

The Rapid Response Team

A Panel Discussion

Panelists

Jimmy Phillips: Catawba Valley Medical Center

Jessie Miller: Martin General Hospital

Lawson Millner: Forsyth Medical Center

Jhaymie Cappiello: Duke University Hospital



Institute for Healthcare Improvement 2004

1. Delivery of Reliable, Evidence-Based Care for Acute Myocardial Infarction...
2. Prevention of Adverse Drug Events (ADEs)
3. Prevention of Central Line Infections
4. Prevention of Surgical Site Infections
5. Prevention of Ventilator-Associated Pneumonia
6. Deployment of a Rapid Response Team
 - early recognition and treatment of clinical deterioration can decrease the rate of cardiopulmonary arrests outside the critical care setting and unplanned intensive care admissions
 - The goal: To prevent deaths in patients who are failing outside intensive care settings.

Reason for RRT initiation

*66 % of patients showed abnormal signs & symptoms within 6 hours of arrest & the MD was notified in 25 % of those cases (Franklin & Mathew, 1994).

*50% reduction in non-ICU arrests (Buist, BMJ 02)

*Reduction in arrest prior to ICU transfer (4 % v 30 %) (Goldhill, Anest 99)

*Reduced post-operative emergency ICU transfers (44%) and deaths (37%) (Bellomo, CCM 04)

IHI Recommendations for an RRT

1. What Is the Role of the Rapid Response Team
2. Determine the Team Structure
3. Provide Education and Training
4. Establish Criteria for Calling the RRT
5. Mechanism for Calling the RRT
6. Communication and Documentation
7. Establish Feedback mechanisms and Measure Effectiveness

Where Are We Now?

Rapid Response Team

**Catawba Valley Medical Center
Hickory, NC**

*Jimmy Phillips RRT-NPS, RCP
Director Cardio-Pulmonary and Critical Care
Transport Svcs*

Catawba Valley Medical Center

- 32nd Magnet Hospital in the Nation
- 2nd hospital in North Carolina
- Re-designated 2010 which was our 3rd re-designation
- 258 bed acute care hospital

Current Status

- 3,000+ hospitals nationwide enrolled in the IHI campaign
- 96 hospitals in North Carolina
- Reference: Institute for Healthcare Improvement, (2005)

Rapid Response Team

- **Team of clinicians who bring critical care expertise to patient's bedside or wherever it is needed**
 - Critical Care Nurse
 - Critical Care Registered Respiratory Therapist

Fast Facts

- Cardiac arrests can be prevented 70% of the time (Buist, 2002)
- 76% of patients show sign/symptoms of deterioration 6-8 hours prior to the arrest. (Buist, 2002)

Goal of Rapid Response Team

- Prevent deaths from patients who show signs/symptoms of clinical deterioration in areas outside of critical care

Role of RRT

- Assess
- Stabilize
- Assist with communication
- Educate and support patient and family
- Assist with transfer to ICU, if needed

■ Reference: Institute for Healthcare Improvement, 2005

Benefits of RRT

- Brings clinical expertise to bedside
- Provides staff with additional support
- Provides early intervention of clinical deterioration
- Collaboration among members of health care team

What's the Difference?

- | ■ Code Blue Team | ■ RRT |
|--|--|
| ■ Initiated for any patient experiencing or in imminent danger of experiencing cardiac or respiratory arrest | ■ Responds before the arrest |
| | ■ Provides early interventions to prevent the arrest from occurring |

Is it working?

- 50% reduction in non-ICU arrest(Bellamo, 2004)
- 44% reduction in post-operative emergency ICU transfers(Bellamo, 2004)
- 37% decrease in postoperative deaths(Bellamo, 2004)
- Baptist Memorial Hospital -29% reduction in cardiac arrests (Walker, 2005)
- Pittsburgh Medical Center- 17% reduction in cardiac arrests (Buist, 2004)

Criteria for RRT

- Heart rate <40 or >140, with symptoms
- Systolic blood pressure less than 90 mm HG
- Change in respiratory rate
- Pulse oximetry less than 85%
- Uncontrolled bleeding
- Acute onset of anxiety
- Acute mental status change
- Failure to respond to treatment
- Seizures
- Patient, Staff, or family worry or concern for any reason

