

## THE RESCUE PROJECT

Baystate Medical Center Abigail Orenstein, MD, MPH, FCCP, and Christine Callahan, MS, RN

In December 2004, the Institute for Healthcare Improvement (IHI) launched the "100,000 Lives Campaign" including Rapid Response Teams (RRTs) as one of six interventions to reduce mortality (Wachter, 2006). Since then, their use has spread widely throughout the United States. Their implementation was further invigorated, several years later, when The Joint Commission (TJC) included the concept of rescue among the 2008 National Patient Safety Goals. The expectation was clear, hospitals were to "improve recognition and response to changes in a patient's condition" (Goal 16); how they were to achieve this, however, was not. Although many institutions formed teams of clinicians with critical care expertise to rescue patients prior to cardiac arrest, TJC did not explicitly mandate the creation of a dedicated RRT per se, nor delineate their scope and design. Rather, a list of expected performance elements was included, followed by a disclaimer that the mere existence of a team did not mean that Goal 16 was automatically achieved. As a consequence, a myriad of RRT models now fill the healthcare land-scape, each customized to the uniqueness of the individual organization it serves. Not surprisingly, this variety has generated performance data for rapid response that is also quite variable. While there is good evidence that RRTs can reduce the rate of out-of-ICU Code Blue, the data regarding their impact on mortality rates is much less consistent (Chan et al., 2010; Winters et al., 2013).

### **BACKGROUND and HISTORY**

Baystate Medical Center (BMC), in Springfield, Massachusetts, is an academic, research and teaching hospital that serves as the western campus of Tufts University School of Medicine. It is the only Level I trauma center in western Massachusetts, treating the most critical and urgent cases in the region. The RRT at BMC serves over 716 inpatient beds as well as several outpatient services contained within its campus. Originally implemented in March 2006, the BMC adult RRT was considered a "success story" both for the positive reception it received among the staff and the reduction in out-of-ICU Code Blue witnessed (Scott & Elliot, 2009). Within the first 5 years, the cardiac arrest rate decreased by more than 50%, from 7 per 1000 patient discharges to 3 (Data reported quarterly by BMC's Division of Healthcare Quality, 2015). Employing a nurse-led model, team membership consisted of an experienced critical care nurse (team leader), a respiratory therapist, and an infusion nurse, all of whom left their primary patient care assignments to respond to RRT calls. Unfortunately, over time, significant critical care nursing shortages and increased bed occupancy brought about a deterioration in the quality of rescue support. On occasion, RRT call coverage was limited to merely "telephone triage".

In 2012, in the face of increasing concern over the sustainability of BMC's RRT Program, as well as a projected downward trend in the overall clinical years of experience of bedside nursing, the institution, prompted by Patricia Samra, MS, RN, Director of Clinical Workforce Planning and Finance, made a commitment to fund 6 full-time RRT RN positions in order to provide 24/7 coverage for rescue response. (Samra now serves as nursing director of the program.) With dedicated staffing, one RRT Resource RN would be available around the clock. For the other members of the team, respiratory therapy and IV therapy, the provision of RRT coverage would continue to be an added responsibility.

As it turned out, the decision to hire "RRT Resource RNs" gave rise to much more than a new job description. It created an opportunity to not only rethink the roles and responsibilities of these nurses but, in so doing, reenvision the rescue response of the institution. The redesign of BMC's RRT became the intervention in a hospital-wide, continuous performance improvement project ("The Rescue Project") for which BMC's Department of Risk Management provided initial funding to support a program designer. The role of medical director was created to more formally include critical care medicine in program development and process improvement. Continued partnership with BMC's Division of Healthcare Quality helps to ensure that any changes are data driven.

In order to meet TJC's original goal of improving recognition and response to changes in a patient's condition, the newly hired RRT Resource RNs, themselves, realized that their scope of practice had to extend beyond response to acute calls. In their new role, they would provide surveillance for deteriorating condition as well as support for less experienced staff. In the literature, active surveillance (the afferent limb) is considered an essential component of a comprehensive rapid response system (RRS) in which acute calls are the efferent limb. In mentoring recent RN graduates, especially at night, RRT Resource RNs offer invaluable assistance with assessment, clinical decision-making and implementing changes in plan of care.



