

Quality Care Monitoring and Improvement

Source of Evidence 33 Empirical Outcome

Describe and demonstrate how the allocation and/or reallocation of resources improved the quality of nursing care.

Appraiser Feedback:

Examples did not describe and demonstrate (empirically) how the quality of nursing care improved.

Example 1

Allocation of resources for education and a specialized kit: Adult Emergency Department – Blood Culture Sterile Kit

Purpose/Background

Vanderbilt University Medical Center's Level 1 Trauma Center, comprehensive Regional Burn Center and LifeFlight emergency transport program offer critical trauma care to a three state region. The adult Emergency Department (ED) has over 55,000 visits a year and sees an average of 150 patients per day.

An institutional review performed by Infectious Diseases found our overall rate of contamination of blood cultures to be 2-3 times above national benchmarks. The adult ED is a crucial point of reference for patient care as the ED is frequently the first point of contact for acutely febrile patients drawing an average of 40,000 blood cultures per year. The blood culture contamination rate in the adult ED was at 7%; benchmark is 3% as recommended by the Clinical Laboratory Standards Institute. This issue affected many areas: timely and appropriate patient treatment, increased length of stay, necessitated patient call backs, increased costs and wasted resources.

In August, 2009, an ED Blood Culture Contamination Work Group was developed to try to address the issue. The goal was to reduce the percent of contaminated blood cultures drawn in the adult ED (current rate was at 7%) to below the benchmark (3%) (Clinical Laboratory Standards Institute) by July 1, 2010.

Methods/Approach

Vanderbilt University Hospitals & Clinics
Magnet Second Designation
Sep 2011

An interdisciplinary committee was charged by administration and the quality council to resolve this and improve the care of patients with a febrile illness. The team brainstormed the process barriers and grouped the issues around collection of blood cultures into six (6) categories:

- Technique
- Supplies
- Data
- Education
- Peripheral IV issues
- Other issues

Committee members began working in teams on data collection and ideas on how to address these issues. Since nursing is the responsible group for collecting the blood culture specimens, they were key members of all the work groups. This work included a collection of audits of staff nurse current practices and observations of actual practice and a nursing survey of common practices surrounding collection of blood cultures. Data access was also obtained for the ED Quality Consultant and the Emergency Services physician on the team so they could monitor the results.

Table EP 33 EP - 1: Participants

Name	Area
Aylessa Baker, RN 2 – CC	Adult Emergency Department
Julie Ervin, BSN, RN 3 –CC	Adult Emergency Department
Dawn Hawley, BSN, RN, Charge Nurse	Adult Emergency Department
Janice Sisco, BSN, RN, Manager	Adult Emergency Department
Jacki Ashburn, BS, RN, Quality Consultant	Adult Emergency Department
Gary Howard, RN, MSN, Director	Adult Emergency Services
Tom Talbot, MD	Infectious Disease
Wesley Self, MD	Adult Emergency Services
Ian Jones, MD	Adult Emergency Services
All staff members	Adult Emergency Department

Outcomes/Impact

Interventions:

1. Blood Culture Sterile Kit (with checklist)
2. RN training program
3. RN Feedback and retraining

Based on nursing staff input and direct observations, technique and supplies were found to be the two (2) significant processes that contributed to the high rate of contaminated blood cultures. A teaching video was developed, allocating additional resources for staff education. Each staff member was required to view the video and complete a follow-up competency quiz. The video will also be part of the initial training for all new ED nurses.

In addition to this work the packaging of a Blood Culture Sterile Kit was recommended by the staff nurses. Resources were allocated for the development, packaging and cost of a Blood Culture Sterile Kit. Drawing blood cultures requires a sterile field and procedure. Staff input and direct observations identified that the supplies required for the sterile process were not always readily accessible. Thus, the Blood Culture Sterile Kit provided convenient and quick access to the required supplies to support quality patient care. An initial trial of the kit was done and then based on staff nurse input; the kit was optimized and finalized.

