

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams



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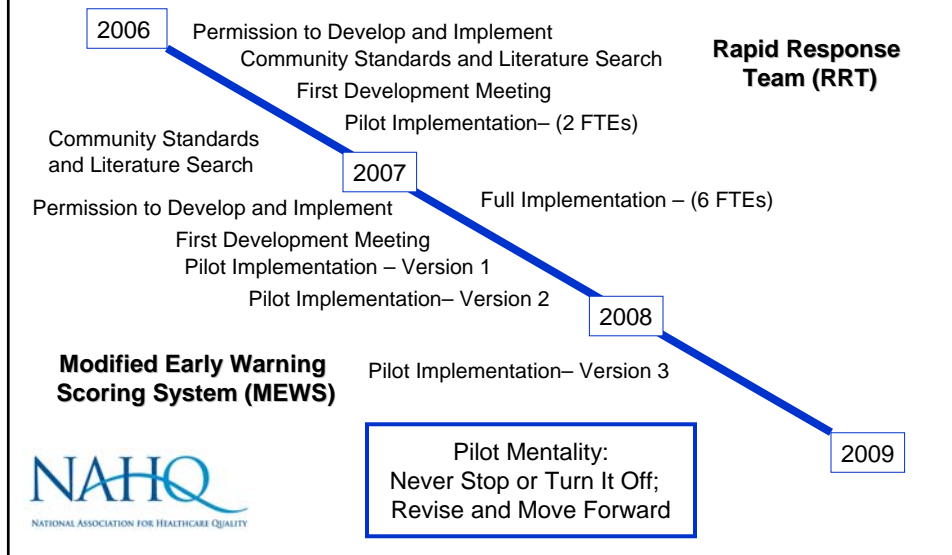
## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

At the conclusion of this learning activity the participant will be able to:

- Describe the development and implementation of a Critical Care Outreach Team;
- Discuss the efficacy of a Critical Care Outreach Team;
- Describe the development and implementation of an Early Warning Scoring System; and
- Discuss the efficacy of an Early Warning Scoring System.



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Early Warning Systems
  - Critical Care Outreach Teams (CCOT)
    - Respond to requests from staff members, based on physiological criteria
    - Assess and treat patients that may be experiencing clinical deterioration.
    - Rapid Response Team (RRT)



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Stakeholders
  - Departments
    - Administration\*
    - Administration: Nursing\*
    - Bed Management
    - Critical Care: CCU and MSICU\*
    - Education: Clinical Educators and Clinical Nurse Specialists\*
    - Hospitalist\*
    - Pharmacy
    - Respiratory Therapy
- Stakeholders
  - Hospitals
    - Ashland City
    - Tower\*
    - Women's Hospital
    - Parkview
    - Parthenon Pavilion
    - Women's Hospital

\*MEWS Development and Implementation Team Stakeholders

- Advanced Practice Nurses
  - > MSICU
  - > Neuroscience
- RRT



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Purpose
  - To improve patient care at Centennial Medical Center through early identification and intervention on behalf of patients experiencing near or actual medical emergencies
- Mission
  - The mission of the Rapid Response Team at Centennial Medical Center is to provide early and rapid medical assessment and intervention in order to improve patient outcomes



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Goals
  - Decrease the number of unplanned transfers to the intensive care units;
  - Decrease the number of cardio-respiratory arrests in medical-surgical patient care areas;
  - increase survivability post-code blue event and at discharge for medical-surgical patients;
  - Provide assessment and intervention education for nursing and respiratory staff members; and
  - Promote critical thinking skills for nursing and respiratory staff members.



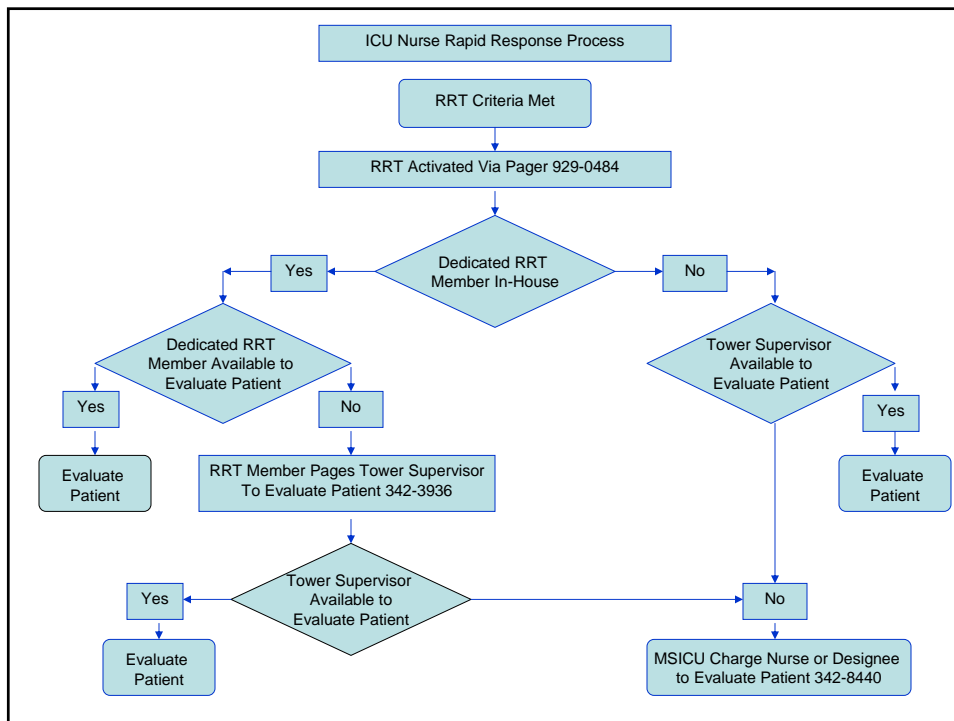
## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Name Selection
  - Rapid Response Team (RRT)
- Model Selection
  - Team Composition
    - Critical Care Nurse (6.0 Dedicated FTEs)
    - Respiratory Therapist (Non-Dedicated FTE – Lighter Assignment)
    - Health Care Team
- Scope of Services
  - Inpatient Areas (Exception: ER and NICU)
  - Outpatient Areas
  - Ancillary Areas
    - Visitors – Goal: Assess and transfer to the ER; May not use protocols
    - EMTALA - ER



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Process
  - Policy and Procedure
    - It is the responsibility of clinical staff members (non-ICU) to activate the Rapid Response Team (RRT) according to the activation criteria.
  - Who may call the RRT
    - Any staff member
    - Any physician
    - Any patient or family member
  - Response Time
    - 5 Minutes



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Process
  - Protocols
    - Allergy & Anaphylaxis
      - Upper Airway versus Lower Airway
      - SBP > 90 mmHg and **NO** Respiratory Compromise
      - SBP < 90 mmHg and/or Respiratory Compromise
    - Neurological Clinical Changes
      - Altered Level of Consciousness or Change in Mental Status
      - Medication Review - Narcotic Administration & Benzodiazepine Administration
      - New Onset or Prolonged Seizures
    - Respiratory Clinical Changes
      - Respiratory Rate < 8 (symptomatic) or > 30
      - Oxygen Saturation < 90%
      - Patient Assessment of Crackles / Rhonchi and Complaint of Dyspnea