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With the rollout of the redesigned RRT in late 2013, attention was focused on promoting the expanded role of the RRT Resource RN. While all employees, clinical and non-clinical alike, and even family members, were encouraged to call acute "RRTs", nursing staff were specifically instructed to ask questions and seek support. Although the primary criteria for activating acute calls were retained, additional criteria were developed to foster earlier identification of deteriorating condition. (Alternative criteria not based on vital sign changes were also developed for use by non-RN staff in some of the outpatient settings.) The thought was that, over time, RRT consults might reduce the number of acute calls.

To introduce the new RRT program to the medical staff, the RRT medical director met with hospitalists and internal medicine residents. Onboarding for new midlevel providers on the hospitalist service was extended to include a weeklong experience on the team. With a core group of dedicated RRT Resource RNs, collaborative relationships began to take root. Included among these is the collegial relationship that has developed with the medical intensivists. Available for backup support since the program's inception, they have become increasingly involved in surveillance, rounding with the Resource RNs on intermediate care units when able.

The current day-to-day responsibilities of the RRT Resource RN include: first responder for acute RRT calls, second responder for out-of-ICU Code Blue calls, surveillance ("rounding") throughout the institution, follow-up visits for patients transferred out of intensive care (to decrease recidivism), and education and mentoring of staff RNs. When simultaneous calls occur, the RRT RN coordinates triage. To enhance their accessibility, the RRT Resource RNs decided to wear bright red uniforms as well as carry a consult phone. Where there may have once been anxiety over paging what might not have been an "appropriate" acute call, the same barrier to rescue does not exist in relation to calling the consult phone. Since introducing the consult phone, its use has increased exponentially. In a 12-hour shift, receiving 10 to 12 calls is commonplace. Moreover, RRT now routinely provides clinical support to medical staff, particularly those who are new to the institution.



With redesign, acute calls soared to more than 300 per quarter, representing a 100% increase as compared to prior. In the last year, acute calls have decreased with consultative work representing a rapidly growing portion of the team's work-load. Capturing this increase in meaningful data remains a challenge.

When a RN initiates an acute call (an "RRT"), the patient's covering physician is paged as well. Prior to redesign, RNs called the majority of "RRTs". Over the past year, as the acuity of non-ICU patients has continued to increase, there has been a growing recognition among physician staff of the need for critical care nursing expertise outside the ICU. Whereas previously an RRT acute call may have been associated with a perceived failure of care, increasingly, it has come to be viewed as an assertive response to a patient in crisis. Although the rapid response team itself is nurse-led, each acute response is meant to be a collaboration between the covering physician and the RRT RN. The physician, while not an official member of the "team", is integral to the rescue process; a process which the RRT RN facilitates. Physicians now not only initiate "RRTs" themselves, but call on the RRT Resource RNs to "check on" patients of concern.

The ongoing success of rapid response at BMC is in large measure a direct result of the individuals who were carefully selected to become RRT Resource RNs. The importance of the depth and breadth of their critical care expertise cannot be understated. Education-wise, the full-time RRT Resource RNs are all baccalaureate-prepared, two are Master's prepared, and several hold added certifications in their specialty. Experience-wise, there is a mean of 12 years of ICU or ED (trauma trained) experience among them. Skill-wise, they all have a demonstrated record of excellent communication skills and leadership ability. "Traveling" nurse educators, they must be highly approachable, willing and able mentors. In addition to the full-time staff, a cadre of other critical care nurses has been cross-trained to the RRT resource role in order to have a per-diem pool for staffing coverage.



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## IMPACT

In terms of traditional performance measures, the impact of rapid response at BMC is best seen in relation to Code Blue rates. While there are natural variations each quarter, the total Code Blue rate for the entire institution has progressively declined since the introduction of RRT in 2006. In 2005, the mean rate was 6.88/1000 patient discharges. Since 2009, the mean rate has been less than half that (3.02/1000 patient discharges). Out-of-ICU Code Blue events have also declined. With original implementation, they decreased by approximately 25%. Since redesign, out-of-ICU Code Blue events are down even further.