The video actually consisted of a blood culture draw using the Blood Culture Sterile Kit. Initially, the kits were made in our sterile processing department, but have now been outsourced and their availability expanded for use throughout the organization. Most recently the Cardiovascular Intensive Care Unit (CVICU) has had similar results in decreasing their number of contaminated blood cultures. Although this was a cost to the organization, the allocation of resources was important to improve the blood culture collection accuracy and ultimately patient care.

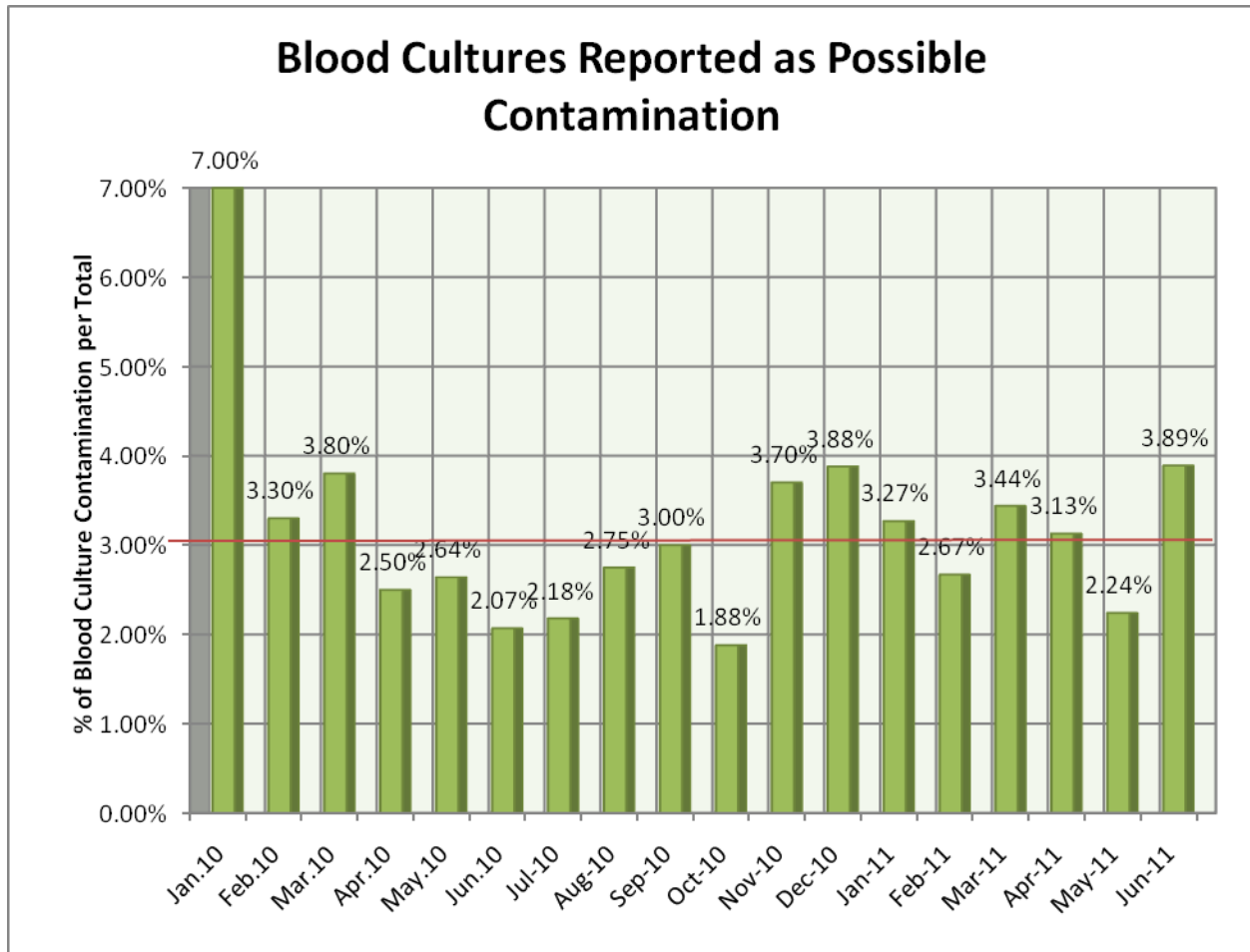
Please see photo of Blood Culture Sterile Kit Below

Photo EP 33 EO – 1: Blood Culture Sterile Kit



(Please see results graphs below)

Graph EP 33 EO - 1: Blood Cultures Contamination Report from the Adult ED



*Our benchmark is 3% based on the Clinical Laboratory Standards Institute recommendations.

