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## 2011 National Teaching Institute Evidence Based Abstracts

### EB50 Action Plan to Decrease Blood Culture Contamination Rates in the Medical Intensive Care Unit

Kerri Gambrel, Pamela Duncan; Lakeland Regional Medical Center, Lakeland, FL

#### Purpose

Blood culture contamination represents an ongoing source of frustration for clinicians. Ambiguous results can lead to increased cost, inappropriate therapy, and extended length of stay. The national average contamination rate is 3% with an average cost of \$5000 per contamination. The purpose of this project was to explore the question, "What innovations in knowledge and techniques in our current blood culture collection process could we as registered nurses implement to improve outcomes?"

#### Description

After literature and policy review, staff members discussed the effect of blood culture contamination. Emphasis was placed on hand washing and following the steps exactly as prescribed in the blood culture collection policy (no omissions or shortcuts), treating the procedure as a "sterile procedure" with emphasis on setup and masking for the procedure, and follow-up with every nurse who was involved in collection of a contaminated culture to debrief about what might have contributed to the

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## Evaluations/Outcomes

As a result of this project, the following outcomes were realized: increased accountability, increased awareness, decreased delay in care, decreased cost, decreased length of stay, and an overall decrease in contamination rate in the next 7 months by 62.5% for the unit and by 51% overall hospital-wide after the unit's results were shared with nursing leaders.

[kerri.gambrel@lrmc.com](mailto:kerri.gambrel@lrmc.com)

## EB51 A Multidisciplinary Approach to Daily Goal Setting in the Intensive Care Unit



Sarah Elliott, Ann Pedack, Glenn Allan; Harborview Medical Center, Seattle, WA

### Purpose

To implement a multidisciplinary rounds including physicians, nurses, physical therapist, dietitian, respiratory therapist, pharmacist, and patients' families. The ultimate goal was to improve communication and set goals and a "plan of the day" for each patient. With all disciplines present to set the daily goals, patient care was focused, redundancy was reduced, and the most up-to-date information was communicated by the care team in one setting, thus reducing misinformation or old information.

### Description

Over the course of 5 years, our hospital has made a transformation from nurses not being included in daily rounds to nurses leading daily rounds. A standardized form has been developed for nurse presentation, including head-to-toe assessment modeling the Institute for Healthcare Improvement's daily goals checklist. Use of this form allows succinct, concise, and uniform delivery of patient information. The list includes verifying prophylaxis of deep venous thrombosis and gastrointestinal stress, ventilator-associated pneumonia bundle care, and catheter needs, all of which have been proven to shorten stay in the intensive care unit (ICU). Implementation of daily goal forms led to greater than 95% nurse and resident understanding of the patient plan for the day as compared with 10% understanding before implementation. Additionally, after implementation, mean ICU stay decreased from 2.2 days to 1.1 days. Elaborating even further on this concept, we have recently added a daily "huddle" to take place every evening with the day-shift charge nurse, the on-call resident, and the ICU fellow. The evening huddle is a brief review of the patients and the updated goals from morning rounds. The goals are then reviewed between the bedside nurse and charge nurse and allow for timely goal review for the night shift team.

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## Evaluations/Outcomes

Our ICU transformed daily patient rounds that lacked a multidisciplinary approach to a culture where rounds do not begin without the patient's nurse. This transformation has led to improved communication and physician and nurse satisfaction within our ICU. Initial fears of including patients' families in rounds have been overcome. Daily goal worksheets and the daily huddle have improved collaboration of the team, decreased duplication of work, decreased nurses' intimidation about speaking up, and improved nursing morale. There now exists a mutual agreement among the ICU physicians always to include nurses in daily rounds.

[misse\\_me@yahoo.com](mailto:misse_me@yahoo.com)

## **EB52 A Multifaceted Approach to Maintaining Low Device-Related Infection Rates in a New Pediatric Medical Intensive Care Unit**

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John Flaherty, Jason M. Thornton, Hollis Caswell, Heather M. Kennedy, Patricia A. Hickey, Michael S. D. Agus; Children's Hospital Boston, Boston, MA

### **Purpose**

Infections from central venous catheters (CVCs), endotracheal tubes (ETTs), and urinary catheters have been identified by the Centers for Disease Control (CDC) as significant contributors to patient morbidity and mortality. With the aim to prevent these infections on a newly opened pediatric medical intensive care unit (MICU), all health care staff were trained in standardized policies and procedures for the insertion and care of these devices based on the recommendations of industry experts for best infection prevention practices.

### **Description**

The MICU uses a multifaceted approach in preventing device-related infections. All nurses are trained by an infection preventionist on CVC, Foley catheter, and ventilator patient care bundles as outlined by the Institute for Healthcare Improvement and the CDC. Nurses also receive ongoing education through yearly staff education days, as well as via computer-based learning modules. Compliance with standards is measured through developed tools like the "Line Safety Audit Form," which is used to improve patient care. Unit physicians all receive training on the central catheter insertion bundle, as well as strategies for prevention of ventilator-associated pneumonia and urinary tract infections. Physicians used an insertion checklist to ensure that all components of the central catheter bundle are followed when inserting a CVC, and nurses use an insertion audit form during catheter placement. Nurses are empowered to stop the procedure if a breach in sterility is witnessed. The unit has established criteria to identify patients who qualify for a CVC or Foley catheter, which are reviewed daily on rounds with the health care team via a "rounds checklist." This

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checklist identifies patients who no longer meet the criteria for a CVC or Foley catheter, or qualify for an extubation readiness test, facilitating the expeditious removal of these devices.

## Evaluations/Outcomes

From the day it opened in March 2008, the MICU went 408 days before its first catheter-associated blood stream infection, 25 months elapsed before its first and only case of ventilator-associated pneumonia, and it has not had a catheter-associated urinary tract infection to date. The unit is well below national benchmarks set by the National Health Safety Network for these infections. These results speak to the effectiveness of using education, training, checklists, and audits to keep the focus of health care providers on the many aspects of health care–related infection prevention. Ongoing education of all health care workers on the continually evolving evidence-based strategies to prevent device related infections is necessary to sustain this success.

[john.flaherty@childrens.harvard.edu](mailto:john.flaherty@childrens.harvard.edu)

## EB53 A New Horizon for a Collaborative Partnership: Ergonomic Interventions to Enhance Comfort and Minimize Injury



Maria Melanson, Carol Daddio-Pierce, Elizabeth Tucker O’Day; Brigham and Women’s Hospital, Boston, MA

### Purpose

When the nursing staff in several of our intensive care units (ICUs) struggled with the ergonomic challenges associated with a newly purchased continuous renal replacement therapy (CRRT) device, their concerns were expressed to the institution’s ergonomic, nursing leadership, and CRRT committees. These committees collaborated with the CRRT company, which redesigned the machine to enhance safety and comfort for the nursing staff.

### Description

In a large tertiary hospital, a new CRRT technology was introduced to replace outdated devices. A key factor in the selection process was to minimize the physical demand and risk of injury to the staff. Within weeks of instituting the new device, more and more nurses were sustaining multiple musculoskeletal injuries. A focus group was formulated and identified the following major design flaws that increased the risk of musculoskeletal injury: the height of the hooks for the intravenous infusions prompted the nurses to lift 5-kg bags of dialysate above their shoulders; the hook design did not allow quick hanging and release of the bags during replacement; adjusting the machine height was difficult; and moving the machine itself was difficult.

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The company redesigned their CRRT machines on the basis of our recommendations. Ergonomic improvements assimilated into the new design included adjustment of the heights of the hooks and the machine to prevent nurses from lifting the CRRT bags above their shoulders. The hooks were redesigned to make them less curved so that the holes in the CRRT bags could pass through more easily. Other ergonomic improvements involved putting handles on each side of the machine and improving the ease with which height of the machines could be adjusted.

### **Evaluations/Outcomes**

The ergonomically enhanced CRRT machine was tried first by the cardiac surgical ICU, where most of the injuries had taken place, for 1 month. The medical ICU tried the machine for another month. Nursing evaluation of the machine focused on ease of use, ease of moving the machine, ease of adjusting the height of the machine, and ease of connecting the CRRT bags to the hooks. Once the trials and evaluation were completed, on the basis of the nursing staff feedback, the nursing leadership and CRRT committee agreed to modify all the machines. Education on the new machines included teaching the nurses ergonomic positioning when handling the CRRT bags and having 2 nurses adjust the height of the machine. To date, we have not had any injuries related to the CRRT machine since the machines were modified.

[mbentainmelanson@partners.org](mailto:mbentainmelanson@partners.org)

### **EB54 A Nurse-Driven Approach to Medication Prescription Success**

Michele Zimmer, Lisa Hartin; University of Maryland Medical Center, Baltimore, MD

#### **Purpose**

Nurses noticed patients stating that they had difficulty paying for their medications. Often these patients were labeled as being noncompliant before their predicament was understood, and strategies to assist them were unknown to nursing staff. The intent of our project was to identify criteria that nurses can use to screen cardiac patients for medication nonadherence and to locate resources, both internally and externally, to help patients obtain their medications at the best costs available.

#### **Description**

According to the literature, one-third of medication noncompliance can be associated with medication cost or the patient's inability to pay for medications, whether the patient is insured or not. The most vulnerable patients are those with low incomes, those who have more than 1 chronic condition, and the uninsured, who account for a large number of our cardiac patients. We were searching for the most common medication adherence issues and the best way to screen for those issues. The literature did not offer any substantial solutions for the issue; thus, we decided to survey our

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patients to determine the common issues and look for plausible solutions. Our first survey included 18 items related to 5 potential issues of medication adherence: affordability, accessibility, safety, prescribing compliance, and maintaining a supply. Once in progress, we found 9 items to be the most sensitive questions in the survey, and the tool was modified and pilot tested again in the progressive care unit and included the emergency department. When we found patients with adherence issues, we searched both internal and external resources to assist each patient with the problem.

### **Evaluations/Outcomes**

Our survey results show that patients had issues with medication adherence due to costs and maintaining a supply of medications. The innovative outcomes from this nurse-driven project include collaboration with case managers and social workers, early identification of patients with pharmacy assistance issues, increased awareness of patient education needs in terms of medication safety, and having a reserve of internal/external resources to assist compromised patients. We attribute these outcomes to increasing our patient satisfaction scores attributed to “nurses listening carefully to us.” Because of our success, we are sharing this information with other areas of our medical center.

[mzimmer@umm.edu](mailto:mzimmer@umm.edu)

## **EB55 A Penny for Your Thoughts: The Initiation of Therapeutic Journaling in a Progressive Care Unit**

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Stephanie Niemchak, Delores Fuller; Duke University Hospital, Durham, NC

### **Purpose**

In our 28-bed adult progressive care unit, it is not unusual to have patients tethered to technology, often unable to leave their rooms. Patients often yearn for stimulation other than the television or computer while awaiting lung transplant or recovering from serious illnesses. Patient satisfaction and overall patient survival can depend on an individual’s state of mind, so we looked for opportunities to help vulnerable patients express themselves during their long stays.

### **Description**

After the success of our unit-based musical performers from the Health Arts Network at Duke (HAND), our unit was asked if any of our patients might benefit from the experience of journaling. Unclear on what this might involve, we met with the director of HAND, as well as the journalist responsible for initiating the process. Such journaling was originally used with oncology patients, so we embarked on an experiment to see if patients in our progressive care unit could benefit from journaling.

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Writing down one's thoughts can be cathartic and allow a patient to ventilate in a fulfilling way an otherwise indescribable or unbearable hospital stay. Not only does the patient benefit, but this method allows communication with family members when words cannot be said out loud. Once a week, the HAND journalist would come to the unit and consult with the charge nurse of any prospective patients that may benefit from journaling. The charge nurse would introduce the journalist and the reason she was here to see the patient. The HAND representative would explain about journaling to the patient and leave the patient with the book. Follow-up would occur within 2 or 3 days to see how the patient is doing.

### **Evaluations/Outcomes**

Our patient satisfaction scores have continued to increase and are now in the 99th percentile. Patients have stayed in touch with the HAND journalist, expressing how beneficial journaling was during their hospital stay and how much they appreciated this opportunity to voice their feelings. Staff felt that because patients had a way of expressing themselves, they were less likely to become disgruntled or become impatient with their treatment or long hospitalization. Owing to the success of this initial project, our unit now has a HAND representative that comes up weekly to enlist patients in the journaling experience, and staff continue to advertise the availability of this wonderful form of art.

[niemc001@mc.duke.edu](mailto:niemc001@mc.duke.edu)

## **EB56 An Innovative Approach to Improving Community Cardiac and Neurological Care**

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Nicki Roderman; The Medical Center of Plano, Plano, TX

### **Purpose**

A formal relationship between this community hospital and its local emergency medical services (EMS) agency was forged with a goal to improve cardiac and neurological care of our patients. A multidisciplinary team set forth to implement evidence-based care, provide hospital and EMS education, and continuously evaluate outcomes. Over time, education and communication were expanded to all surrounding EMS agencies to give all of our patients the benefit of evidence-based care.

### **Description**

The American College of Cardiology/American Heart Association guidelines recommend a door-to-balloon time of less than 90 minutes. The American Heart Association has included therapeutic hypothermia after cardiac arrest in its Advanced Cardiac Life Support guidelines since 2005. The Joint Commission Advanced Primary

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Stroke Certification advocates timely administration of thrombolytic therapy for acute stroke, and the published national rate of thrombolytic therapy is less than 3%. In order to improve the care of these patients, a multidisciplinary team that included EMS was formed to monitor and evaluate outcomes. The door-to-balloon times were tracked, and in 2009 the team moved to tracking EMS call-to-balloon time. Additionally, therapeutic hypothermia for cardiac arrest was implemented, and after 6 months, cooling began in the field after return of spontaneous circulation. Noting a fairly low rate of thrombolytic therapy delivery and long door-to-needle time, steps for process improvement in the emergency department were taken. Quarterly continuous education events were provided to EMS and hospital staff to include care and management of the cardiac and stroke patients. Outcome data were reported to EMS agencies and hospital staff.

### **Evaluations/Outcomes**

The mean door-to-balloon time was reduced to 49.8 minutes in 2009, and the mean EMS call-to-balloon time was reduced from 71.3 minutes in 2009 to 62 minutes for the first 2 quarters of 2010. Forty-two patients have been initiated on the therapeutic hypothermia protocol, and 19 were precooled in the field. Of those precooled in the field, 33.3% survived to hospital discharge. Administration of thrombolytic therapy for acute stroke has increased from 5% to 16%, and door-to-needle time of thrombolytic agents has decreased in 2 years to a mean of 63 minutes. Significant improvements in cardiac and neurological care have been the result of this multidisciplinary effort.

[nicki.rodeman@hcahealthcare.com](mailto:nicki.rodeman@hcahealthcare.com)

## **EB57 Analysis of Practice and Performance Improvement in Patients with Severe Sepsis and Septic Shock**

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Jeannette Richardson, Jadene Hendricks-Jensen, Christina Vann; Portland Veterans Administration Medical Center, Portland, OR

### **Purpose**

To examine practice patterns and outcomes in the care of patients with severe sepsis and septic shock before and after implementation of a comprehensive paired educational program/standardized treatment protocol at a teaching hospital.

### **Description**

In 2007, critical care unit (CCU) staff nurses noted inconsistencies in care provided to patients with severe sepsis/septic shock; these perceptions were supported by baseline data collected and compared with published national guidelines. An interdisciplinary interdepartmental sepsis work group was established to improve compliance with national guidelines. The sepsis work group designed multiple tools

based on guidelines to encourage standardized care: a computerized provider order set with links for real-time clinical decision support, a paper-based worksheet, a facility-specific sepsis screening tool and antibiotic reference guideline, and laminated pocket cards. Educational strategies included informational posters, presentations targeted to individual work areas, and simulation scenarios. The team collected data from retrospective chart reviews on 30 patients both before and 6 months after project completion in 2009.

## **Evaluations/Outcomes**

Postimplementation data indicate that treatment was started earlier on more patients on the medical-surgical units before their transfer to the CCU (2% vs 40%) and mortality at hospital discharge (33% vs 17%) and 3 months after discharge decreased by half (47% vs 23%), meeting the Surviving Sepsis Campaign goal. Overall, adherence to guidelines was better (6-hour resuscitation bundle completion increased from 13% to 23% and 24-hour management bundle completion increased from 10% to 40%). The sepsis work group is encouraged by the decreased mortality rate and indications of increased attention to early goal-directed treatment despite a small sample size; continued improvement over time is anticipated.

[jeannette.richardson@va.gov](mailto:jeannette.richardson@va.gov)

## **EB58 Bath Basins in the Cardiovascular Intensive Care Unit: A Nosocomial No-No**

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Lori Hadas; Florida Hospital, Orlando, FL

### **Purpose**

Since Medicare no longer reimburses institutions for hospital-acquired surgical site and other infections and pressure ulcers from skin breakdown, the cardiovascular intensive care unit (CVICU) Nurse Practice Council (NPC) has found that by using disposable baths they can not only prevent skin breakdown, but save valuable nursing time and decrease the cost of tending to patients' hygienic needs.

### **Description**

A literature review by the NPC found that bath basins are a potential source of microbial growth and pose a threat of cross-contamination as the basins are often used as storage bins for hygiene and other personal belongings of patients between baths. In addition, one cannot be sure that the personnel who use bath basins did not reintroduce the same washcloth into the bath water while bathing a patient. It is also known that the drying effect of soap and hot water combined with harsh friction can leave the skin dry and cracked and can provide an avenue for bacterial infection. Studies have shown that numerous colonies of bacteria such as *Acinetobacter*,

methicillin-resistant *Staphylococcus aureus*, *Pseudomonas*, coagulase-negative *Staphylococcus*, and others have been cultured in bath basins after only 48 hours. The first step was to analyze the current method of providing hygiene to an ICU patient. Factors considered were nursing time, cost of laundry, and the various hygiene products used. The nursing equipment committee approved the project plan. A product evaluation was conducted in 3 ICUs within the hospital system. A survey was done to measure the amount of time it took to do a disposable bath, which bath method was more hygienic and thorough, and which was the preferred method.

### **Evaluations/Outcomes**

After a 2-week evaluation, 98% of nurses favored the disposable basin over basin baths, and bath times decreased valuable nursing time from approximately 30 to 10 minutes. An annual cost savings of \$6700 was achieved by eliminating the current products. When nursing time was factored in, a total of \$60 700 in annual savings was calculated. Results of the product evaluation were presented to the nursing equipment committee and disposable baths were adopted for all 7 campuses as well as the entire Adventist Health System.

[lorih357@yahoo.com](mailto:lorih357@yahoo.com)

## **EB59 Battling Ventilator-Associated Pneumonia, Step By Step: An Evidence-Based Approach to Improving Head-of-Bed Elevation**

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Kristen Luttenberger; Morristown Memorial Hospital, Morristown, NJ

### **Purpose**

During our Beacon journey through the AACN, staff in the coronary care unit at Morristown Memorial Hospital analyzed our components of ventilator-associated pneumonia (VAP) prevention and realized that what many nurses perceived as a 30° angle for ventilated patients was not actually 30°. Thirty degrees is much higher than what the staff thought, and many patients on ventilators were not being maintained at that level.

### **Description**

Owing to this discovery, from June to October 2008, we randomly selected 50 patients receiving mechanical ventilation to evaluate for head-of-bed (HOB) elevation angle by using the AACN Data Collection Tool for HOB elevation. Our results showed that 66% of the angles for these patients were between 5° and 25°; and only 33% had the HOB elevated at an angle of 30° or higher. When HOB elevation was found to be less than 30°, nurses were asked why. The nurses mentioned the AACN contraindications but added 2 more of their own: femoral vascular access and risk of skin breakdown. To investigate nurses' concerns about femoral vascular access, we contacted 4 companies

that provide our hospital with various types of femoral catheters. We then performed a literature review to find the most recent evidence on HOB elevation and care after percutaneous coronary intervention. The unit's action plan included one-on-one staff education (including the latest literature), removable and laminated HOB elevation signs placed over the beds of all patients receiving mechanical ventilation, hands-on education on how to use the HOB elevation alarms on the beds, and a reevaluation with the AACN Data Collection Tool for HOB elevation after the education.

### **Evaluations/Outcomes**

At completion, 50 ventilator patients were reevaluated, and adherence to the 30° HOB elevation was 79%, an astonishing accomplishment when compared with the 33% rate in 2008. Our VAP rate reflected the value of this initiative by decreasing from 1.07 (2008) to 0 (2009) per 1000 ventilator days. We concluded that HOB elevation is a nursing judgment decision, and nurses must weigh the risks and benefits. In general, HOB elevation should be 30° or higher for patients receiving mechanical ventilation at all times unless specific contraindications are present. The rationale is that HOB elevation of 30° or higher helps prevent aspiration and VAP.

[klutt22@yahoo.com](mailto:klutt22@yahoo.com)

### **EB60 Blood Loss from Routine Phlebotomy Practices and a Strategy for Conservation**

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Carrie Sona, Kathleen To, Marilyn Schallom, Jessica Bowles, Steve Jarman, Lee Skrupky, Robert Southard, Brad Freeman, Doug Schuerer, John Mazuski; Barnes Jewish Hospital, St Louis, MO

#### **Purpose**

Blood loss from routine laboratory studies in the surgical intensive care unit (SICU) can lead to many complications for critically ill patients. These patients have less physiological reserve, immune system suppression, blunted erythropoiesis, and bone marrow suppression. Blood loss can lead to a need for transfusion of packed cells in critically ill patients. Blood transfusion has been linked to an increase in infection and mortality rates. SICU patients most often have blood samples obtained from an indwelling catheter such as an arterial or central venous catheter that requires a discard volume. This amount of waste is not fully standardized in the SICU, and the current waste tube was a 6-mL tube. Therefore, patients would have blood loss for every sample of 6 mL plus the additional volume required for clinical testing. In a chart review of 2 sample SICU patients with a 4-week length of stay, they had an estimated blood loss (EBL) from discard volume that decreased during each week of their stay but totaled a volume of 288 mL for one patient and 351 mL for the other.