The real impact of RRT redesign at BMC may be best assessed in terms of the original goal JCAHO set forth to "improve recognition and response" to patients with deteriorating condition. Through the surveillance and consultative roles of the RRT Resource RNs, patients are identified earlier in their downward trajectory, thereby averting RRT acute calls in some cases and ICU transfers in others.



## **FUTURE DIRECTIONS**

Going forward, there are certainly many opportunities for improvement in rescue response at Baystate Medical Center. It is evident that a change in culture is underway and will be essential to this process. Only by continuing to encourage every staff member to embrace rescue and utilize the resources of RRT, will measurable improvements in patient care be realized.

## REFERENCES

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## MEMBERS OF BAYSTATE MEDICAL CENTER'S RAPID RESPONSE TEAM



Pictured sitting from Left to Right: Kristin Fournier, BS, RN; Mandy Ritter, MS, RN, CCRN.

Pictured standing from Left to Right: Maura Ford, BSN, RN, CCRN; Christine Callahan, MS, RN (Program Designer); Lisa Mayo, BSN, RN; Khristine Morin, BSN, RN; Denise Moroney, BSN, RN.

Not pictured: Victoria Antwi-Boasiako, BSN, RN, TNCC; Gregory Krach, BSN, RN, TNCC; Deana Gasperini, BS-C, RN, CAPA; Erik Lawrence, BS, RN, CCRN; Noelle Little, BS, RN; Dawn Sanders, BS, RN; Stephanie Sneath, AD, RN; Abigail Orenstein, MD, MPH, FCCP (Medical Director); Patricia Samra, MS, RN (Nursing Director).



Baystate Medical Center Rescue Project (Continued from page 3)

# Ten Steps to Success



Page"99778"	
Criteria for calling the RRT-Acute Call	<ul> <li>Acute change in heart rate &lt;40 or &gt;1308PM</li> <li>Acute change in systolic blood pressure &lt;90mmhg</li> <li>Acute change in respiratory rate &lt;8 or &gt;28 BPM</li> <li>Acute change in O2 saturation &lt;90% despite supplemental O2</li> <li>Acute change in mental status</li> <li>Staff member is worried about a patient</li> </ul>
Contecting RRT for -Acute Cell	RRT is available 24/7 via web paging 99778     We will be at bedside w/in 5 minutes
Role of Staff RN	<ul> <li>Stay with your patient</li> <li>Take VS and obtain O2 Sat</li> <li>Verify that MD was notified</li> <li>Provide RRT with Patient information</li> </ul>

Figure 1

Figure 2



## Safer Health Care Through Transparency

The following Lucian Leape Institute report is a "must read" for health care facility governing board, administrative and medical staff leadership: Shining a Light. Safer Health Care Through Transparency is available at the National Patient Safety Foundation website: <u>http://www.npsf.org/?shiningalight.</u>

## BETH ISRAEL DEACONESS MEDICAL CENTER FRONTLINE CLINICIAN ENGAGEMENT VIA A HOUSESTAFF QUALITY IMPROVEMENT COUNCIL

### Background

Though quality improvement (QI) and patient safety (PS) are part of the culture at BIDMC, engaging residents and fellows at the front line has been limited due to busy schedules and unclear mechanisms for involvement. To address this need, the HouseStaff Quality Improvement Council (HSQIC) at BIDMC was launched in 2013 to provide our residents and fellows opportunities to participate in quality improvement and patient safety initiatives.

### Our Mission

The HSQIC diamond (Figure 1) represents the 4 key roles of the HSQIC mission.

- To provide multidisciplinary clinician evaluation and feedback to administration QI/PS projects (termed the "HSQIC Consult");
- 2. To engage housestaff in formulating and leading their own QI/PS projects;
- 3. To teach an educational curriculum about QI & PS to all interested housestaff;
- 4. To foster career development through active engagement in QI/PS projects with direct access to experts and leadership.



Figure 1: The HSQIC Diamond – 4 pillars of HSQIC's mission statement

## Membership, Leadership and Operations

HSQIC is currently composed of 72 residents and fellows from 16 different training programs at the institution. The group meets monthly to teach QI principles, complete HSQIC Consults, and work on internal projects. Five housestaff compose the group leadership with two faculty advisors who provide guidance, mentorship, and expertise. The council reports to two executive sponsors (Chief Quality Officer and Director of GME). The housestaff leadership of HSQIC manages its own operations.

