Rapid Response Teams and Impact on In-House Cardiac Arrests

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Learning Objectives

- Review the impact of rapid response teams on the incidence of in-house cardiac arrest
- Compare and contrast various rapid response models

INSTITUTE FOR HEALTHCARE IMPROVEMENT (IHI) initiated the 100,000 Lives campaign in December 2004 which encouraged hospitals to take steps to reduce harm and deaths.

Goal: To introduce proven best practices across the country to reduce morbidity and mortality

A central focus of this initiative encouraged hospitals to create a Rapid Response Team which would be deployed at the first sign of patient decline.

Rapid Response Teams have been shown to decrease hospital cardiopulmonary arrests by 17% (DeVita et al., 2004) and have reduced non-ICU cardiac arrests by 50% (Buist et al., 2002)

National Patient Safety Goals

Instituted by The Joint Commission in 2007: Requires hospitals to have a process to recognize and respond to patients whose condition appears to be declining.

Rapid Response Teams are designed to respond to unstable patients and triage, treat and transfer. RRT brings ICU to the non-ICU areas of the hospital and attempts to stabilize the patient and avoid cardiac arrest.

"Institute of Medicine (IOM) estimated that as many as 98,000 people die in U.S. hospitals each year due to medical injuries."

"FAILURE TO RESCUE"

"Failure to Rescue" was coined by Dr. Jeffrey Silber in 1992 to describe patients who died as a result of delayed or inadequate response to a post-surgical event. The term is not meant to imply negligence but is a measure of the overall performance of a hospital (Silber, Williams, Krakauer, & Schwartz, 1992).

According to a 3 year HealthGrades Quality Study (July, 2004), Failure to Rescue accounts for 60,000 deaths each year in Medicare patients under the age of 75 (Kremsdorf, 2005).

"The timely and appropriate response of the hospital is strongly related to the quality of care provided" (Silber et al., 2007)

Creation and Function of a Rapid Response Team: Reducing Morbidity and Mortality

4 Limbs of Rapid Response

- Administrative Limb- where it all begins
- Afferent Limb- crisis detection or trigger
- Efferent Limb- bringing ICU to the bedside
- Evaluative Limb- Assess system and improve

ADMINISTRATIVE LIMB

- Typically consists of administration and managers, but may also include attorneys, patient advocates and associations.
- Involves the planning, implementation and maintenance phases of the Rapid Response System.
- Focuses on governance and administration of the RR system.

Administrative Decisions

Choose and support a model. Obviously there are costs associated with implementing a team but also some financial and functional benefits:

- Avoid unnecessary use of ICU beds by first assessing patient needs and triaging appropriately. Rapid Response Teams have been shown to decrease the number of unnecessary transfers to a higher level of care by a mean of 30% (Goldhill, 1999)
- Prompt action to stabilize a patient in a non-ICU setting can avoid a more costly and labor intensive cardiac arrest.
- Identify at-risk patients and triage, treat and stabilize before the severity of the patient's condition worsens, leading to longer ICU stays.
- Can present an opportunity to address a patient's code status prior to an arrest event.

Administrative Limb

The Rapid Response Model is chosen by Hospital Administration.

- Medical Emergency Team (MET)
- Rapid Response Team (RRT)
- Critical Care Outreach Team (CCO)

Medical Emergency Team (MET)

Team is capable of "full" critical care capabilities and can:

- Prescribe therapy
- Perform advanced airway skills
- Establish central lines
- Able to begin ICU level care at bedside

METs teams are physician-led and are common in North America, Australia and New Zealand.

Rapid Response Team (RRT)

An Intermediate-approach Team which can:

- Rapidly assess patient needs
- Begin basic care to stabilize the patient
- Rapidly triage patient to a safer care setting- either Intermediate or Intensive Care Unit

This team is usually Nurse-Led and is the most common Rapid Response Model used in the United States. It is less expensive than supporting a Medical Emergency Team (MET) which is physician-led and reduces unnecessary transfers to ICU's while producing impressive decreases in non-ICU cardiac arrests.