2010 CVMC RRT Data

- Average 18 RRT calls per month
 - 24% medical unit
 - 24% Ortho/Neuro/Inpatient Rehab
 - 19% Surgical unit
 - 10% Maternal-Child
 - 10% other areas
 - 5% Oncology, Psych, Secure Care

Reasons for RRT calls

- Most common reasons at CVMC
 - Respiratory distress
 - hypotension
 - Hypoxia
 - Cardiac

Most Common RRT Interventions

- O2
- Breathing Treatment
- ABG
- Fluid Resuscitation
- Ekg
- Labs
- Portable Chest X-ray

CVMC Code Blue Data

- Average 24 Code blues per month
 - 56% Inpatient
 - 39% Critical Care
 - 17% other inpatient units
 - 5.4 Codes per 1000 Discharges
- 44% ED/Outpatient

2010 Code Blue Outcomes

- Code Blue Survival Goal >25%
- 29% survived to discharge
- 28% Survived code but died at a later time
- 43% Expired at time of code blue

CVMC's success Code Blue versus RRT

- Goal > 50% will be code purple outside of a critical care unit on a medical/surgical floor
- Start RRT in late 2005
- 91 Code blue vs 22 RRT in 2006
- 74 Code Blue vs 160 RRT in 2008
- 60 Code Blue vs 204 RRT in 2010

References

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- IHI Getting Started Kit: Prevent Central Line Infections.
<http://www.ihl.org/NR/rdonlyres/BF4CC102-C564-4436-AC3A-0C57B1202872/0/CentralLinesHowtoGuideFINAL720.pdf>
- IHI Getting Started Kit: Preventing Surgical Site Infections.
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RAPID RESPONSE TEAM

Martin General Hospital
Jesse Miller RCP, RRT

Introduction

- Martin General Hospital is a 50 bed facility consisting of an ED, ICU, MSP, OR, Nursery, and outpatient services.
- Owned by CHS/Community Health Systems, Inc., the company's strategy is that financially sound, hometown hospitals are vital to the health of community residents as well as the economic development of the areas they serve.

An Overview



- **Purpose:** To provide a rapid multidisciplinary team approach to critically assess a patient whose condition is deteriorating, in addition to providing support and education to the staff.
- **Definition:** A multidisciplinary team that responds to urgent patient situations throughout the hospital.
- **Scope:** The Rapid Response Team (RRT) will be used in areas outside of the Emergency Dept., OR, and PACU.

Formation & Mission



- The Rapid Response Team (RRT) was approved by administration and made effective on July, 16 2008.
- The goal of the RRT is to provide early and rapid intervention to promote improved outcomes such as: reduced cardiac and/or respiratory arrests in the hospital, higher level of care, reduced intubations, and finally reduced hospital deaths.

Statistics

- January 2011: Ten code blues occurred this month. Seven occurred in the ED, 4 began outside the facility and three were initiated within the facility. One of the seven codes was successful. One in ICU and which was unsuccessful. Two occurred on MSP both of which were unsuccessful. There were no unusual occurrences during any of the codes. One RRT was initiated this month for a patient on MSP for decreased mental status. The RRT was successful and the patient was transferred to ICU.

- February 2011: Four code blues occurred this month. All codes were deemed successful with no adverse events. One originated outside the facility and continued in the ED. The patient expired. Two originated inside the facility in ICU. One patient expired, one patient was resuscitated and continued care in ICU. One code originated with an ED patient, the patient was not resuscitated and expired. There were no RRTs this month.

- March 2011: Five codes occurred this month. 3 codes began outside the facility and continued in the ER, 2 of the patients were resuscitated and 1 expired. All three codes were successful and all indicators were met. Two codes were initiated in the hospital and occurred on Med/Surg. Both patients expired. Both codes were successful and all indicators were met. The Rapid Response Team was utilized once during March for a patient with a decreased level of consciousness. Interventions were performed and the patient recovered and remained on MSP.

- April 2011: Six codes occurred this month. 3 codes began outside the facility and continued in the ER. All codes were successful in that all staff were qualified and all equipment was present. One patient was resuscitated and admitted to the ICU for further management. 3 codes were initiated within the facility. Two began in the ED. Both were successful however both patients expired. One code was initiated in the ICU, it was also successful however the patient expired.