** These rates include actual true positive blood cultures; therefore contamination rate is extremely decreased.

*** Education was completed in December 2009 and the program was fully implemented by April 2010.

This initiative has also received national attention:

- Kathy Burns, RN (CVICU Clinical Nurse Specialist) presented a poster at the Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke 2011 Scientific (QCOR) sponsored by the American Heart Association's Council on Quality of Care and Outcomes Research in Washington DC in May 2011

- An oral presentation was done at the Society for Healthcare Epidemiology in America 21st Annual Scientific Conference in Dallas Texas in April 2011.
- An oral presentation at the Institute for Healthcare Improvement in December 2010 in Orlando Florida.
- An abstract is scheduled for publication in the American Heart Association Journal *Circulation: Cardiovascular Quality and Outcomes* (**month not determined at this point**)

[EP 33 EO Exhibit A-1-Blood Culture Training Quiz, EP 33 EO Exhibit A-2-Dr. Talbot Email, EP 33 EO Exhibit A-3-ED Blood Culture Contamination Work Group Meeting Minutes 8 24 09, EP 33 EO Exhibit A-4-Reduction of Contaminated Blood Cultures Poster, EP 33 EO Exhibit A-5-SHEA 2011 Contaminant Blood Cultures Presentation Dr. Talbot, EP 33 EO Exhibit A-6-Staff Education Email, EP 33 EO Exhibit A-7-Staff Survey Email Dr. Self, EP 33 EO Exhibit A-8-Sterile kit Info Email, EP 33 EO Exhibit A-9-WSelf Blood Culture Quality Meeting 5-25-11]

Example 2

Re-allocation of nurse practitioners to Rapid Response Team Improves Quality of Nursing Care and Patient Outcomes

Purpose/Background

Several years ago the IHI instituted the 100,000 lives campaign with the objective of enrolling over 2,000 hospitals to take a proactive response to healthcare and save 100,000 lives. That goal has now been exceeded with over 100,000 lives saved and more than 3,100 hospitals enrolled. The platform involved six (6) interventions: deploy Rapid Response Teams at the first sign of patient decline, employ Evidence Based Medicine for AMI, prevent adverse drug events, and prevent hospital-acquired infections and ventilator-associated pneumonia.

Studies showed that there were predominately six (6) clinical signs before a cardio/pulmonary arrest that were associated with a high risk for mortality – most commonly hypoxia and hypotension. In subsequent research, Rapid Response Teams (RRT) were shown to make a significant difference in decreasing cardiopulmonary arrests and subsequent survival rates.

Several years ago, Vanderbilt Hospital instituted RRT that cover every unit in the hospital utilizing ICU nurses and respiratory therapy. Protocols were developed for specific triggers to call the RRT and the staffs were educated. In addition, patients, visitors and family members can also activate an RRT call.

All units are covered on RRT calls by a specified ICU team and they provide back-up for each other as needed.

Table EP 33 EO – 2: RRT Coverage by Unit

RRT Coverage by Unit		
SICU	MICU	CVICU
9 North	11 North	5 South
9 South	8 North	6 South
Labor & Delivery	8 South	7 North
3 Round Wing	7 Round Wing	MCE Cardiology 5 th Floor (South Tower)
4 Round Wing	Clinical Research Center	Cardiac MRI
5 Round Wing	6 North	Cath Lab Holding
6 Round Wing	10 South (STATS Covered by 10 North Trauma)	
4 East	Endoscopy	
Burn Stepdown	Radiology	
4 Maternal Special Care	TVC OBS – ED Holding	
	7 South Bronch Lab	

Between January and November of 2010, we had over 1,000 calls for RRT. As RRT calls increased, the numbers of codes were decreased. For example, for the general care units that receive RRT support from the SICU, there were 335 RRT calls and only 33 code calls. During RRT debriefings a persistent barrier was identified – the lack of a licensed provider (LIP) on the team to decrease delay in treatment, order medications, labs and other diagnostics, facilitate communication and expedite transfer when needed.