## **HSQIC** Consults

A HSQIC Consult can be generated by any member of the BIDMC community as a method to obtain multidisciplinary housestaff evaluation and feedback on a QI or PS project. A Consult consists of a presentation during meetings that describes the problem and proposed solution. Each consult must include a specific question to the group and is not meant to merely inform. Consults are classified as short, medium, or long depending on scope. A short Consult may seek a simple 'yes or no' response to a proposal, while a long Consult may become an ongoing effort headed by HSQIC members. To date HSQIC has finished 15 Consults, with universal praise for the feedback provided and many implemented changes resulted.

## **HSQIC** Projects

HSQIC has undertaken three internally driven projects over the past two years of operation. The first completed project was an initiative to understand barriers to adverse event and error reporting amongst housestaff. Significant barriers included lack of knowledge regarding what and how to report, skepticism in the system to induce tangible change, and fearing negative repercussions. The two other projects are currently in progress; one involves changing housestaff workflow to incorporate a HIT tool to reduce common delays in inpatient hospital care, and the other focuses on reducing overutilization of low-value send-out diagnostic testing.

## QI/PS Education

Membership feedback year over year demonstrates the main reason for voluntary engagement with HSQIC is the opportunity to learn about QI and PS. At each meeting, a 15 minute "QI Toolbox" module is taught and then project work is aligned so that the module is used to move projects forward. Examples of modules include: techniques to arrive at group consensus; creating a project charter; understanding the IOM's 6 dimensions of quality; making and using fishbone and affinity diagrams; and performing a stakeholder analysis.



## FIRST

#### (Continued from page 5)

#### QI/PS Career Mentorship

The final role builds on HSQIC's link with the faculty advisors, executive sponsors and hospital QI/PS leadership. As the group's integration with institutional QI/PS projects grows, so do the opportunities for mentorship and networking. Faculty advisors and sponsors are available to provide career advice and review QI Portfolios. Previous members have obtained QI roles due in part to their work with HSQIC. For instance, three members have been accepted into the Harvard Medical School Patient Safety and Quality Fellowship, funded by The Risk Management Foundation of the Harvard Medical Institutions Inc., (CRICO).

#### Future Direction

Our organizational model has provided a clear mechanism for BIDMC to quickly connect with frontline trainees from all departments and divisions, and for frontline trainees to engage in institutional priorities. We hope that HSQIC's integration into BIDMC will solidify and grow, while our members benefit from education, opportunities to get involved in projects, and career mentorship. In the future, we aim to track internal metrics of success and publish results from our projects, work and group experience.

David Lucier MD, MBA (Chair, Co-Founder) – HMS Patient Safety and Quality Fellow, BIDMC Andrew Hale MD (Vice-Chair, Co-Founder) – Infectious Disease Fellow, BIDMC John Torous MD (Vice-Chair) – Psychiatry Resident, BIDMC Luisa Solis-Cohen MD (Vice-Chair) – Neurology Resident, BIDMC Samir Jani MD (Vice-Chair) – Anesthesiology Resident, BIDMC Patricia Folcarelli RN, PhD – Director of Patient Safety, BIDMC Anjala Tess MD (Faculty Advisor, Co-Founder) – Director of HMS Patient Safety and Quality Fellowship

For all correspondence, please contact David Lucier: dlucier@bidmc.harvard.edu

## LESSONS LEARNED WHEN THE POWER GOES OUT

Cambridge Health Alliance Denise Peterson, RN, CPPS, Sr. Director Risk Management and Patient Safety James LaPlante, Sr. Director Technology and Biomedical Engineering Mary Samost, RN, DNP Associate Chief Nursing Officer Christian Lanphere, PhD, FP-C, NRP, CEM Director of Emergency Management & CHA Safety Officer

Did you ever start your day well organized, planned out and anticipating the weekend, only to have the day turned upside down? Cambridge Health Alliance (CHA) had such an event on Friday, April 18, 2014 when our power failed. CHA's out-sourced data center experienced a catastrophic power failure that impacted all of CHA's electronic systems, electronic resources, paging systems, emergency notification systems, networks, and remote site phone systems. The power failure not only affected CHA, but also impacted 14 other customers. This event occurred despite significant investment in fault tolerant servers, dual power, distributed network, and multiple layers of redundancy.

