

# 2020 National Teaching Institute Evidence-Based Solutions Abstracts

## **EB1: A Creative Staffing Approach for Patients Requiring Mechanical Circulatory Support Devices**

Elizabeth Reinke; Froedtert Hospital, Milwaukee, Wisconsin

**Purpose:** With the orientation of 6 new cardiac surgeons over 2 years, the mechanical circulatory support (MCS) volumes in our cardiovascular intensive care unit (CVICU) rose precipitously, increasing the demands on nursing resources. We wanted to find and test an alternative registered nurse (RN) staffing model for patients receiving MCS that would ensure patient safety while decreasing staff turnover and overall staffing costs. We believed a new staffing model would accomplish our goals, reduce incentive pay and overtime, and preserve staff retention. **Summary:** Because of the close monitoring patients receiving MCS require, due to both the underlying critical illness and the equipment, the RN-to-patient ratio in our CVICU traditionally was 1:1 or 2:1, depending on the device type. The continuous presence of a perfusionist was not available in our unit to augment nurse staffing for these patients. Instead of increasing our core staffing to allow for 2 RNs in each MCS room, we followed the guidelines of the Extracorporeal Life Support Organization (ELSO). The ELSO guidelines recommend a team comprising an extracorporeal membrane oxygenation (ECMO) specialist, an RN, and a perfusionist or other trained professional who manages up to 3 pumps at a time in a particular unit. The ECMO specialist receives increased didactic and hands-on training to respond to ECMO emergencies and assist in troubleshooting the circuit in the event of a pump malfunction; this model is used widely at large ECMO centers across

the country. We implemented the MCS role on a trial basis on August 3, 2018, with 12 core staff filling the role, allowing us to decrease our core staff per shift by 2 to 3 RNs. In November 2018, the role became a permanent part of our CVICU staffing model and we were granted a worked hours per unit of service increase on the basis of the need for this role. **Evaluation/Outcome:** With the rollout of the new model, change-management strategies were used and adjustments to the MCS role and expectations were made on the basis of interprofessional team feedback in the first 2 months. After implementation of this role, 180-day turnover decreased from 15% to 11.43%; overall turnover decreased from 16% to 6.26%. We have observed no increase in patient safety events, and incentive dollars and hours have remained stable, as have overtime hours. Bedside-nurse perception of staffing in the CVICU increased dramatically, as measured by the organization's staff engagement survey, from 3.73 (on a 1-to-5 Likert scale) in 2018 to 4.27 in 2019.

## **EB2: A Team Approach to Improving Initial Ventilation Hours for Patients in the CTU Who Have Undergone Isolated CABG**

Amelia Stover, George Berberian, Anthony Thrower; Southeast Health, Cape Girardeau, Missouri

**Purpose:** The Society of Thoracic Surgeons (STS) defines early extubation as extubation performed less than 6 hours after the patient exits the operating room (OR). This is 1 of the 11 composite elements for isolated coronary artery bypass graft (CABG) STS star rating. In our cardiothoracic intensive care unit (CTU), the STS median for initial ventilation hours has consistently been more than 8 hours for most quarters since 2016. Our team worked to identify and overcome barriers to

improve initial ventilator hours and improve outcomes for our patients. **Summary:** We used a team approach to assess and evaluate our barriers to early extubation. Two major areas were identified: awareness and culture. To improve awareness, several initiatives were implemented. All staff were educated on the importance and purpose of early extubation, including improved outcomes, decreased risk of ventilator-associated events, decreased risk of infection, and decreased length of stay. The STS standards and composite scores were identified, discussed, and displayed in the unit. Anesthesia personnel began displaying OR exit times and 6-hour extubation goals on patient doors. This message was also communicated during handoff. We placed a “CABG Countdown” time clock at the nurse’s station to notify the unit that a CABG was being fast-tracked. In addition, Anesthesia personnel collaborated with the surgeons on beginning low-dose dexmedetomidine before patients left the OR, as well as reversing the paralytic before anesthesia personnel left the CTU bedside. This intervention was initiated to help to wake patients sooner, initiate native breathing, and alleviate associated anxiety, rather than to allow patients to rest longer and administer central nervous system medications, as needed. **Evaluation/Outcome:** All these initiatives positively changed the culture of the unit as well as the team. Nurses began increasing promotion of wakefulness when patients showed signs of following commands. Respiratory personnel made more aggressive efforts to wean patients from ventilators. Staff could speak to STS standards and why they lead care. With all the efforts put into effect by our team, we reduced initial ventilation hours from 9.6 hours overall in 2018 to 5.8 hours in quarter 1 of 2019. The collaboration and success of the team are beyond measure.