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Process
  - Protocols
    - Cardiac Clinical Changes
      - Heart Rate < 40 (symptomatic) > 130
      - Chest Pain
      - Systolic Blood Pressure < 90 (symptomatic)
    - Decrease in UOP
      - Urine Output Less Than 50ml In 4 Hrs
    - Laboratory Testing
      - Labs to be Drawn at the Discretion of the RRT
    - Unstable Clinical Patient
      - If Patient Remains Clinically Unstable, Transfer Patient to Higher Level of Care



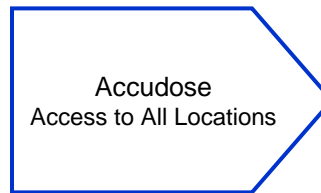
- Process
  - SBARD



<b>S</b>	<input type="checkbox"/> Dr. <u>(their name)</u> , this is <u>(your name)</u> I am a member of the RRT. <input type="checkbox"/> I am calling about <u>(patient name)</u> . <input type="checkbox"/> The RRT was called about this patient because <u>(triggers)</u> .
<b>B</b>	<input type="checkbox"/> The patient was admitted on <u>(date)</u> with <u>(admitting diagnosis)</u> . <input type="checkbox"/> The patient has <u>(co-morbidities)</u> . The patient has had <u>(procedures)</u> . <input type="checkbox"/> The patient is currently taking <u>(applicable meds)</u> .
<b>A</b>	<p>The patient's initial assessment when RRT was called was significant for:</p> <input type="checkbox"/> Level of consciousness <input type="checkbox"/> Vital signs and SpO2 & HGB (oxygen delivery system and setting) <input type="checkbox"/> Physical assessment <input type="checkbox"/> I & O and lab values <input type="checkbox"/> Patient and/ or significant other report
<b>R</b>	<p>The RRT recommends the following:</p> <input type="checkbox"/> Medications <input type="checkbox"/> Interventions <input type="checkbox"/> Level of Care: leave at same or transport to higher
<b>D</b>	<input type="checkbox"/> Do you have any further recommendations for the plan of care? <input type="checkbox"/> We <u>(are)</u> <b>OR</b> <u>(are not)</u> in agreement on the plan of care? <input type="checkbox"/> I need to read back and verify your verbal orders.

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Documentation
  - RRT Call
  - RRT Follow Up (12-24 Hours)
- Documentation
  - Logs
    - Calls – Follow Up (Hard Copy)
    - Calls – Metrics (Shared Drive)
    - ICU Transfers
    - IV Therapy and Resource



- Resources
  - Communication
    - Cell Phone (resource)
    - Computers
    - Office
    - Pagers
      - Code Blue
      - RRT
  - Jump Bag
  - Psychiatric Hospital

- ✓ Alcohol Preps
- ✓ Allergy & Anaphylaxis Kit
- ✓ ABG Kits
- ✓ Christmas Trees
- ✓ Extension Sets
- ✓ Hemostats
- ✓ IV Catheters
- ✓ IV Pump Tubing
- ✓ IV Start Kits
- ✓ Manual Blood Pressure Kit
- ✓ Mask and One-Way Valve
- ✓ Nasal Cannula
- ✓ Non-Rebreather Mask
- ✓ Normal Saline 250 ml
- ✓ Normal Saline Syringes
- ✓ Oral airway
- ✓ Scissors
- ✓ SpO2 Monitor (finger)
- ✓ Tape (transpore)
- ✓ Tape paper)
- ✓ Venoscope 2 Vein Finder



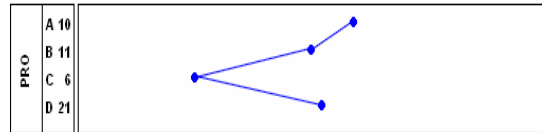
## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Tasks
  - Calls
  - Resource (407)
  - Intravenous Therapy (689)
  - Proactive Rounding
    - Inpatient - Outside ICU
    - ICU Transfers
  - Data Entry
  - RRT Reports (8 Hour Look Backs)
- Metrics
  - Definitions
  - Methods
  - Inter-Rater Reliability



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Operations
  - Full Time Equivalents
  - Selection, Setting Expectations and Evaluation
    - Job Description
      - RN
      - Critical Care (3 Years)
      - ACLS (EP Preferred)
    - Predictive Index



Pace and Variety of Activities  
Focus  
Decision Making  
Communication and Collaboration  
Delegation and Leadership Style



- Operations
  - Interview Rating Tool
  - RRT Orientation Check-List
  - Performance Management Plan

### Competencies

#### Pace and Variety of Activities

- Adaptability
- Energy
- Stress Tolerance
- Continuous Learning
- Technical / Professional Knowledge
- Information Monitoring
- Follow Up
- Demonstrates Principles of Continuous Improvement

#### Focus

- Manages Work
- Developing Others

#### Decision Making

- Decision Making

#### Communication and Collaboration

- Communication
- Coaching
- Building Customer Loyalty

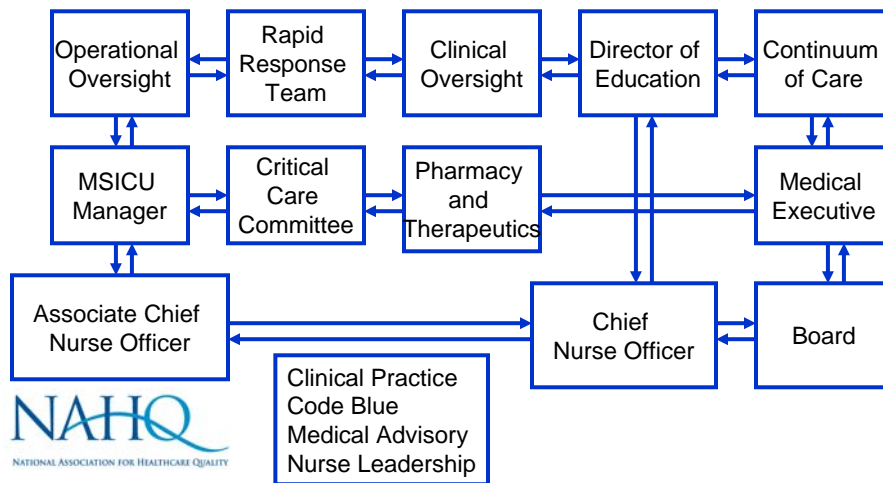
#### Delegation and Leadership Style

- Delegating Responsibility
- Facilitating Change
- Managing Conflict
- Accurate Self Insight



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Oversight and Reporting Structure



- Education and Marketing
  - Target Audience
    - Staff Members
    - Physicians
    - Patients and Families



**Centennial Medical Center**  
TRI STAR HEALTH SYSTEM

**RAPID RESPONSE TEAM**

Page: 929-0484

Then enter the **Patient's Room # OR:**  
**RESOURCE CALLS @ 5331**

**Criteria for calling the Rapid Response Team**

- Any acute change or nursing concern
- MEWS: Increasing and/or > 5 (new)
- Acute change in LOC
- Acute change in O2 Sats (<90%)
- Acute change in SBP (<90 mm hg)
- Acute change in HR (< 40 or >130)
- Acute change in RR (<8 or >30)
- Acute change in UOP (<50ml in 4 hrs)
- New onset or prolonged seizures

**Call the Rapid Response Team for help assessing any unstable patient!**

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Education and Marketing
  - Methods
    - Badges
    - Brochures
      - Elevators
      - Patient Rooms
    - Business Cards
    - Computer Based Training
      - Initial
      - Annual
      - Updates



### CMC Early Warning Systems

At the conclusion of this learning activity the participant will be able to:

- Discuss the purpose of rapid response teams and early warning scoring systems;
- List the trigger criteria for summoning the RRT;
- Describe the process for summoning the RRT;
- Describe bedside nurse's responsibilities during a RRT call;
- List the scoring criteria for the MEWS;
- Describe the process for documenting the MEWS;
- Discuss the trigger criteria for the MEWS; and
- Describe the SBAR method of communication.