The solution was to resource our critical care (reallocate time) nurse practitioners to deploy with the RRT and provide the follow-up for patient care, staff education and unit debriefing sessions. We have 8 advanced practice nurses in each MICU and SICU. Before this change, the designated ICU charge nurse or help-all nurse was the only nurse responding to RRT calls with the other team members, such as respiratory therapy.

Methods/Approach

An interdisciplinary team began the work to add this additional resource to improve the quality of nursing care and patient outcomes to our RRT. Resources to support the implementation of this plan included:

- Resources for multi-ICU interdisciplinary simulation training for the NPs for emergency response
- Classes in communication and teamwork in developing action plan and follow-up
- A total of 26 hours of education for the MICU and SICU advanced nurse practitioners was conducted
- Resources for the development of an electronic medical record note
 - Documentation of evaluation and management of patients
 - Collaboration with coding/billing and StarPanel informatics
 - Rapid response team NP note
- Resources for the development of methods for electronic data collection to evaluate the deployment of the ANPs on RRT calls.

Table EP 33 EO – 3: Participants

MICU Nurse practitioners	
SICU Nurse Practitioners	
April Kapu, RN, APN	Assistant Director, APNs Critical Care, VUH
Laurie Ford, RN, APN	Critical Care
Barbara Gray, BSN, RN	Quality Consultant, Surgery/Trauma
Jackie Ashburn, RN, TNCC	Quality Consultant Adult ED
MICU Interdisciplinary Team	
SICU Interdisciplinary Team	
Byron Lee, MBA	Quality Value Analyst, CAPNAH
Art Wheeler, MD	Medical Director, MICU
Susan Hellervik, RN, APN	
Liza Weavind, MD	Anesthesiology
John Barwise, MD	Anesthesiology
Addison May, MD	Trauma
Critical Care Anesthesia	
Vanderbilt LifeFlight	Call Center Response
Rapid Response Team Steering Committee	