### **EB3: An ICU’s Journey: CLABSI Free for 3 Years and Counting**

Natalie Kitago, Elirose C. Tamargo, Lindsey Burrell; Little Company of Mary Hospital, Torrance, California

**Purpose:** Hospital-acquired infections affect the patients we care for. When considering nurse-driven quality indicators, it was evident that central catheter-associated bloodstream infections (CLABSIs) were a key issue. As a unit, we consistently had more CLABSIs per month than the national average, and even just 1 CLABSI is considered too many. Although we had seen some improvement with certain past initiatives, we could not

manage to keep the unit CLABSI free. **Summary:** Through a multiteam approach, we set out to address the issue of CLABSIs. We began with a Kaizen plan (an action plan focusing on specific areas within a company and involving employees at all levels, with a strong emphasis on involving floor employees) to assess current practices for use and handling of central catheters. Evidence showed that most CLABSIs were acquired during the maintenance phase of the catheter, so we tailored our nursing interventions to directly target that phase of catheter management. Individualized training was provided for changing central catheter dressings, administering proper drugs, and collecting blood samples. Concurrently, the hospital developed a decision tree to aid proper catheter selection for patients. Charge registered nurses (RNs) have since been tasked with auditing central catheter dressings and intravenous (IV) tubing. There has also been a push for peer-to-peer accountability, and nurses are empowered to verbalize their concerns if issues with central catheters occur. As part of the intensive care unit (ICU) interdisciplinary rounds, the ICU physician and RN discuss catheter needs and opportunities for de-escalation, thus aiding early removal of central catheters. In addition to bedside RNs, a designated IV access team is trained to place ultrasound-guided peripheral IV catheters and midlines. This change has decreased the number of central catheters left in patients because of lack of access. **Evaluation/Outcome:** The outcomes we have today are a result of a complete shift in unit mentality around CLABSIs. Instead of focusing on short-term goals, we changed the culture of the use of central catheters altogether. Before initiating the many interventions required to achieve this success, we were frequently battling CLABSIs, averaging 8 CLABSIs annually despite being at a use rate consistent with similar hospitals. Now we can proudly state we have not had a CLABSI since April 2016. Our success is measured through the data submitted to the National Database of Nursing Quality Indicators database and it is shared by the members of our ICU.

### **EB4: Augmenting Bedside Nursing Assessment Skills With Technology to Decrease Incidence of HAPI**

Sheila Chucta, Mark Sabo, Maddie McGarvey, Lori Price; The Ohio State University Medical Center, Columbus, Ohio