- Education and Marketing
  - News Letters
  - Magazines
  - Posters
  - Stand Up
    - Departmental inservices
    - Nursing Orientation
    - Staff Meetings



When something just does not look or seem right with the patient they may be getting much sicker. **Please contact the patient's nurse immediately!**

Some warning signs that a patient may be getting much sicker:

- Change in mental (thinking) status (confused, sleepy, hard to awake up)
- Change in skin color (pale, grey, blue) moisture (sweaty) and temperature (too cold or too hot)
- Change in breathing (too fast, too slow, too shallow or too hard)
- Complaint or observation of shortness of breath or chest pain

If the patient's nurse is not immediately available, call the **Rapid Response Team** at x.5331 to request a visit.

## Who is your Rapid Response Team?



When you need a **second pair of eyes** to help uncover changes in your patient, call us! Our team collectively has over 110 years of ICU nursing experience and decades of respiratory therapist expertise from our respiratory team.

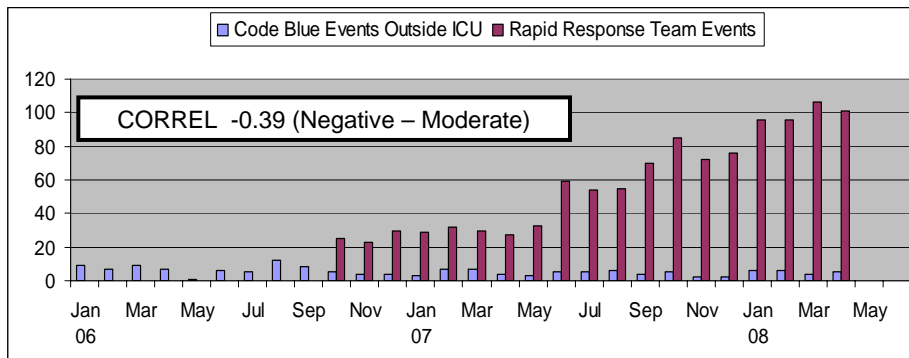
We're here to work with you and your patients!

Call *beeper (dig)* **929-0484** with your room number.



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

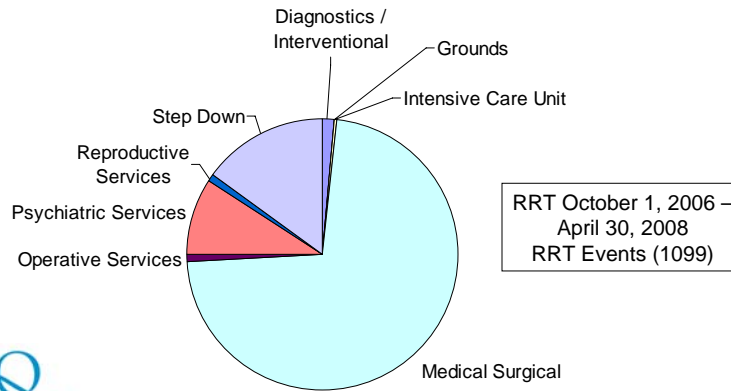
Events (Raw #)



RRT October 1, 2006 – April 30, 2008  
Code Blue Events (151) RRT Events (1099)

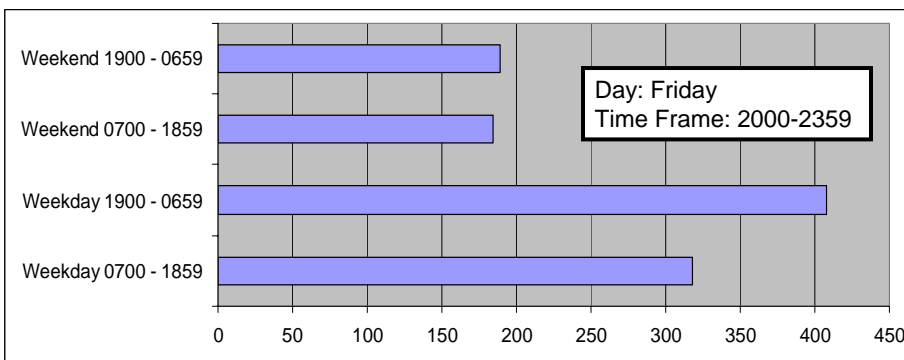
## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Utilization of Rapid Response Team (Patient Care Area – Percentage)



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

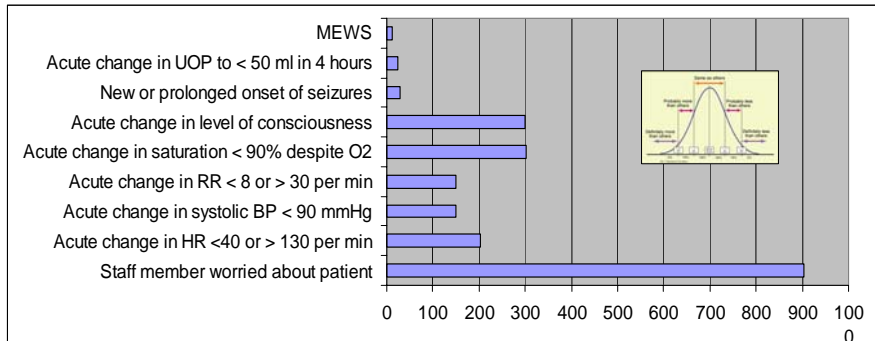
Utilization of Rapid Response Team (Day and Shift – Cumulative – Raw #)



RRT October 1, 2006 – April 30, 2008  
RRT Events (1099)

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

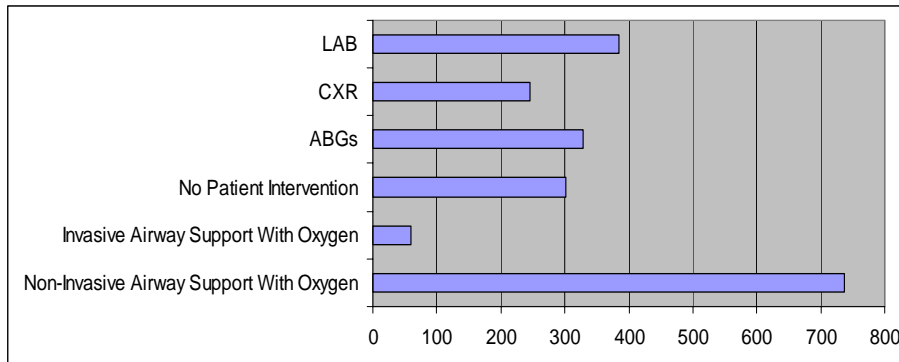
Reasons for Calls to the Rapid Response Team  
(Not Mutually Exclusive – Cumulative – Raw #)



RRT October 1, 2006 – April 30, 2008  
RRT Events (1099)