#### **Description**

A multidisciplinary team of the SICU staff met and discussed potential strategies to reduce iatrogenic blood loss in the SICU. Many potential strategies were identified but a strategy to standardize blood waste and change from a 6-mL to a 3-mL waste tube was developed. A preintervention data collection process was done to quantify the current EBL from blood discard volumes in the SICU. A blood waste container was placed in each of the 24 beds in the SICU next to the sharps container. Staff members were instructed via e-mail information, staff meetings, unit practice committee updates, and unit flyers about the process of placing any discard volume from laboratory testing into the containers. The blood was collected for 35 days from November 11, 2009, to December 14, 2009. After the baseline discard volume EBL data were collected, staff members were taught that the necessary discard volumes for central and arterial catheters are 1.5 to 2.4 mL. Nurses using the syringe method to discard were instructed to decrease their waste volumes to the new standards. The 6-mL waste tubes were changed to 3-mL waste tubes. Staff members were instructed to use the 3-mL waste tubes for discard volume. This education was also provided to all staff via e-mail information, staff meetings, unit practice committee updates, and unit flyers. Blood discard volume was then measured again for 35 days from April 1, 2010, to May 6, 2010.

### **Evaluations/Outcomes**

The preintervention EBL was 8896.75 mL for 750 patient days. The average EBL per patient day was 11.93 mL, with a range of 5.06 to 21.2 mL. The postintervention EBL was 4958.1 mL for 801 patient days with an average EBL per patient day of 6.12 mL and a range 2.92 to 11.37 mL. This resulted in a 52.05% decrease in EBL from discard volume in the SICU for laboratory testing. A simple intervention of standardizing blood waste and changing the waste tube from 6-mL to 3-mL discard volume reduced blood waste by 52.05% in a 24-bed SICU. Decreasing EBL for laboratory testing by 50% in critically ill patients can potentially lead to a decrease in the need for transfusion.

[cjsona@charter.net](mailto:cjsona@charter.net)

### **EB61 Butterfly Bundle**

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Kimberly Vanwagenen, Amy Duffy, Elaina Williamson, Mike Brinza; Shands at Gainesville, FL

#### **Purpose**

To implement a uniform standard for palliative care and end-of-life care in our intensive care units (ICUs). The goals of the butterfly bundle are to address the patient's wishes for end of life, as well as the families' emotional, spiritual, and cultural needs. Initial idea for developing the butterfly bundle came to light upon application and subsequent acceptance of the Beacon Award.

## Description

The butterfly bundle was created as a collaboration between medical and cardiac surgery ICU nurses with consultations from social workers, palliative care resource nurses, palliative care clinical nurse specialists, and pastors. End-of-Life Nursing Education Consortium education is provided for palliative resource staff. The butterfly symbol was chosen by the project group and drawn by the Arts in Medicine program at Shands at the University of Florida. Development of the bundle included revision of the hospital's current palliative care and the initiation of withdrawal-of-care order sets. A "Life's Passage" brochure was obtained and revised for families to understand the dying process better. Relationship-specific brochures are available for coping and comfort. Small butterfly placards were designed to place outside the door to indicate a "quiet zone" for respect of the patient and family. A volunteer program, "No One Dies Alone," was initiated for families in need of respite care or available for a patient alone at the end of life. Referrals for grief counseling to families include hospice. Additional materials provided to families include children's literature, butterfly belonging bags, butterfly journals, fleece blankets, poems, grief literature, parking vouchers, tissues, and sympathy cards.

## Evaluations/Outcomes

Families and staff were interviewed after initiation of the butterfly bundle as a qualitative research study approved by the institutional review board. Overall, positive feedback was collected. We found that it created a collaborative environment for discussing end of life with patients, their families, physicians, and staff. Education on the butterfly bundle is now given to the physicians monthly and to new unit staff. Current goals for the project include hospital-wide use of the bundle and national awareness. "The goal of end-of-life care is to make the process of dying as respected and cherished as life itself."

[fsurnkvw@yahoo.com](mailto:fsurnkvw@yahoo.com)

## **EB62 CCU Nursing Guidance Team Evaluates Fecal Management System, Provides Nursing Education, and Improves Satisfaction**

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Diane Hamilton; Providence St Peter Hospital, Olympia, WA

## Purpose

Our critical care unit (CCU) Nursing Guidance Team is a nurse-driven avenue of self-governance to promote evidence-based practices. The team comprises self-directed nurses who engage coworkers in new practice changes to ensure that patients receive the safest, highest quality, and most efficient care. The team uses the AACN standards, practice alerts, and clinical protocols as its guiding infrastructure. The support of our CCU manager fosters an environment of collaboration, autonomy, and professional

growth.

## **Description**

Skin breakdown is a serious nursing issue when caring for any bedridden patient but becomes more difficult to prevent when the patient is critically ill. These patients have fragile skin, poor tissue perfusion, and limited ability to reposition. They often receive antibiotics and enteral feedings and consequently develop near-continuous liquid stool. The CCU had been using a fecal management system (FMS) that was helpful, but leakage around the tube occurred frequently and there was no easy means of administering medicated enemas. A staff nurse had read a study in the *American Journal of Critical Care* in which the effectiveness of 2 FMSs was compared. Based on the results of the research, the CCU Nursing Guidance Team took initiative to contact the more effective FMS vendor. Although we did not replicate the published study, a trial was conducted for several months with all CCU nurses having the opportunity to provide input comparing the new product with the previous product. The qualitative evaluation paralleled the evidence reported in the published article, and a request was submitted to our purchaser to change products. The actions of the team were supported by the CCU manager; however, the effort was directed and implemented by staff nurses.

## **Evaluations/Outcomes**

A satisfaction survey was physically attached to each FMS box during the trial. The qualitative comments received included ease in administering enemas, less leakage around the tube, and a generally preference for this system among staff. With this information, our CCU Nursing Guidance Team collaborated with our manager and key supply chain management staff to explain the results of our trial and asked to change FMS products. As a result, the FMS was changed for our entire hospital. The guidance team then created a poster presentation displayed at our annual Nursing Congress that outlined not only the success of our self-directed team but also served to instruct staff in the proper use of the new FMS.

[hamiltonddjj@msn.com](mailto:hamiltonddjj@msn.com)

## **EB63 Critical Care Unit Web Site: Information and Education . . . A Click of the Mouse Away**

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Marysol Cacciata, Troy Gideon; St Jude Medical Center, Fullerton, CA

## **Purpose**

Communication and information dissemination is one of the biggest identified problems in critical care units (CCUs). Absence of or inconsistent communication inhibits the flow of information necessary to the delivery of quality and evidence-

based patient care. The intent of this project is to provide a 1-stop Web site or portal as a repository where information is easily available and accessible by all unit staff.

## **Description**

The CCU Web site was developed in response to staff request to improve unit communication and information retrieval. The Web site was created as a portal to a site where all information is stored and readily available for all members of the health care team. The Web site contains information from minutes of committee meetings, quick reference guides, important unit information that pertains to patient care, quality improvement, upcoming educational opportunities, and other information that staff members need to know. The staff also uses the Web site as a communication tool by sending text messages to the intensivists for orders and patient information or updates. The Web site is used as an educational tool and offers information on different body systems with colorful illustrations and descriptions. It provides links to professional organizations, education programs, as well as a link to the AACN Web site and its local chapters. Staff members have become more aware of the resources available both in house and outside of the organization through use of the Web site. To introduce the Web site, an in-service training session was provided and staff members were encouraged to use the site. Word of mouth also helps spread information about this information and education resource.

## **Evaluations/Outcomes**

Since the creation of the Web site, information dissemination improved from 30% to 90%. With information at their fingertips, staff members no longer waste time searching for information; this alone has allowed staff to spend more time at the bedside. With education just a click of a mouse away, staff members no longer spend the time (or experience frustration in) searching for reference materials. The manager and clinical coordinators report increased staff awareness of unit activities, resources, and professional organizations. AACN membership increased from 15% to 50%. Potential remains for expanding the Web site and use of technology as our partner in care.

[mcacciata68@yahoo.com](mailto:mcacciata68@yahoo.com)

## **EB64 Chill Alert: An Interdisciplinary Approach to Implementing Therapeutic Hypothermia**

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Prasama Sangkachand, Rosanna Tangredi, Noreen Gorero, Lynne Maccubbin, Francine LoRusso, Jephtha Curtis, Dawn Cooper, Peter Marshall, Robyn V. Hewitt, Charles R. Wira III, Joseph Schindler; Yale New Haven Hospital, New Haven, CT

## **Purpose**

Our hospital had no formal protocol or systematic method to deliver therapeutic hypothermia effectively. Previous attempts at implementing therapeutic hypothermia were not successful primarily because of the lack of an organized interdisciplinary team approach with all persons with a stake in the process engaged from the beginning. In addition, there were no formal processes for data collection. Our goal was to develop and implement a systematic, interdisciplinary approach for using therapeutic hypothermia for survivors of out-of-hospital cardiac arrest.

## **Description**

In early 2008, we formed a therapeutic hypothermia work group that comprised representatives from nursing, the emergency department, pulmonary critical care, cardiology, neurology, pharmacy, respiratory therapy, intensive care unit (ICU) administration, and performance management. Members from maternal-fetal and neonatology services were later engaged. Key components of the initiative included devising a protocol; defining roles of champions from each discipline; identifying barriers (system, department, unit specific) and implementing strategies to overcome the barriers. We also evaluated the impact on staff work flow and resources (education, staffing, equipment, budget); determined processes for data management; and established modes of communication. The champions were responsible for communicating the therapeutic hypothermia initiative to their colleagues, including the education on the protocol, the new cooling device, patient management, and documentation. If a patient is eligible for therapeutic hypothermia, a “chill alert” is activated through a pager system notifying “chill alert” team members: cardiac ICU nurse, rapid response nurse, clinical administrative support, cardiologist, pulmonary critical care, and neurologist/stroke physicians. All have opportunities to assess patients before cooling.

## **Evaluations/Outcomes**

The protocol was implemented in December 2008. Our experience confirmed that therapeutic hypothermia has beneficial effects for patients who experience out-of-hospital cardiac arrest. Of the 40 cardiac arrest survivors who underwent therapeutic hypothermia, 40% were transferred out of the ICU. All but 1 of these patients, who is still hospitalized, were discharged from the hospital (37.5% of the total). The members of the therapeutic hypothermia work group are committed to working as an interdisciplinary team, providing round-the-clock consultations regarding clinical or device issues. The use of a consensus-driven, interdisciplinary team approach that required interdepartmental engagement was vital to our success in implementing this complex therapy.

[prasama.sangkachand@ynhh.org](mailto:prasama.sangkachand@ynhh.org)



## **Purpose**

Pulmonary arterial hypertension (PAH) is a rare and serious clinical condition affecting approximately 1 or 2 persons per million individuals annually. Life-long continuous infusion of prostacyclin (Epoprostenol or Treprostinil) is an effective treatment for patients with moderate to advanced disease. The goal of this project was to evaluate the clinical impact of a new evidence-based educational nursing competency program to reduce errors in the nursing management of hospitalized patients with PAH who require prostacyclin infusion therapy.

## **Description**

To ensure safe patient outcomes in this complex patient population, the AACN organizational framework for clinical nurse specialist (CNS) competency was the backdrop for this implementation. At the unit level and in collaboration with the nurse manager and pulmonary hypertension physician team, 100% of the nursing staff completed extensive educational training on the intricacy of infusion management in critical care settings. For additional staff support, the CNS provided individualized consultation and 24-hour-a-day, 7-days-a-week phone consultation to all clinicians. Patients who are new to this infusion therapy received detailed education and training from a PAH specialty pharmacist, a pharmaceutical nurse educator, and a staff nurse. To expand our program, education was provided to other hospital areas that may interact with and manage these patients. Based on our successful unit-level implementation of the education program, we are currently revising inpatient clinical practice guidelines to be used throughout the institution. The design and revision of computer-based learning modules about Epoprostenol and Treprostinil is an effective mode of learning for medical, nursing, and pharmacy staff who manage PAH patients. The key CNS roles of clinical expert, consultant, educator, researcher, and leader are used effectively to optimize patients' outcomes.

## **Evaluations/Outcomes**

Comparison of data from 2005 and 2009 shows improvements in process and safety outcomes. The percentage of events related to prostacyclin administration and clinical care management therapy decreased from 8% to 1.5%. The mean event severity level decreased by 50% from 1.8 to 1.0. Of most significance, the percentage of event reports with a severity level greater than 3 decreased from 33% to 0%. Our data demonstrate that these initiatives have positively benefited patient care and improved patient safety overall. The work of the interdisciplinary team as led by the CNS, and the common goal that all members share (to provide the best patient care possible) have led to these successful outcomes.

## **EB66 Collaboration Between 2 Hospital Departments to Improve Care of Patients With Sepsis**

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Rebecca Pontius, Crystal Miller; PinnacleHealth, Harrisburg, PA

### **Purpose**

Two hospital departments collaborated to decrease patient mortality, hospital lengths of stay, and hospital costs for patients admitted to the intensive care unit (ICU) with the diagnosis of sepsis.

### **Description**

Since the sepsis protocol was instituted in late 2007, the ICU has seen a decrease in hospital lengths of stay by 2 days, which resulted in a cost savings of approximately \$6000 per patient. The decision was made to combine ICU admission and sepsis orders into 1 form to ensure use of the protocol because a number of patients admitted with sepsis were not placed on the protocol. A collaborative process with the emergency department was developed for early identification and treatment of sepsis. A triage form that includes nursing interventions was designed so that emergency department nurses could identify patients with sepsis. A triage form for emergency department physicians was developed to include additional criteria for identification of sepsis, early initiation of administration of antibiotics, and activation of the sepsis alert. Since initial sepsis treatment has been implemented in the emergency department, patients have received their first dose of antibiotics before transfer to the ICU. Preliminary data indicate improved patient outcomes and shorter hospital stays.

### **Evaluations/Outcomes**

Recent data indicate that patient mortality, hospital costs, and hospital lengths of stay decrease when hospital departments collaborate to begin timely identification and treatment of patients with sepsis. Early identification of sepsis and beginning the sepsis protocol in the emergency department is imperative for high-quality outcomes for patients. Collaboration between the emergency department and the ICU contributed to a decrease in hospital lengths of stay from 12.3 to 10.3 days and a decrease in patient mortality rates from 51% to 42%.

[glennbecky70284@verizon.net](mailto:glennbecky70284@verizon.net)

## **EB67 Creating a Culture of Evidence-Based Practice**

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Sarah Voogd, Lucas Kemp, Jan Vrchota; Mayo Clinic, Rochester, MN

### **Purpose**

Nursing must be able to keep pace with evolving change using the most current results from evidence-based practice (EBP). Strategies were used to facilitate staff nurses' use of current evidence in daily bedside care. Nurses often use what is known or comfortable, but patient care can be improved by nurses who are open to changes suggested by an ever-evolving body of evidence. By encouraging the development of unit practice changes, nurses enjoy a sense of ownership for their practice.

## **Description**

Barriers to innovation and acceptance of EBP are mainly at the organizational level. Nurses need support and institutional collaboration to use EBP effectively. Our foundation for EBP has been rooted in the practice/staff development committee. This monthly committee provides a forum for feedback from all staff regarding practice issues or concerns. Literature is evaluated for pertinence to our practice and reviewed to determine if current practice and research are congruent. An article review with continuing education units is also conducted monthly on a relevant topic, exposing our staff to current research and encouraging them to critically analyze the quality of the data and determine its applicability to our patients. Nurses who are well informed about EBP are more likely to use it. A common barrier to EBP use is nurses' perception that their workplace is not conducive to change or supportive of EBP. To address this barrier, nurse interns formulated a population, intervention, comparison, outcome (PICO) research question with supportive literature with regard to a clinical issue. These questions were subsequently presented at a unit meeting, increasing staff awareness of the PICO process.

## **Evaluations/Outcomes**

Unit practice changes have been the direct result of nurse-driven literature review. Practice has been modified in several areas and evaluation of outcomes by registered nurse quality coaches continues. Examples of changes resulting from nurse data collection include an early mobilization protocol, increased sedation holiday compliance, and use of chlorhexidine baths to decrease patients' colonization rates with methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococcus. Our aim is to promote an environment favorable to use of EBP by exposing our staff to the PICO process and scholarly literature. Unit nurses are empowered to question their daily practice and now look to literature for answers to their questions more often.

[sarah\\_voogd@hotmail.com](mailto:sarah_voogd@hotmail.com)

## **EB68 Creating a Healthy Work Environment With Civility and Respect**



Mary Mather, Kaye Alford; South Texas Veterans Health Care System, San Antonio, TX

## **Purpose**

One of the factors cited as a reason for turnover and burnout among Veterans Health Administration (VHA) nurses is incivility. The emergency department nurses at South Texas Veterans Health Care System participated in a 6-month civility training program to increase awareness of civility and respect issues in the workplace. The goal was to change unit culture toward increasing workplace civility in order to achieve a healthy work environment (HWE).

## **Description**

CREW (Civility, Respect, and Engagement in the Workplace) is an initiative by the VHA's National Center for Organization Development. The goal of CREW is to support the members of the interdisciplinary team as they identify strengths and areas for organizational improvement. HWE was measured by civility scores. A survey (Likert scale 1–5) was sent to the emergency department staff before and after CREW to measure the following parameters: perceived respect, cooperation, conflict resolution, coworker personal interest, coworker reliability, antidiscrimination, value differences, and supervisor diversity acceptance. Biweekly 15 to 20 minute CREW meetings on the day, evening, and night shifts were implemented for 6 months with trained facilitators guiding work-group-level dialogue about civility and respect. Evidence-based tools from Agency for Healthcare Research and Quality's TeamSTEPPS (Strategies and Tools to Enhance Performance and Patient Safety) and Vital Smart's Crucial Conversation concepts were included during the sessions to build an understanding of communication and team-work barriers. Brainstorming, appreciative inquiry, and expressive drawing were some of the techniques used to facilitate group discussion.

## **Evaluations/Outcomes**

Postsurvey results showed a significant increase in scores on all the parameters (perceived respect, cooperation, conflict resolution, coworker personal interest, coworker reliability, antidiscrimination, value differences, and supervisor diversity acceptance). Overall perceived civility by the staff nurses in the emergency department scored 4 out of 5 on the Likert scale. Staff nurses in the emergency department discussed processes needing quality improvement, and the work group constructed a plan for change. Subjective comments from the emergency department staff mentioned an increased awareness of civility and respect issues and interventions that foster a HWE.

[mary.mather@va.gov](mailto:mary.mather@va.gov)

## **EB69 Critical Care Clinical Immersion Practicum for Graduating Nursing Students: A Success Story**

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Angela Leasure, Sandra Graham, Jane A. Hill; University of Oklahoma Health Sciences Center, Oklahoma City, OK

## **Purpose**

Critical care units and academic institutions are challenged with “doing more with less” while getting sicker patients through the health care system more quickly. Consistent with the values of the AACN, synergistic relationships with persons with a stake in the process were developed and maintained to develop and implement this partnership. The purpose of this 6-week critical care clinical immersion practicum is to prepare nursing students interested in employment in the critical care area after graduation.

## **Description**

Consistent with AACN’s values of collaboration and innovation, a synergistic program was implemented that benefited both clinical and academic partners. The director of critical care services and an academic educator serve as co-faculty for the experience. Additionally, the state board of nursing provides very clear and helpful guidelines for precepted clinical experiences. Although a student may indicate a preference for a preceptor, the preceptor must agree and the unit manager approves each supervisory partnership. Students work their preceptor’s schedule whether it is days, nights, or compressed weekends. The co-faculty are available by phone and through time spent on the unit, regularly scheduled site visits, and meetings with student/preceptor pairs throughout the rotation. This experience has required a paradigm shift where the faculty is no longer the “safe on the clinical stage” but rather the “guide on the side.” Through this experience, students focus on time management issues related to management of the care of more than 1 critically ill patient and examine unit-based outcomes such as relevant core measures.

## **Evaluations/Outcomes**

In the past 4 years, the program has been characterized by high levels of student, staff, and critical care service satisfaction. One-year turnover rates among new graduate nurses hired into the ICU decreased after the program started and have remained low. Pass rates for the National League for Nursing Accrediting Commission’s examinations have remained high. The units remain positive about the practicum as they have an increased voice in determining who is hired. Through continued networking and marketing of the program, unit nurse leaders now guide the elements of this program and promote its continued evolution and success.

[renee-leasure@ouhsc.edu](mailto:renee-leasure@ouhsc.edu)

## **EB70 Critical Care Goes Viral! Connecting With Generation Y**

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Cynthia Thompson, Elizabeth Naber; Grant Medical Center, Columbus, OH

## **Purpose**

Connecting with a multigenerational work-force brings unique challenges, but now one must factor the techno-savvy generation Y into the mix. Since generation Y comprises more than 60% of our critical care staff, the leadership team had to develop creative communication strategies to engage this generation armed with Blackberrys, cell phones, laptops, and other gadgets.

## **Description**

Generation Y can be described as a generation where technology is innate and inherent, which essentially has allowed them to be plugged in 24 hours a day, 7 days a week. With this in mind, the leadership team brainstormed ideas and explored if technology was present to support the initiative. Internet access to “eSource,” our organization’s intranet, provided the framework to implement our plan. First, every employee was given a work e-mail account. A critical care Web site was designed. The Web site features include special announcements, clinical resources, “Best Practice” tip sheets, charge nurse resources, an event calendar, management weekly “Talking Points,” unit council minutes, a “How are We Doing?” section that focuses on quality outcomes, CCRN preparation resources, unit-based newsletters, and relevant links. Both the work e-mail and Web site can be accessed 24 hours a day, 7 days a week from any computer with Internet capabilities (including Blackberrys, iPhones, etc). One-to-one training on accessing the Web site and its features was provided. The leadership team is now exploring the opportunity to create, while adhering to organizational policies, Facebook and Twitter accounts and group paging and e-mailing options.

## **Evaluations/Outcomes**

Our information technology department has reported increasing use of our Web site. Staff members have demonstrated increased knowledge of current events and other communications. Performance expectations on using e-mail and the Web site to keep current have been incorporated into our “Standards of Care and Professional Practice” at the request of both practice councils. An opportunity was identified to promote use of the Web site by doing follow-up education on accessing these tools from home since staff has expressed that they do not know the process. As technology advances and organizational policies permit, this leadership team plans to take full advantage of these advances to connect with our growing generation Y workforce.