Critical Care Outreach Team (CCO)

Typically found in the British health care system, it includes:

- A model of response to a crisis
- A system to identify and treat deteriorating patients

This team is usually Nurse-Led but may also be Physician-Led.

Administrative Limb: Reducing Cardiac Arrests

Creating, Implementing and Supporting a Rapid Response Team is a crucial step in reducing Failure to Rescue and avoiding non-ICU Cardiac Arrests

Afferent Limb Impact on Reducing Non-ICU Cardiac Arrests

The Afferent Limb of Rapid Response focuses on triggers which activate the team and processes to provide early detection and intervention of patients in crisis.

Early recognition and intervention are crucial in reducing non-ICU cardiac arrests and improving patient outcomes.

AFFERENT LIMB= CRISIS DETECTION AND TRIGGER

The Afferent Limb is the most challenging.

Bedside staff are the crucial front line of the Rapid Response Team and should be empowered to call a Rapid Response whenever they are concerned.

Bedside Staff Challenges

Bedside nurses and staff may:

- Be unaware of changes
- Be unable to identify at-risk patients as their condition begins to decline
- Lack confidence to advocate for the unstable patient
- Be intimidated by physicians who discourage calling the Rapid Response Team

Diverse medical crises share common characteristics

Many impending crises including respiratory and cardiac events, sepsis, hypovolemic shock, etc. all present with similar changes.

WARNING SIGNS:

- Change In Heart Rate And/Or Respiratory Rate
- Decreased Blood Pressure
- Confusion Or Other Mental Status Changes
- Decreased Urinary Output

Vital Signs

Vital signs are the primary identifier of a failing patient and:

- Are often delegated to patient care technicians and less experienced staff
- May be recorded long after the signs are taken
- May be recorded in error (is the patient's respiratory rate *really* 20?)
- Busy nursing staff may not have the opportunity to carefully review the recorded vital signs to assess for subtle changes and trends.

MENTAL STATUS CHANGE

Changes in mental status often occur in the declining patient but may not be recognized or appreciated by busy staff. Will staff notice that someone is calling them less often? Less organized in their thought processes?

Staff may attribute the altered mental status to medications, procedures, unfamiliar environment, stress, etc

If the bedside staff does notice a significant change, will they be able to articulate the change to the physician? And will the physician investigate the change?

AFFERENT IMPROVEMENT

- Educate bedside staff, patients and family members to observe for changes and empower to alert the Rapid Response Team.
- Identify specific patient risks and establish programs for early identification and intervention including cardiac events, stroke events and sepsis.
- Utilize computerized charting of assessments and vital signs to create programs/alarms when criteria are met to enhance early intervention. It is imperative to use every tool available to reduce morbidity and mortality.

PROCESS IMPROVEMENT

Does your facility have a system or process in place to identify and respond to:

- Cardiac events
- Neuro events
- New onset sepsis

Each of these can contribute to cardiac arrests in non-ICU patients

Cardiac Events (Code STEMI)

Is there a formal process which can be activated when a patient complains of chest pain?

- Does your hospital have a cardiac catheterization lab? Does your hospital have cardiovascular surgery capability?
- If not, is there an established plan to move cardiac patients promptly to a higher level of care/nearby facility to improve outcomes?
- If the patient needs to be transferred, is there an order set to provide early intervention prior to transfer in order to maximize patient outcome (aspirin, oxygen, morphine, heparin, etc)?

Neuro Events (Code Stroke)

Is there a formal process which can be activated when a patient displays signs/symptoms of a neuro event?

- Is your hospital a Stroke Center?
- Is there an established plan to move stroke patients promptly to a higher level of care (HLOC) to improve outcomes?
- If a patient needs to be transferred to another facility, is there an order set for prompt intervention prior to the transfer to maximize the patients outcome?

EARLY SEPSIS INTERVENTION

Each hour of delay in recognizing and treating sepsis shock increases the risk of patient death by 8%.

Your facility should have established Early Goal Directed Therapy guidelines for Sepsis intervention. If there isn't, please work on it.