- May 2011: Six codes occurred this month. Four of those codes began outside the facility and continued in the ER. All codes were successful in that all staff were qualified and all equipment was present. The patients were not resuscitated. One code began in the facility in the ED. The code was successful however the patient expired. One code occurred in the ICU. The code was successful and the patient was resuscitated and remained in ICU.

- June 2011: Four codes occurred this month. None began outside the facility. All codes began in the facility. Two occurred in the ED, both were successful in that all personnel were trained and supplies and medications were correct. One patient did expire. The other patient was admitted to ICU for management and then transferred out. One code occurred on MSP, the code was successful and the patient resuscitated and transferred to ICU for management. One code occurred in ICU, it was successful however the patient expired.

- July 2011: six codes occurred this month. Four began outside the facility. These patient were brought into the ED where the codes continued. All codes were successful in that all staff were properly trained and all equipment was available and functioning, however none of the patients were resuscitated. Two codes occurred in ICU, both were successful regarding staff and equipment however the patients expired.

Who is Involved?



- Respiratory Therapist (In House)
- House Supervisor: Provides expertise and facilitates communication among team members.
- Staff Nurse: Provides background info. relating to patient; stays with patient and provides any further assistance needed.
- ED/ICU Nurse: Provides clinical expertise and multidisciplinary approach and procedure with drug administration as per protocol.

Role of the RT.....



- Keep everyone CALM!!!! (lol)
- Provide advanced respiratory assessment
- Stabilize and/or maintain the airway
- Provide immediate o2 therapy, tx's or set-up of respiratory equipment (bi-cpap, vent., etc.)
- Review the situation with other team members and the staff nurse as a teacher and mentor.
- ACLS/BLS certified



Criteria for Initiating a RRT



- Response time must be within **five (5) minutes** of being called!
- **Call Code Blue if pt becomes apneic, pulseless. Or has an unstable cardiac rhythm!!**
- ✓ Acute change in HR from baseline (<40 or >130)
- ✓ Acute change in SBP from baseline (>200 & <90mmHG)
- ✓ Respirations <10 or >30, or threatened/compromised airway

Criteria cont...

- ✓ Change in o2 sat.(>90% despite o2 therapy)
- ✓ Acute change in o2 needs requiring an Fio2 of 50% or greater
- ✓ Chest pain unrelieved by nitroglycerin SLx3
- ✓ Altered mental status or acute change in LOC
- ✓ Acute or significant bleeding
- ✓ New, repeated or prolonged seizures
- ✓ Acute change in urine output (<50mls in 4 hrs)

Criteria cont...

- ✓ Failure of patient to respond to treatment for an acute problem/symptom
- ✓ *Staff member concerned/worried about the patient!*

Interventions



- Maintain pt's airway
- Increase Spo2 to keep >90% (o2 mask, BiCpap, NTS)
- Begin ACLS protocols if symptomatic dysrhythmia detected
- EKG if HR abnormal or chest pain noted
- Start IV access if not in place (consider 2nd line and drawing blood for lab)

Interventions cont...

- Administer NS 500ml bolus for hypotension (if pt is not in CHF)
- Foley cath. if needed
- Naloxone for opiate/narcotic overdose
- Finger stick to check blood sugar
- D50 IV if blood sugar <50mg/dl and symptomatic
- Albuterol unit dose for bronchospasm

Monitoring and further data

- If patient has met any of the above criteria, then he/she should be transferred to our ICU so that further critical care monitoring can take place, along with other diagnostic testing.
- If a respiratory issue is suspected, then pt's respiratory effort, rate and rhythm should be monitored, along with o2 sat. Abg should be drawn to assess oxygenation/PO2, and acid/base balance. If positive pressure or mech. ventilation is needed, this is to the discretion of the Resp. Therapist and the MD.
- In general, pt's Level of consciousness (LOC) should be assessed at least every Q1-Q2 hrs.

Further diagnostic testing



- ABG
- Labs: CBC, BMP, PT, PTT, INR
- Labs: Troponin, CK, CKMB, if cardiac injury suspected. (BNP)
- Portable CXR (CT scan if indicated)
- If temp. >101 and no work-up in 24 hrs., obtain blood cultures, UA w/C&S and sputum C&S

Lessons Learned

- If RRT is called in time, it improves the chance of patient survival, which is what healthcare is all about.....saving lives.
- MD's cannot do it all. Taking the initiative by calling a RRT shows concern and integrity.
- If you follow the RRT criteria, and 1 or more apply to the patient, you cannot go wrong by initiating a RRT. As long as you follow the criteria, do not be scared to activate the RRT!!
- Remember to use your good clinical judgement. Coupled with the RRT, your hospital should have a good clinical staff with improved response/reaction time for the patients.