[hathompson@hughes.net](mailto:hathompson@hughes.net)

## **EB71 CRRT Nursing Education Program: Impact on Filter Life and Patient Care**

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Alyssa Akers-Nowicki, Theresa Mottes, Tonie Owens; University of Michigan C.S. Mott Children’s Hospital, Ann Arbor, MI

## **Purpose**

Historically, use of continuous renal replacement therapy (CRRT) in children has been intermittent and infrequent when compared with use in adults. Developing and maintaining a consistent level of competency for nurses who care for children receiving CRRT is challenging. The purpose of our educational program was to build an infrastructure that would support advancing clinical expertise as described in Benner's Stages of Clinical Competence for this highly technical, low-volume therapy.

## **Description**

To identify challenges, an analysis of our program's current state was completed. First, we identified 2 roles that nurses play in delivering CRRT: initiating therapy and providing bedside care. Other metrics used included filter life, unplanned filter changes, incidence of adverse events during initiation, and the knowledge and comfort scores of trained staff. Analysis revealed a filter life of 42.7 hours, unplanned filter changes of 38%, and adverse event incidence rate of 0.18 per initiation of filter. Further root-cause analysis conducted on filters that were discontinued before 72 hours of use revealed that 67% of events were potentially preventable and of those 40% directly correlated with alarm interventions at the bedside, highlighting the role of nurses in influencing filter life and patients' outcomes. A role-based education program was created that addresses the different skills and knowledge necessary to perform appropriate clinical competencies. Simulation was chosen as the venue because it facilitates teamwork and an individual's acquisition of skill and insight that is best learned in realistic conditions. Scenarios used represented actual events, with staff receiving immediate feedback and suggestions for future practice.

## **Evaluations/Outcomes**

Developing a comprehensive nursing education program has improved unplanned and unscheduled filter changes from 38% to 18%, which resulted in an improvement in filter life by 15% (55 hours). This improvement also translates into a 12% decrease in patient adverse events and a 15% decrease in filter cost. The annual nursing survey/knowledge assessment also demonstrated improvement in the areas of comfort level, knowledge level, and troubleshooting skills for nurses who both initiate and deliver bedside care for CRRT patients. By creating a deliberate practice environment through simulation, improved program metrics have been sustainable over time.

[alyssaj@med.umich.edu](mailto:alyssaj@med.umich.edu)

## **EB72 Decreasing Noise Levels in the Intensive Care Unit: Promoting a Quiet Environment for Patients and Staff**

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Lisa Winters; Mercy Hospital, Coon Rapids, MN

## **Purpose**

Excessive noise levels in the intensive care unit (ICU) can be a significant problem for patients and staff. Excessive noise is a direct contributor to many negative effects among patients and staff, such as sleep deprivation and irritability. Recent ICU patient and staff surveys illustrated numerous complaints about high noise levels. The goal of this project is to implement realistic interventions to decrease noise levels in the ICU to promote a quiet environment for patients and staff.

## **Description**

This project was developed by a core ICU nurse and implemented with the assistance of the ICU council. Baseline noise levels in the ICU were measured with a decibel meter. The average decibel reading [dB(A)] found in the ICU was 55 to 65 dB(A), with peaks as high as 85 dB(A). This level of noise is comparable to heavy traffic and is well above the World Health Organization recommendations. All ICU staff received education on the noise reduction project during the annual ICU skills day. Education focused on relaying the patient and staff survey comments, decibel readings, and relevant research on the negative consequences of noise. Several equipment and behavior modifications were implemented to reduce noise; which included the installation of rubber padding around glass door frames, closing doors of patients' rooms (when safe for the patient), decreasing telephone ring volumes, and keeping staff conversations to a minimum. Structural changes included the installation of Yacker Trackers and a sound masking system. The Yacker Trackers serve as an awareness tool to alert staff when noise levels are too high. The sound masking system works by gently raising the background sound in the space with masking to create a comfortable environment.

## **Evaluations/Outcomes**

Noise levels reduced in the ICU by evidence of a decrease in decibel readings with fewer patient and staff complaints. Decibel readings were taken after all interventions were implemented, with findings supporting a successful project. Decibel readings decreased by more than 10 dB(A). Patients also reported feeling they had periods of adequate rest during their ICU stay, and staff reported an improved ability to concentrate. The ICU setting is often chaotic and prone to multiple, unpredictable loud noises; however, this project has proven that it is possible to decrease noise levels with some simple behavioral, equipment, and structural modifications.

[nurserella@comcast.net](mailto:nurserella@comcast.net)

## **EB73 Developing Skilled Communication and True Collaboration: Improving Interdisciplinary Communication During Rounds in the Intensive Care Unit**

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Susan Derubis, Kristy Bayer, Todd Cobourne, Susan DeRubis, Alissa Muhlman, Ashley Ulrich; UPMC Presbyterian, University of Pittsburgh Medical Center (UPMC),

## **Purpose**

We established an “ICU Rounds Task Force” to improve interdisciplinary communication, develop partnerships, and improve patient care delivery by developing a standard format for conveying patient information during daily rounds in the transplant intensive care unit (TICU). Structured communication between physicians and nursing staff by using a systems-based framework ensures effective information sharing within the health care team and establishes clear expectations for the team, the patients, and the patients’ families.

## **Description**

Both physicians and nurses review and analyze clinical data to develop an individualized plan of care for each patient. Nurses at the bedside have the most current information available, including the patient’s response to therapeutic interventions. Without effective communication, this critical information may be overlooked, delayed, or missed. In the TICU, critical care fellows gather data, perform physical assessments, and then present their findings during formal ICU rounds with the attending physicians. Nursing participation may depend on the assertiveness of the nurse to speak up and/or the physician’s receptivity to receive the information. A group of nurses and physicians convened to develop a structured format for nurse-led rounds. A worksheet was created to assist the nurse in collecting the appropriate information and presenting the patient’s report in a systems-based framework. The nurses and physicians work together as a team to develop the patient’s plan of care by using dialogue, negotiation, and advocacy. Surveys before and after implementation were used to measure the perceived change in communication between nurses and physicians.

## **Evaluations/Outcomes**

Five key questions from the survey were used as “indicators of change” in bedside nurses’ perception of the communication and collaboration. The response to “strongly agree” or “agree” on the preimplementation survey was 57%. The postimplementation response yielded a mean of 79.8% to the same 5 questions—a 22% increase in nurses’ satisfaction with interdisciplinary communication. Most (76.6%) of the nurses who responded believed that nurse-led rounds have improved interdisciplinary communication. Improved interdisciplinary communication with a comprehensive goal-directed plan of care for the patient also advanced collaborative relationships in our ICU.

[sderubis@comcast.net](mailto:sderubis@comcast.net)



## **Purpose**

The purpose of this project was to facilitate the removal of chest tubes with improved pain control, minimal complications, and no delays in care. Before this project, the physician assistants in the intensive care unit removed chest tubes. Because of time constraints, pain medication often was not available or had inadequate time to take effect before chest tube removal. Pain was a major patient complaint during chest tube removal. Chest tubes removed later in the day were at the availability of the physician assistant.

## **Description**

Patients have described chest tube removal as one of the most painful postoperative events, and no national standards have been set for pain associated with removal of chest tubes. A national survey of more than 500 nurses revealed that only 16.3% of patients have routine pain medications ordered for chest tube removal. Nurses who remove chest tubes can plan for the procedure and provide consistent, adequate pain relief with improved patient satisfaction. By allowing the bedside nurse to remove chest tubes, pain could be treated adequately with no delay in the removal. The first group of nurses completed a written assessment of competency in the safe removal of chest tubes and then demonstrated removal of chest tubes from a styrofoam chest. Each trained nurse must then complete 5 assisted removals of chest tubes. A quality improvement tool to track patient's pain level by using a numeric rating scale after chest tube removal and to track complications after removal was completed for each removal. The quality improvement tool is a written form used to track a patient's pain level by using a numeric rating scale after chest tube removal and to track complications after chest tube removal. A chest radiograph obtained after removal is the standard of care. Each radiograph was tracked for the presence of a pneumothorax.

## **Evaluations/Outcomes**

A total of 18 nurses were successfully trained removing 181 sets of chest tubes from 181 cardiovascular surgical patients with zero reinsertions. The pain score on the numeric rating scale were 4 in 89.4% of all the patients. No major complications were experienced. Pneumothoraces occurred in only 2.2% of the patients; all were under 5% and required no further action. Bedside nurses can safely remove chest tubes with improved pain control. Overall, this project has provided improved nursing autonomy and improved satisfaction among associates, patients, and physicians. The cardiovascular surgeons have praised the nurses and now request all nurses be trained.

## **EB75 Eliminating Central Catheter–Associated Blood Stream Infections: Counting Down to Zero With a Nurse-Driven Collaboration**

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Laurie D'Acquisto, SICU Team; Rochester General Hospital, Rochester, NY

### **Purpose**

The use of a central venous catheter (CVC) occurs in nearly half of all critically ill patients. Central catheter–associated blood stream infection (CLABSI) can be a catastrophic complication. A CLABSI of 3.1 per 1000 catheter days prompted our surgical intensive care unit (SICU) to develop a plan for reduction. Our goal was to reduce our CLABSI rate by forming a nurse-driven central catheter collaborative that implemented evidence-based interventions, staff education, and follow-up evaluation.

### **Description**

The SICU CLABSI rates were monitored for 2 years. The 2008 rate was 3.1 per 1000 catheter days. The central catheter nursing collaborative was formed with nurses from the hospital infection prevention and SICU, a nurse educator, and a manager. The action plan included reeducation on the key components of the Institute for Healthcare Improvement (IHI) central catheter bundle including hand hygiene, maximal barrier precautions, appropriate site selection, chlorhexidine skin preparation, and daily review of catheter necessity. Recommendations from IHI called for daily review of catheter necessity; we changed this requirement to a more frequent shift-to-shift review. It was identified that staff was unaware in which rooms CVCs were being inserted, leading to interruptions in catheter placement and potential safety risk to our patients because of potential distraction of care providers. A “Stop” sign was developed and placed on door to signal staff not to enter the patient’s room while a CVC was being placed. Nursing staff was also educated and empowered to stop the insertion process if any elements of the bundle were not adhered to. Nursing staff evaluated adherence to bundle components and sign placement by using an insertion checklist. Weekly collaborative meetings occurred to review data and provide feedback to nursing and provider staff.

### **Evaluations/Outcomes**

A zero infection rate was achieved with a nurse-driven reeducation about bundle components, shift-to-shift evaluation of catheter necessity, and placement of stop signs on doors during CVC insertion. These changes, paired with the empowerment of staff to identify nonadherence, have led to the SICU not having a CLABSI in 473 days.

[ldacquil@rochester.rr.com](mailto:ldacquil@rochester.rr.com)



# Comfort Care in the Intensive Care Unit

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Jennifer Hartley; University of Washington Medical Center, Seattle, WA

## Purpose

A comfort care education and mentorship program was established in a medical-surgical intensive care unit (ICU) to increase nursing competence at end of life and to support nurses. Research suggests an increase in aging chronically ill patients transitioning to comfort care in the ICU. Nurses must be competent and feel comfortable with end-of-life care to meet the growing needs. Empowering nurses to become mentors creates a culture that values collaboration with a commitment to quality and excellent patient care.

## Description

We initiated an evidence-based comfort care education program that focuses on patient/family care at the end of life, including life-support withdrawal and the support of nurses providing this care. Two critical care nurses attended the End of Life Nursing Consortium (ELNEC), which provides research-based education related to end-of-life care, with an emphasis on adult ICU patients and their families. After completion of the course, bedside nurses in the MSICU completed surveys to identify current strengths and weaknesses in providing comfort care. All staff nurses were invited to participate in a comfort care education project; 20 nurses attended an 8-hour comprehensive class on comfort care that used ELNEC materials. The course focused on the pathophysiology of death and dying; signs and symptoms of dying; pain management; communication with patients, patients' families, and providers; and provider self-care. Upon course completion, these nurses became mentors, serving as resources for staff providing comfort care and with whom to debrief after a death on the unit. Program success was evaluated by using surveys of 52 nurses before and 26 nurses after implementation of the program, including a self-assessment of competence in providing comfort care and anecdotal feedback.

## Evaluations/Outcomes

The survey before the class yielded the following results: barriers related to comfort care (100% communication); self-care prevalence (20%); comparing comfort with care provision (before 5.9/10, after 6.7/10); increase in competence: symptoms (before 3.3/5, after 3.6/5); pain (before 3.5/5, after 3.7/5); communication (before 2.8/5, after 3.2/5). The survey after the class yielded the following results: obtaining resources (96%); consult a mentor (32%) with 88% reported benefit. Using mentors to debrief (12%) with 100% reported benefit. Thirty-seven more care providers will attend the class. It has become the cultural norm to seek mentors for clinical assistance and debriefing; feedback indicates a drastic change from being called "angel of death" when providing comfort care before the class to a supportive culture after the class.

## **EB77 Enteral Feeding Formula for Sepsis Patients with Acute Lung Injury/Acute Respiratory Distress Syndrome: Are Recommendations Achievable?**

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Kirsten Springer, Debbie Motley, Julie Barrett; Mission Hospital, Mission Viejo, CA

### **Purpose**

Based on the new guidelines from American Society for Parenteral and Enteral Nutrition and the Society of Critical Care Medicine, starting patients with a diagnosis of acute respiratory distress syndrome (ARDS) or acute lung injury (ALI) on enteral formulas characterized by anti-inflammatory lipids and increased antioxidants may be beneficial and received a grade A recommendation. Studies suggest improved outcomes in patients who received at least 1000 mL/d of these formulas (1500 kcal) during the initial week of injury. The purpose of our study was to determine feasibility.

### **Description**

A prospective, convenience sample meeting ALI/ARDS criteria were started on an ALI/ARDS formula. Patients not meeting these criteria were started on a nonpulmonary formula. Data were collected from August 2009 through August 2010. Eighteen patients received an ALI/ARDS formula through day 7 during the study period. Seven patients (39%) met target mean dietary intake of at least 1500 kcal/d on days 4 through 7 (range, 1688–2182 kcal). Eleven patients (61%) received a mean dietary intake of at least 17 kcal/kg daily. Four patients (22%) died after day 7. Nonphysiological factors impeding delivery included pulled feeding tube (n=1), held for procedures (n=3), or late start (n=2). Twenty patients received a non-ALI/ARDS formula through day 7. Eleven patients (55%) met target mean dietary intake of at least 1500 kcal/day on days 4 through 7 (range, 1676–2115 kcal). Fifteen patients (75%) received a mean dietary intake of at least 17 kcal/kg per day. Four patients (20%) died after day 7. Nonphysiological factors impeding delivery included pulled feeding tube (n=2), late start (n=1), or clogged tube (n=1). Binomial proportion testing on all comparisons showed no statistical difference with 1- and 2-tailed *P* values.

### **Evaluations/Outcomes**

Current grade A evidence recommending a dose-dependent 1000 mL/day of an ALI/ARDS formula was achievable at our center in only 39% of patients. Interestingly, when a kilocalories/kilogram-based target is used, 61.1% of patients received 17 kcal/kg a day. Although nonphysiological factors commonly impede adequate nutrition delivery in the intensive care unit, further research is needed to determine if ALI/ARDS formulas contain enough therapeutic nutrients for those patients unable to reach the recommended level of 1500 kcal/day.

## **EB78 For Goodness Sake: The Power of Personal Perceptions and Communication in a Critical Care Setting**

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Judith Schofield; The Christ Hospital, Cincinnati, OH

### **Purpose**

With the AACN Synergy Model used as a guideline, the purpose of this project was to describe key factors that influence the perspective of the loved one, the nurse, and the patient in order to enhance a healthy communication process in critical care. By bridging the gap in awareness of the perception of others through personal stories, a new understanding of each is found. Sharing the human side of critical care is the building block for healthy work environments and patient and staff satisfaction.

### **Description**

Evidence has demonstrated that retention of presented information is 90% or greater when it can be personalized. This project incorporated the AACN Synergy Model, healthy work environments, and personal experiences to develop an educational program for critical care staff. It combines the reality of illness and the effect it has on our relationships with the array of human emotions that are connected to it. The information focuses on the effect of perception and communication skills in critical care through the power of one-to-one conversations and insight at the bedside. Talking, listening, and understanding are at the root of the relationship and vital to quality outcomes, and those basic needs are as important as the medical ones. As the personal stories of being a loved one, a nurse, and a patient are shared, critical care nurses can relate to the vulnerability and responsibility of each role and apply it to their clinical practice. As they personalize the experience, they are more likely to recall the information and the emotions and find it relevant in a critical care setting. This practice change is an internal decision that then affects quality outcomes, patient and staff satisfaction, and healthy work environments.

### **Evaluations/Outcomes**

This project was presented to a cardiac unit as an educational offering before their Beacon application. The evaluation scores were excellent, and the comments described the power of the personalization of the topic. Within 6 months, customer service scores went from 89th to 95th percentile and staff satisfaction measured 3.7 out of 4. The unit did achieve Beacon status, and the presenter has repeated the presentation at other institutions. This project was just one factor in developing a healthy work environment but it does demonstrate that having the knowledge and understanding of each other's perspective leads to development of a therapeutic milieu that is beneficial to the nursing and patient care environment.

## **EB79 Fostering Success: Nurturing New Nurses in a Medical Intensive Care Unit**

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Bridget Remel, Brooke Gee, Rachel Johnson, Michelle Jonkiert, Jill Kane, Tamyra Mosley, Dustin McFarland, Mary Neeman, Denise Williams, Christina Wintrup; Christiana Care Health System, Newark, DE

### **Purpose**

The medical intensive care unit (MICU) is a 20-bed unit with a diverse population. Following an influx of novice nurses, we recognized a need to support our nurses in their transition from orientation to proficient and confident practitioners. We developed an initiative to educate and integrate new nurses into the MICU, while fostering independence and success through support, ongoing education, and continued mentorship.

### **Description**

New nurses are hired into the MICU from a variety of nursing backgrounds, including nurses without critical care experience and new graduates from our critical care nurse internship program. According to the literature, several themes were identified by new nurses that hindered their transition into skilled practitioners. Themes included deficits in critical thinking and clinical knowledge, lack of confidence in skilled performance, struggle with being dependent on others yet wanting to be independent, and organization and priority setting skills. The “Novice Nurse Work” (NNW) group was formed to improve upon these areas and ease transition of new nurses into the MICU. Topics included an evaluation of their individual orientation program, open dialogue for improvements, critical thinking exercises, an introduction to the implementation of the Synergy Practice Model, and simulation lab practice in critical care scenarios. The first NNW group, consisting of 9 novice nurses, met quarterly for 1 year in 2009. Because of the first group of participants’ satisfaction and successful development, we have decided to continue this initiative. Two members of the first group have risen to the challenge of leading the current group.

### **Evaluations/Outcomes**

Personal goals were set at the first meeting and reviewed at subsequent meetings to determine progress. At the end of each session, participants had the opportunity to evaluate that session’s education content and suggest topics for the next session. Benner’s stages of clinical competence novice to expert rubric were also used to track development at each meeting. Recent simulation lab evaluations have revealed a significant increase in comfort level in caring for critically ill patients. Participants described feeling more confident in their critical thinking capabilities and are

enthusiastic and positive about this program.

[brige00@hotmail.com](mailto:brige00@hotmail.com)

## **EB80 Growing a Garden of Leadership**

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Ashley Fleming, Susan Collins, Lisa Moore, Kas Sheehan, Beth Harris, Susan Wall, Jade Hanson, Elizabeth Walters, Christine Beck, Melissa Macogay; All Children's Hospital, Saint Petersburg, FL

### **Purpose**

In order to dissolve the traditional hierarchical management ladder, an alternative approach was designed to focus leadership horizontally rather than vertically within a pediatric cardiovascular intensive care unit. The goal was to provide strong clinical leadership representation continuously from shift to shift and spread seeds throughout the unit to grow leadership skills among bedside nurses.

### **Description**

The leadership team includes 6 bedside nurse leaders from both shifts in addition to the administrative director, clinical manager, and education specialist. Each nurse leader has a designated focus. Using this structure, the staff can easily identify the correct point person to discuss a certain process or issue. Focuses include, but are not limited to, bedside education, evidence-based practice, shared governance, safety reporting, and research and quality assurance/improvement projects. In addition, nurse leaders function in a charge role and mentor a small group of nurses in the "relief charge" role. Nurse leaders assist in annual employee evaluations by providing a hands-on perspective of nurses' growth, and encourage this growth at the bedside throughout the year. This leadership model has enhanced mentorship of bedside nurses with individual and group projects. Reports of unit projects are provided monthly at the unit council meetings. Projects have included an educational game to increase understanding of cardiac defects, healthy work environment focuses, service recovery, data collection for quality assurance/improvement projects, and increased unit representation for hospital-wide initiatives.

### **Evaluations/Outcomes**

The presence of the leadership team every shift has shown to increase the growth of staff. Success of leadership growth is measured by staff nurse commitments to leading projects both in the unit and hospital-wide. Bedside nurse involvement in unit projects has grown by 32% in a year, with more than half of our nurses participating in unit-based projects. Additionally, 13% of bedside nurses participate on hospital committees. Growth of the nurse leadership team has resulted in nurse leaders developing hospital-wide projects and committees including evidence-based practice

changes, development of a medical emergency response team, and the continued development of an extracorporeal membrane oxygenation specialist program.

[ashleycollins@gmail.com](mailto:ashleycollins@gmail.com)

## **EB81 Healthy Work Environments . . . We Make It Happen!**

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Brooke Johnson, Victoria Boyce, Jeannine Rathod, Noelle Maude; St John Hospital and Medical Center, Detroit, MI

### **Purpose**

A priority has been placed on establishing and sustaining a healthy work environment to improve patient safety, outcomes, and nurse retention. This poster describes creative, simple interventions used to improve teamwork and collaboration in a surgical intensive care unit. Embracing the principles of true collaboration, associates and leaders formulated and implemented a variety of strategies to enhance the work environment.

### **Description**

The plan evolved over the period of a year and gained momentum as associates realized the benefits of building community, caring, and partnership activities within the unit. Activities included consideration of self-care opportunities for staff such as partnering with leaders in co-creation of the redesign of the staff lounge for a functional and inviting environment; creation of a renewal/meditation room with soft chairs and low lighting (staff developed the rules for use of the room, including no food or shoes); and chair massages on a regular basis. Teamwork and a sense of community are enhanced through activities such as development of a social committee within the unit, whose goal is to foster closer relationships between coworkers. The committee plans a variety of activities, including poster contests with themed photos (baby, prom, graduation, etc) potlucks, community projects to care for the underserved, and social activities outside the unit such as formation of a softball team, day trips to amusement parks, and after-shift outings.