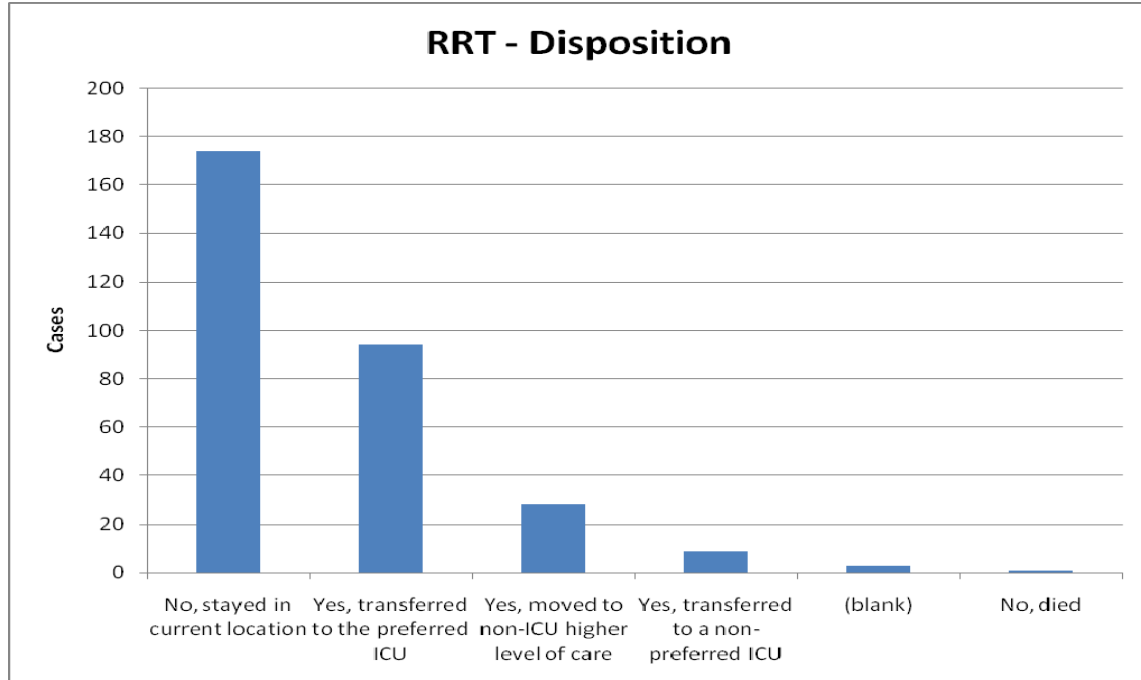
Outcomes/Impact

Initial implementation of APNs on the RRT showed the following data:

- 309 calls between January 2011– May 2011
- 103 transfers to an ICU.
- 1005 APN unique interventions
 - 112 lab tests ordered
 - 154 medication administrations
 - 84 X-rays
 - 88 EKGs
 - 9 procedures
 - 256 education opportunities/events

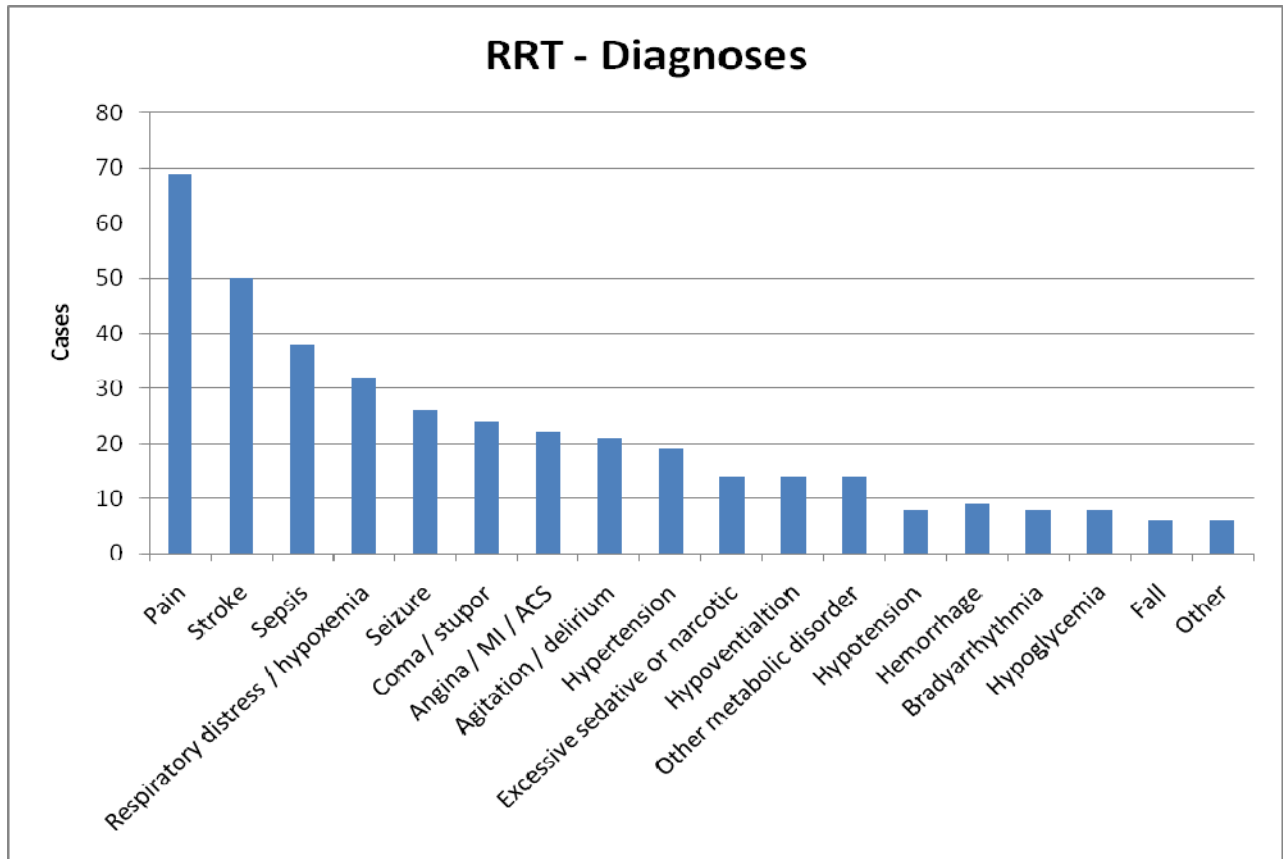
Graph EP 33 EO – 2: Final Disposition of Patients on Rapid Response Calls January 2011 – May 2011