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

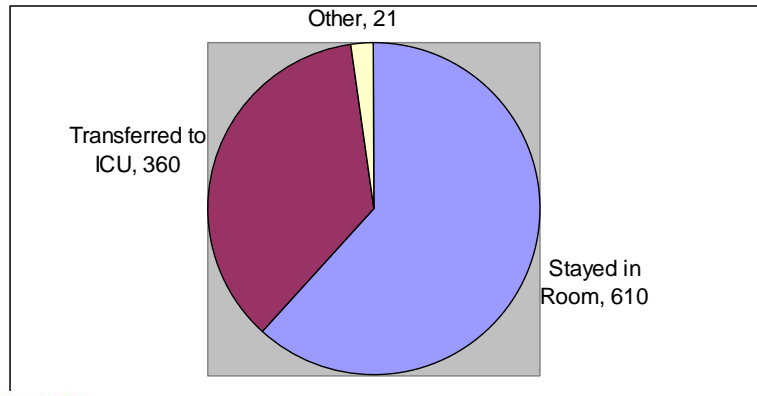
Rapid Response Team Interventions - Airway – Breathing (Cumulative – Raw #)



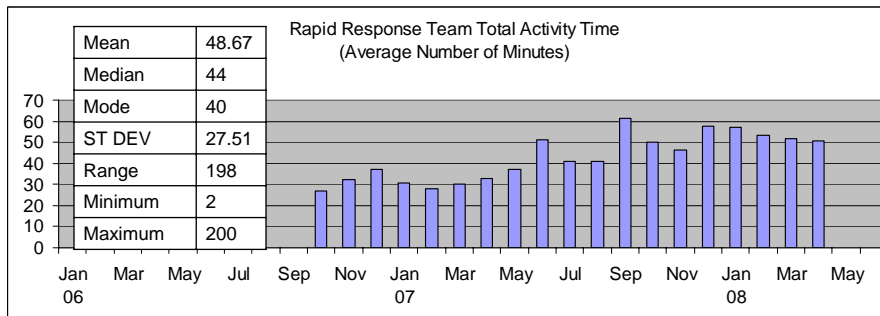
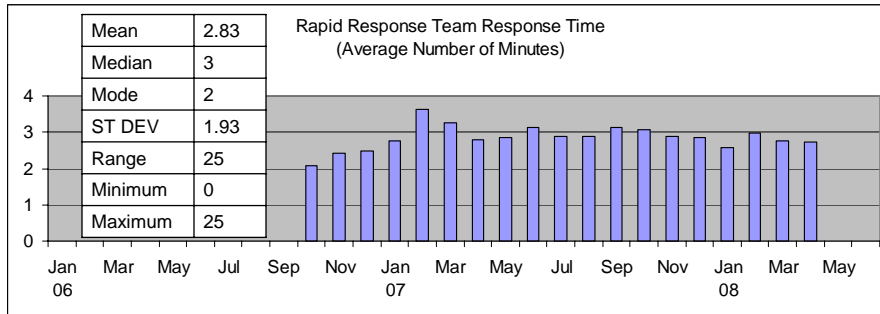
RRT October 1, 2006 – April 30, 2008  
RRT Events (1099)

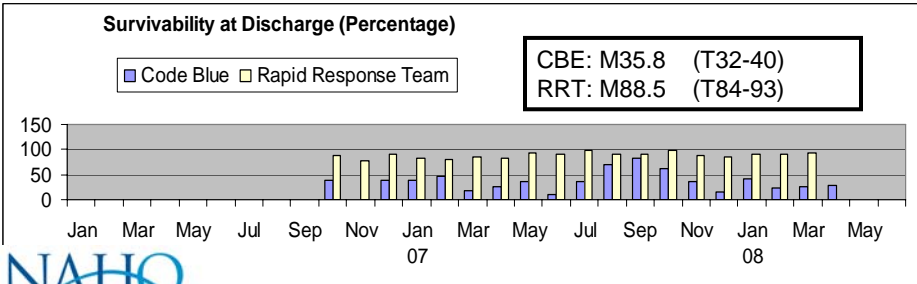
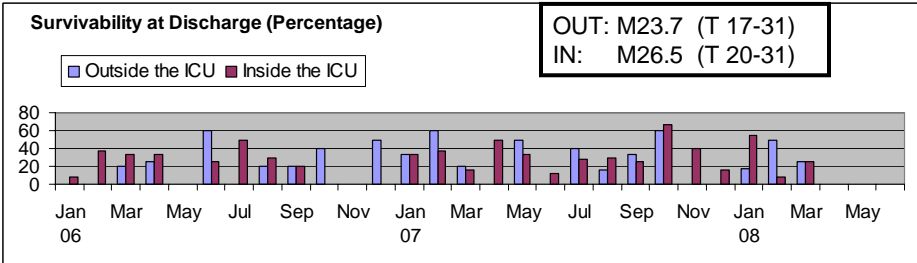
# The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Number of Rapid Response Team Calls That Resulted in Transfers



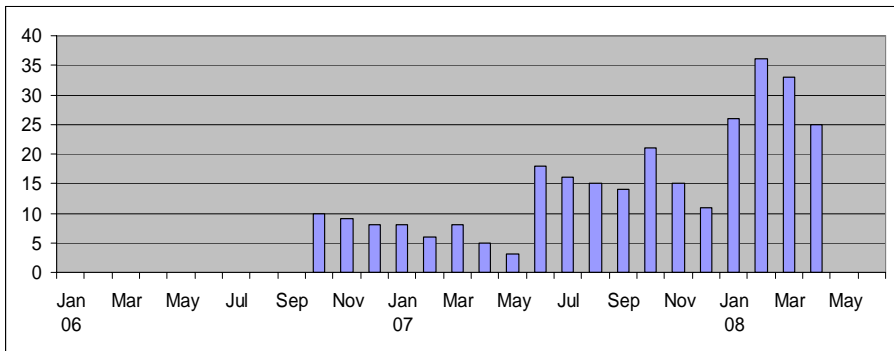
RRT October 1, 2006 – April 30, 2008  
RRT Events (1099)





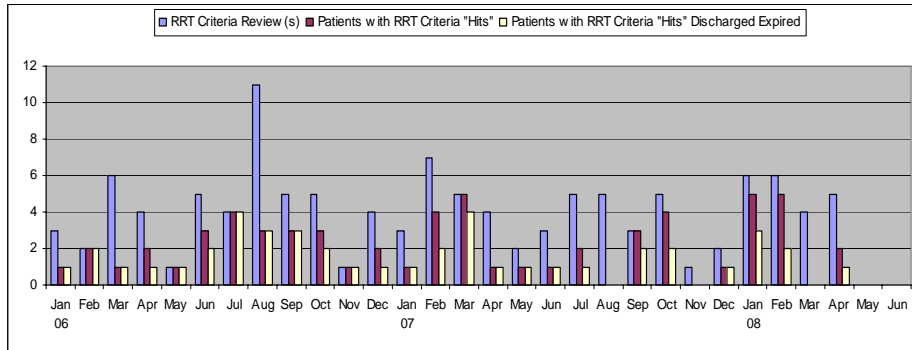
## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

RRT Call Within 24 Hours of Admission



# The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Medical Surgical Code Blue Look Back (8 Hours) for RRT Criteria (Raw #)



RRT October 1, 2006 – April 30, 2008  
(117 CBE Events with 61 "Hits")