### **Evaluations/Outcomes**

The organization uses a satisfaction survey to assess engagement, job satisfaction, and leadership support. In 2009, 47 surveys were returned; that number increased to 59 in 2010, with 74% of associates responding. Eighty-three percent of staff reported a favorable response to the question “There is a spirit of cooperation and teamwork in my group.” These interventions have had a positive effect on patients’ outcomes, with a 50% reduction in blood stream infections from 2009 to 2010, improvement in ventilatory weaning, and 89% of associates reporting that “Members of my work group perform quality work” in the hospital survey.

## **EB82 Immersive Critical Care Nursing: A Nonconventional Certification Review Model**

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Amelia Ross, Sherrice Sanders; Wake Forest University Baptist Medical Center, Winston Salem, NC

### **Purpose**

The benefits of certification for nurses, patients, patients' families, and employers are well known. In the Piedmont region of North Carolina, a partnership among a hospital department of nursing, school of medicine, area health education center, and community hospitals was established to increase the number of certified critical care registered nurses through the development of a nonconventional certification review program. The program was designed to incorporate concepts of immersive learning.

### **Description**

Today's adult learners experience hands-on education as well as computer-mediated instruction. Blended learning combines face-to-face interaction with Web-based or e-learning instruction. Immersive learning refers to highly interactive education that includes e-learning, simulation, and virtual learning. Wake Forest University Baptist Medical Center, a tertiary level I trauma center with a simulation center and learning management system (LMS), collaborated with community hospitals for an opportunity in immersive learning. The curriculum centered on the CCRN exam test plan. Activities of immersive learning included e-learning from the AACN Essentials of Critical Care Orientation (ECCO), discussion forums via the LMS, problem-based case scenarios using high-fidelity simulation, and didactic debriefing sessions. Debriefing provided opportunities for assessment of strengths and weaknesses, questions and answers, review of evidence-based practice, and practice test questions. Completion of the assigned ECCO module was expected before the corresponding simulation session. Learners were provided an orientation to ECCO, the learning management system, and the simulation environment.

### **Evaluations/Outcomes**

Twenty-nine of 40 nurses completed the program. The Basic Knowledge Assessment Tool (BKAT-8), a validated test that measures basic knowledge in critical care nursing, was administered before and at the end of the program. Improvement in the test scores was demonstrated (pretest mean 79, median 81; posttest mean 84, median 86), but was not statistically significant ( $P>.99$ ). Evaluations reported positive feedback with suggestions for improvement. A celebration was held for those who completed the program with a door prize, roses, and an AACN lunchbox. Applications for the certification examination were submitted with results due by December 31, 2010.

## **EB83 Improved Telemetry Utilization Through a Nurse-Driven Screening Protocol at a Public Teaching Hospital**

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Joseph Clement, Rachel Oribello; San Francisco General Hospital and Trauma Center, San Francisco, CA

### **Purpose**

Nationally, and on our medical/surgical/telemetry unit, patients routinely receive continuous cardiac monitoring longer than is clinically indicated. This contributes to a chronic shortage of beds, impeded patient flow, and increased cost. The aim of this project is to reduce unnecessary cardiac monitoring by conforming to national guidelines and to empower telemetry nurses to advocate more effectively for optimal patient care, thus improving patient flow.

### **Description**

Active surveillance techniques for removing cardiac monitoring have been safely implemented in telemetry units in the United States. An intervention aimed at reducing monitoring duration was implemented in October 2010. It involved proactive screening of current patients by night-shift telemetry nurses to determine which patients are ready for discharge. Readiness for discharge was determined by using a screening tool developed for this study that integrated laboratory, electrocardiographic, and physical assessment data. The screening tool was based on national guidelines for in-hospital cardiac monitoring. Day-shift nurses communicated screening findings to teams of primary physicians and recommended removal orders. The process was refined over time through multiple PDSA (plan, do, study, act) cycles. Average monitoring duration in hours per patient was measured after implementation and was compared with baseline data from fall 2009. In June 2010, all staff nurses were surveyed about their understanding of the process, their perceptions of its effectiveness, and the impact on their role using a 5-point Likert scale via an online survey tool.

### **Evaluations/Outcomes**

Average monitoring duration decreased from 60 hours at baseline to 48, 51, and 42 hours in June, July, and August 2010, respectively. Forty-seven of 57 (82%) staff nurses responded to the survey. Thirty-four (73%) agreed or completely agreed that they understood how to perform the screening process correctly. Forty-one (87%) agreed or completely agreed that the screening process helps reduce unnecessary monitoring of patients, and 42 (89%) agreed or completely agreed it strengthens the role of telemetry nurses. No adverse events (eg, death, cardiac arrest) were associated with cessation of monitoring during the study. On the basis of these results, the intervention has been

incorporated into practice at our institution.

[joe@onetwothree.net](mailto:joe@onetwothree.net)

## **EB84 Improvement of Temperature Monitoring During Induced Hypothermia in Neonates During Transport**

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Edd Shope; Duke University Hospital, Durham, NC

### **Purpose**

Our neonatal transport team is responsible for transporting newborns after hypoxic injuries (hypoxic ischemic encephalopathy). For improved outcomes, we have a protocol for induced hypothermia, reducing and maintaining a core temperature of 33.5°C. Traditionally, we have used skin temperature probes (STPs) to monitor newborns' temperature. However, in this population, skin perfusion is usually compromised. A reliable alternative method for monitoring "core" temperatures was sought.

### **Description**

In our neonatal intensive care unit (ICU), we use the Blanketrol II device for temperature regulation of newborns undergoing induced hypothermia. It has feedback control technology through an esophageal temperature probe (ETP). This ETP has a phone-jack attachment to a cable that plugs into the Blanketrol II machine. The size of the ETP catheter was appropriate for our needs in transport, but first the compatibility had to be determined (whether it plugs into the incubator, which it did), then the accuracy of the number delivered to our incubator had to be evaluated. We collaborated with our biomed department to conduct an experiment where 2 incubators were used, each with different modes of temperature monitoring. The first incubator had an STP and the second had an ETP. These 2 probes were secured to an industrial thermometer (Digi Sense Type T Thermocouple) and placed in ice water. The values of all 3 devices were monitored and graphed over a period of several hours as the water warmed up. In part 2, we repeated the experiment using hot water from a coffee dispenser, which gradually cooled. Once again, the 3 devices were monitored for a number of hours and the temperatures graphed.

### **Evaluations/Outcomes**

When the values of the temperature probes were compared, the graphs overlaid each other with <math><0.1^{\circ}\text{C}</math> variance. This innovative experiment proved several things: First, the traditional STP is an accurate and effective method of measuring temperatures (with adequate perfusion). Second, the ETP was compatible with the incubator, and third, it was as accurate a measuring device as the STP. Fourth, when properly placed in the distal third of the esophagus, the ETP is an accurate and reliable method for measuring

core temperatures. In summary, the ETP is easily placed in critical ill patients (by a transport nurse) and accurately reflects core temperatures in a newborn receiving induced hypothermia therapy.

[shope001@mc.duke.edu](mailto:shope001@mc.duke.edu)

## **EB85 Improving Alarm Responsiveness: How Do We Prevent Alarm Fatigue?**

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Mary Evans, Pamela Shumate, Sandra Lovelace; University of Maryland Medical Center, Baltimore, MD

### **Purpose**

The number of critical alarms that sounded in our cardiac surgery intensive care unit on a typical day was overwhelming. Electrocardiography, blood pressure, pulse oximeter, and mechanical ventilator violations all produced critical level alarms through the same central alarm notification system. Most of these alarms were not actionable. Our nurses and respiratory therapists reported that the number of critical alarms made it hard for them to stay sensitive to alarm soundings. We knew that alarm fatigue was an issue.

### **Description**

We conducted an extensive review of the literature on alarm safety. Graham and Cvach combated alarm fatigue with a rapid-cycle quality improvement project. They focused on staff education, adjusting monitor defaults, and software changes that resulted in unique alarm sounds. They achieved a 43% reduction in false-positive alarms. We developed a 3-pronged attack plan to combat alarm fatigue based on the work of Graham and Cvach. First we reviewed our default alarm limits and alarm levels to ensure that default alarm violations would produce actionable alarms for our typical patient. We updated our monitor safety policy to reflect these new parameters. Second, we reeducated our nurses on how to customize alarm limits to best reflect a particular patient's needs. Monitor alarm safety is now a part of our initial and yearly competency validation plan. Finally, we moved our mechanical ventilator alarms to our patient call system instead of our central monitoring system. With this move, our ventilator alarms trigger an auditory alert that is easily heard and unlike other clinical alarms. In addition, staff get a visual cue of a light flashing above the patient's door.

### **Evaluations/Outcomes**

We conducted an anonymous Likert survey of staff immediately before and 1 month after moving ventilator alarms to the call light system. Thirty-seven staff nurses, nurse practitioners, respiratory therapists, and physicians completed each survey (nonpaired). Postintervention surveys showed improvements in 8 of 9 variables.

Caregivers were more satisfied with our alarm notification system (3.70 before/2.58 after). Staff were more confident that crisis alarms were real (3.54 before/2.54 after) and more confident that they were aware of ventilator alarms (2.51 before/1.97 after). Comfort with customizing alarms remained stable (2.05 before/2.08 after).

[mnevans@comcast.net](mailto:mnevans@comcast.net)

## **EB86 Improving Compliance With the Sepsis Resuscitation Bundle in the Medical Intensive Care Unit**

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Jennifer Elmer, Catherine T. Bowron, Richard D. Danielson, Laura K. Evenson, Garrett E. Schramm, Bekele Afessa; Mayo Clinic, Rochester, MN

### **Purpose**

Sepsis is the most common cause of death in noncardiac intensive care units (ICUs). Early goal-directed therapy (EGDT) decreases mortality in patients with severe sepsis/septic shock ([www.ihf.org](http://www.ihf.org)). Despite clearly outlined treatment guidelines, the compliance rate with the sepsis bundles is low. All-or-none baseline compliance with the 7 elements of the sepsis resuscitation bundle was low in our medical ICU (MICU). A multidisciplinary continuous improvement (CI) group was formed with the aim of improving compliance.

### **Description**

The sepsis resuscitation bundle is designed to implement individual elements of evidence-based care in order to reduce mortality. Bundle tasks to be completed within 6 hours include measurement of serum level of lactate, blood culture before administration of antibiotics, improving time to antibiotic administration, treatment of hypotension and/or elevated lactate level with fluids, administration of vasopressors for ongoing hypotension, maintaining adequate central venous pressure, and maintaining adequate central venous oxygen saturation (ScvO<sub>2</sub>; [www.ihf.org](http://www.ihf.org)). Assessment of barriers to bundle compliance was conducted. CI strategies were developed and initiated, including education on the bundles for every MICU nurse, development of bundle checklist and pocket cards, immediate access to norepinephrine, initiation of point-of-care lactate, and attainment of X-ray reader and ScvO<sub>2</sub> monitors. Finally, a sepsis response team consisting of admitting MICU team, rapid response nurse, respiratory therapist, vascular access technician, and pharmacist was developed and activated if lactate level was 4 mmol/L or systolic blood pressure was <90 mm Hg after a 20 mL/kg fluid bolus. Bundle compliance was monitored daily. Weekly feedback was given to the multidisciplinary team. Barriers were reassessed and additional education was provided as needed.

### **Evaluations/Outcomes**

All-or-none bundle compliance improved 3-fold over baseline after CI strategies and weekly feedback were initiated. With the addition of the sepsis response team to the strategies and feedback, compliance improved more than 6-fold ( $P<.001$ ). Mortality decreased by 5% after initiation of CI strategies plus weekly feedback and by 27% with addition of the sepsis response team ( $P=.03$ ). In summary, through our continuous improvement efforts, we met our aim of increasing compliance with the sepsis resuscitation bundle and improved the process of care as well as mortality of critically ill patients with severe sepsis or septic shock.

[elmer.jennifer@mayo.edu](mailto:elmer.jennifer@mayo.edu)

## **EB87 Improving Accuracy of Lead Placement**

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Elise Hazlewood, Jia-Ni Liu, Alison Dunn, Reda Elhatab, Margaret McGlothlin, Heba Desouky, Ray Bachir, Nat Chadwick, Kathy Walton, Barbara Drew, Marge Funk; UCSF Medical Center, San Francisco, CA

### **Purpose**

Consistent and accurate lead placement is an important component of continuous cardiac monitoring. The variability of lead placement can affect rhythm diagnosis such as diagnosis of a bundle branch block or distinguishing between supraventricular tachycardia and ventricular tachycardia in lead  $V_1$ . In the telemetry unit of interest, lead placement accuracy had deteriorated over time. The culture of the unit did not prioritize lead placement accuracy. The practice was that both registered nurses and patient care assistants placed telemetry electrodes on the patients, with the nurse officially holding all accountability. The aim of this project was to improve the accuracy of lead placement for patients in a telemetry unit throughout the hospital stay.

### **Description**

The project took place in a progressive care telemetry unit at an academic medical center. The team working on the project comprised a clinical nurse specialist, staff nurses, and monitor technicians. As part of a research study (the PULSE trial) being conducted on the aforementioned unit, all staff nurses and telemetry technicians were educated about proper lead placement via online modules, based on the American Heart Association's practice standards for electrocardiographic monitoring in hospital settings. The staff nurses were motivated to improve lead placement and created an action plan. Changes included that on admission, only a nurse would place the electrodes on the patient. The nurse marked lead sites with indelible ink before the electrodes were placed. As a reminder to mark lead placement, special "one patient use" pens were given to the nurse by the monitor technician along with the transmitter box for all new telemetry admissions. As part of the cardiovascular assessment at the start of each shift, the nurse was expected to check the integrity of electrodes and the

accuracy of lead placement. Patient care assistants were educated about lead placement and were to place leads on patients only after the initial placement and markings were done by the nurse. Collaboration also took place, with the echocardiography department agreeing to assist with replacing leads back onto marked areas after echocardiography. Postintervention evaluation of the accuracy of lead placement was conducted through audits led by the clinical nurse specialist and unit councils.

### **Evaluations/Outcomes**

Baseline data for accuracy of lead placement were retrieved from the PULSE trial's preintervention data collection on lead placement. Sixty-five patients were audited and showed only 40% accuracy with lead placement. After implementation of the lead placement accuracy project, 58 patients were audited, showing 70% of patients with accurate lead placement. In addition, 12% of the audited patients had their lead placement marked after intervention. Accurate lead placement is an independent nursing intervention that has the potential of improving the safety and accuracy of cardiac monitoring. Led by our unit councils, we plan to continue efforts around increasing nurses' accountability in cardiac monitoring with identified staff nurses taking a greater role in the improvement process.

[echazlewood@hotmail.com](mailto:echazlewood@hotmail.com)

## **EB88 Improving Skin Integrity in Children Receiving Extracorporeal Membrane Oxygenation**

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Colleen McIntyre; Rush University Medical Center, Chicago, IL

### **Purpose**

Our purpose was to improve the skin integrity of our patients receiving extracorporeal membrane oxygenation (ECMO). In the pediatric intensive care unit, skin breakdown was noted in patients on ECMO therapy. Extracorporeal membrane oxygenation is a procedure used to treat a variety of conditions such as congenital heart defects, sepsis, pneumonia, diaphragmatic hernia, and meconium aspiration.

### **Description**

ECMO therapy is a cardiopulmonary bypass machine that allows the heart and lungs to rest by performing gas exchange in the patient's blood until damage to the heart or lungs can heal or be repaired. Patients can be on ECMO therapy for up to 4 weeks. Patients receiving ECMO have a high severity of illness. Patients are often immobile because of the fragility of the cannula placement for the duration of therapy. The patient often has a combination of other contributing factors; these include but are not limited to inadequate nutrition, poor perfusion, electrolyte imbalance, long duration

of neuromuscular blockade, hypotension, and edema. The unit director, clinical nurse consultant, and nurse decided to investigate support surfaces for this population with the specific ability to provide secure support so as not to jeopardize the cannulas and the stability of the patient. We selected gel pressure-relieving products from Action Medical Products, Inc, the pediatric cradle headrest, pediatric chest roll, and the gel underpad. We developed a plan that included having the gel products under the patient at the onset of ECMO therapy.

### **Evaluations/Outcomes**

We were successful in having the gel products under the patient at the onset of ECMO therapy. Previously patients receiving ECMO therapy were discovered to have skin breakdown at or about day 10. Since the initiation of the new gel products in May 2009, we have had no skin breakdown with our 11 ECMO patients. Of considerable mention, 3 ECMO patients received ECMO therapy for 17, 20, and up to 21 days without skin breakdown. We are very pleased with our outcome and are currently investigating creating a protocol with the cardiovascular surgeon for thorough skin inspection and turning options.

[colleen\\_mcintyre@rush.edu](mailto:colleen_mcintyre@rush.edu)

### **EB89 Improving Teamwork on a Medical Intensive Care Unit**

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Maren Johnson, Deb Johnson, Rebecca Helgeson, Mark Fischer, Jenny Curran, Barb Froemming; Mayo Clinic, Rochester, MN

#### **Purpose**

Strong teamwork and communication are essential to patient safety, satisfaction, and excellent service. These skills also promote greater staff satisfaction and a more positive work environment. Both open confrontation and service among team members affect safety and service provided to patients and their families. This project sought to improve key drivers of teamwork, with a focus on openly confronting problems and service among team members in a medical intensive care unit (ICU).

#### **Description**

A teamwork survey completed in June 2008 identified an opportunity for teamwork improvement in the medical ICU related to staff openly confronting and solving problems. In addition, unit focus groups revealed that establishing trust among patient care assistants (PCAs) and nurses related to professional interactions in the workplace was a key component for enhancing teamwork and service among team members. A unit-based team formed to improve team-work, affecting both staff satisfaction and patient safety. PDSA (plan, do, study, act) cycles conducted around service and teamwork included evidence-based interventions such as direct eye contact with

patient and their families during communication, team communication training, and team briefings at shift change. Using rapid tests of change, strategies affecting teamwork and service were implemented and evaluated among medical ICU staff. Strategies showing signs of success and satisfaction were further refined, evaluated, and implemented. Throughout this project, satisfaction of patients and their families was measured during weekly walking rounds with questions specific to nursing care while in the medical ICU. In weekly spot-checks, the team asked staff to rate their comfort in speaking up and to identify barriers they experienced if they did not speak up.

## **Evaluations/Outcomes**

A repeat staff survey completed in the spring of 2010 revealed improvement in core teamwork measures. Staff members had greater confidence and skills in communicating directly and openly with others. Staff satisfaction with the support felt from one another increased from 85% to 95%. Satisfaction with systems and procedures to prevent errors improved from 60% to 71%. A service measure of doing whatever is necessary to provide excellent service increased to nearly 90%. Overall, interventions demonstrated success in improving teamwork among staff in the medical ICU. These efforts continue to evolve and have spread to unit committees, work groups, and additional staff.

[johnson.maren@mayo.edu](mailto:johnson.maren@mayo.edu)

## **EB90 Minute Coaching: Using Evidence to Act on Education Opportunities in Electrocardiographic Monitoring Skills**

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Hannah Wichterman, Kristin E. Sandau, Kim Stephens, Barbara Drew, Catherine Winkler, Jeanine May, Kristopher Fennie, Rebecca O. Henry, Marjorie Funk; Bethel University, St Paul, MN

### **Purpose**

Our hospital is participating in the Practical Use of the Latest Standards for Electrocardiography (PULSE) trial (M. Funk, principal investigator). One aim of the PULSE trial is to improve nurses' knowledge and skills in electrocardiographic (ECG) monitoring. An audit of electrode placement showed acceptable accuracy for the 4 limb electrodes, but only 28% accuracy for the chest electrode (V<sub>1</sub>). We provided coaching on electrode placement by using anatomical markers and tested coaching via audits before and after the coaching.

### **Description**

Baseline data from the PULSE trial provided evidence that quality improvement for accuracy of electrode placement was a priority. A nurse researcher and summer nurse

research intern independently performed audits on 10 patients, demonstrating initial acceptable interrater reliability and then discussing until 100% agreement was reached. Next, they conducted baseline audits of all inpatients receiving continuous ECG monitoring (n=72). Nursing staff were coached with an interactive poster consisting of a diagram of a chest with anatomical markings, as well as Velcro electrodes that could be attached and detached to practice correct electrode placement. Staff members were asked to test themselves by using the interactive poster. This allowed identification of placement problems that could be addressed immediately. The intern tailored coaching to individual staff; some wanted to self-test, whereas others wanted an in-service style demonstration. All coaching was individual or small group on patient units during times when staff were responsible for patient care; thus duration of coaching varied, never lasting more than 10 minutes. Quick reference guides and case studies were offered. Follow-up audits (n=77) assessed the effect of “minute coaching.”

### **Evaluations/Outcomes**

Chi-square analysis showed significant improvement ( $P=.009$ ) for placement of  $V_1$ , with accuracy improving from 50% to 65% after 3 weeks of interactive minute coaching. Continued education for nurses will include standardized on-line education. The interactive poster will be used for nurses and assistants during unit-specific education. The AACN has a commitment to quality and excellence in nursing care of cardiovascular patients. By using the evidence provided in baseline assessment of an international trial, we were able to recognize an area for improvement in quality of care for our monitored patients, prompting an innovative intervention.

[hannah-wichterman@bethel.edu](mailto:hannah-wichterman@bethel.edu)

## **EB91 Multidisciplinary Approach to Hyperglycemia Control for Cardiac Surgery Patients**

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Laura Huesman; The Christ Hospital, Cincinnati, OH

### **Purpose**

A problem after cardiac surgery is stress-induced hyperglycemia, which is associated with increased morbidity, mortality, and sternal wound infections. A current core measure is a 6 am blood glucose level <200 mg/dL on postoperative day 1 (POD1) and POD2. The POD1 goal is easily achieved with an insulin infusion; however, inadequate transitioning to injection prevents many patients from meeting POD2 goals. Our tertiary care 550-bed hospital with 300 cardiac surgeries per year tested a protocol designed to meet POD2 goals for blood glucose.