Conclusion

- In summation, utilizing your assessment skills, and this includes RN's as well, the Rapid Response Team is a highly effective skill to be used by the healthcare team to help prevent further deterioration in a patients status.
- Most importantly, for the RRT to work it MUST BE UTILIZED! We are striving hard at Martin General to implement the RRT more often when appropriate. If you feel the patient is in distress, DO NOT HESITATE to call an RRT! It's the early intervention that makes all the difference to your patients. Thank you very much.

Forsyth Medical Center's Rapid Response Team

Lawson Millner, RRT, RCP
Winston Salem, NC

Forsyth Medical Center



- Located in Winston Salem
- 961 bed non-academic
- 24/7 Hospitalist coverage
- Respiratory is a protocol driven department
 - Protocols for everything from bronchodilator therapy, A-Lines and Intubations to Ventilator and HFOV management

Our Mission...

To reduce the number of unnecessary code blue events and deaths outside our critical care units by empowering nurses to initiate an immediate response from qualified critical care staff when a patient's condition appears to deteriorate.

In the Beginning

- Started as the "Rapid Assessment Team" (RAT)
- Project selected due to the number of events outside critical care
- Bed shortages led to long holding times
- Unable to adequately monitor deteriorating patients

If we couldn't get the patient to the unit, we would bring the unit to the patient!

Implementation

- We piloted on a general medicine floor.
- Started RRT program in 2007
 - Data Collection started in 2009
- Started letting the family members initiate the RRT call in January 2009
 - calls are screened to ensure calls are appropriate before sending RRT team to room

Team Composition

- Critical care RN's from ICU, CICU and Critical Care Triage
- Critical care RCPs
- All are ACLS certified
- Patient's care nurse

Our "uniqueness"

- ... no responding physician on the team
- RNs and therapists carry all the responsibilities they have on their working unit.
- Hospitalists are available for anything requiring additional physician orders

RRT Criteria

- Heart Rate < 40 or > 130
- Respiratory Rate < 8 or > 28
- Systolic BP < 90 mmHg
- Drop in O2 Saturation below 90%
- Unexpected change in LOC
- Change in urinary output < 50 ml in 4 hours
- Concern for the patient
 - Probably the reason for the majority of our RRT calls

Stroke RRT

- Numbness or weakness of the face, arm, leg
- Trouble speaking or understanding
- Trouble seeing
- Trouble walking
- Severe headache

RRT Protocols/Standards

- Expected response within 5 minutes
- The patient's primary caregiver or individual who activated the team will provide a history of the current changes to the team members
- The assessment and response is a collaboration between the primary caregiver and the RRT
- The attending physician may be notified as indicated following assessment by RRT
- The Rapid Response and Assessment Team will document their findings/assessments using the RRT documentation form

Team Roles

- Team members have all the responsibilities they would normally have in their working unit
- Ability to access and implement all emergency orders
- RCPs are either trained in intubation or are in training to develop the skill
- RCPs can implement any order covered under the respiratory care protocol
- If indicated, team members may participate in the transport of the patient to a higher level of care