- Look Back

## Pre-Code Blue Event Departmental Review

Patient Name	
Patient Account Number	
Admission Date	
Patient Care Area	
Date of Code Blue Event	
Time of Code Blue Event	
Eight Hour Look Back Trigger	<input type="checkbox"/> Staff member worried about patient
	<input type="checkbox"/> Acute change in HR (<40 or >130)
	<input type="checkbox"/> Acute change in SBP (<90)
	<input type="checkbox"/> Acute change in RR (<8 or >30)
	<input type="checkbox"/> Acute change in O2Sat Despite O2 (< 90)
	<input type="checkbox"/> Acute change in LOC
	<input type="checkbox"/> New onset or prolonged seizures
	<input type="checkbox"/> Acute change in UOP (< 50 ml in 4 hours)
Nursing Staff Members Caring for Patient During Eight Hour Look Back Time Frame	
Date of Medical Record Review by Nursing Staff Members (Clinical and Management)	
Actions - Nursing Staff Members Did Well	
Actions or Inactions – Nursing Staff Members Need to Improve	
Action Plan for Improvement	
Action Plan Follow Up Date	



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Ongoing Challenges
  - Behavior
    - Nursing
    - Physician
  - Change Process
    - Culture
  - Communication
    - Patient / Family and Health Care Team
    - RRT and Health Care Team
  - Critical Care Transport
  - High Risk Medications
  - Multiple Simultaneous Calls
  - Service Recovery
  - Surge Holding



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Future Improvement           <ul style="list-style-type: none"> <li>– Automation               <ul style="list-style-type: none"> <li>• Documentation                   <ul style="list-style-type: none"> <li>– Protocol</li> <li>– RRT Call</li> <li>– RRT Follow Up</li> </ul> </li> <li>• Logs                   <ul style="list-style-type: none"> <li>– RRT Call</li> <li>– ICU Transfer</li> </ul> </li> <li>• Reports</li> </ul> </li> <li>– Bundles Work               <ul style="list-style-type: none"> <li>• Sepsis</li> </ul> </li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Future Improvement           <ul style="list-style-type: none"> <li>– Code Blue               <ul style="list-style-type: none"> <li>• Defibrillation <math>\leq</math> 2 Minutes</li> <li>• Use of Pressors (first dose)</li> </ul> </li> <li>– Intraosseous (IO) Access               <ul style="list-style-type: none"> <li>✓ Board of Nursing</li> <li>✓ Community Practice</li> <li>✓ CNO and Nursing Directors</li> <li>✓ Clinical Practice Committee</li> <li>✓ Device Selection</li> </ul> </li> <li>• SMAT</li> <li>• Protocol Development</li> <li>• Education &amp; Competency</li> </ul> </li> </ul> |
|---|---|



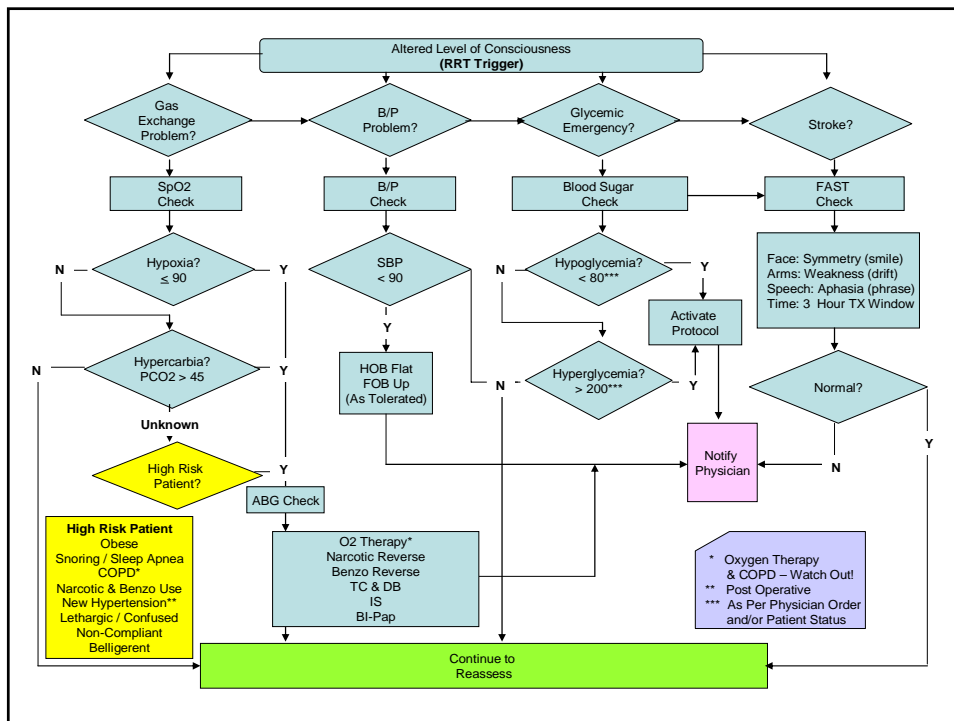
# The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Case Study

## Clinical Scene Investigation (CSI) Centennial: Stories from the Rapid Response Team Episode 1: Postoperative Respiratory Failure

The objectives of this learning activity are to:

- Describe oxygen saturation monitoring
- Discuss the indications of oxygen saturation monitoring
- List the requirements of oxygen saturation monitoring
- Discuss the limitations of oxygen saturation monitoring;
- Use the oxygen saturation to calculate hemoglobin oxygen content capacity; and
- Identify and treat post operative respiratory failure.



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Early Warning Systems
  - Early Warning Scoring Systems (EWSS)
    - Transform the patient's physiological data, using weighted criteria, into aggregate scores
    - May be used to categorize clinical deterioration and direct care
    - Modified Early Warning Scoring System (MEWS3)



Systems to  
Detect and  
Communicate  
Clinical  
Deterioration



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Early Warning Scoring Systems **ARE:**
  - Aids to good clinical judgment
  - Sensitive depending upon their complexity
  - Indicators of physiological competence & trends
  - Markers of potential or established critical illness
  - Aids to effective communication
- Early Warning Scoring Systems **ARE NOT:**
  - Substitutes for clinical judgment
  - Comprehensive clinical assessment tools
  - Indicators for immediate admission to step down or ICUs
  - Predictors of the inevitable development of critical illness
  - Predictors of overall outcome from critical illness

(Parissopoulous & Kotzabassaki, 2005)



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- **Methods**

- The MEWS was selected and refined by a multidisciplinary team based on a literature search (Subbe, Druger, Rutherford, & Gemmel, 2001), discussion of work flow impact (date entry and reporting) and a pilot study.
- Nursing staff members formed focus groups to evaluate and make recommendations for workflow and educational needs.
- Information System staff members revised the electronic documentation system (Meditech) to capture the MEWS data and automatically convert the physiological data into aggregate scores.



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- **Methods**

- Nursing staff members were educated about the purpose of the MEWS, the documentation process and the reporting expectations (trigger and trend scores).
- A report was developed for the RRT to direct and focus rounds (48 hour trending report of individual and aggregate scores pulled by date and patient name or location).
- The MEWS score is considered a monitoring activity and not an assessment activity. Non-licensed and licensed patient care staff may obtain and record the MEWS data.
- There were no additional software or hardware costs associated with implementing the electronic MEWS.



NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) - HANNA,LEE ANN

Options Edit Help

Patient AF0000025658 Medical-Surgical,News Status ADM IN Room AF.205  
 Attend Dr ADASA ADAMS,SAM Admit 03/17/08 Bed A  
 Start Date 04/07/08 at 0752 End Date 04/07/08 at 2359 Age/Sex 40 F Loc AF.TEST  
 Include A,D AS,CP,OE,PS 1:99 GRP INT Med Edit Unit# AF00001864

Vital Sign Queries21  
 04/07 0800 LAH AF0000025658 Medical-Surgical,News

Last 7 Vital Signs Entries (Past 6 days)

Date	Time	B/P	Temp	Pulse	Resp	SpO2
04/07	0752	120/70	99.0	90	20	98
04/07	0754	110/68	100.0	96	22	96
04/07	0755	100/66	100.2	100	22	98
04/07	0756	96/60	100.4	110	22	96
04/07	0757	96/58	100.6	120	24	92
04/07	0758	94/54	100.8	122	26	90
04/07	0758	94/50	101.0	126	26	88

Blood Pressure→ 80/42 BP Source→ ARM,LT-AUT  
 Temperature→ 102.8 Temp Source→ ORL  
 Pulse→ 150 Pulse Source→ MONITOR  
 Respirations→ 32 Resp Source→ OBSERVED  
 SpO2→ 80 O2 Device→ NON-REBREATHER MASK  
 LPH→  
 Neurologic Status→ T

Comment→

NATIQA NATIONAL ASSOCIATION FOR HEALTHCARE QUALITY

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NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) - HANNA,LEE ANN

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Vital Sign Queries21  
 04/07 0805 LAH AF0000025658 Medical-Surgical,News

Last 6 MEWS Entries (Past 7 days)

Date	Time	BP	PTS	HR	PTS	Rsp	PTS	Sat	PTS	Temp	PTS	Neu	PTS	Total
04/07	0754	110/68	0	96	0	22	2	96	0	100.	0	A	0	2
04/07	0755	100/66	1	100	0	22	2	98	0	100.	0	A	0	3
04/07	0756	96/60	1	110	1	22	2	96	0	100.	0	A	0	4
04/07	0757	96/58	1	120	2	24	2	92	1	100.	0	A	0	6
04/07	0758	94/54	1	122	2	26	2	90	1	100.	0	U	1	7
04/07	0758	94/50	1	126	2	26	2	88	2	101.	0	U	1	8

MEWS Score: 15 MEWS Scores have been reviewed:

MEWS score > or = 5  
 MEWS score increased

THIS IS A REQUIRED FIELD!

PREVIOUS SCORE:  
 RT

CAN BE ACTIVATED VIA PAGER 929-0484 AND ENTER RM#  
 FOR RAPID RESPONSE RESOURCE CALL: 5331

NATIQA NATIONAL ASSOCIATION FOR HEALTHCARE QUALITY

NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) u:\My Docume... Microsoft Powe... 8:08 AM

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Vital Sign Queries21  
 04/07 0805 LAH AF0000025658 Medical-Surgical,News

Last 6 MEUS Entries (Past 7 days)

Date	Time	BP	PTS	HR	PTS	Rsp	PTS	Sat	PTS	Temp	PTS	Neu	PTS	Total:
04/07	0754	110/68	0	96	0	22	2	96	0	100.	0	A	0	2
04/07	0755	100/66	1	100	0	22	2	98	0	100.	0	A	0	3
04/07	0756	96/60	1	110	1	22	2	96	0	100.	0	A	0	4
04/07	0757	96/58	1	120	2	24	2	92	1	100.	0	A	0	6
04/07	0758	94/54	1	122	2	26	2	90	1	100.	0	U	1	7
04/07	0758	94/50	1	126	2	26	2	88	2	101.	0	U	1	8

MEUS Score: 15 MEUS Scores have been reviewed+ Y

**MEUS TOTAL SCORE**

IF SCORE IS GREATER THAN OR EQUAL TO 5, OR GREATER THAN PREVIOUS SCORE:  
 Non-licensed staff-notify licensed staff  
 Licensed staff-consider a resource call or activate RRT

RAPID RESPONSE TEAM CAN BE ACTUATED VIA PAGER 929-0484 AND ENTER RN#  
 FOR RAPID RESPONSE RESOURCE CALL: 5331

Do you like to review MEUS Scoring Criteria? → Y

NATIQA NATIONAL ASSOCIATION FOR HEALTHCARE QUALITY

NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) u:\My Docume... Microsoft Powe... 8:14 AM

NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) - HANNA,LEE ANN

Options Edit Help

Patient AF0000025658 Medical-Surgical,News Status ADM IN Room AF.205  
 Attend Dr ADASA ADAMS,SAM Admit 03/17/08 Bed A  
 Start Date 04/07/08 at 0752 End Date 04/07/08 at 2359 Age/Sex 40 F Loc AF.TEST  
 Include A,D AS,CP,OE,PS 1:99 GRP INT Med Edit Unit# AF00001864

MEUS SCORING SYSTEM

SYS BP/PTS	HR/PTS	RESP/PTS	O2 SAT/PTS	TEMP/PTS	NEURO/PTS
<or=70=3	<or=40=2	<or=8=2	<or=84=3	<or=34.9=2	Alert=0
71-80=2	41-50=1	9-14=0	85-89=2	35-38.4=0	Reacts to voice=1
81-100=1	51-100=0	15-20=1	90-94=1	>or=38.5=2	Reacts to touch=2
101-140=0	101-110=1	21-29=2	95-100=0		Reacts to pain=3
141-170=1	111-129=2	>or=30=3			Unresp to pain=4
171-199=2	>or=130=3				
>or=200=3					

A score > or=to 5,  
 or an increasing score could indicate  
 clinical deterioration.

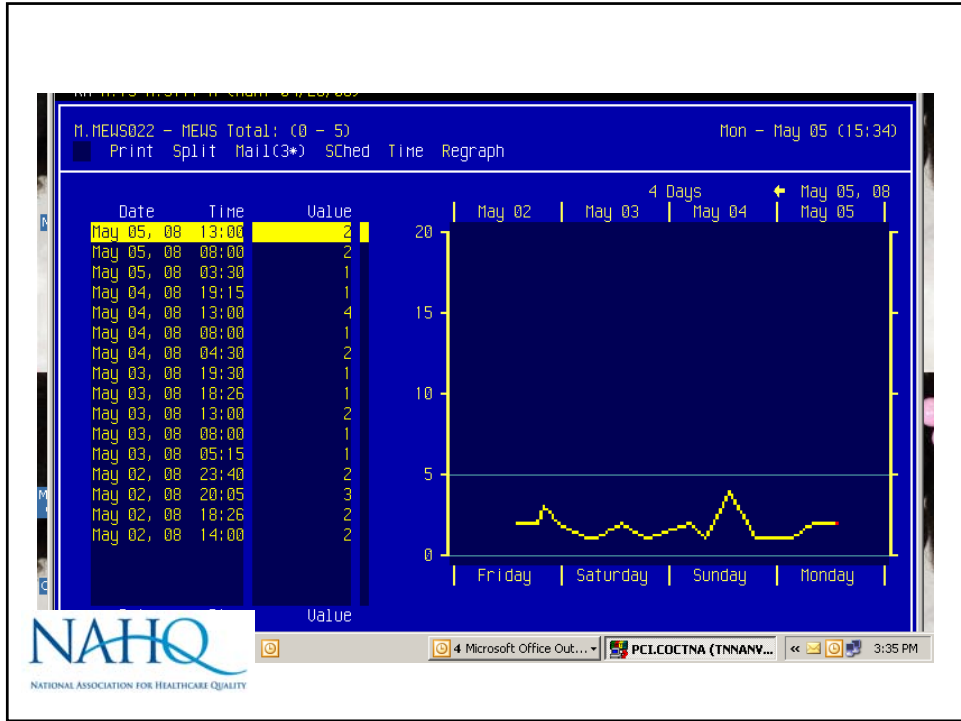
Modified Early Warning Score (MEUS) Points