The majority of RRT Call patients were able to stay in their original unit without transfer to another level of care.



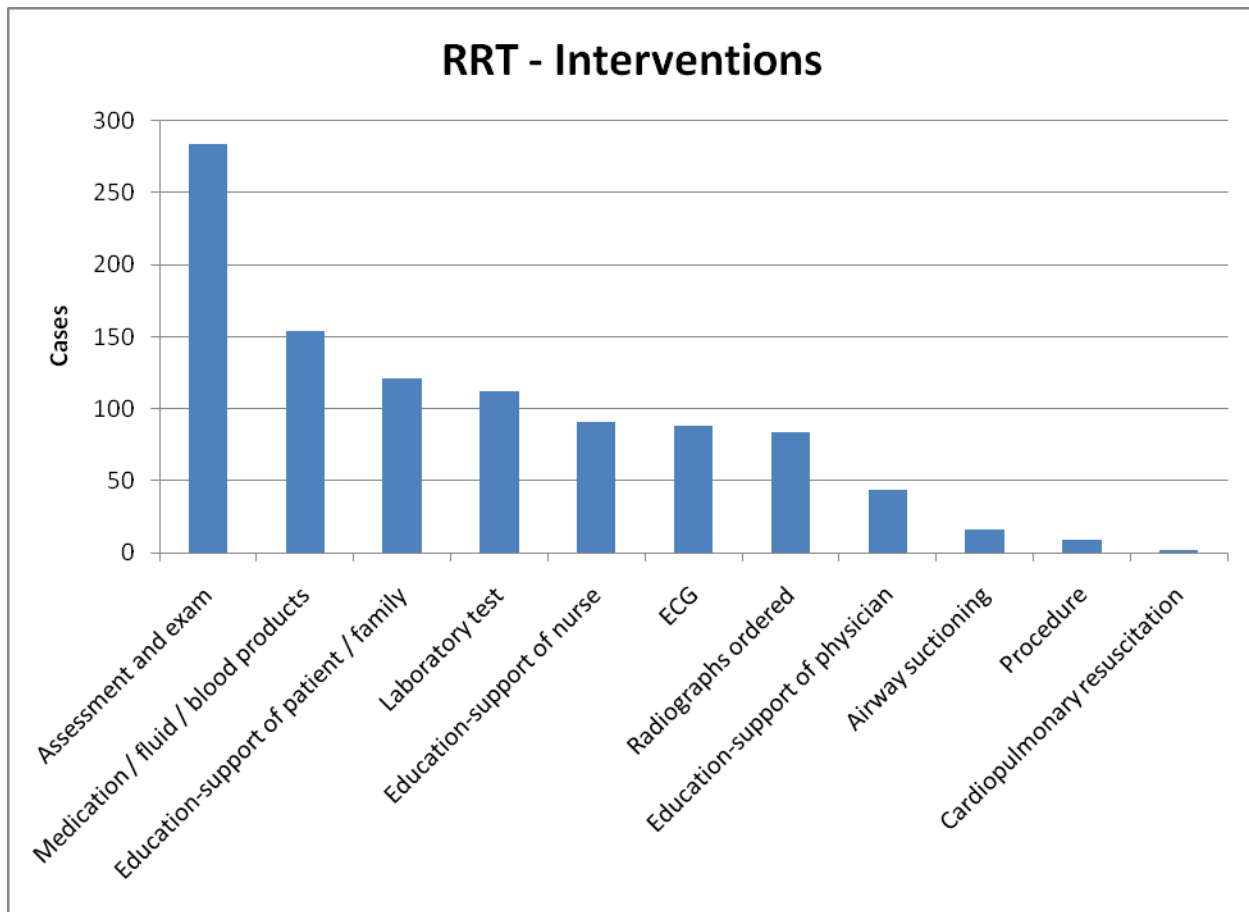
Graph EP 33 EO – 3: APN Diagnoses on Rapid Response Calls January 2011 – May 2011