### **Description**

A multidisciplinary team (physicians, pharmacists, staff nurses, nurse practitioners, managers, educators, technicians, dieticians, and performance improvement personnel) was formed to develop and evaluate a protocol to meet the POD2 goal for blood glucose. In 3 months, the group developed transitioning protocols based on best evidence. The specific protocol covered the intravenous insulin therapy along with the conversion to either daily glargine insulin or twice daily NPH insulin with correction factors. Order sets were developed for the electronic medical record. Considerations were made for those with known diabetes (controlled and uncontrolled) and those with newfound elevation in blood glucose level. Day 2 dose of injected insulin was based on a formula that considered the prior 6-hour insulin infusion dose and current blood glucose level, and degree of control. Prescribers opting to use NPH insulin would calculate the dose by taking the 30% of the prior 24-hour infusion. The total NPH dose would be divided, with 75% given in the morning and 25% in the evening. After all agreed on the protocol, educational sessions were held for the staff. Outcomes were then examined and use of insulin glargine and use of NPH insulin were compared.

### **Evaluations/Outcomes**

Our blood glucose goal of <200 mg/dL for POD1 was met 79% of the time before the protocol was implemented and 95% of the time after the protocol was implemented. The day 2 goal was met 76% of the time before and 95% of the time after the protocol was implemented. One downfall of tight hyperglycemic control is hypoglycemia, which is expected to remain less than 1%. Unfortunately, we experienced a slightly higher hypoglycemia incidence of 1.5%. To reduce this occurrence, we have made extra efforts to increase monitoring of dietary intake upon transfer from the ICU. We are proud that our program received regional health care improvement awards; however, we continue to try to monitor our outcomes to improve practice.

[lahuesman@yahoo.com](mailto:lahuesman@yahoo.com)

### **EB92 Multifaceted Initiatives to Eliminate Central Catheter– Associated Blood Stream Infections in the Intensive Care Unit**

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Gerri Kaye, Celi Mateo; Weiss Memorial Hospital, Chicago, IL

#### **Purpose**

Central catheter–associated blood stream infections (CLABSI) in the intensive care unit (ICU) are common, costly, and potentially lethal. Our CLABSI rate for the first half of 2009 was 4.87/1000 catheter days, exceeding the acceptable national average. An evidence-based practice using “bundles” was initiated to minimize CLABSI in the ICU. It emphasized the maintenance phase of catheter care because previous initiatives focusing on the insertion phase had produced only modest results.

## Description

The initiative began with a gap analysis of the problem by a multidisciplinary team. An approach, partly based on recommendations of the Society for Healthcare Epidemiology of America/Infectious Diseases Society of America (SHEA/IDSA) and the Centers for Disease Control and Prevention/National Healthcare Safety Network, was developed that involved adoption of evidence-based CLABSI-preventive practices and technologies, data collection/analysis, a catheter maintenance bundle based on the Infusion Nurses Society standards, clinician education, and compliance enforcement using the PDSA (plan, do, study, act) cycle as our performance improvement method. Improvements included creation of SHEA-recommended carts containing supplies required for central catheter placement, revision of a monitoring tool that nurses were required to use, nurse empowerment to help develop protocols and enforce compliance by all clinicians, monthly meetings to review CLABSI cases, and analysis of data by the quality department. Another example of an effective protocol change: A disinfection cap containing isopropyl alcohol was adopted to replace a problematic Luer access valve disinfection routine. The cap's use, supported by laboratory tests and early clinical experience showing its effectiveness, helped ensure effective disinfection, protocol compliance, and protection of central catheter ports between each access.

## Evaluations/Outcomes

A dramatic decrease in the ICU's CLABSI rate shows the initiative's success. After full implementation of all the initiatives, the CLABSI rate for November 2009–July 2010 was 0.46/1,000, a >90% decrease. From March 2010 to July 2010 (the latest data), the rate is zero. Note: Most initiative elements except for compliance enforcement were in place by July 2009, but the CLABSI rate for July 2009 to October 2009 decreased by <20%. The >90% decrease occurred after maintenance enforcement was implemented in November 2009. Conclusion: Although all initiative elements were important, compliance enforcement of evidence-based practices was responsible for the greatest improvement.

[gkaye@weisshospital.com](mailto:gkaye@weisshospital.com)

## **EB93 Multiple Intensive Care Units Within One Hospital: The Challenge of Decreasing Practice Variation**

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Patricia Lincoln, Susan Hamilton-Bruno, Mary-Jeanne Manning, Michelle Labreque, Denise Casey, Heather Kennedy, Katherine Cook, Martha A. Q. Curley; Children's Hospital Boston, Boston, MA

## **Purpose**

Seven years ago, nursing practice leaders within 4 different intensive care units (ICUs)

in 1 hospital noted wide variation in nursing practices. The Critical Care Practice Group (CCPG) was established to identify “best” practices and standardize nursing policy and practice guidelines across 4 clinical areas (cardiac ICU, neonatal ICU, medical ICU, and medical-surgical ICU) in a large pediatric tertiary care hospital.

## **Description**

CCPG members include clinical nurse specialists and staff nurses from each critical care area. The group meets monthly to discuss common clinical experiences and patient care concerns. Findings from literature reviews and shared conversations with expert practitioners within the hospital and at other institutions assist in developing strategies to plan and implement practice changes. Evidence-based practice guides the review process for any identified practice variation. Multiple completed projects resulted in the development and implementation of hospital policies and practice guidelines, for example, the placement of nasojejunal feeding tubes by staff nurses, standardization of concentrations for infusions of vasoactive and controlled substances, and guidelines for use of appropriate nonpharmacological prophylaxis for prevention of deep vein thrombosis (DVT). Multiple yet isolated patient care concerns from all 4 units guided the development of a multidisciplinary continuous renal replacement therapy (CRRT) review committee, which improved education and resource availability for nurses providing this therapy and quarterly committee review of all patients receiving the therapy.

## **Evaluations/Outcomes**

A hospital safety event-reporting system or unit-based quality improvement processes are used to monitor practice changes. Currently, 39% of ICU staff are competent in the successful placement of nasojejunal feeding tubes. Standardization of continuous infusion concentrations and diluents has decreased variations from 131 to 67 infusions, still meeting the needs of >90% of the patients. After the implementation of a DVT prevention guideline, which included the elimination of compression stockings, skin breakdown incidents decreased from 9 to 0. Multidisciplinary review of CRRT has led to a 70% decrease in the need for unscheduled CRRT circuit changes and a 43% decrease in heparin infusion issues for these patients. Through the CCPG, commitment to quality and excellence is achieved across multiple units caring for a range of disease complexity.

[patricia.lincoln@childrens.harvard.edu](mailto:patricia.lincoln@childrens.harvard.edu)

## **EB94 Opening the Chest in the Intensive Care Unit After Cardiac Surgery: Improving Patients' Outcomes**

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Karen Straetmans, Sanjay Batra, Amy Blowyck, Jill Coleman, Antonio Delvillano, Patti Haugh, Lisa Hergott, Brooke Johnson, Corinne Naas, Rita Plotzk, Sylvia Vell, Peter Walkowit; St John Hospital and Medical Center, Detroit, MI

## **Purpose**

This evidence-based process improvement project was designed to improve care of patients with postoperative cardiac bleeding and increase the level of staff competence. Excessive bleeding develops in 3% to 11% of patients postoperatively. The innovative instructional strategy allowed learners to evaluate an open chest bleed as it unfolds, practice assessment and communication skills, and reflect on potential problems and solutions.

## **Description**

An interdepartmental performance improvement team consisting of nurses from the surgical intensive care unit (SICU) and the cardiothoracic operating room, cardiothoracic surgeons, a clinical education specialist, clinical managers, and audiovisual services developed a program with the following objectives: (1) Describe roles and responsibilities of SICU team in managing a patient with a catastrophic hemorrhage. (2) Identify interventions required in performing a chest reexploration at the bedside. (3) Identify equipment and supplies included in the open heart chest cart. (4) Develop critical thinking and clinical decision-making skills that reflect competence and confidence in managing an unexpected event. Based on actual case reviews, scenarios were written and team roles were developed (primary, secondary and ICU sterile nurse, patient care technician, and unit secretary). Bright laminated cards were made for each role and placed in each SICU room. ICU nurses viewed the online case scenario video along with an educational PowerPoint presentation before participating in the mock in situ scenario. Following debriefing, discussion and evaluation were focused on team concepts, team process changes, and use of multidimensional simulation as a training modality.

## **Evaluations/Outcomes**

The importance of teamwork in preventing emergent situations is well recognized, and simulator-based team training has been advocated as a possible preventive approach. Evaluation reflected that team participants improved their knowledge of roles, increased their teamwork skills, and developed greater confidence. A successful patient outcome after postoperative cardiac hemorrhage occurred just 2 months after the education took place. Participants gave high marks to the development of laminated cards and to the primary ICU nurse for delegating roles. They found the debriefing helpful in promoting reflection, critical thinking, and learning. All would recommend the program to colleagues.

[karenann02@sbcglobal.net](mailto:karenann02@sbcglobal.net)



## **Purpose**

The clinical nurse advancement system (CNAS) at Rochester General Hospital reflects the organization's mission and vision, promotes clinical excellence and shared governance, and facilitates a healthy work environment. The CNAS provides a format for bedside nurses to take pride in their actions. The problem is that the CNAS focuses primarily on the process of nursing. The goal of this project was to define the impact on outcomes and return on investment from a successful advancement system.

## **Description**

The evidence-based solution is a paradigm shift from "How we do it" to "What difference have we made?" The literature overwhelmingly supports the benefits of a CNAS in increasing professionalism, nurse satisfaction and retention, certification, patient and physician satisfaction, opportunity for professional advancement, and research and utilization of evidence-based practice. The new Magnet model also serves as a structure to help emphasize outcomes and to benchmark nurse advancement programs that recognize, articulate, and celebrate the contributions of nurses. To quantify outcomes and measure impact, a refocusing of reporting metrics was instituted. Nurses from the research department joined the group that was preparing outcome data. Results were gathered in terms of programs implemented rather than as achievements of individual nurses. The impact included diverse outcomes such as a policy for family presence at resuscitation, higher mean scores on criteria from the Geriatric Institutional Assessment Profile, and a nurse-driven protocol for delirium prevention and treatment. Aggregate data were presented to show the results of nurse advancement to the institution. Nurses who participate in an advancement system provide proof of their accomplishments; they stand tall with their achievements.

## **Evaluations/Outcomes**

Successful outcomes from the nurse advancement system have been measured. The demonstrated outcomes from this project include more certified nurses, improved staff satisfaction, improved educational posters, and enhanced use of evidence and research to improve clinical care. Our advanced clinicians are patient champions, interdisciplinary collaborators, transformational leaders, evidence-based practice liaisons, and supportive clinical mentors. The CNAS allows our nurses to validate their exceptional contributions to practice, uphold Magnet standards, and contribute to a healthy work environment. Advanced clinicians own the outcomes of their work and STAND TALL, proud of what they do!

## **EB96 Out With the Thigh-High, In With the Knee-High Sequential Compression Devices**

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Amy Stone, Lynn Chamberlin; Orlando Health-South Seminole Hospital, Longwood, FL

### **Purpose**

Critically ill patients have an incidence of 20% to 50% for venous thromboembolism (VTE). Both knee-high and thigh-high sequential compression devices (SCDs) are equally effective in preventing VTE if they are worn at least 90% of each 24 hours. Patients may not wear SCDs consistently because of discomfort, warmth, or soiling, and then the VTE prophylaxis benefit is reduced. This project's purpose was to improve the effectiveness of mechanical VTE prophylaxis by increasing the time that patients wear SCDs.

### **Description**

SCDs are the mechanical prophylaxis used by our organization. Many critically ill patients need a combination of chemical and mechanical prophylaxis or have contraindications for chemical prophylaxis. Nurses advocated for improving patients' compliance and comfort by using only knee-high SCDs as a means to increase the length of time patients wear their SCDs. Long et al found that patients who wore SCDs a mean (SD) of 13 (4.3) hours per day still had VTE develop, whereas patients who wore SCDs for 19.2 (5.1) hours per day did not. To be effective, SCDs should be worn more than 21 of each 24 hours. The hospital's critical care committee approved this nurse-led proposal to eliminate thigh-high SCDs and establish the knee-high product as the standard for intensive care units (ICUs). Added benefits of the proposal for the knee-high SCDs included lower cost, less storage space, and decreasing environmental waste.

### **Evaluations/Outcomes**

No DVTs have been newly diagnosed in the ICU since this change was implemented early in 2010. A survey of nurses' perceptions indicated that patient compliance with wearing SCDs increased significantly with knee-high sleeves. The projected cost savings was estimated at \$10000 per year, and the actual results are greater because frequent soiling of the thigh-length SCDs required periodic replacement of the sleeves. Knee-high SCDs are much less likely to become soiled. The ICU is proud that this green program also results in less environmental waste.

[sto4977@aol.com](mailto:sto4977@aol.com)



## **Purpose**

To develop a staff-led council that will change our organizational culture to a culture of patient safety and evidence-based practices that will result in measurable incremental improvements in clinical outcomes. It has been shown that properly trained staff-led councils can be effective in empowering nurses to correct existing processes contributing to medical errors and in identifying opportunities for improving quality of care and adopting new practices.

## **Description**

Partners Advancing Clinical Excellence (PACE) is a staff-led nursing council formed in 2007 funded by the Betty Moore Foundation and Sutter Health that is committed to transform acute care nursing practice by developing a culture of patient safety and increasing the use of evidence-based practices. It is composed of bedside nurses from the acute medical-surgical and critical care units that will guide and implement evidence-based practices. Council members received special training in evidence-based practice, literature review, quality improvement strategies, patient safety, effective communication and coaching, and conflict management. One clinical initiative that we identified is 25% reduction in mortality due to acute myocardial infarction from our 2006 baseline. The council reviewed literature and compared evidence-based practices with our hospital's current practice. The council identified that new patients with symptoms of acute myocardial infarction were recognized and treated more quickly than inpatients with the same symptoms were treated. PACE teamed up with the cardiologists and cardiac advanced practice nurses to institute an evidence-based chest pain protocol that empowers and directs staff to order a stat 12-lead electrocardiogram and call a rapid response team. House-wide education was given to nursing staff on signs and symptoms of acute myocardial infarction.

## **Evaluations/Outcomes**

The PACE council has demonstrated that a staff-driven council can create and implement effective methods of change to improve patients' outcomes. As a result of our initiative, calls for the rapid response team related to chest pain are up 70% in 2009 compared with our 2007 baseline. Length of time for a stat 12-lead electrocardiogram to be done decreased from an average of 22 minutes to 8 minutes, which improves accuracy of diagnosis and decreases the time to intervention. Through our staff-led council, staff members now have considerable participation in decision making that affects their work environment, thereby empowering them to be engaged in the changed process. The solutions are more effectively implemented and are sustainable.

## **EB98 Pain, Anxiety, and Delirium: An Interdisciplinary Approach to Management**

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Patricia Clark, Linda A. Browning, Sommer Eagle, Lois Larson, Elizabeth McDowell, Maria Palleschi, Sue Sirianni, Lisa Hall Zimmerman, Ghulam Saydain, Janie Faris; Detroit Medical Center, Detroit, MI

### **Purpose**

Critically ill patients receiving mechanical ventilation can experience distress including pain, discomfort, anxiety, sleep deprivation, and delirium. A foundational concept of critical care is to provide relief from distress without causing harm to the patient. Using sedatives and analgesics to maintain an optimal level of comfort is a precarious balancing act. The purpose of this evidence-based solution was to develop a unified, yet comprehensive approach to managing this problem.

### **Description**

According to Sessler and Varney, effective sedation management is best accomplished when physicians, nurses, and pharmacists work as an interdisciplinary team to develop and plan a strategy. The 2002 Society of Critical Care Medicine sedation and analgesic guidelines represent an evidence-based approach for management of pain, anxiety, and delirium. The critical care committee at Detroit Medical Center developed a decision tree that provides recommendations for drug dosing based on patients' responses. Pain, anxiety, and delirium assessment tools were standardized across all critical care units. An extensive self-learning module was written by advanced practice nurses, nurse educators, and clinical pharmacists. This educational tool was used to educate the staff nurses before implementation of the guidelines. Advanced practice nurses, specifically trained in critical care, are present daily in the units to provide support to the staff during this highly complex decision-making process.

### **Evaluations/Outcomes**

Because anxiety and agitation is associated with adverse outcomes, the Detroit Medical Center Critical Care Committee monitors and reports the rate of ventilator-associated pneumonia and unplanned extubations. In addition, compliance with providing daily interruption of continuous intravenous sedation and analgesia is measured. Ongoing and informal assessment of patients' response and staff compliance occurs daily during interdisciplinary critical care rounds. Finally, nursing staff were required to study the self-learning module and complete a posttest with a passing score of 80%.

[randypatclark@msn.com](mailto:randypatclark@msn.com)

## **EB99 Pediatric Oral Health Care and Cardiac Surgery: Providing and Improving Assessment and Access**

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## **Purpose**

In the past 10 months, 6% of cardiac operations were canceled at our hospital the day before surgery because of poor dentition and the potential for postoperative complications. These delays have resulted in emotional, time, and financial expenditures for the patients, their families, and hospital staff. Lost work time, disruption to daily life, and frustration of cancelled surgery along with the need to reschedule a surgery are extremely stressful situations for the patients and their families.

## **Description**

Upon realizing that children with congenital heart disease had surgery cancelled because of late diagnosis of dental decay and abscesses, we implemented a family and staff education program. The interventions included (1) Education material for patients and their families that include information about oral care, dentists, and access. (2) Education of the cardiology clinic staff about the importance of dental care. (3) Incorporating dental assessment into the history intake form. (4) Nurse practitioner phone calls before surgery to review dental care and intervention needs. The program provides comprehensive, high-quality patient care through interdisciplinary team collaboration. Cooperation among the health care team and family is imperative to ensure preventive and restorative dental care. Evidence has shown that children with congenital heart disease have higher levels of untreated dental caries and are receiving inadequate preventative dental care. Dental decay and plaque provide a microhabitat for organisms that can translocate to and colonize other parts of the body, specifically the heart.

## **Evaluations/Outcomes**

Eight months after implementation of the educational intervention, no cardiac surgeries have been cancelled because of the patient's poor oral health. In addition, 2 children were found to have dental caries before cardiac surgery was scheduled. Cardiac surgical delays due to dental decay are time, cost, and emotionally consuming. Regular and necessary dental care can facilitate high-quality and prompt cardiac surgical care. Including dental care evaluation and encouraging oral health improves outcomes for children with cardiac defects.

[martha.willis@cchmc.org](mailto:martha.willis@cchmc.org)



## **Purpose**

Patients in critical care units (CCUs) are at risk for development of pressure ulcers for many reasons. Previous studies have shown a national prevalence of pressure ulcers in critical care units to be 0.4% to 34%. The CCU staff at Durham Regional Hospital developed a TEAM approach to reduce the rate of pressure ulcers that occurred in the CCU.

## **Description**

Durham Regional Hospital is a 369-bed community hospital in Durham, North Carolina. CCU staff provide care to a diverse patient population within a 22-bed unit. Patients admitted to the CCU are at elevated risk of pressure ulcers developing because of their acuity level, comorbid conditions, decreased mobility and functional status, and altered nutritional status. In collaboration with physicians, registered nurses, certified nursing assistants, dieticians, and pharmacists, the CCU staff developed a multidisciplinary team approach to decrease the rate of pressure ulcers. Educational events were held on determining patients at risk (Braden Scale), improving documentation of skin assessment, and actions or interventions taken. Classes were held on how to use the new beds purchased when the unit was extensively remodeled. We implemented a “buddy system” to aid in turning and offloading pressure in our patients. More education was given on how to decrease risk factors by focusing care plans on the areas of the Braden Scale where the patient scored low, the implementation of early nutritional support, and early consultations with a wound ostomy care nurse as needed. The program developed reduced the rate of pressure ulcers in our critically ill patients.

## **Evaluations/Outcomes**

The CCU rate of pressure ulcers decreased from 5% to 15% per month to 2 ulcers in the past 29 months (or 0.4% over the entire 29-month period). Outcomes include improved assessment of patients at risk, early nutritional support, increased compliance with documentation of skin assessments and corresponding interventions as well as early consultations with a wound ostomy care nurse as needed. Staff and patient satisfaction scores also have increased. We continue to work vigilantly and have developed a skin care bundle to reflect the care given to our patients.

[bonnie.dickerson@duke.edu](mailto:bonnie.dickerson@duke.edu)

**EB101 Providing Information Patients and Families Want:  
Smoothing the Transition From Intensive Care to General Care Units**

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Marie O’Connell, Mary Stare, Paulette Espina-Gabriel, Renee Franks; Northshore

## **Purpose**

The goal of this project was to smooth the transition between intensive care units (ICUs) and general care units for patients and their families. We noticed that some patients and their family members express mixed feelings about leaving the watchful ICU environment. We use the Relationship-Based Care model in our ICU and wanted to find a solution that fostered more personalized communication before transfer.

## **Description**

A search of the literature showed the existence of “transfer anxiety” that can be lessened with teaching interventions before the patient leaves the ICU. Previous studies used written materials about what to expect on the general care units to improve satisfaction with transfer. In order to tailor this intervention to the needs of our ICU population, a survey of patients and families (n=25) preparing to transfer out of the ICU was used. Information was collected regarding feelings about transfer, desire for more information about the general units, and opinions related to several teaching points suggested in the literature. On the basis of the results of these surveys of patients and families, a “Helpful Information” sheet was developed for 2 general care units that most commonly receive our patients. Teaching points included important phone numbers such as those of the nurse’s station and nurse manager, information on how to call a “Code Help” or for an ethics consultation, visitor dining information, and about the availability of services such as social work, financial services, pet therapy, and music therapy.

## **Evaluations/Outcomes**

The main outcome of the project was measured with a survey of patients and family members receiving the Helpful Information sheet. After a short pilot study, 78% of patients and family members found it helpful to get the information and 78% recommended continuing the teaching intervention. We had 100% satisfaction with “how the transfer out of intensive care occurred.” This project provided an opportunity to tailor teaching materials to our own population of patients with a joint project involving the ICU and general care units. The scope of the project allowed participation from all shifts and all levels of staff, including nurses, unit concierges, and patient care technicians.

