

Effect of an Advanced Practice Nurse (APN) Rapid Response Team—Utilizing a Predictive Query as an Early Warning System

Rapid Response Team: Linda Benson RN MS APRN-BC CCRN, Gabriel Pedraza MD, Jacob Ainsworth MSN NP-C, Debra Schultz MSN RN ACNP, Wendy Falkins CNRN MSN NP-C

Poster #380

Abstract

Introduction

In response to studies suggesting patient deterioration occurs hours previous to a cardiac arrest, hospitals introduced medical emergency teams (METs) or rapid response teams (RRTs) to decrease incidence of cardiac arrests and thus improve hospital mortality.

Hypothesis

Utilization of an advanced practice nurse rapid response team model would lead to a relative reduction in cardiopulmonary arrests and hospital mortality.

Methods

There are a variety of RRT models employed at hospitals nationwide. Bronson Methodist Hospital (Bronson) employs a non-traditional nurse practitioner model as the primary responder with a respiratory therapist as back up. Use of an APN model allows for a provider with advanced assessment skills, prescriptive ability and reimbursement capability. Implementation was multi-faceted including protocol development, practice agreements, and a multidisciplinary-targeted educational plan. A predictive query was developed from the hospital's documentation system to assist with the identification of patients likely to deteriorate to an arrest situation. These patients were then discussed with the charge nurses of the six medical/surgical units. Staff also identified patients of concern and paged the team accordingly.

Results

Bronson's rapid response team responds to an average of 90 calls per month. Cardiopulmonary arrests were reduced 29 percent after six months of operation and 61 percent one year after operation (p=0.0065 Mann-Whitney U test). Med/surg mortality was reduced by nine percent after the first six months and the failure-to-rescue rate was reduced by 19 percent. Ninety percent of the patients are stabilized on the floor, thus keeping open intensive care unit beds for emergency admissions and allowing for optimized throughput. Eighty-one percent of the patients survive to discharge. Bronson's program was well-received by all disciplines with a high satisfaction rating.

Conclusions

Bronson's APN Rapid Response Team was able to demonstrate significant reductions in codes per 1,000 discharges, failure-to-rescue rates, and medical/surgical mortalities. All were indicative of the efficacy and safety of this team.

Background

The goals of Bronson's Rapid Response Team are to anticipate patients with arrest potential and to help patients in the time window of clinical instability while maintaining collaboration with the attending physician.

Patients Seen by the Rapid Response Team

- Any patient that the registered nurse (RN) is concerned about!
- Abnormal vital sign parameters for airway, breathing, circulation, neurological
- Query list from Care Manager that identifies tachycardic, tachypneic, hypoxemic and hypotensive patients. Reviewed with charge nurses.

Advantages of an APN Model

- Nursing resource, support system
- Dedicated service with time spent per call ranging from 45-60 minutes
- Time to spend providing education, both anecdotal and formal, for the bedside staff nurses
- Advanced assessment skills
- Promotion of evidenced-based practice (early goal-directed therapy)
- Prescriptive ability
- Reimbursement capability

Collaboration with Attending Physician

- All protocols that have been developed by the team involve an initial contact with the attending physician
- Improved SBAR (Situation, Background, Assessment, Recommendation) communication
- If a resident was involved in a particular case, he or she would be contacted first so that a learning opportunity is afforded.

Tools

Predictive Model from Care Manager Query

- Predictive model from Care Manager to identify tachypneic, tachycardic, hypotensive and hypoxemic patients
- Proactive approach that enables us to identify patients with arrest potential as the literature supports
- Discuss with charge nurses at least once per shift and observe for corrections
- Thirty percent of patients seen have come from query and discussion with the charge nurse. The other 70 percent have been direct RN referrals.