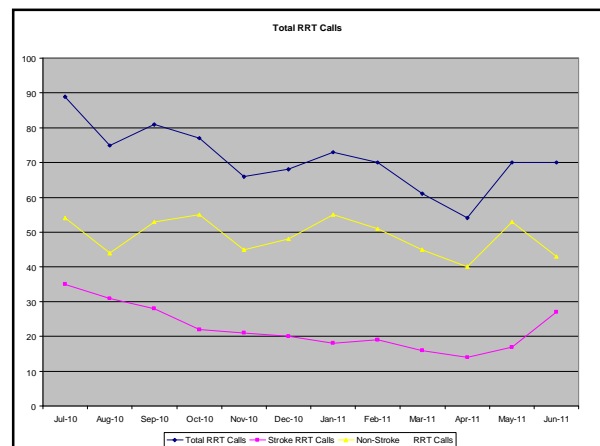
Rapid Response Team Overview

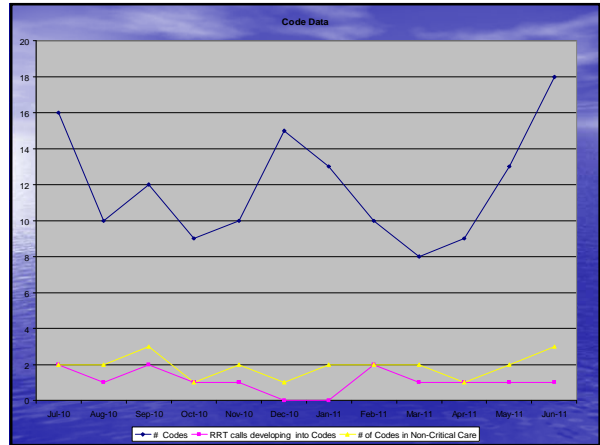
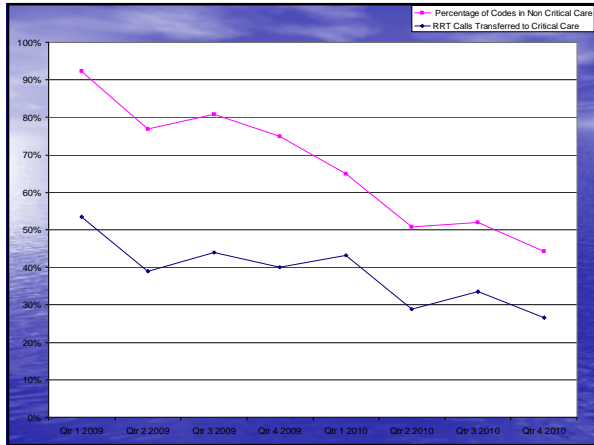
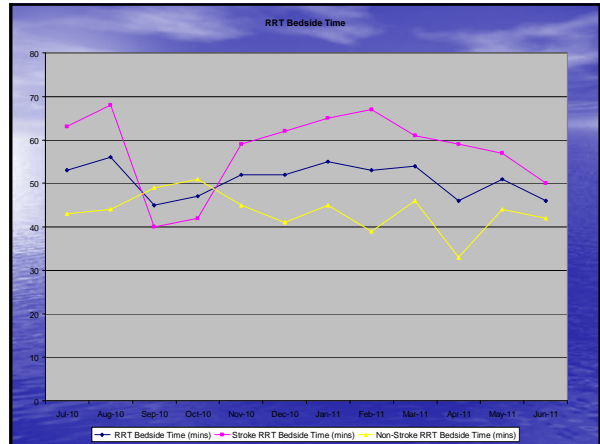
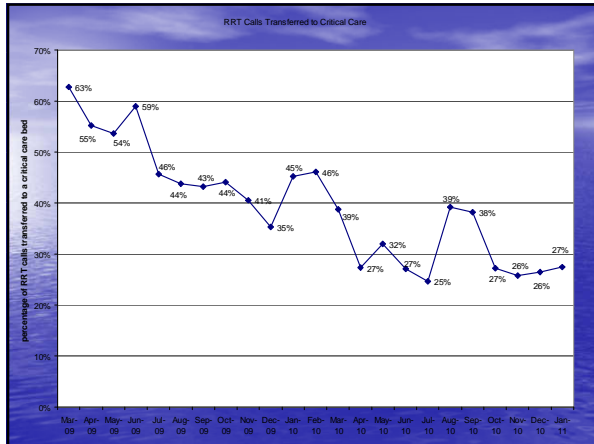
Total RRT calls

2009: 544, (Mar-Dec) monthly average - 54
2010: 917, monthly average - 76
2011: 398, (Jan-Jun) monthly average - 66

Average Time per Activation

2009: 47 minutes
2010: 52 minutes
2011: 51 minutes

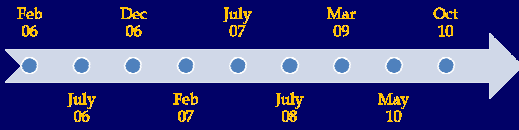




- ## Lessons Learned
- Staffing Practice
 - Assigned to evaluators / RCP's that are out on the floors.
 - Education/Orientation
 - New hires do an orientation rotation with the evaluators
 - Productivity
 - Possible increase
 - Codes
 - Use of RRT had decreased the number of codes outside of critical care
 - Family Initiated RRT
 - Better than we thought
 - We hope we can get a designated RRT position in the future