[mariekylco@yahoo.com](mailto:mariekylco@yahoo.com)

## **EB102 Rapid Response Teams: Kicking It Up a Notch!**

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Deborah Lampo, Bonita Trapnell, Suzan Brown, Paul Iannini, Lee Maddox, Pamela Hines; York Hospital, York, PA

## **Purpose**

Rapid response teams have been implemented to bring the knowledge and expertise of critical care nurses to the bedside of patients whose condition is deteriorating. Since 2005, York Hospital's "Help" team has provided clinical consultation and assistance to novice nurses. Today, critical care nurses armed with real-time data from patients' electronic health records facilitate the identification and treatment of patients with severe sepsis and septic shock.

## **Description**

The Medical Service Line identified a higher than expected mortality rate for severe sepsis and septic shock. A collaborative including hospitalists, infectious disease, family practice, emergency department, pulmonary-critical care, pharmacy, information technology, and nursing conducted an evidence-based practice project that resulted in the implementation of a sepsis team and treatment protocols. Resource allocation consisted of a 0.5 full-time-equivalent nurse and a 0.5 full-time-equivalent clerical support person. A clinical nurse specialist dressed in boxer's attire, complete with satin shorts and gloves, conducted hospital-wide education to "knock out sepsis." Random review of individual patient's data showed a significant gap in early identification and treatment for patients with severe sepsis and septic shock. Failure to identify severe sepsis early in the disease process resulted in inappropriate placement of patients and urgent transfers to the intensive care unit. Medical leaders collaborated with information technology staff to use the electronic health record for real-time synthesis of clinical indicators as a mechanism for case finding. Refinement of clinical parameters resulted in generation of more than 70 sepsis alerts daily, creating a challenge for existing personnel.

## **Evaluations/Outcomes**

A direct correlation between the severe sepsis alerts and nursing interventions resulted in a reduction in mortality due to septic shock from 38% to 9%. Because of this proactive and innovative approach, York Hospital has achieved a >75% reduction in mortality from septic shock. Sepsis alerts provide the sepsis team with clinical data to assist with case finding and collaboration. The sepsis team is educative and supportive of staff across service lines and specialties. Sepsis alerts have been adopted by Cerner (manufacturer of the electronic health records system used at York Hospital) and will be available for use by other Cerner facilities.

[dlampo@wellspan.org](mailto:dlampo@wellspan.org)

## **EB103 Reducing Central Catheter–Associated Blood Stream Infection in Trauma Patients: A Multifaceted, Evidence-Based Approach**



Kathryn Von Rueden, Karen McQuillan, Paul Thurman, Gena Stanek, Michele Emerick,

## **Purpose**

The goal of this nurse-sensitive quality initiative was to reduce central catheter-associated blood stream infection (CLABSI) in a 100-bed level I trauma center by implementing evidence-based strategies for insertion and maintenance of central catheters. The resuscitation, acute care, 3 critical care, and 3 intermediate care units were involved. Before full implementation of evidence-based practice (EBP), the CLABSI rate in 2006 was 2 times higher than the mean rate for trauma units reported by the Centers for Disease Control and Prevention (CDC; 14.3 vs 7.0 CLABSI/1000 catheter days).

## **Description**

Efforts were initiated using evidence-based guidelines from the CDC and Infectious Disease Society. Videotaped elective insertions of central catheters in the resuscitation unit showed 49% compliance with proper technique. All residents and fellows now complete online training in the insertion of central catheters. A nursing campaign in the resuscitation unit included checklists for insertion of central catheters, arranging the admission bays to improve access to supplies for central catheter insertion, and providing data and reminders to nurses and physicians. All units implemented use of an antimicrobial dressing (Biopatch) with a clear sterile dressing (Tegaderm), central catheter kits with a full drape and gown, catheter insertion carts, annual assessments of competencies with central catheters, and a checklist. The latter was modified to include a time out and procedure note. A white paper empowering nurses to stop insertion of a central catheter if sterile technique was broken was required reading for nurses and physicians. All staff and advanced practice nurses completed an online education program. An intravenous to oral medication conversion protocol and antibiotic-impregnated catheters were introduced. A CLABSI interactive Web site was developed to engage staff further. Unit-specific and aggregate data were monitored and reported quarterly to staff, nursing councils, and interdisciplinary forums to show the impact of EBP.

## **Evaluations/Outcomes**

Aggregate CLABSI rates decreased from 14.3 in 2006 to 2.5 in the fourth quarter of fiscal year 2010, a relative reduction of 175%. Video reevaluation of practice in the resuscitation unit showed overall compliance with guidelines for insertion technique of 80%. The number of CLABSIs has decreased annually from 138 in 2006 to 49 in 2010. Units have demonstrated the ability to “get to zero.” For example, the number of consecutive weeks with no CLABSI: multitrauma critical care, 25 weeks; neurotrauma critical care, 24 weeks; neurotrauma intermediate care, 82 weeks; acute care, 76 weeks. These results demonstrate that interdisciplinary collaboration and implementation of multiple evidence-based strategies can have a significant impact on reducing CLABSI

in the trauma population.

[kvonrueden@comcast.net](mailto:kvonrueden@comcast.net)

## **EB104 Reducing Sepsis Mortality Through a Collaborative Model**

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Elizabeth Scruth, Jay Johanni, Carmen Adams, Nancy Hiteshew, Nancy Taquino; Kaiser Permanente, Oakland, CA

### **Purpose**

Building an infrastructure and developing local capacity to accelerate implementation of a sepsis initiative across a multicenter health care organization to reduce mortality.

### **Description**

A Gordon and Betty More Foundation grant of \$5 million was used to accelerate an existing infrastructure, tools and processes to implement evidence-based sepsis protocols across a multicenter health care organization commencing in July 2009. A collaborative approach consisting of multidisciplinary teams, regional and local improvement advisors, faculty experts, data analysts, and support teams was established. The following lists of activities are used to support local and regional efforts to meet established benchmarks: (1) monthly improvement advisor and sepsis team collaborative calls, (2) monthly newsletters, (3) sepsis Web site, (4) annual summits with playbooks, (5) monthly scorecards, (6) use of a Web-based tool for concurrent review of sepsis cases and abstraction of data, (7) use of the Institute for Healthcare Improvement's rapid improvement model—using PDSA (plan, do, study, act) cycles to test changes before widespread implementation, (8) educational workshops, (9) physician champions at the regional and local level to coach and instruct their peers on sepsis recognition, management, and documentation.

### **Evaluations/Outcomes**

Evidence of results or outcomes: (1) Monthly scorecard demonstrating achievement of individual metrics and full bundle compliance -reduced mortality (13% in May 2010, down from 26% in June 2009) and increase in diagnosis rate (78 per 1000 in May 2010, up from 52 per 1000 in June 2009). (2) Advancing skill sets for nurses and physicians in the emergency department. (3) Improved bridging between the emergency department and the ICU. (4) Timely treatment of patients with sepsis in the emergency department and ICU (bundle compliance 40% in May 2010, up from 0% in June 2009). (5) Decreased length of stay for sepsis patients: reduction of 3 days as of June 2010 for primary diagnosis and a reduction of 2.5 days for secondary diagnosis present on admission.

[elizabeth.scruth@kp.org](mailto:elizabeth.scruth@kp.org)

## **EB105 Reducing Use of Indwelling Urinary Catheters With a Nurse-Driven Protocol**

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Patrick Schultz, Ayat Aljawawdeh, Tricia Hopp; Sanford Health, Fargo, ND

### **Purpose**

Prolonged use of indwelling urinary catheters (IUC) is a major contributing factor to development of urinary tract infections. The goal of designing and implementing a nurse-driven protocol for IUC insertion and removal was to decrease the overuse of IUCs in a Mid-western critical care unit that had an extraordinarily high rate of IUC use. This nurse-driven protocol gave nurses increased accountability for using IUCs only when truly warranted.

### **Description**

The protocol for IUC insertion and removal was developed from evidence-based recommendations written by national infection experts. The protocol was a compilation of a scoring tool that evaluated need for a urinary catheter, an intermittent catheter protocol that used bladder scanning, and a protocol from another hospital (Reading Hospital). Nurses assessed indicators for insertion, maintenance, or removal of IUCs daily. The initial assessment was performed within 48 hours after catheter insertion or within 48 hours after admission to the critical care unit. Indicator scores determined the nursing actions, such as intermittent straight catheterization, alternative devices, and bladder scanning. The clinical nurse specialist, the unit educator, and a clinical nurse specialist student instructed nursing staff on the protocol, the current overuse of IUCs, and correct use of a bladder scanner. Hesitancy from nurses to remove IUCs because of convenience of the catheter and lack of confidence in their decision was addressed. The protocol was implemented on April 7, 2010.

### **Evaluations/Outcomes**

Nurses reduced the use of IUCs with the insertion and removal protocol. The rates of use of IUC devices (IUC days/patient days) ranged from 0.95 to 0.90 for the 9 months preceding implementation and from 0.84 to 0.76 for the 3 months following implementation of the protocol. Compared with the benchmark data from the National Healthcare Safety Network, this rate improvement moved the critical care unit from the 90th percentile in March to the 50th percentile in August.

[netricks@msn.com](mailto:netricks@msn.com)

## **EB106 Reducing Ventilator-Associated Pneumonia Through a Multidisciplinary Collaborative Approach**

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## **Purpose**

By the end of the second quarter of 2009, Sentara Bayside critical care unit had 4 cases of ventilator-associated pneumonia (VAP) develop, which was well above its goal of 1 case of VAP for the year. A multidisciplinary team was assembled to determine if a common cause was present; any gaps in current practice and areas for improvement were identified. With no clear common cause, the team was formed to reinforce the best practice guidelines from the Institute for Healthcare Improvement (IHI) and develop practices that may improve outcomes.

## **Description**

A multidisciplinary team, which included nurses, respiratory therapists, an intensivist, and an anesthesiologist, reviewed the charts of the 4 patients who had a VAP within the first 6 months of 2009. A common cause analysis was done, and although no clear common cause was identified, several areas of opportunity to focus on were apparent. Interventions were identified, which included the components of the IHI's best-practice bundle, the use of sterile gloves during intubation, sterilizing the Miller/Mac blades and application of 0.12% chlorhexidine oral solution twice a day. A pilot protocol was developed and implemented. The team met monthly for 3 months to determine the effectiveness of the interventions outlined in the protocol. Several interventions were not consistently performed, and no cases of VAP occurred during these lapses. These specific interventions were discontinued and the team continued to meet monthly for an additional 3 months. No cases of VAP were reported, and the team moved to ad hoc meetings. A key intervention implemented was the use of 0.12% chlorhexidine oral solution twice a day. The patient received this treatment for 7 days and was reevaluated for continued use if still intubated for up to 3 weeks.

## **Evaluations/Outcomes**

From an implementation date of September 3, 2009 until September 3, 2010, zero cases of VAP have occurred in the critical care unit. Our overall compliance with the VAP bundle increased from 91.7% (September 2009) to 96.5% (July 2010). Specific interventions were reevaluated and deemed to have no effect and others were deemed to be integral and have been fully implemented. By refocusing on all components of the IHI bundles and introducing a new evidence-based intervention of chlorhexidine oral rinse, we have seen a dramatic decrease in cases of VAP. However, because several interventions were implemented simultaneously, it was not clear which intervention was responsible for the improvement.

[stammyb@aol.com](mailto:stammyb@aol.com)



Pamela Triplett, Cindy Schuveiller; Regions Hospital, St Paul, MN

## **Purpose**

In more than 3000 root cause analyses reviewed between 1995 and 2005, communication was identified in 65% to 70% of cases as a primary contributor to the event. The handoff process has been identified as a break in the link of patient care that is clearly vulnerable to communication errors. The primary objective, as stated by the Joint Commission, of a handoff is to provide accurate information about a [patient's] care, treatment, and services, current condition, and any recent or anticipated changes. The information communicated during a hand-off must be accurate in order to meet [patient] safety goals. Issues identified within the critical care areas included the following: inconsistent bedside handoff with staff confusion related to process; unstructured end-of-shift nurse-to-nurse report, resulting in inconsistencies including extraneous information, lack of clarity, incorrect information, and minimal focus on plan of care; nursing staff reported "near misses"; as well as concern related to potential for poor patient outcomes because of these inconsistencies. The critical care/progressive care practice and quality committee, in consideration of the aforementioned issues, sought to develop a systematic method to ensure accurate and concise communication during the end-of-shift nurse-to-nurse reporting process and to strengthen the bedside handoff process currently in place.

## **Description**

A recent audit of incident reports from the intensive/progressive care unit that involved medication errors showed that a mean of 39% of medication errors were found after the end-of-shift handoff period. The committee anticipated that there was strong evidence to support the development of a process that would assist in the decrease of errors and/or the ability to recognize the error during the bedside handoff process, thus reducing the duration and the potential effects of the error. The bedside handoff process that had previously been implemented was reported as not yet a consistent practice for all nursing staff. Taking these issues into consideration, the committee reviewed the literature relative to bedside handoff process and standardized end-of-shift nurse-to-nurse reporting. Benefits of the use of this type of report style have been identified in other organizations. For nurses, benefits include the fact that the nurse can prioritize care better and sooner, enhancement of relationships between nurses, increased accountability for patient condition, and opportunity for education exchange with unfamiliar equipment and practice. Improvement of bedside handoff could benefit patients via increased knowledge related to disease processes and plan of care, as well as increased opportunity for questions and clarifications. Benefits of the use of face-to-face review at the bedside include confirmation of a patient's status as well as additional confirmation of current administration of intravenous medications. With an additional review of the

medication administration record and new order summary with the off-going nurse, it was anticipated that additional medication errors could also be prevented. A standardized report sheet that also included a bedside handoff checklist was developed by the practice group. The staffs on 2 of the 4 critical care units were educated on processes, including use of the standardized report sheet with bedside handoff. Goals emphasized included the following: consistent use of the standardized report sheet for all critical care units and to ensure portions of report were completed at bedside. Additional goals include having key items consistently addressed and doubled checked during handoffs, report given consistently by using the same style to increase familiarity regardless of the unit. Unit surveys were completed by staff at the 30-day and 60-day mark, which included ability to comment on format and function of the report sheet and process. Surveys revealed positive feedback with minimal changes needed initially. Full implementation to all critical care areas was recommended by this practice group and promptly ensued.

### **Evaluations/Outcomes**

After 1 year, nurses in all 4 critical care areas were asked to complete an anonymous survey. A total of 10 questions were developed and included in the survey, with the primary focus on both the report sheet format and use and the bedside handoff process. Additional components included questions to solicit feedback related to nurses' opinions of the process and actual experience with errors. The survey was opened to all 230 registered nurses working in critical care areas, with a total of 69 nurses responding. Results obtained indicated that 82.4% of nurses responded that they use the standardized report sheet consistently; 56.5% of nurses thought that the report sheet offered a consistent, accurate picture of the patient's condition; 49.3% stated that they felt more confident about their report after using the report sheet; and 48.5% stated that they felt more confident when receiving report when the report sheet was used. When asked about error discovery, 55.1% stated they had personally discovered errors during the report and bedside handoff process. The practice group was able to surmise that, although these may be significant changes to some nurses' practice and will take time to adjust to, our ultimate goal (and everyone's) is to ensure the safety of our patients. The nursing response and the data obtained from the survey indicate that the process of bedside handoff with the use of the critical care report sheet has significantly affected nursing practice and is viewed as beneficial by nursing staff.

[triplett@usfamily.net](mailto:triplett@usfamily.net)

### **EB108 Round and Round We Go! Using Crew Resource Management Team Training to Improve Multidisciplinary Rounds in the Surgical Intensive Care Unit**

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Melissa Browning, Ann Lough, Joan Salomon Sales, Mary Jane Tully, Mira Loh-Trivedi, William C. Croley; Rush University Medical Center, Chicago, IL

## **Purpose**

The goal of crew resource management (CRM) training is to reduce human errors that can have devastating effects by focusing on improvements in interpersonal communication, leadership, and decision making. Hardwired safety tool development sessions identified multidisciplinary rounds as the area with the greatest need for improvement. Increasing nursing participation and improving the rounding presentation format should lead to improved patient outcomes, such as lower rates of nosocomial infections.

## **Description**

In 2000, the Institute of Medicine released a report “To Err is Human: Building a Safer Health System.” The report stated that 44 000 to 98 000 Americans die each year from preventable errors. The Joint Commission lists lack of communication as the No. 1 reason for sentinel events. CRM focuses on team training and improving communication in an effort to prevent errors. During a hardwired safety tool development session that consisted of a multi-disciplinary team of nurses, intensivists, surgeons, pharmacists, and respiratory therapists, one area identified for improvement was daily rounds. Initially the goal was to increase nurses’ attendance at rounds and provide a consistent presentation format for resident physicians to use. To increase nurses’ participation, unit managers began auditing rounds and increased staffing from 7 AM to 11 AM for improved patient coverage. Hardwired safety tools were developed for the resident case presentation and for the format of rounds. The next step was to improve the content of rounds. A third hardwired safety tool called the nurse cross-check was developed so that the nurse would serve as the gatekeeper on important bundle compliance components such as need for a central or urinary catheter.

## **Evaluations/Outcomes**

After creating a hardwired safety tool for the rounding format in the surgical intensive care unit, nurses’ participation at rounds was audited daily. For 3 consecutive months (January to March 2010), nurses’ participation in rounds was 80% or greater. After the nurse cross-check, where the nurse asks if the central or urinary catheter is still needed, was implemented, the device utilization ratio for the urinary catheter decreased from above the 50th percentile (third quarter, fiscal year 2010) to below the 25th percentile (fourth quarter, fiscal year 2010). From January to June 2010, the rate of central catheter-associated blood stream infections in the surgical intensive care unit was below the National Healthcare Safety Network’s 10th percentile for 3 months.

[melissa\\_browning@rush.edu](mailto:melissa_browning@rush.edu)



## **Purpose**

The goal of proactive rapid response team (RRT) rounding was to allow staff nurses and other members of the health care team who had issues, concerns, or questions about the care or status of the patient an opportunity to communicate them to a nurse who was bringing intensive care to the bedside. The desired outcome is earlier intervention that will help decrease transfers to higher level of care and decrease cardiac or respiratory arrests.

## **Description**

The RRT nurse is an independent role. The RRT nurse travels throughout the hospital, talking with all the different members of the health care team to identify patients at risk for decompensation or requiring a higher level of care. The health care team members include, but are not limited to, patient care technicians, telemetry monitor technicians, respiratory therapists, and nurses. Involving all members of the team brings out different perspectives on the health, wellness, and safety of the patient. The concerns from the members of the health care team are not limited to abnormal vital signs. Concerns may also include questions about plan of care, orders given by physicians, results of laboratory tests, and unfamiliar skills/tasks. This allows the RRT to assess the patient, intervene if appropriate, and educate staff. Rounding involves the RRT nurse communicating with the members of the patient's health care team, reviewing results of laboratory tests, reviewing the patient's chart, and assessing the patient. If an intervention is required, the RRT completes the event summary form and communicates concerns, issues, and needs to the physician. At this point, the rounding is now considered an RRT call.

## **Evaluations/Outcomes**

From December 2008 to March 2010, the RRT rounded on 1538 patients. Among the patients seen, 234 (15%) rounds escalated into RRT calls where the team had to intervene: 19 of the 234 (8%) required transfer to a higher level of care with telemetry monitoring and 110 of the 234 (47%) required transfer to the intensive care unit. From December 2009 to March 2010, 33 patients were moved to the intensive care unit as a result of RRT rounding: 60.6% of the patients were transferred for respiratory issues, 12% for decreased level of consciousness, 12% for low blood pressure, and 6% for neurological changes/altered mental status. Proactive rounding allows early intervention and ensures that patients are receiving the appropriate level of care for their condition.

[amyv@baylorhealth.edu](mailto:amyv@baylorhealth.edu)



## **Purpose**

To create a plan to help intensive care units decrease the use of restraints and still maintain a safe environment for patients and staff. The importance of this plan is based on research that indicates that use of physical restraints may cause an increase in length of stay, an increase in delirium, and a decrease in patient safety.

## **Description**

An interdisciplinary team including nurse educators, a clinical nurse specialist, nursing leaders, and risk management analysts created several practice changes to address the high use of restraints within the critical care setting. These practice changes included a performance improvement plan, revision of current documentation of daily restraint assessment, and daily rounding by the management team. The group also worked with physicians to create an order set that included a standardized communication tool as part of the initial order. Education was provided to more than 900 nurses to address the changes in policy and documentation. The goal of the documentation changes was to cue staff nurses to seek out alternative measures to correct patient behavior before using restraints and to eliminate restraints at the earliest possible moment. Managers monitored compliance daily, and a report was sent to the director of critical care. Nurse managers coached staff for accountability with following new restraint procedures and addressed noncompliance within 24 hours of the event. Within a few months, the changes became a standard of practice for the critical care staff.

## **Evaluations/Outcomes**

Since implementing the practice changes, use of restraints has decreased from 7504 hours in January 2010 to 2149 hours of restraint use in July. Data from the National Database of Nursing Quality Indicators for the first quarter of 2010 showed that critical care units restrained 43.75% of patients. Data for the second quarter of 2010 showed a decrease in restraint use to 16.95%. With this change, Sparrow Hospital has maintained a self-extubation rate of less than 3%, with only 5 extubated patients requiring reintubation. In addition, patient fall data (per 1000 patient days) decreased to 1.65 falls per day in the second quarter of 2010, which is down from 3.11 falls per day during the first quarter. Evaluations continue in an effort to maintain a safe restraint-free environment.

[strangeacres@aol.com](mailto:strangeacres@aol.com)



## **Purpose**

In 2009, the national nurse turnover rate was 7.1%, resulting in substantial recruiting, orientation, and training costs. Nurse turnover may be linked to low morale and a noncollaborative work environment, leading staff to feel undervalued and disrespected. Respected, empowered employees are more satisfied and remain in their current position. The purpose of this project was to institute and evaluate outcomes of a staff acknowledgement and awards committee (AAC) tasked to celebrate achievements.