Systolic BP: 80 mm Hg	: 2
Heart Rate: 150 per minute	: 3
Respiratory Rate: 32 per minute	: 3
SpO2: 80 %	: 3
Temp: 102.8F: 39.3C	: 2
Neurologic Status: T	: 2

Do you like to review MEUS Scoring Criteria? → Y

NATIQA NATIONAL ASSOCIATION FOR HEALTHCARE QUALITY

NUR.COCCD (TNNANVZA/TNA.TEST.MIS/220/COCCD) u:\My Docume... Microsoft Powe... 8:15 AM



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- MEWS Report

MON DATE: 05/20/08  
MON TIME: 1416  
MON USER: H.WEB-LAN

Centennial Med Ctr Patient Care "LIVE"  
MEWS RPT SHORT REPORT BY LOCATION

From: 05/18/08-05/20/08

ROOM	NAME	UNIT	AGE/SEX	ADMIT DIAGNOSIS	DATE/TIME	SYST BP	HEARTRATE	RESP RATE	SpO2	TEMP (F)	HRING	TOTAL
					05/19/08 0400 142	76	18	97	98.2	A		1
					05/19/08 0800 141	75	20	95	98.0	A		1
					05/19/08 1400 139	79	18	96	98.0	A		1
					05/19/08 2000 144	83	20	96	98.6	A		1
					05/20/08 0001 129	81	18	93	98.7	A		2
					05/20/08 0400 139	86	20	92	98.6	A		2
					05/20/08 0743 148	90	22	92	98.6	A		3
					05/20/08 1200 148	87	20	94	98.1	A		2
H.7101			75 F		05/18/08 0000 112	71	18	94	98.0	A		2
					05/18/08 0400 111	64	18	97	97.0	A		1
					05/18/08 0800 122	60	18	97	97.8	A		1
					05/18/08 1200 114	70	18	97	98.0	A		1
					05/18/08 2000 141	77	18	95	98.4	A		1
					05/19/08 0001 118	81	16	94	98.4	A		1
					05/19/08 0400 115	58	18	96	98.0	A		1
					05/19/08 0800 141	71	20	90	98.0	A		1
					05/19/08 2000 129	79	18	94	98.8	A		2
					05/20/08 0001 116	52	16	96	98.0	A		1
					05/20/08 0400 124	60	18	97	98.3	A		1
					05/20/08 0743 112	66	20	95	98.1	A		1
					05/20/08 1200 114	69	20	94	98.0	A		2
H.7102			53 M	DOB	05/18/08 1840 116	89	18	92	102.3	A		4
					05/18/08 2000 125	92	18	99	99.6	A		1
					05/19/08 0001 134	92	15	100	101.2	A		1
					05/19/08 0400 116	74	18	100	98.5	A		1
					05/19/08 0800 124	65	22	93	98.4	A		3
					05/19/08 1200 118	64	18	100	98.4	A		1
					05/19/08 1600 133	75	18	100	98.0	A		1
					05/19/08 2000 140	116	22	90	102.9	A		4
					05/20/08 0001 123	109	20	97	101.8	A		4
					05/20/08 0400 101	71	17	93	97.3	A		2
					05/20/08 0743 95	64	20	90	97.5	A		3
					05/20/08 1200 98	74	20	94	97.4	A		3

**NAHQ**  
NATIONAL ASSOCIATION FOR HEALTHCARE QUALITY

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- RRT MEWS Alert

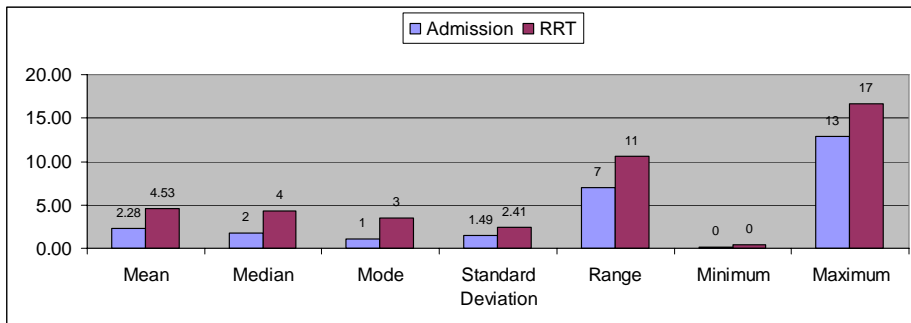
```

*****
PATIENT HAS MEWS SCORE GREATER THAN OR EQUAL TO 5

Name: ██████████
Unit: M.T5           Room #: M.5101
    
```



MEWS2 Score Change from Admission to RRT Call (Average)



**Unpaired t test results**  
**P value and statistical significance:**  
 Two-tailed P value is less than 0.0001  
 Difference is statistically significant.

**Intermediate values used in calculations:**  
 $t = 23.0465$   $df = 1968$   
 standard error of difference = 0.095

Group	ADM MEWS2	RRT MEWS2
N	967	1003



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Ongoing Challenges
  - Change Process
    - Culture
    - Documentation
  - Information System
    - Computer - Limitations of Meditech (Downtime)
    - People - Prioritization of other facility work
    - People - Prioritization of facility versus market and divisional work
- Ongoing Challenges
  - Documentation
    - Accuracy
    - Feed
      - Automated
      - Hand
    - Completeness
    - Correction
    - Timeliness



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

- Future Improvement
  - Automation
    - Alerts (auditory)
    - Nursing Dashboard
    - Physician Rounds Report
  - Bundles Work
    - Sepsis
  - Establish reliability and validity of MEWS
- Future Improvement
  - Incorporate oxygen carrying capability on RRT report
  - Incorporate MEWS into decision making
    - Triage
    - Placement
  - Implement Pediatric MEWS score



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

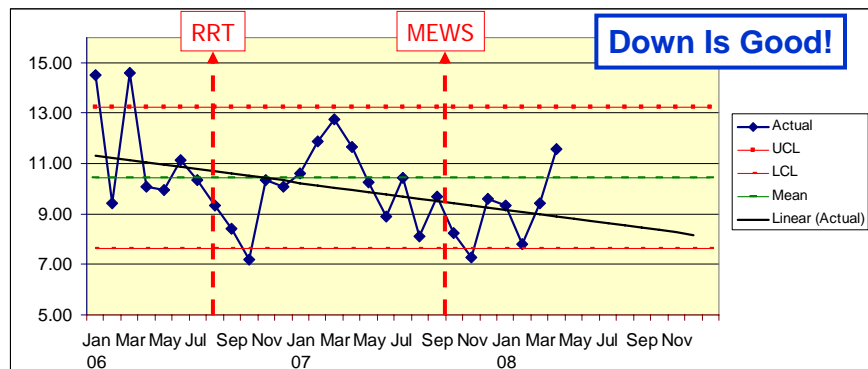
### MEWS Case Study

Day	Time	SBP	MEWS	HR	MEWS	RR	MEWS	SpO2	MEWS	T	MEWS	Neuro	MEWS	Total MEWS
1	1325	121	0	65	0	20	1	93	1	97.9	0	A	0	2
1	1750	179	0	64	0	20	1	94	1	97.4	0	A	0	2
1	2000	192	0	85	0	26	2	94	1	97.4	0	A	0	3
1	2045	182	0	97	0	20	1					A	0	
1	2339	130	0	99	0	20	1	92	1	98	0	A	0	2
2	0450	102	0	109	1	20	1	92	1	98.4	0	A	0	3
2	0720	77	2	122	2	22	2	90	1	99.5	0	A	0	7



