 85.1% (n=63) of events resulted in the admission termination outcome of discharge compared to 11 **RRT** events, which resulted in death

MORTALITY ANALYSIS



Corresponding quarterly patient census indicated by gray boxes atop facility mortality bars

- Downward trend in overall hospital mortality was observed over the 4*yr-time interval of study
- Quarters with lower mortality and fewer **Code Blue & RRT** deaths were not associated with decreased patient volume in general
- Number of **Code Blue** deaths did not decrease following complete housewide implementation of **RRT** (March 2006)

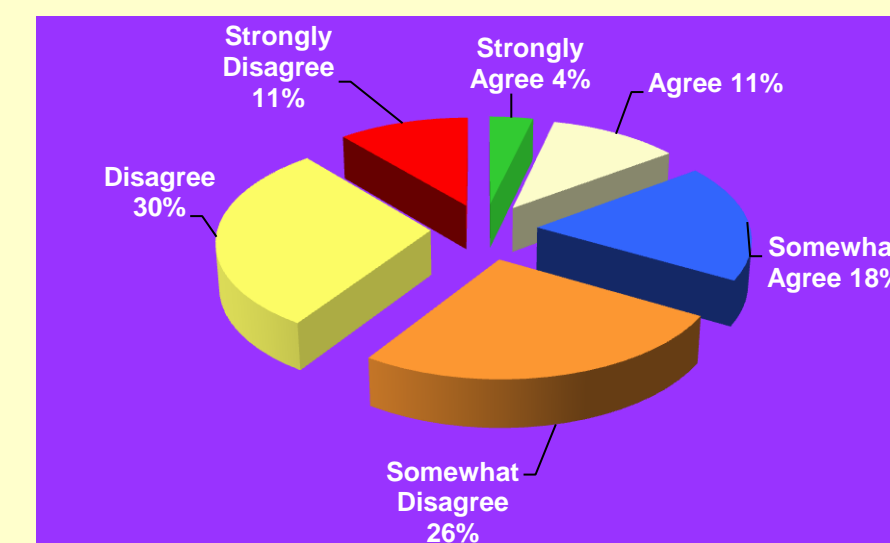
RRT NURSING QUESTIONNAIRE FINDINGS

RRT Questionnaire Subjects	n=	%
Questionnaires Distributed*	42	
Questionnaires Returned	27	64.3
Full-Time Nurse Respondents	25	92.6
Direct Care Nurse Respondents	24	88.9
Experience at time of RRT (<2 yrs)	4	14.8

*Total nurses initiating RRT calls (N=74) minus RNs no longer employed, multiple RRT calls by same RN, unknown initiating-RNs, non-RN initiated RRT

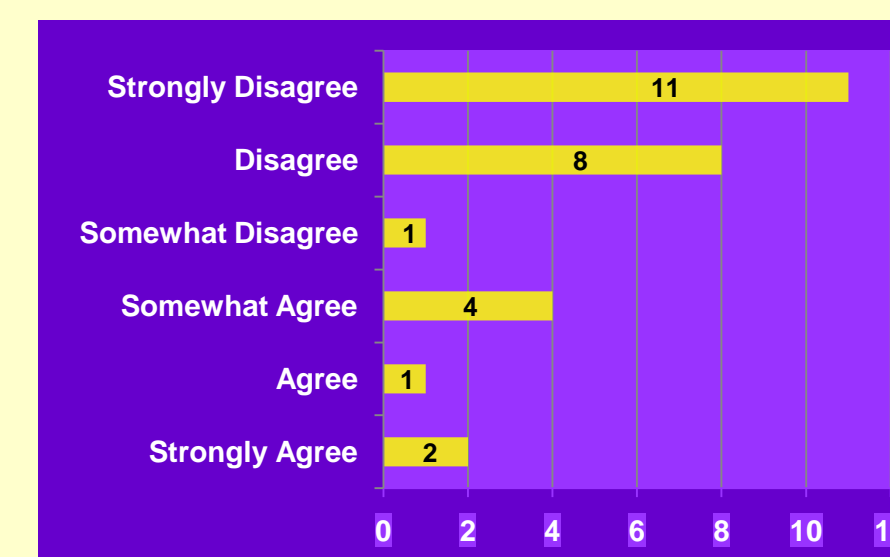
- Primarily full-time, direct care nurses with more than 2 years of nursing experience comprised the nursing sample with a 64% response rate
- 48% of nurses learned new skills during the **RRT** event
 - Critical thinking and decision making
 - Monitoring of vital signs, lab values and medications
 - Recognition of cardiac arrhythmia associated with PEA
- 97% of nurses would utilize **RRT** again

"My nursing skills were inadequate"



- 1/3 of respondents agreed with the statement, "I felt that my nursing skills were inadequate to handle my patient's condition prior to initiating the **RRT**."
- 66% disagreed indicating their nursing skills were adequate to deal with the deteriorating status of their patient

"I was intimidated by the RRT"



- Initial education of **RRT** nurses included emphasis on a supportive role
- Results affirm team education effectiveness as more nurses disagreed (n=20) with the statement, "I was intimidated by the **RRT** when they arrived at the patient's bedside," than agreed (n=7) to being intimidated

SUMMARY

Conclusions

I. Code Blue & RRT Mortality & Events

- Overall mortality trended downward while census remained consistent, but **Code Blue** deaths did not decline following full implementation of the **RRT**
- Establishing an **RRT** has not decreased **Code Blue** events
- Inability to conduct research on DOC population was a limitation
- Facility **Code Blue & RRT** event data has been entered in the NRCPR® (National Registry of CardioPulmonary Resuscitation)(4) as of April 2009
- 2Q09-1Q10 NRCPR® data revealed the facility's **Code Blue** patient survival to discharge was better than the national average of 10% (data not shown)

II. Nursing Efficacy

- RRT** is a valuable resource for hospitalized patients and nursing staff
- An **RRT** nurse can function as a mentor and coach for non-critical care nurses initiating **RRT** calls as revealed by
 - nearly half of the nurse respondents indicated they learned new skills during the **RRT** event
 - over 1/3 agreed the **RRT** involved them in the care of the patient (data not shown)
 - most respondents indicated lack of intimidation by the **RRT**

Implications

- NRCPR® provides continuous quality improvement evaluation
- Temporary Action Group (TAG) is developing a process for patient/family-initiated **RRT**
- Another TAG is revising **Code Blue & RRT** documentation tool
- Staff to be educated on significance of accurate documentation

Future Direction

- Investigation into the following could prove beneficial:
 - Patients who were Do Not Resuscitate (DNR) or arrived to the ER as dead on arrival (DOA)
 - Time patients experienced signs of deterioration and **RRT** initiated
 - Reasons for stopping resuscitation, e.g., family request, advance directives or medical futility

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