On the morning of our power failure, staff first reported difficulty with the informatics systems followed by an inability to use any informatics system. Staff could not page physicians, senior leaders, or ancillary departments for assistance; could not access Pyxis for their medication administration; and could not access EPIC, CHAs electronic medical record. Other key information was also not available, such as the physician-on-call list, staff nurse work schedules, and communication through routine electronic pathways.

Senior leaders in the organization rounded on the various units and clinics to address and reassure staff's anxiety while the organization coordinated a unified response. A Code Triage (hospital-wide disaster notification) was initiated:

- CHA Incident Command managed the event as it unfolded;
- Staff replaced on-line activity with paper, and runners were used per our downtime procedures;
- IT liaised with CHA corporate command to manage IT and operational issues;
- IT and Informatics staff were deployed to acute care sites (Cambridge and Whidden Hospitals) to support staff;
- Pharmacy, Lab and other testing areas segregated all paper/faxed orders for input when systems became available;
- Risk Management alerted the Department of Public Health and tracked reports of any potential incidents/patient impact and concerns for review.



#### (Continued from page 6)

There were significant clinical and patient safety concerns that needed to be rapidly addressed. Immediate leadership rounding began to reassure staff and refocus them on caring for patients. Volunteers and students acted as "runners" for orders going to the lab, radiology, pharmacy and other ancillary services. All electronic medical record documentation reverted back to the paper-based back up process. Nursing leaders rounded frequently to update staff and answer questions and physician/nurse huddles were increased in order to check in and address changes in treatment planning.

As with an unexpected adverse clinical event, there were lessons learned:

## Patient Safety

The need for an immediate assessment of patient census in all areas (especially Critical Care, OR, and Labor and Delivery) in order to:

- Identify OR procedures in progress and assess for safety to continue;
- Identify any need to transfer patients out of the system;
- Cancel and reschedule non emergent procedures;
- Assess adequacy of clinical staff and resources;
- Immediately review impact if an adverse event were to occur, including keeping staff and patients informed, with reassurance that care will continue; and
- Regularly scheduled Hospital Incident Command System (HICS) and DPH updates.

## Communications

- A central, accurate, up to date list of all key Incident Command players and their cell phones needs to be created and maintained (CHA's is maintained by Emergency Preparedness).
- Each department needs to maintain a complete, up to date phone tree cascade.
- There needs to be a back-up external communication tool (CHA uses Amerilert Communication System).
- There needs to be a process to maintain updated staff contact info in RN staffing offices and departments.
- HICS charts need to be updated asap and regularly with any staff changes.
- Determine what information could be automatically downloaded, refreshed and accessible.
- The OBIX fetal central monitoring system goes through Epic; if Epic goes down, you need the ability to flex up staffing immediately on L&D to 1:1.
- Each department needs to have a printed list of On Call schedules each day for several days out, not solely kept within departments on-line.
- A comprehensive set and standard location for policies on each unit needs to be determined.
- Central Incident Command (IC) call-in and password use was restricted to IC.

## Information Technology

- Having a computer system with 99.995% uptime still leaves potential downtime.
- Assess and recognize how disruptive the loss of networking/telecom can be to staff, patients and families.
- Preparation pays off: our Epic Disaster Recovery and Disaster Recovery planning/strategy worked and helped recover our systems with minimal impact on patient safety. The annual Disaster Recovery Tests proved to be adequate. By using technology and techniques that were part of daily routine, staff were prepared to respond to unique, unforeseen challenges that may occur in any downtime event.
- The need to have understanding and mastery of the equipment and technologies in our data center was highlighted; this is what enables you to flex and respond to such unexpected events.

Most important: DRILL, DRILL, DRILL, TEST, TEST, TEST!

Within 28 hours all systems were restored and no data was lost. All major systems that were impacted, including hardware damage, were replaced. Staff were well informed, resulting in safe, calm, professional interactions with patients and each other during the downtime. Acknowledging everyone's efforts during such a difficult event is as important as the work to get systems back up and running smoothly.