Computerized charting and the St John's Sepsis tool is utilized at my employing hospital. The computer constantly scans for specific markers and notifies the bedside nurse and the Rapid Response Nurse with concerns about evolving sepsis based on charted vital signs, labs, etc. Use the benefits of computerized charting to protect your patient population.

ANOTHER THOUGHT…

A very real but seldom discussed attribute of the Rapid Response Team is assisting the physicians and patients/families to discuss the patients code status prior to a cardiac arrest.

Cardiac arrests are aggressive, most often painful (think of broken ribs) and do not change the underlying disease or condition.

If a patient has stage 4 cancer, arrests and is resuscitated, he still has stage 4 cancer but now he also has broken ribs and is on a ventilator, restrained, unable to speak or eat.

The Rapid Response Nurse should be attuned to patient and family wishes and be supportive, regardless of their individual views or opinions. If a problem is noted, consider contacting the Ethics Committee at your facility.

Here Comes the Calvary!!

Also Known As

The Efferent Limb of Rapid Response

RAPID RESPONSE TEAM

Rapid Response Teams (RRT) are more prevalent in the U.S. than Medical Emergency Team (MET) and include:

- Nurse (ICU level)
- Respiratory Therapist

Also may include:

EKG technician
Radiology Technician
Chaplain
Nurse Supervisor

The five characteristics of a successful team are commitment, common goals, competence, consistency of performance and communication. Excellent communication is VITAL!

RAPID RESPONSE NURSE ATTRIBUTES

- ICU skills
- Patience
- Assertiveness
- Strong clinical skills
- Good interpersonal skills
- Ability to multi-task
- Ability to accurately assess and describe an evolving emergency via phone to the physician
- Direct bedside staff to promote best outcome
- Must "play well with others." This is not a position for a difficult, contentious nurse. That would limit staff from calling RRs and adversely affect the patient outcomes.

RAPID RESPONSE RESPIRATORY THERAPIST ATTRIBUTES

- Quickly assess respiratory status
- Draw/process/interpret an arterial blood gas, when needed
- Support airway and ventilation until pt is intubated, if needed
- Assist designated staff with intubation, secure device, provide rescue ventilation while transporting to a higher level of care
- Obtain rapid access to ventilatory equipment in order to stabilize pt more quickly

Cavalry and Code Blue

- The Efferent limb of Rapid Response utilizes the system, protocols, experience, skills and knowledge which exists between Administration, Bedside Staff and Physicians, ICU Physicians, Nurses and other Rapid Response Team Members to obtain the best possible outcome for the individual patient.
- This is where it all comes together and the patient benefits tremendously!!

Evaluative Limb

Audit and evaluation of data is important to assess the effectiveness of the Rapid Response Team and identify areas of potential improvement which may include:

- The number of calls to the RRT
- Time to transfer to ICU (RR start to ICU delivery)
- Number of non-ICU cardiac arrests (does not include Do Not Resuscitate patients)
- Number of avoidable ICU transfers (subjective)

Ongoing analysis of the RRT is important to search for weaknesses that can be converted to Team strengths, further reducing non-ICU cardiac arrests and improving patient outcomes.

Learning Assessment Question

Implementation of rapid response teams has demonstrated which of the following outcomes:

A. Decreased incidence of inpatient non-ICU cardiac arrest in adults
B. Reduction in overall in-hospital mortality
C. Increased implementation of Do Not Resuscitate status in adults
D. All of the above

"The names of the patients whose lives we save can never be known. Our contribution will be what did not happen to them. And, though they are unknown, we will know that mothers and fathers are at graduations and weddings they would have missed, and that grandchildren will know grandparents that they might never have known, and holidays will be taken, and work completed, and books read, and symphonies heard and gardens tended that, without our work, would never have been."

Donald M. Berwick, MD, MPP
Former President and CEO
Institute for Healthcare Improvement
(Home / Engage with IHI / Initiatives / Completed / 5 Million Lives Campaign / and, page 1)

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