APN Diagnosis on RRT calls supported quicker access to appropriate treatment.



Graph EP 33 EO – 4: APN Interventions on Rapid Response Calls January 2011 – May 2011

APN Interventions on RRT calls provided quicker access to treatment.



A nursing staff survey was also conducted to assess the addition of the APNs to the RRT. A summary of that survey is below:

Table EP 33 EO – 4: Survey Regarding Adding APNs to RRT

Question	Response Rate
Is NP beneficial on the RRT	<p>96% said yes</p> <ul style="list-style-type: none"> • Provides orders outside RN scope ---- 100% • Facilitated quicker transfer to the ICU when needed ---- 62.5% • Facilitated communication with primary team ----- 70.8% • Collaborated with healthcare team on

Exemplary Professional Practice
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	<p style="text-align: center;">action plan ----- 83.3%</p> <ul style="list-style-type: none"> • Provided support to nurses ----- 87.5%
Knowledgeable and skilled in emergency care	100% said yes
Promote teamwork	100% said yes
Provided education	86% said yes and 14% said not applicable

Sample of comments from nursing staff on having APNs on RRT:

- This has been wonderful. We can immediately start ordering labs, tests, and such to investigate patients' condition. This is a great time saver. Their additional knowledge of diseases and treatment of conditions is very helpful.
- I think it is great. Most RRT are called to evaluate a situation and decide if transfer is needed. A lot of time, the patients need orders and we cannot do that. It is so much easier to have the APNs with us in the first place. It saves time, which is better for the patient and also allows the RN to stay with the patient, providing better care.
- I like it, because before the APNs, I would typically find myself in a room with the patient acutely going bad while the primary physician team would say, "the ICU RRT is here and we are going to take care of our other patients. So I would not only be trying to get the patient back to the ICU, but trying to take care of the patient at the same time. I like the additional support the APNs provide, because I can concentrate on taking care of the patient while getting what is needed.
- Their additional knowledge of diseases and treatments of conditions is very helpful. A great time saver.

Conclusions from adding the APNs to RRT calls:

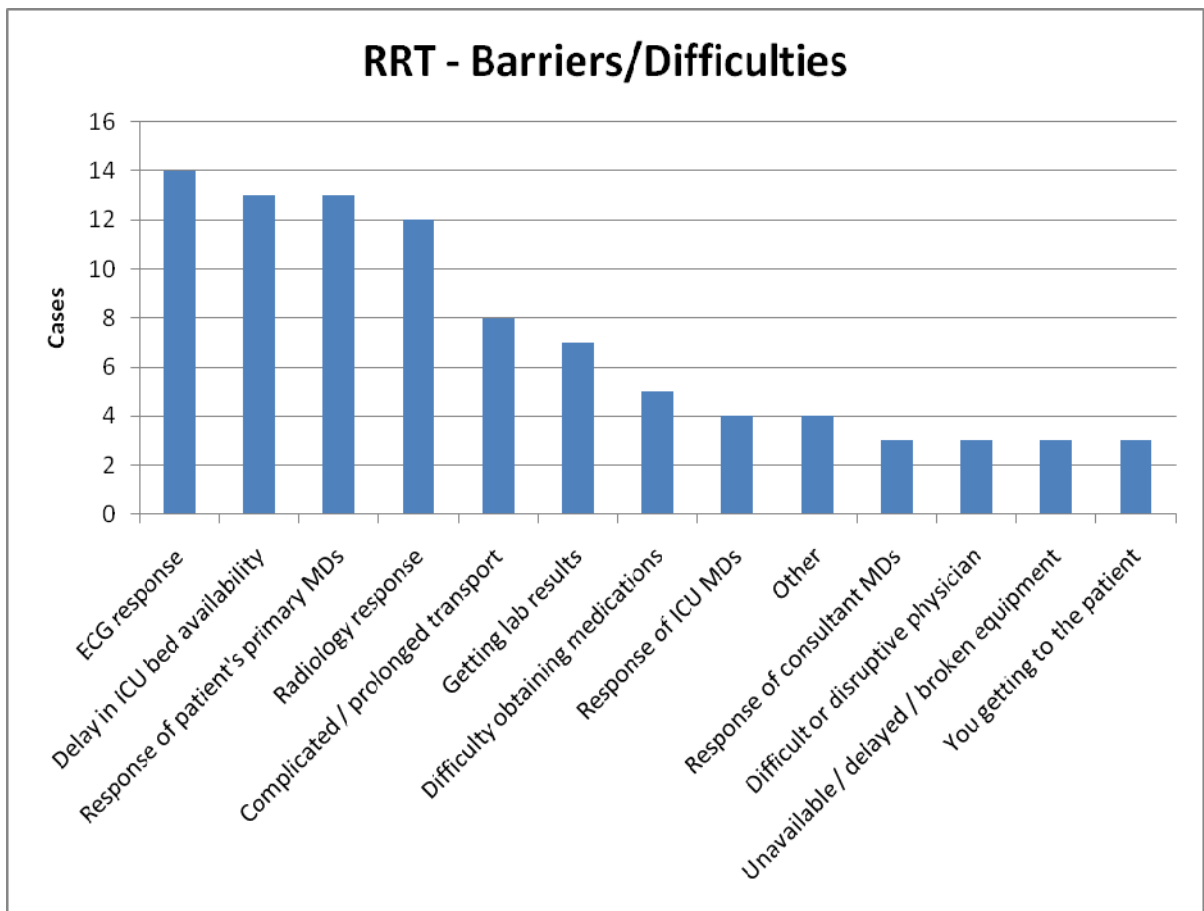
- Decreases time between symptom onset and treatment
- Facilitates rapid transfer to ICU when necessary
- Evaluate, diagnose, and initiate consistent early management
- Facilitates team communication and collaboration
- Provides critical care management when necessary
- Performs emergent procedures if immediately needed.
- Provides staff, patient and family education
- Facilitates early consultation with other healthcare team
- Decreases unnecessary returns to the ICU by early communication and management

The success of the MICU and SICU education and resource allocation of APNs to the RRT calls has been so successful that one of the next steps has begun with adding the CVICU APNs to their RRT calls as well.

Improvement and Research Opportunities

Another critical outcome is that the APNs are collecting additional data for identification of issues and process improvements. This will support future work and improvement in RRT response and ultimately nursing care and patient outcomes.

Graph EP 33 EO – 5: Barriers Identified by APNs on Rapid Response Calls Jan – May 2011



Other improvements/ideas to improve the quality of nursing care and patient outcomes that have been generated as a result of this allocation of resources includes:

- Adding APNs to all emergency responses (Codes)
- Add APN to Stroke Alert Team
- Multiple research projects have been identified – encouraging interdisciplinary research efforts/teams

[EP 33 EO Exhibit B-1-APN RRT Education, EP 33 EO Exhibit B-2-APNs on RRT information from Dr. Wheeler MICU, EP 33 EO Exhibit B-3-APNS on RRT update June 2011]