Practice Protocols Developed

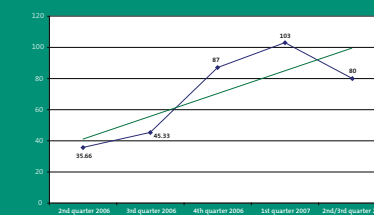
- Respiratory distress
- Hypotension
- Acute hemorrhage
- Chest pain
- Acute change in level of consciousness or focal deficit
- Hypoglycemic reaction
- Seizures
- Cardiac dysrhythmias
- Reversal agents
- Anaphylactic reaction

Outcomes

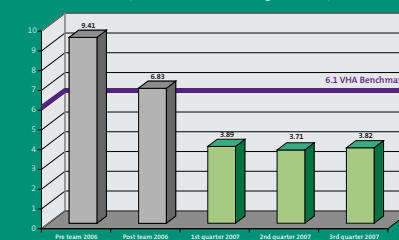
Reason for Referral

- Staff concerned about patient
- Respiratory distress
- Change in blood pressure
- Change in heart rate
- Altered level of consciousness
- Stroke
- Seizures
- Threatened airway

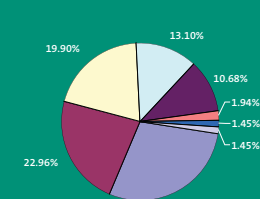
Average Number of Rapid Response Calls Per Month



Codes per 1000 Discharges (Intensive Care & Med/Surg Combined)



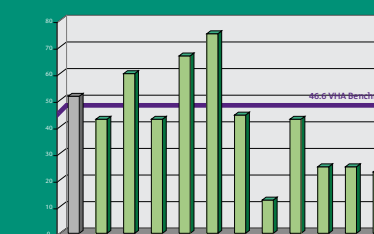
Cardiopulmonary arrests were reduced 29 percent after six months of operation and 61 percent one year after operation. (p=0.0065 Mann-Whitney U test)



Rapid Response Calls by Unit (2006)

- General Surgical Unit
- Adult Medical Unit
- General Medical Unit
- Ortho/Neuro Unit
- General Care Unit
- Cardiology
- Coronary Care Unit
- Other

Codes Outside of ICU



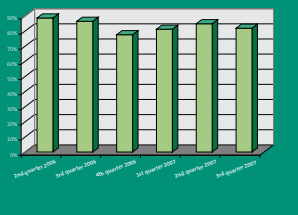
Management/Treatment Strategies

- 12 Lead electrocardiogram (EKG)
- Chest X-ray
- Labs, including isoenzymes, lactate levels
- Pancultures
- CT Scan: head, spiral CT, abdominal
- Medications: Lasix, Narcan, Cardizem, Ativan, Dilantin, Nitroglycerin, Aspirin, Beta-blockers, Antibiotics
- Fluids
- Telemetry initiation
- Change or initiation of oxygen therapy
- Arterial blood gases
- Duonebs
- Bilevel positive airway pressure (BiPAP)/Continuous positive airway pressure (CPAP)
- Code status changes/discussions
- Change in frequency of vital signs

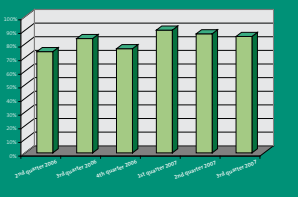
Patient Outcomes

- Nine percent reduction in the average number of med/surg patient mortalities per month
- Well below National Database of Nursing Quality Indicators (NDNQI) benchmark for failure to-rescue patients. Note reduction of 19 percent from first to second quarter 2006.

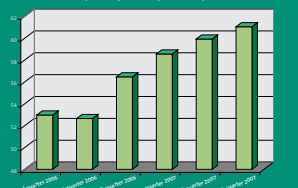
Survival to Discharge of Patients Seen



Patients Stabilized on Med/Surg Floors



Time Spent per Rapid Response Call



Bronson Methodist Hospital
601 John Street
Kalamazoo, MI
bronsonhealth.com



Institution

Bronson Methodist Hospital, Kalamazoo, Michigan, is the flagship of Bronson Healthcare Group, a not-for-profit healthcare system serving all of southwest Michigan and northern Indiana. With 380 licensed beds and all private rooms, Bronson provides care in virtually every specialty – cardiology, orthopedics, surgery, emergency medicine, neurology and oncology. The hospital has advanced capabilities in critical care as a Level I Trauma Center; in neurological care as a Joint Commission certified Primary Stroke Center; in cardiac care as the region's first accredited Chest Pain Center; in obstetrics as the leading BirthPlace and only high-risk pregnancy center in southwest Michigan, and in pediatrics as one of only four children's hospitals in the state. The hospital has been recognized for many quality achievements, including the 2005 Malcolm Baldrige National Quality Award, the 100 Top Hospitals Award (Solucient), and the VHA Leadership Award for Clinical Excellence.