## **Description**

The site for this project is a 28-bed cardiopulmonary telemetry unit that is part of a 550-bed tertiary care Magnet-designated hospital. We wanted to develop a formal mechanism for recognizing staff achievements and performance and nominating staff for various internal and external awards. Recognizing that it takes confidence and skill to be successful in writing letters of nomination, we created the unit-based ACC with the support of the shared governance council. The AAC is composed of a chairperson and 2 editors who are able to mentor other staff in effective letter writing. Our goal is to recognize all deserving nursing and nonnursing staff involved with the unit, and to do so, the AAC created the “Shining Star” award program. Next, we turned our attention to hospital and external awards. A total of 25 nominations for the regional Nightingale Award were submitted over 2 years, and 3 staff nurses were recipients. Another nurse was named preceptor of the year by the Regional Health Council. Our social worker and clinical educator were recognized by the hospital as employees of the month. We have found that recognizing performance has had a positive impact on the culture of our unit.

## **Evaluations/Outcomes**

Staff satisfaction and retention rates have soared. Within the Press Ganey Employee Partnership survey, our unit has a higher level of partnership and staff satisfaction than 96% of the work groups in their national database and a high level (93%) of engagement. The nurse satisfaction, as measured by National Database of Nursing Quality Indicators, increased 11.1% from 2008 to 2010 in the areas of “nurse participation in hospital affairs” and “leadership and support.” Unit retention improved with a turnover rate well below hospital and national average. During the 2 years of this project, only 1 nurse left the hospital and 2 transferred to a higher acuity unit. The AAC has been a powerful change, empowering staff and increasing retention.

[sara.frazee@thechristhospital.com](mailto:sara.frazee@thechristhospital.com)



Janis Smith-Love; 4-Atrium Progressive Cardiac Care Unit Staff; Broward General Medical Center, Fort Lauderdale, FL

## **Purpose**

Falls are a growing public concern viewed as the health care provider's failure to maintain the environment and deliver safe care. Falls have a significant impact on patients' outcomes and health care costs and are considered "never events," that is, events that should never happen. A multimodal, staff-directed response team led the fall elimination initiative on the progressive cardiac care unit, using innovation and implementation of best-practice solutions.

## **Description**

The fall response team reviewed the causes of patients' falls; obtained feedback from patients about what led up to the event, including contributing factors; evaluated staff knowledge of fall risk assessment, diagnoses, and interventions based on current use of the Morse Fall Scale; and examined technology designed to assist with fall prevention. Industry best-practice recommendations from the Veterans Health Administration and Agency for Healthcare Research and Quality were used as clinical practice guidelines. Based on the data, 10 interventions were initiated to improve patients' outcomes: (1) Educate all licensed and assistive personnel on fall risk best-practice strategies. (2) Implement safety observation rounds and concurrent chart audits by charge nurses. (3) Institute hourly rounding to address pain, activity, and toileting. (4) Purchase bedside commodes for each patient's room. (5) Collaborate with industry partners for equipment optimization. (6) Use white boards and other fall-risk communication tools in patients' rooms. (7) Involve patients and their families in plan of care by using printed information and "Stand Tall." (8) Initiate "Fall Elimination" campaign, including t-shirt. (9) Evaluate fall-risk clinical information system. (10) Celebrate successes and identify opportunities.

## **Evaluations/Outcomes**

Monitoring from the past 9 months revealed significant improvement in clinical practice from 50% to 90% compliance; falls per quarter decreased by more than 50% with an overall reduction in severity of fall-related injuries. Most falls occurred in patients whose initial and subsequent fall risk was zero. Ongoing education of patients, their families, and staff is needed to address the impact of cardiac medications on fall risk. The "Stand Tall" fall-elimination response team increased the number of fall prevention and management experts, involved patients and their families in the process, and used a multimodal approach to improve patients' outcomes with fall elimination as the goal. Stand Tall, Don't Fall!

[smithlovej@bellsouth.net](mailto:smithlovej@bellsouth.net)

# EB113 Standing Tall for Delirium Screening By Implementing the Confusion Assessment Method for Intensive Care Units in Adult Critical Care

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Cheri Blevins, Scott Beach, Vicki Buffmire, Rebecca Hockman, Anita Isom, Paul Merrel, Booker Moritz, Mary Smith, Jessica Wilkins; University of Virginia Health System, Charlottesville, VA

## **Purpose**

In 2008, the University of Virginia sedation management task force revised the critical care sedation management guidelines to include the recognition and treatment of delirium. However, no consistent method of screening patients for delirium was in practice in the health system. Significant evidence supports the recognition of delirium to improve patients' outcomes and decrease health care costs. A group led by an advanced practice nurse incorporated delirium screening by using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) into all nurses' assessments of critically ill adults.

## **Description**

The reported incidence of delirium in the critically ill ranges from 40% to 85%. Evidence from the literature describes multiple complications from delirium, including increased lengths of stay, potential for long-term cognitive defects, and higher mortality rates. Ely et al published a validation study in *JAMA* in 2001 for the screening tool, CAM-ICU. A review article in 2007 by Pun and Ely describes the importance of recognizing and treating delirium. The use of the CAM-ICU screening tool was pilot tested in the medical ICU at the University of Virginia in 2009. The pilot study included preassessment of nursing staff on knowledge of delirium and screening, an educational campaign that used a multimedia approach, implementation of CAM-ICU with every nurse's assessment, and a postimplementation knowledge assessment. The results of the pilot study were then presented to the multidisciplinary group governing critical care practice for the institution as a model for implementation of delirium assessment for the institution. A task force of clinical leaders from each adult ICU was formed, including a clinical pharmacy specialist to address delirium in the division. The pilot model was then implemented in the adult ICUs except for the neurological unit. Delirium screening has been in place for 7 months.

## **Evaluations/Outcomes**

The goal of the project was education of nurses on delirium, performing the CAM-ICU, and increasing awareness. The multidisciplinary committee governing the task force wanted to demonstrate adherence to CAM-ICU assessment documentation. Audits reveal a 98.5% documentation rate. Education is ongoing for nurses and physicians

including reference materials, unit delirium champions, and consultation with the advanced practice nurse who was a delirium expert. The other goal of the task force was to develop a delirium treatment guideline for the critical care units. A treatment guideline was developed including pharmacological and nonpharmacological interventions and is in the institution's approval process.

[cms5q@virginia.edu](mailto:cms5q@virginia.edu)

## **EB114 Standing Tall to Protect Our Patients: Improving Blood Consent Review in the Pediatric Intensive Care Unit**

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Heather Burt, Michelle Weiss Krupa, Patricia McElroy, Kathryn E. Roberts; The Children's Hospital of Philadelphia, Philadelphia, PA

### **Purpose**

Errors in administration of blood products can be fatal. Chart reviews in our 45-bed pediatric intensive care unit (PICU) revealed inconsistencies in the documentation and review of blood consent forms (BCFs) before administration of blood products. Although no adverse events had resulted, our team recognized this as a serious safety risk and worked to (1) improve bedside nurses' review of BCFs before administering blood products and (2) increase multidisciplinary compliance with BCF documentation.

### **Description**

A shared-governance council (SGC) led by a PICU nurse tackled this patient safety problem. Key barriers to complete review of BCFs were identified via a survey of nurses and senior nurse aides (SNAs) and included the following: assumptions that the BCF was complete because blood products had been administered on a prior shift, time constraints and a lengthy and confusing BCF (12 required components to be considered "complete"). An eye-catching label was added to the blood requisition form that is completed before blood products are retrieved from the blood bank. The label triggers nurses to completely review, sign, and date the BCF before the SNAs retrieve the blood products. Education was done with 135 nurses and 15 SNAs before implementation. Tip sheets were posted throughout the PICU. If the BCF documentation was incomplete, the prescribing clinician was notified to correct the form with the parent/guardian. Additionally, 158 nurses and 30 prescribing clinicians were educated on complete and accurate documentation of BCF. These clinicians were also asked for input on how to improve the BCF. Their feedback was summarized and presented to hospital administrators by the SGC. The majority of their recommendations were incorporated into a revised BCF.

### **Evaluations/Outcomes**

Before implementation of the label, chart reviews of 22 patients receiving blood products revealed that 3 patients had no signed BCF on the chart; only 25% of the required components were documented on all 22. After label implementation, 42 of 43 patients had a signed BCF but 0 of the 43 had all 12 necessary components completed. After the new BCF was implemented, all 13 patients who received blood products had a signed BCF and 67% of the required components were complete. The SNAs have been instrumental in our improvement. They will not retrieve blood products until a nurse has reviewed the BCF and completed the label. Other units are now replicating this process. Education and triggers are not enough. Despite improvements in review and documentation, ongoing BCF revisions and monitoring are needed.

[hbieler@yahoo.com](mailto:hbieler@yahoo.com)

## **EB115 Strategy for Reducing Prolonged Ventilation in Postoperative Cardiac Surgery Patients**

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Theresa MacFarlan, Judy Smith, Christine Morrison, Curtis Klann, Damien LaPar; University of Virginia Health System, Charlottesville, VA

### **Purpose**

The purpose of this initiative was to show that after an intervention designed by an advanced practice nurse (APN) in collaboration with the Cardiac Surgery Quality Support Team (QST) to remind clinicians about target extubation times was implemented, the number of cardiac surgery patients intubated for greater than 24 hours after surgery decreased.

### **Description**

Shorter intubations after cardiac surgery translate to shorter lengths of stay, improved outcomes, and decreased costs. The QST sought to decrease the number of patients who require mechanical ventilation for greater than 24 hours. The use of a time-targeted, written reminder placed at the head of the patient's bed was followed by a statistically significant reduction in intubation times for postoperative cardiac surgery patients in a pilot study conducted from October 8, 2009 to December 8, 2009. Since a visual reminder proved instrumental in effecting a change in extubation practice for nurses and respiratory technicians, the QST decided to embark on an ongoing collaborative approach to continue the positive momentum, using a variation on the visual reminder. A timer was acquired for each bed in the cardiac surgery intensive care unit (ICU) and was magnetically attached to the door of each patient's room. The timer was preset to 6 hours and 20 hours from when the patient was admitted from the operating room (6 hours is considered timely extubation, 24 hours prolonged). At the 20-hour mark, a collaborative "huddle" determined whether changes in strategy could facilitate safe extubation by the 24-hour mark.

## Evaluations/Outcomes

Two time frames were compared, one 8 months before the original pilot study (October 2007 to June 2008) and one 8 months immediately after the pilot (October 2008 to June 2009). In the routine CABG population, the mean ICU length of stay decreased 12.3 hours per patient. With 80 patients in that group at an approximate average charge per day of \$4824, this translated to a total cost savings of \$197 784 in 8 months. We anticipate that this change in awareness and practice will continue to lead to shortened lengths of stay and overall improved outcomes for patients, at a significant cost savings and potential for maximized reimbursements.

[trm7w@virginia.edu](mailto:trm7w@virginia.edu)

## EB116 Swat Out Pressure Ulcers Through Teamwork

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Alice Evans, Regina Bustamonte, Shirley Drake; Community Regional Medical Center, Fresno, CA

### Purpose

Hospital-acquired pressure ulcer (HAPU) rates in the intensive care units (ICUs) at Community Regional Medical Center (CRMC) were higher than state and national benchmarks. Our goal was to decrease HAPU rates by 30%. In order to achieve this goal, we developed a skin wound assessment team (SWAT) to provide a program to reduce HAPU rates in ICU. The program entailed support and education of nursing staff while focusing on prevention as means of defense against pressure ulcers.

### Description

In 2008, the CRMC ICU created a multidisciplinary work group to analyze unit problems and to implement an evidence-based pressure ulcer prevention bundle. Through education, our objectives were to implement the following best-practice interventions for the bedside nursing staff:

- Creation of the ICU SWAT. Specialized wound training was provided for nurses to become “in-house experts.” The team assesses each ICU patient every week, providing consultation on wounds, pressure ulcer prevention, and “just in time” individualized bedside education for staff.
- The SWAT members instituted mandatory wound classes for staff in 2009. Prevention strategies, staging, product selection, and evaluation of new technologies and equipment were presented. Classes focused on documentation, wound recognition, and HAPU prevention using the Save Our Skin Campaign and focusing on surface selection, turning, incontinence control, and nutritional support.

- ICU manager/designee performed a daily audit of documentation since April 2008 to assess compliance with documentation.
- Through regular meetings and case reviews, we were able to identify commonalities and triggers in HAPU development and implement strategies targeting those areas.

## **Evaluations/Outcomes**

Implementation of the critical care SWAT program and an evidence-based HAPU prevention bundle has had multifaceted rewards for the patients in our unit. Nursing staff are more aware and comfortable implementing pressure ulcer prevention and caring for wounds. Critical Care HAPU incidence rates were as high as 15.4% when we started in the second quarter of 2008 and have declined by an amazing 93% to 0.3% in the second quarter of 2010.

[aevans@communitymedical.org](mailto:aevans@communitymedical.org)

## **EB117 Taking Evidence to the Bedside: Implementing a Venous Thromboembolism Prophylaxis “Care Bundle” in the Intensive Care Unit**

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Marci Handley, Christina Williamson, Beth Huweiler, Marie Schroeder, Mary Sutton, Dianna Jongwald, Drake Rippelmeyer, Javonna Parker, Ann Lawson; Veteran’s Health Care System of the Ozarks, Fayetteville, AR

### **Purpose**

This evidence-based practice project was initiated by a group of staff nurses from the intensive care unit (ICU) who wanted to ensure that the current method of practice was evidence based. The nurses, as an organizational goal-sharing project, conducted a thorough literature review to identify best practices for venous thromboembolism (VTE) prophylaxis and used a bundle approach to implement a change.

### **Description**

VTE is the most common preventable cause of hospital death, yet a large US study of more than 5000 patients at 183 medical centers revealed that most hospitalized patients do not receive any prophylaxis for VTE. Furthermore, many patients in whom VTE develops while they in the hospital do not receive adequate treatment or education about their illness. Nursing issues from the literature concerned placement and compliance in wearing sequential compression devices and educating the patient. Patient issues from the literature concerned education about the risks and empowering patients to be active and ambulate. Based on the evidence, all ICU patients are at risk for VTE and should receive thromboprophylaxis, which reduces adverse outcomes. The ICU nurses developed a care bundle that included the patient,

nurse, and provider on the basis of evidence from the literature review. This care bundle consisted of (1) a computerized physician order set for VTE prophylaxis, (2) development of a patient education pamphlet, (3) education sessions for nurses on correct placement of sequential compression devices, (4) a hospital-wide VTE prophylaxis policy, and (5) educating patients to ambulate and about ankle pumps.

### **Evaluations/Outcomes**

This change took place over a 4-month period. All of the nursing staff and providers were educated. Additionally, the nursing staff was educated about proper placement and use of mechanical prophylaxis and quality-of-life issues for patients. The patient education pamphlet was included in the admission packet and discussed during the admission process. The ICU admission orders and the daily round sheet were modified to include VTE prophylaxis. Before implementation of the intervention, chart reviews showed a 55% compliance rate for VTE prophylaxis. At the end of the project, VTE prophylaxis compliance rates are 100% for ventilator patients and 95% for medical and surgical high-risk patients.

[marci2be21@msn.com](mailto:marci2be21@msn.com)

## **EB118 Targeting Hypoglycemia Reduction With Use of Insulin Infusions**

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Lynette Richter, Melissa Browning, Ruth Kleinpell; Rush University Medical Center, Chicago, IL

### **Purpose**

With education and protocol adherence, insulin infusion protocols can provide improved patient outcomes while limiting hypoglycemia. More specifically, the goals of this project were to (1) decrease the occurrence of hypoglycemia with the use of insulin infusions, (2) improve the quality of patient care provided, and (3) assess the impact of a Web-based education program on the nursing staff to increase compliance with established protocols for insulin therapy.

### **Description**

Glycemic control has evolved as a standard of care in the intensive care unit (ICU), partly thanks to a growing body of research literature that has substantiated the benefit of intensive insulin protocols on outcomes for critically ill patients. Hypoglycemia is an associated risk of insulin therapy. Even 1 episode of hypoglycemia increases the risk of death. A retrospective study design was used to assess factors that influence episodes of hypoglycemia in the ICU that affect nurses' oversight of insulin protocols. Data were collected on all hypoglycemic events in the ICUs on patients with insulin infusions. The data included the blood glucose values, repeated episodes per patient,

nurses' adherence to the protocol, if a blood glucose measurement was missed, late, or on time, diagnosis, and/or physician service. A second phase of the study used a quasi-experimental design to examine the impact of a Web-based tutorial and educational intervention for ICU nurses on increasing awareness and adherence to established insulin protocols for ICU patients.

### **Evaluations/Outcomes**

A sustained reduction in the number of hypoglycemic events occurred after a revised insulin infusion protocol was implemented in July 2008. Hypoglycemic events had been reduced by more than 50% by 3 months after implementation of the new protocol and another 50% reduction was demonstrated from April to June 2009. A pretest/posttest format was used to evaluate increased nursing knowledge after completion of the Web-based education module. Posttest scores increased 17%. Even though hypoglycemia has been reduced with a revised protocol, further investigation is needed on appropriate glycemic targets and glycemic variability.

[lynette\\_richter@rush.edu](mailto:lynette_richter@rush.edu)

## **EB119 The Effect of Bispectral Index Monitoring on Outcomes of Patients Receiving Mechanical Ventilation With Continuous Sedative Infusion**

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Karen McCarthy, Susan Arrendell, Nicki Roderman; The Medical Center of Plano, Plano, TX

### **Purpose**

Oversedation of patients receiving mechanical ventilation can lead to prolonged mechanical ventilation and length of stay. Critical care nurses have traditionally had wide latitude in management of intravenous sedation. The noninvasive bispectral index (BIS) monitor provides a numerical value on the bedside monitor of depth of sedation. The purpose of this project was to determine if use of the BIS monitor decreases the amount of intravenous sedatives administered to patients receiving mechanical ventilation.

### **Description**

Evidence suggests that the use of the noninvasive bispectral index monitor, initially developed to gauge level of consciousness during general anesthesia, may assist the critical care nurse in management of intravenous infusions of sedatives. Staff education was completed on the use of the BIS monitor as an objective measure of sedation therapy for patients receiving mechanical ventilation. Education included appropriate documentation and adjustment of sedation according to the BIS score. All ventilator patients receiving intravenous sedatives were connected to a BIS monitor.

Documentation of the BIS score was done with appropriate adjustment of the sedative infusion. Data were collected retrospectively on 25 patients receiving mechanical ventilation with continuous intravenous sedation by using traditional methods for assessing sedation. This group was compared with a group of patients receiving mechanical ventilation who were managed using the BIS monitor in addition to traditional methods of sedation assessment. Data collected included patient demographics, diagnosis, ventilator days, length of stay in the critical care unit, hospital length of stay, number of doses of pain medication administered in a 24-hour period, and amount of sedatives administered in a 24-hour period.

### **Evaluations/Outcomes**

Demographics were similar for both groups. Comparison between the baseline (n=25) and study group (n=23) showed a decrease in amount of sedation given, length of ICU stay, ventilator days, and length of hospital stay for the study group. The number of doses of pain medication administered during a 24-hour period was increased in the study group. These outcomes suggest that BIS monitoring is a useful adjunct in the management of intravenous sedation therapy in patients receiving mechanical ventilation and may also be of benefit in managing sedated patients' pain. Further investigation should include a larger sample size, more discrete inclusion criteria, and a severity of illness score.

[karen.mccarthy@hcahealthcare.com](mailto:karen.mccarthy@hcahealthcare.com)

## **EB120 Effect of Early Mobilization Efforts on Postoperative Length of Stay After Cardiac Transplant and Left Ventricular Assist Device Surgery**

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Jennifer Evans, Carrie Tsekouras, Katherine Johnson, Michelle Marx; St Luke's Episcopal Hospital, Houston, TX

### **Purpose**

A longer postoperative length of stay (LOS) due to decreased functional capacity before surgery was observed among cardiac transplant and left ventricular assist device (LVAD) patients. Conventional physical therapy was not meeting the demands of this population. In order to decrease LOS and optimize recovery, in addition to physical therapy, a cardiac rehabilitation (CR) nurse was added to the interdisciplinary team to implement early mobilization efforts and increase total exercise time.

### **Description**

Studies have shown that early mobilization and increased exercise time in patients with an LVAD, critically ill patients, and patients receiving mechanical ventilation results in higher functional capacity, optimal recovery, and fewer serious complications. On the

basis of reviewed evidence, the cardiac transplant/LVAD team decided to provide early mobilization efforts and increase overall exercise time with the LVAD and cardiac transplant patients by adding a CR nurse in addition to a physical therapist to the interdisciplinary team. A data collection process was implemented by the CR nurse to track the LOS for this population, to monitor the baseline amount of exercise time provided by the physical therapist and nursing staff, and to monitor barriers. Equipment, such as a leg ergometer and portable ventilators was made available to patients to assist in early mobilization. The CR nurse began exercising with all cardiac transplant and LVAD patients in critical and acute care setting 1 or 2 times per day, in addition to the once daily visit from the physical therapist, for 3 to 5 days per week. In order to further enhance the cardiac rehabilitation efforts, nurse aides were trained and used to assist with patients' mobilization therapy.

### **Evaluations/Outcomes**

Through early mobilization efforts, we have notably reduced postoperative LOS and enhanced recovery and functional capacity for this population. In February 2009, only 49% of patients were discharged within 40 days of surgery. In August 2010, after implementation, the number of patients discharged within 40 days of surgery had increased from 49% to 75%. In addition to meeting the project's goals, communication has improved between members of the interdisciplinary team about patients' mobility status and system barriers to mobilization have been resolved. A daily tracking system monitors the new program's effectiveness and allows the team to make changes as necessary to meet patients' needs.

[jevans@sleh.com](mailto:jevans@sleh.com)

### **EB121 The Leadership Imperative . . . Moving Control of Nursing Practice to the Bedside**



Julie Gorczyca, Carmella Bovol, Victoria J. Boyce; St John Hospital and Medical Center, Detroit, MI

#### **Purpose**

The AACN Standards for Establishing and Sustaining Healthy Work Environments (2005) were used to identify opportunities for improvement in the critical care units. As part of a leadership assessment, nursing leaders in 4 intensive care units identified an opportunity to improve and foster true collaboration in nursing practice. The poster describes a strategic plan for embracing all members of the units in shared decision making.