Implementation



Team Composition

ICU Charge Nurse
 Respiratory Therapy Supervisor
 ICU Fellow (as indicated)
 Patient's care nurse & House Staff
 Unit charge nurse
 Nursing Operations Administrator

The Education

Adult Medical Rapid Response Team (RRT)

Quick Facts About the RRT

- RRT is a team of healthcare professionals who respond to patients who are at risk of cardiac arrest or who have become unresponsive.
- RRT is available 24/7.
- RRT is located in the ICU.
- RRT is called when a patient becomes unresponsive or has a cardiac arrest.
- RRT is called when a patient has a seizure.
- RRT is called when a patient has a respiratory emergency.
- RRT is called when a patient has a medical emergency.

Definition of a Rapid Response Team (RRT)

The role of the individual staff member

Reason for creating a Rapid Response Team

The DUH Rapid Response Team (RRT) call criteria

Communicating the RRT

The role of the "Team"

Individual team member roles

What Happens During a Call?

When Does a RRT Call End?

Documentation Guidelines

Team Huddle/Debriefing

Equipment needed

Definition of a Rapid Response Team (RRT)

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RRT Patient Criteria

When the patient experiences ACUTE changes in their condition -

Heart rate <45 or >125 bpm
 Systolic BP <80 or >200 mmHg
 Diastolic BP >110 mmHg
 Resp. rate <8 or >30
 SpO₂ <90%
 Seizures
 Chest Pain
 ACUTE change in mental status

OR

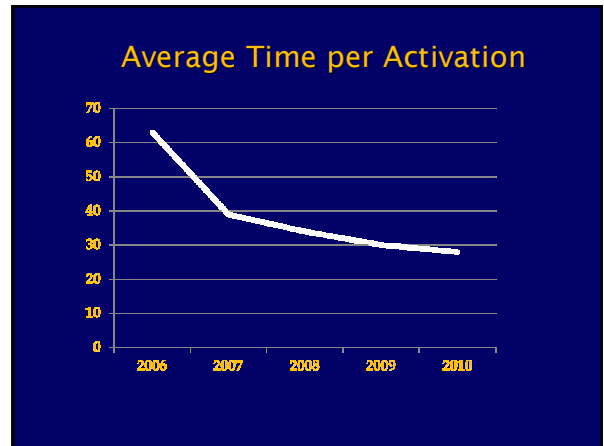
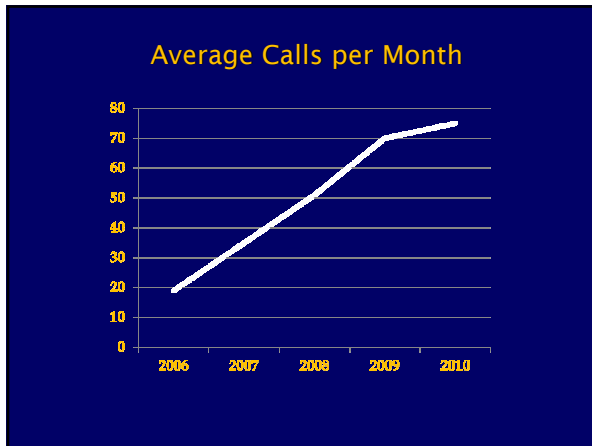
If You are concerned or worried about your patient's status

RRT Protocols/Standards

- Respond within less than 5 minutes
- Be non-judgmental to person initiating the call
- The RRT will collaborate with primary care team to stabilize and guide stabilization of the patient.
- Orders are obtained from the Primary Physician / House Officer or RRT MD
- A Code Blue should be called if the patient becomes apneic, pulseless, or develops an unstable rhythm. (Unless the patient has a documented "Do Not Resuscitate order")
- Concluding the RRT call, the RRT nurse facilitates an assessment of the RRT with the care nurse using the Situation, Background, Assessment, and Recommendation (SBAR) methodology