As CEO Patrick Wardell noted: "In the days following the outage, I have heard many examples of people going above and beyond their roles to ensure we were able to provide the best care possible for our patients in what were highly unusual and difficult circumstances. This type of commitment is a hallmark of our workforce here at CHA, and it truly makes me proud to lead this organization. Thank you for your efforts. "



## FIRST

#### "EXAMPLES" OF EVENTS DESCRIBED IN SAFETY AND QUALITY REVIEW (SQR) REPORTS

- Intraoperative code (review of management)
- · Respiratory compromise related to oversedation
- Bleeding post TPA administration
- Foreign object ingestion by patient on psychiatric unit
- Cardio/respiratory arrest during cardiocentesis
- Aortic dissection (review of diagnosis and management)
- Respiratory compromise associated with mucous plug (ventilated patient)
- Pneumothorax after NUSS procedure/Pectus Excavatum
- Myocardial infarction (Rehabilitation hospital review of diagnosis and management)
- Splenic injury during colonoscopy
- Pathologic fractures (review of positioning/lifting of fragile patients)
- Post operative wound infection (review of diagnosis and management)

#### "LESSONS LEARNED" FROM SAFETY AND QUALITY REVIEW REPORTS

- Following implantation of the wrong size lens during cataract surgery, one health care facility implemented an independent and separate "Lens Time Out." This time-out is done by the ophthalmologist and members of the surgical team before the physician scrubs for surgery. Two independent sources, the order and formal exam notes from the physician's office record, are used to verify the correct lens.
- Following a suicide attempt by a patient at a rehabilitation hospital, a Suicide Precaution/Prevention Policy was implemented. At admission, all patients are screened by the nursing staff for psychosocial issues and suicide ideation. The results of this initial screening are helping to identify those patients who require psychiatric consultation and a more comprehensive assessment.
- An improvement measure identified and initiated following the review of an obstetrical emergency: all clocks in Labor and Delivery and the operating rooms are synchronized to the hospital's network time. This initiative is being spread throughout the hospital as units are wired for synchronization.
- An environmental assessment of this hospital's inpatient psychiatric unit was conducted following an attempted suicide by hanging from a closed bathroom door. Following this review, several inches were removed from the tops and bottoms of all bathroom doors. This will prevent future similar events while still allowing for patient privacy.

#### "TIP" FOR SAFETY AND QUALITY REVIEW REPORTS

Demonstrate your health care facility's "transparency" in the Safety and Quality Review report by including a description of the information that was provided to the patient and/or family following your review and analysis of the reported event. Show how you are involving patients and family members in your Root Cause Analyses and other investigatory processes.

#### "TIP" FOR SEMI-ANNUAL REPORTS

Include information about how your health care facility is engaging patients and families through your Patient Family Advisory Council or otherwise. Describe how your health care facility is providing patients with the information they need to make informed decisions about their care. Share how your health care facility is working to ensure that transparency is an essential element of your culture of safety.

The QPSD recently published the following Advisory: Colonoscopy – Considerations for the Elderly Patient.

http://www.mass.gov/eohhs/docs/borim/physicians/pca-notifications/colonoscopy-advisory.pdf. A comprehensive review of a colonoscopy complication should include an evaluation of the: patient risk assessment; informed consent process; patient instructions and oral preparation; type of sedation; technical aspects of the procedure; adequacy of post procedure instructions; appropriateness of the setting (hospital/ satellite); timeliness of diagnosis and management of the complication; and provider volume and complication data.

#### **CONTACT THE QPSD**

To be added to the QPSD Newsletter and advisory mailing list, update hospital contact information, submit an article, request an SQR form, or obtain additional information, contact QPSD: Jennifer.Sadowski@state.ma.us or (781) 876-8296.

The QPSD Newsletter, FIRST Do No Harm, is a vehicle for sharing quality and patient safety initiatives of Massachusetts healthcare facilities and the work of the Board's Quality and Patient Safety Division and Committee. Publication of this Newsletter does not constitute an endorsement by the Board of any studies or practices described in the Newsletter and none should be inferred.