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

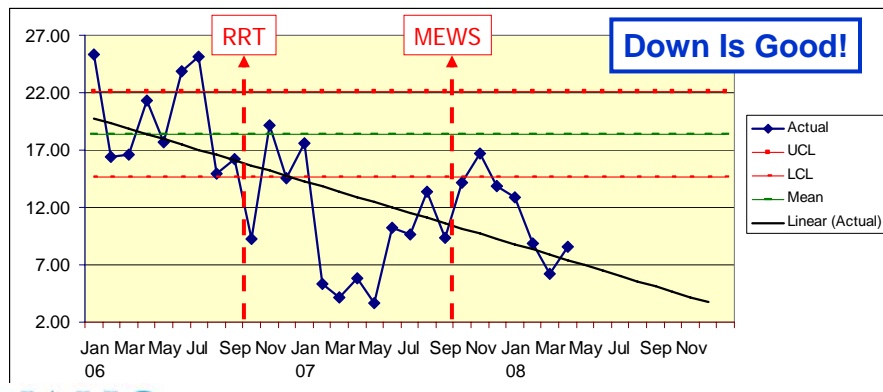
Unplanned Transfer to ICU Medical-Surgical Rate\*  
(4, 6, 7 and 8 [End May-07] Tower; 2, 3 and 4 Parkview; 3 WH)



Number of Unplanned Transfers to  
the ICU / Adjusted Patient Days X 1000

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Unplanned Transfer to ICU Step Down Rate  
(5 and 8 Tower [Start Jun-07])

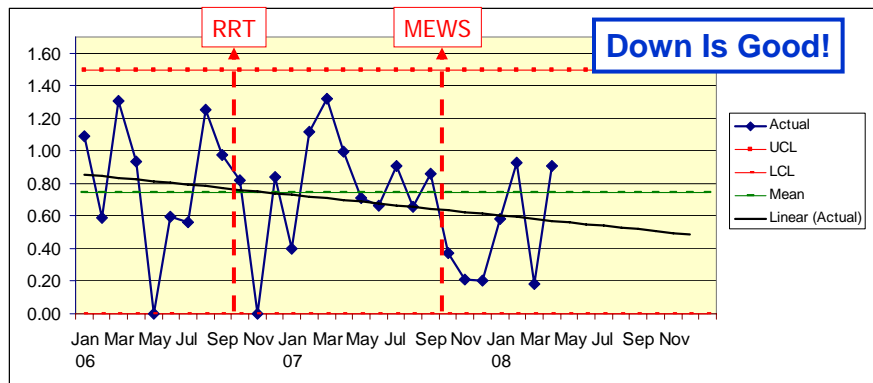


Number of Unplanned Transfers to the ICU / Adjusted Patient Days X 1000

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Mock Code Program

Code Blue Event Inpatient Medical-Surgical Rate\*  
(4, 6, 7 and 8 [End May-07] Tower; 2, 3 and 4 Parkview; 3 WH)

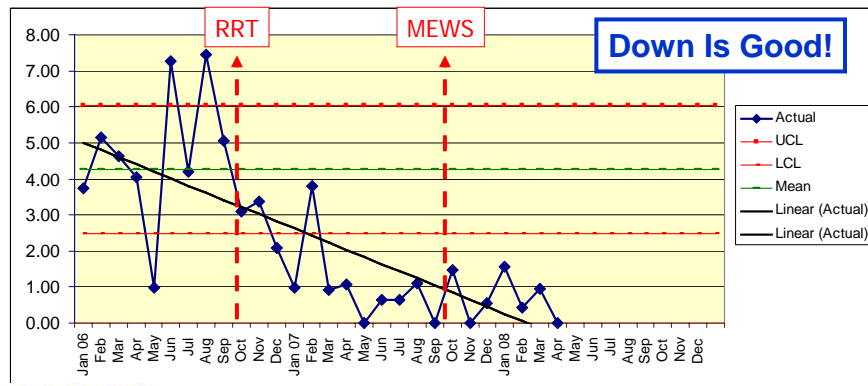


Number of Inpatient Codes / Adjusted Patient Days X 1000

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Mock Code Program

Code Blue Event Inpatient Step Down Rate  
(5 and 8 Tower [Start Jun-07])



Number of Inpatient Codes /  
Adjusted Patient Days X 1000

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

IHI Indicator	Q1-07	Q2-07	Q3-07	Q4-07	Q1-08
RRT - # time RRT deployed	91	119	179	233	298
RRT - Codes/1000 discharges	9.91	7.19	7.46	6	10
RRT - % codes occurring outside ICU	25.37	23.91	20.34	15.69	22.22

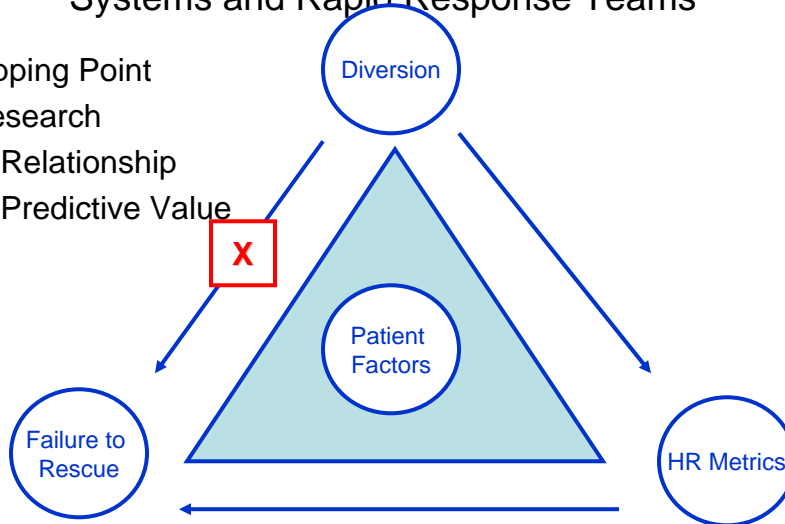


- IHI RRT Conference Call (May 18) 20-25 RRT Calls / 1000 Discharges
- IHI Q1-08 – 23 – 24 RRT Calls /1000 Discharges

## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

Tipping Point  
Research

- Relationship
- Predictive Value



## The One-Two Punch: Early Warning Scoring Systems and Rapid Response Teams

### Acknowledgments

- Members of the MEWS Development Team, Members of the Rapid Response Team, Members of the HCA Centennial Medical Center Nursing and Physician Staff

### References

- Parissopoulos, A., & Kotzabassaki, S. (2005). Critical care outreach and the use of early warning scoring systems: A literature review. *ICUS NURS WEB J*, 21, 1 – 13.
- Subbe, C., Druger, M., Rutherford, P., & Gemmel, L. (2001). Validation of a modified early warning score in medical admissions. *Quality Journal of Medicine*, 94 (10), 521-526.