Respiratory Therapist

- | Requirements | Role |
|--|---|
| <ul style="list-style-type: none"> • ACLS, PALS, BLS • Registered Respiratory Therapist • 2 years Crit Care Experience • Advanced Airway Certified • Advanced Care Practitioner | <ul style="list-style-type: none"> • Will answer all RRT calls in person within 5 minutes • Assess airway/oxygenation level • Recommend respiratory therapy interventions • Provide respiratory therapy interventions as ordered • Communicate with team • Assist in transfer to higher level of care, if necessary |

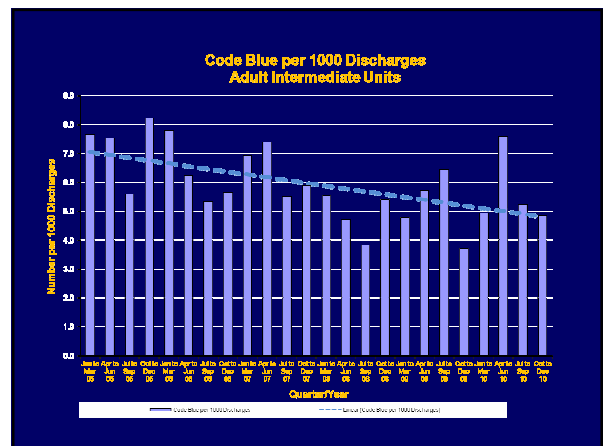
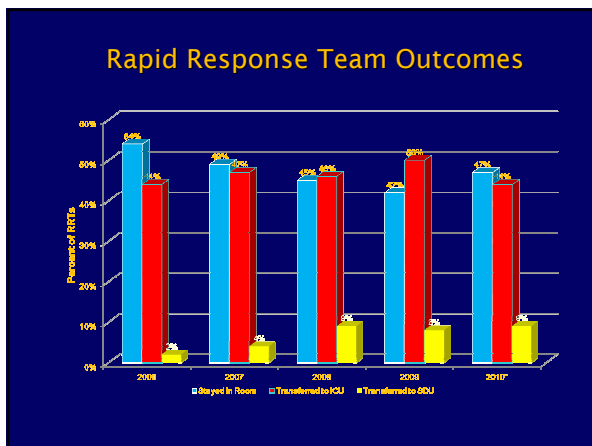


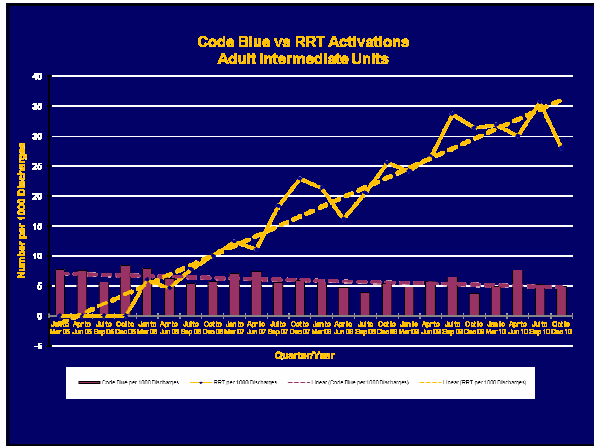
Rapid Response Team: Top 5 Reasons for Activations

	2006	2007	2008	2009	2010
• Staff concerned/worried:	53%	64%	62%	65%	61%
• Systolic BP less than 80:	23%	28%	27%	24%	23%
• Oxygen sat less than 90:	21%	21%	29%	31%	29%
• Heart rate > than 125:	20%	20%	25%	21%	22%
• Acute Mental Status Δ:	20%	16%	20%	20%	23%

Rapid Response Team: Most Frequent Interventions

	2006	2007	2008	2009	2010
• Oxygen mask/nasal:	45%	48%	49%	56%	60%
• ECG:	33%	34%	36%	34%	32%
• Arterial blood gas:	29%	35%	39%	39%	38%
• IV fluid bolus:	31%	32%	34%	30%	31%
• CXR:	14%	21%	24%	27%	23%





- ## Lessons Learned
- Work Volume
 - Unpredictable, potential for high impact on individual assignment
 - Staffing Model/Practice
 - Increased demand for qualified/available personnel
 - Education/Orientation
 - Added to orientation and yearly review
 - Productivity
 - No noticeable change
 - Training
 - Loss of staff exposure to acute events, led to acquiring "shadow pager"
 - RRT Progression
 - Condition "H"

Discussion