#### **Description**

Nursing leaders including managers, assistant leaders, and preceptors collaborated at

an all-day retreat to develop a strategic plan for critical care. The plan includes Kramer's "walk the talk" best practices for releasing control to bedside nurses, which includes shared governance and a commitment to shared decision making. The units moved to project-based shared governance to create a sense of completion and accomplishment. Chairs of shared governance were supported with classes on leadership and attendance at AACN's National Teaching Institute. Twice a year, a CCRN review is held for interested staff, and the certified nurse manager and leader course is offered annually for leaders. Leaders support certification and serve as role models by supporting associates or by attaining certification themselves. The team developed a method for regular and consistent communication, which includes quarterly rounding with all leaders on all shifts. "Beacon Bound," a monthly newsletter, provides staff with regular updates on progress toward achieving Beacon status. Nurses are encouraged to grow, develop, and be part of solutions. Improvement initiatives led by staff nurses and supported by leadership are the cornerstone of collaboration in our nursing practice.

### **Evaluations/Outcomes**

The effects of staff nurse involvement are seen in the number of nurses and their progress participating in projects. To date, nurses have modified practices for sedation/delirium, lung protective strategies for ventilator patients, and mobility. Blood stream infections have been reduced 50% by developing a poster presentation on wheels. The number of nurses certified has gone from 7 to 30, a 328% increase. Forty percent of leaders have obtained certification. In hospital satisfaction surveys, there was a 35% improvement from 2009 to 2010, in responses to the question "I have the opportunity to give input on decisions that affect my job," with 105 positive responses.

[julie.gorczyca@stjohn.org](mailto:julie.gorczyca@stjohn.org)

### **EB122 The Tracheostomy Time-Out: First Change, Every Change**



Janet Boyce, Joseph Bolton, James McCarrick; The Children's Hospital of Philadelphia, Philadelphia, PA

#### **Purpose**

Artificial airway safety is imperative for tracheostomy-ventilator dependent patients in the acute care setting. Tracheostomy safety involves critical thinking for correct insertion of the tracheostomy tube. In children, multiple opportunities exist to insert an incorrect tracheostomy tube, depending on the tube's inner or outer diameter, tube length, cuff type/presence and manufacturer. The Trach Time-Out (TTO) was developed to prevent the inadvertent insertion of incorrect tracheostomy tubes.

#### **Description**

Joint Commission and National Patient Safety Goals emphasize safe communication practices, 2 patient identifiers, and correct site identification for procedures. Safe tracheostomy tube changes require 2 caregivers to have a dialog confirming their roles during the procedure. A read-back of the tracheostomy tube orders is essential for verification of the correct tube size, length, and cuff with the actual tracheostomy tube. Based on the surgical procedure timeout initiative, the TTO was developed to integrate these key actions necessary with any tracheostomy tube change with any 2 trained caregivers. In July 2008, the TTO checklist was formalized; in August, it was introduced to staff and families, posted in patients' rooms, and incorporated into every tracheostomy tube change. The checklist was based on a safety event related to a placement of a wrong-sized tracheostomy tube. The list includes the mandatory "rights" of tracheostomy tube changes: patient, tracheostomy tube size, manufacturer, length, cuff, and tube patency. The ability to pass a suction catheter or the obturator through the tracheostomy tube to be inserted was added in 2009 related to finding a tracheostomy tube partially occluded with cleaning material. Events related to placement of an incorrect tracheostomy tube were tracked with Safety Net reports.

### **Evaluations/Outcomes**

The progressive care unit is a 16-bed acute care unit with tracheostomy-ventilator dependent children and children dependent on noninvasive ventilation. The average daily census of children with a tracheostomy and ventilator is 12. These children receive one tracheostomy tube change per week. From August 1, 2008, to August 1, 2010, more than 1200 tracheostomy tube changes have been performed. Nurses, respiratory therapy staff, and patients' families have not reported any incidents of placements of the wrong tracheostomy tube to Safety Net. Two events reported were related to documentation omissions of tube length and presence of a tracheostomy tube cuff in the orders. The TTO has become part of the safety culture within the unit with every tracheostomy tube change.

[jimjanbo@comcast.net](mailto:jimjanbo@comcast.net)

### **EB123 To Turn or Not to Turn: Critical Decisions Using a Therapeutic Repositioning Risk Assessment Tool**

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Carol Ann Daddio-Pierce, Lucy Feild, Mary Aquilino, Margaret Bernazzani, Irene Cooper, Christopher Donahoe, Suzanne Fracione, Jacqueline MacNeil, Stephen Strojwas, Vincent Vacca; Brigham and Women's Hospital, Boston, MA

#### **Purpose**

Therapeutic repositioning promotes oxygenation, minimizes gravitational instability, and protects skin integrity. Yet it poses special risks for patients in the intensive care unit (ICU). Evidence-based guidelines for this procedure are not clearly established. Clinical decisions are often influenced by cultural traditions and subjective

preferences. The intent of this project was to develop a risk assessment tool and intervention guideline for therapeutic repositioning based on objective and measurable criteria.

## **Description**

In response to several sentinel events in which hemodynamically unstable patients had pressure ulcers develop, the Critical Care Pressure Ulcer Reduction Task Force undertook the challenge of developing and standardizing a protocol to guide the critical care nurse's decision making regarding therapeutic repositioning. Membership included representatives from medical, surgical, burn-trauma, thoracic, neuroscience, cardiac, and cardiac surgery ICUs. Following a review of the literature and consultation with unit-based clinical experts, the task force identified 5 clinical conditions that increase the risk of untoward events with therapeutic repositioning: baseline hemodynamic instability, turning-associated hemodynamic instability, complex mechanical ventilator modes and oxygenation ( $\text{PaO}_2/\text{FIO}_2$  ratio), potential for dislodgment of life-sustaining apparatus, and elevated intracranial/cerebral perfusion pressure. These 5 conditions were each stratified into low-, moderate-, and high-risk categories with associated objective measurement criteria. Intervention bundles for each level of risk were formulated. The materials were then consolidated into a nursing procedure and shared with ICU nursing staff for critical review and consensus development.

## **Evaluations/Outcomes**

The task force's work has resulted in the development of a standardized, evidence-based practice guideline for therapeutic repositioning risk assessment and management that is applicable across all 6 ICUs. The guidelines direct the nurse to reassess risk level at least every 8 hours and document this level on the ICU flow sheet, along with the use of the related therapeutic repositioning bundle. It is anticipated that the implementation of the risk assessment tool and adjunctive modalities will reduce the incidence of pressure ulcers in critically ill patients.

[cpierce@partners.org](mailto:cpierce@partners.org)

## **EB124 Ultrasound-Guided Insertion of Peripheral Intravenous Catheter in a Surgical Intensive Care Unit**

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Jennifer MacDermott; The Ohio State University Medical Center, Columbus, OH

### **Purpose**

Central catheter-associated blood stream infections are associated with a 30% mortality and \$45000 bill per case. Early this year, Ohio State University Medical Center (OSUMC) instituted an evidence-based "bundle" with a goal of reducing such

infection rates to zero. Following implementation, it was revealed that removal of unnecessary catheters was limited by issues in obtaining peripheral access. Patients were receiving only minimal intravenous medications, but upper extremity edema, obesity, and other factors were limiting successful peripheral cannulations.

## **Description**

Current literature on the peripheral catheter placement with ultrasound technique is limited to emergency departments. Factors such as obesity, chronic medical conditions, and intravenous drug abuse are reported as affecting the ability to place an intravenous catheter by using the traditional approach. These conditions continue to remain an issue after transfer to the ICU. Several published studies have reported success rates of 80% to 92% with the use of ultrasound. These studies have also described additional outcome measures, including fewer skin punctures and faster insertion with an ultrasound guided approach. Several years ago, OSUMC developed an ultrasound-guided peripheral catheter team that places intravenous catheters throughout the hospital. Because of the limitations in the team's size, placements of peripheral catheters in the intensive care units (ICU) were a low priority, as a central catheter could easily be placed if needed. With an intent to reduce the number of central catheter days and central catheter-associated blood stream infections, I trained with the ultrasound guided peripheral catheter team to use this technology in the surgical ICU on a regular basis.

## **Evaluations/Outcomes**

Since January, I have inserted 320 intravenous catheters using ultrasound guidance in 375 attempts, an 85% success rate. Recently, I also began collecting reasons for placement; most often they included no visible or palpable vessel (75%) or history of a difficult intravenous catheter insertion (29%). Eighty-nine percent were also complicated by edema (38%) and obesity (18%). Since initiation, ultrasound-guided therapy has reduced central catheter days by 31% and infection cases have decreased 46%, from 2.4 to 1.3 cases per month. The rate per 1000 catheter days has remained at 2.5/1000 catheter days as catheter days has decreased; however, in a year's time, it will potentially save 3 patients who would have died and \$540000 in treatment.

[jennifer.macdermott@osumc.edu](mailto:jennifer.macdermott@osumc.edu)

## **EB125 Use of the Electronic Medical Record in the Development of a Modified Early Warning Score**

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Bonnie Albert, Laura Huesman; The Christ Hospital, Cincinnati, OH

## **Purpose**

This project was designed to facilitate the effective use of a nurse-led rapid response

team (RRT) in a 550-bed tertiary care teaching hospital with Magnet recognition. Our Modified Early Warning Score (MEWS) was designed for use in the electronic medical record (EMR) and pilot tested in 4 telemetry units to detect early deterioration and increase the use of the RRT. We anticipated that the EMR scoring and alert would help nurses recognize a deteriorating pattern. It is now used house-wide.

## **Description**

Green and Williams reported that 6 vital signs provided a score that identified patients at risk for an emergency event who were ideal candidates for the RRT. Use of the score and the RRT decreased cardiac arrests and reduced inpatient mortality. Like many other institutions, we wanted to use that score as a foundation for our program. After reviewing other literature, we created the 13-item MEWS by adding factors that might identify early sepsis, stroke, or nurse/family concerns. The sum of the indicators provides a score that triggers a pathway for nursing action. The EMR tallies the score based on the assessment and prompts the nurse to take action. The EMR drop-down box gives the nurse a list of possible actions: consult with charge nurse; notify nurse practitioner, physician or respiratory therapist; rescore later, or enter a comment that describes rationale for action or watchful waiting. The tool was pilot tested on 2 telemetry units; adjustments were made to prevent false positives and allow for expected baseline abnormalities due to chronic underlying disease. Our team also had to address how to handle missing data in the tally of the score by including a category for “no data available.” Chart reviews ensured the accuracy of the EMR scoring.

## **Evaluations/Outcomes**

A 6-month retrospective chart review of patients (n=150) experiencing cardiac arrest/RRT call was done to determine the MEWS score 4 to 8 hours before the event. A score of 3 was adopted as the trigger for nursing action. The pre-event score was significant for respiratory events ( $P=.002$ ). MEWS scores 4 hours before the event were significant for predicting decline ( $P=.006$ ). Both telemetry units had 33% fewer adverse event calls (code blue) with a 50% increase in RRT calls. We met the Institute for Healthcare Improvement’s target for 25 RRT calls/1000 discharges, demonstrating appropriate use of the RRT. The MEWS drop-down box facilitates performance improvement tracking of nursing actions and critical thinking.

[lynneesther@yahoo.com](mailto:lynneesther@yahoo.com)

## **EB126 Use of Ultrasound Guidance for Placement of Deep Peripheral Intravenous Catheters in Difficult-to-Access Patients in Intensive Care, Emergency, and Medical-Surgical Units**

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Gina Maiocco, Chris Coole; Louis A. Johnson VAMC, Clarksburg, WV

## **Purpose**

The primary purpose of our evidence-based project was to implement the use of ultrasound guidance for deep peripheral intravenous (PIV) catheter insertion in difficult-to-access patients across the continuum of care—in the emergency department, intensive care unit, and medical-surgical units. Routinely, a tourniquet is placed to visualize a vein followed by catheter insertion. The problem is that the patients we care for are older, heavier, and live longer with chronic diseases, making simple catheter insertion difficult. Our patient care data showed that more than 50% of our obese patients, who had a 1-in. (2.54-cm) 20-gauge PIV catheter, required a PIV restart within 24 hours because of dislodgment or infiltration. With restarts, multiple sticks were noted. Peripherally inserted central catheter (PICC) referrals increased and, because of the lack of available trained staff to insert a PICC, venous access was often delayed. By implementing this new procedure, our goals were to improve the efficiency of our PIV practice, to decrease PIV access delays by increasing the availability of nurses trained in ultrasound guidance on each shift, and to improve our customer feedback from both nurses and patients.

## **Description**

Ultrasound guidance for deep insertion of PIV catheters is primarily used by nurses in the emergency department. Bauman et al found that emergency department nurses trained to use ultrasound were 80.5% successful in PIV insertion, compared with 44.1% of nurses who used traditional methods. Similar reports state that the procedure is faster, requires fewer skin punctures, and receives higher ratings of patient satisfaction than the routine procedure. Research also notes no increase in infection rates with a change in procedure. Adhikari found the infection rate for ultrasound-guided PIV placements was 5.2 per 1000 versus 7.8 per 1000 in the traditional PIV group. Based on our literature review, we concluded that ultrasound for PIV catheter placement was an effective alternative to address our issues. With a change in practice, a policy outlining use of ultrasound for deep PIV catheter placement was written, an educational course was developed to introduce nurses to the procedure, and a grant was submitted to obtain funds to buy an arm simulator that was used for safe demonstrations/practice. ICU and emergency department nurses representing each shift were initially trained, followed by medical surgical nurses. To assist in monitoring patients' outcomes, nurses completed a survey after insertion detailing reasons for the insertion.

## **Evaluations/Outcomes**

Program success is defined as a decrease in the need for PIV catheter restarts, a decrease in PICC referrals, and positive customer (nurse and patient) feedback. Data monitored included infection rates, frequency of infiltration/dislodgment, number of PIV catheter restarts and PICC referrals, and potential complications. Since the program started, we have inserted 25 deep PIV catheters. Five of the 25 were PICC referrals, saving the facility \$4000, and 56% of patients were medical surgical patients, with 52% being obese. The number of PIV catheter restarts for obese patients decreased by 30%. Patients like not having their PIV catheter replaced in less than 24 hours—most are lasting longer than 72 hours. More nurses are requesting training

because of the positive results.

[gina.maiocco@va.gov](mailto:gina.maiocco@va.gov)

## **EB127 Walking the Deck: Standing Tall for a Safe Environment**

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Michelle Weiss-Krupa, Jill Caplan, Sheri Kubis, Kathryn E. Roberts; The Children's Hospital of Philadelphia, Philadelphia, PA

### **Purpose**

Cluttered, crowded hallways that obstruct the flow of patients and staff create an unsafe environment, especially in fast-paced critical care units. We were concerned that we would not be able to safely evacuate patients and staff in an emergency. The "Walk the Deck" (WTD) system was developed in the pediatric intensive care unit (PICU) and the progressive care unit (PCU) to enhance staff awareness of environmental safety issues and compliance with established state and federal regulations.

### **Description**

The hectic atmosphere of our 45-bed PICU and 16-bed PCU challenge staff trying to maintain a safe environment. The PICU and PCU can have more than 15 admissions, transfers, and discharges per day. On the busiest days, the hallways were lined with beds and equipment that had yet to be put away. Staff members were focused on their individual tasks and were not fully aware of the impact of the cluttered hallways until they needed to move their patients. We needed to change our collective mindset from "cleaning up" to standing tall to own the safety of our environment. Incidents such as the explosion of the Challenger space shuttle in 1986 and the Three Mile Island disaster in 1979 demonstrated that the smallest missed detail can have the biggest impact. The aviation and nuclear power industries have benefited from safety checklists. Using a technique adapted from the US Navy, we developed WTD with input from experienced charge nurses and senior nurse aides (SNA). The SNAs walk the units twice a day, using a safety checklist to complete a thorough and systematic inspection. They partner with the charge nurse to complete the checklist and resolve identified issues. The checklist covers issues such as cluttered hallways, access to fire extinguishers, medication safety, emergency preparedness, and more.

### **Evaluations/Outcomes**

WTD is a significant culture change. In the first 3 months, WTD compliance has improved in the PCU from 81% to 93% and in the PICU from 45% to 50%. PCU compliance is consistent across shifts; PICU is not (days 60%, nights 32%). Variable SNA staffing at night may contribute. Although some resistance persists, most staff have embraced this change, are more engaged, and are aware of their surroundings.

Consistently, hallways are clearer, bedside carts are locked, and equipment is charging. WTD is a work in progress. It is helping to identify and address safety concerns in a timely fashion. Before WTD, there were days when we would not have been able to evacuate the units quickly in an emergency; now we can.

[weisskrupa@email.chop.edu](mailto:weisskrupa@email.chop.edu)

## **CH128 A Global Initiative: How a Chapter Gives Back**

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Nicki Roderman, Ellen Palmer; Dallas County Chapter of AACN, Dallas, TX

### **Purpose**

As one of the strongest chapters in the country and one that is more than 35 years old, the Dallas County chapter of the AACN has had goals in place to promote the mission and vision of AACN. In an effort to expand our membership and volunteer opportunities, a global initiative for expanding volunteerism and support of nursing education was launched. Expanding beyond the walls of our local community, the chapter has become involved in national and international programs.

### **Description**

Volunteer opportunities during the past 5 years have included supporting a local food bank and toy drive. Additionally, every quarter, members have participated with sorting medical supplies and equipment for an international company who distributes supplies from developed countries to developing countries and world disaster areas. Recently, supplies were provided for the disaster in Haiti. A long-standing member of the chapter has assisted in providing nursing education and support to a nursing school in India, and for the past 11 years, this chapter has provided the new graduates of that school with stethoscopes, which they would not have otherwise afforded. Twenty multicolored stethoscopes per year have been hand delivered to these graduates. In 2010, the chapter contributed to the International Council of Nurses French Mobile Library for the Haiti National School of Nursing and supported the school where 90 students and 2 faculty members lost their lives to the earthquake. The school requires that the students have uniforms, which are handmade. Strapped for supplies and money, this chapter supported the school by providing the materials for these uniforms.

### **Evaluations/Outcomes**

This fiscally strong chapter with a large membership has supported volunteer activities for many years. At the annual planning meeting, the board evaluates its volunteer activities and brainstorms ideas for the upcoming year. The chapter has spent up to \$500 per year for 11 years on stethoscopes and supplies. First-hand evidence has shown that the students in international countries are appreciative of our gift of

stethoscopes to help them on their way in nursing. This chapter supported nursing students in Haiti by supplying \$1500 in materials. The chapter is proud of its abilities to serve locally and reach globally to assist those in need.

[nicki.roderman@hcahealthcare.com](mailto:nicki.roderman@hcahealthcare.com)

## **CH129 Combining Efforts: Two Can Do More Than One**

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Nicolette Mininni, Jan Lemme; UPMC Shadyside, Pittsburgh, PA

### **Purpose**

University of Pittsburgh Medical Center (UPMC) Shadyside Hospital approached the Three Rivers chapter of the AACN to cosponsor a successful 1-day critical care conference with national speakers and a member of the AACN board. The hospital wanted to be a part of this program to encourage certification and membership in professional organizations, promote education, and celebrate the first Beacon unit in southwestern Pennsylvania. Together, the AACN board and the hospital wanted to sponsor a well-received program.

### **Description**

The Three Rivers chapter of AACN and UPMC Shadyside worked together to plan and implement a very successful 1-day critical care program. Chapter board members and hospital administrators supported the program, which included local and national speakers, an AACN national board member, vendors, and a community effort to raise food for the local food bank. The hospital offered the use of the conference center, the nursing education department for continuing education credits, and catering services. The AACN chapter supported the national AACN board member as a speaker.

### **Evaluations/Outcomes**

The conference was attended by 160 critical care nurses from the tristate area. Evaluations were tallied, and many participants noted they were looking forward to next year's conference. Financially, the profits from the conference supported sending 3 nurses to the National Teaching Institute in Washington, DC. Participants were asked for a canned good donation for the local food bank and more than 160 pounds were collected! The success of the program gained support from the Three Rivers chapter's current board and the UPMC Shadyside Hospital administration to hold a second program this year.

[mininninc@upmc.edu](mailto:mininninc@upmc.edu)

## **CH130 Getting Off the Ground: Successful Strategies Used During the First Year as a Chapter of the AACN**

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## **Purpose**

Our journey began in December 2009, embracing the mission and values of AACN. We are a small community in Central Oregon with a group of nurses who are compassionate, strive for excellence, and embrace lifelong learning. Our goal was and continues to be to create an environment where all of these traits can be fostered. The purpose of developing the Central Oregon chapter of AACN was to provide a place and a culture where critical care nurses come to learn, network, and help move their units toward Beacon status and certification. Our goal was to carry out this mission and stay financially viable.

## **Description**

Our journey began late last year with the election of our officers. Our board met for the first time with a goal of creating a strategic plan for the year. We developed 6 main objectives focused on financial stability, development of standing committees, education opportunities, networking, activities focusing on community outreach, and AACN's key initiatives. Identifying methods to increase our financial stability was our first challenge. Yearly dues and recruiting new members was our first step. Establishing standing committees in order to meet our goals was another area on which the board focused. These committees consisted of education, communication, membership and certification, community outreach, and the healthy work environment task force. Each of our committees is working hard in achieving their goals and has been very successful. Our poster board will reflect all of the activities each committee group has completed related to education events we have done, community education events in which we have participated, healthy work environment projects, what we have done with membership/certification, and how we have organized our monthly chapter meetings.

## **Evaluations/Outcomes**

As we look back and reflect on our achievements this year, we know we have acted with intention and remain standing tall. We set out to promote AACN's mission, vision, and values. In our first month of life, our chapter was acknowledged by AACN for recruiting the most new national members. Our chapter has worked very hard to promote AACN's key initiatives. We at the Central Oregon chapter of AACN believe that our hard work in the past 8 months has fostered an environment of collaboration and excellence.

[aaliperti@scmc.org](mailto:aaliperti@scmc.org)



Amelia Ross, Jackie Jones, Dale Callicutt, Chris Piteleski, Jilleon Inman, Deborah Walker, Gail Dull, Rebekah Sanders, Mawra Massry, Melanie Williamson; Wake Forest University Baptist Medical Center and Forsyth Medical Center, Winston Salem, NC

## **Purpose**

The Old Salem chapter of the AACN has a long-standing history of providing community service through food drives and charitable monetary and item donations in Winston Salem, North Carolina. With tough economic times for everyone, our chapter embarked on a quest to raise money not only to sponsor our chapter meetings with meals, but also to provide community service through charitable donations and volunteer drives.

## **Description**

Members brought forth several fundraising and community service projects. We proceeded with drives for gently used shoes and bone marrow donation, a children's consignment sale, and health screenings. For the shoe collection drive, we placed

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