**Purpose:** Hospital-acquired pressure injuries (HAPIs) can cause pain, increase health care costs, and may even

result in death. The purpose of this quality project was to appraise and assess continuous bedside pressure mapping (CBPM) systems in a cardiothoracic intensive care unit (CVICU). The CBPM system provides real-time feedback to the bedside nurse so the patient can be effectively positioned, promoting a decrease in areas of high pressure and potentially a decrease in the incidence of HAPI. **Summary:** Quality data in a high-acuity CVICU revealed increasing rates of HAPI. We reviewed the literature and found that CBPM showed pressure incidence monitoring devices are associated with a substantial reduction in the development of HAPI. Using an evidence-based practice process, we developed a PICOT (population, intervention, comparison, outcome, time) statement and intervention process using CBPM. In an adult CVICU, patients (P) used the CBPM (I) versus the standard of care 9 months before use of device (C), resulting in a 50% reduction (O) in HAPI for the 3-month intervention period (T). Use of the CBPM system was considered standard of care for all patients who were in the CVICU for 3 months. Skin-squad team members were trained as superusers and staff was educated on the use and purpose of the device. The CBPM system provided real-time feedback to staff caring for patients and aided assessment of adequate turning before and after repositioning. The primary aim of this trial was to decrease HAPI incidence by 50% during the 3-month trial. During the trial, nurse satisfaction, decrease in employee injuries, and other cost-reduction strategies related to patient positioning were also reviewed. **Evaluation/Outcome:** The CBPM trial exceeded expectations. Staff could reposition patients effectively using traditional turns and weight shifting. The results showed a complete (100%) reduction in sacral pressure ulcers for patients with the system placed on their bed. The device also received favorable feedback from nursing staff (83%) as well as from patients and families. Evaluations included comments such as “The device allowed me to use the visual display screen to give real-time feedback and educate the patient and increase compliance with repositioning.” Since the conclusion of the trial, we have placed the CBPM on all CVICU beds and have had 1 pressure injury in 6 months.

### **EB5: *Clostridium difficile* Reduction Through Interdisciplinary Partnership, Case Review, and Shared Learning**

Erika Setliff, Stacy Meyers, Catrina Weatherby, Rhonda Mann; Carolinas HealthCare System NE, Concord, North Carolina

**Purpose:** This quality improvement project took place on a 35-bed, mixed medical-surgical intensive care unit (ICU) with 12 hospital-acquired *Clostridium difficile* infections in 2016. These infections are costly to hospitals and detrimental to patients, leading to increased length of stay, morbidity, and mortality. This multidisciplinary team aimed to identify root causes, educate, and put processes in place to decrease the number of hospital-acquired cases in this ICU by half. **Summary:** This project was part of a large hospital initiative to decrease hospital-acquired infections (HAIs). A large multidisciplinary team with the goal of reviewing and decreasing HAIs began to review and discuss any HAI from the previous month. The ICU staff specifically focused on *C difficile* rates. The ICU team, comprising a clinical nurse specialist, clinical educator, frontline nurses, clinical supervisor, nurse manager, and infection preventionist, partnered with the larger hospital committee. Each case was reviewed, discussed with involved staff, and brought back to the larger group for discussion and action planning. Multiple performance-improvement cycles were implemented throughout, following plan-do-study-act methodology. Cases were reviewed, at minimum, by a clinical nurse specialist, nurse manager, infection preventionist, epidemiologist, and the hospital’s physician leadership, and opportunities were discussed. Hospital- and unit-level interventions included feedback to the electronic medical record logic for provider- and system-generated stool sample orders, physician and nurse education, sharing learnings from each of the cases, and improving *C difficile* bundle compliance. **Evaluation/Outcome:** Throughout the ongoing quality focus in this large, mixed critical care unit, the team was able to decrease the hospital-acquired *C difficile* infections by half, from 12 in 2016 to 6 in 2017. The improvement was sustained with 7 hospital-acquired *C difficile* infections in 2018, and only 2 total for the first 2 quarters of 2019. The multifaceted and multidisciplinary approach has significantly affected *C difficile* rates to improve patient care and avoid unnecessary costs associated with HAI.

### **EB6: CAPE Nurses: To the Rescue!**

Ashley Frazier, Elizabeth Maffett, Rachel Stapleton,

Michelle Mason, Keturah Williams, Madelaine Baublis; Duke University Hospital, Durham, North Carolina

**Purpose:** Cardiac arrest after pediatric cardiac surgery is associated with high morbidity and mortality. Our pediatric cardiac intensive care unit (PCICU) Code Committee meets monthly to analyze cardiac arrest details, determine root cause, and focus on quality improvement. Specialized Cardiac Arrest Prevention and Education (CAPE) nurses lead ongoing quality improvement initiatives, which have contributed to decreased arrest rates despite increasing surgical volume.

**Summary:** Our PCICU is a 16-bed unit in a high-volume pediatric congenital heart center on pace to perform more than 400 surgical cases in 2019. Approximately one-third of those cases are high complexity (STAT 4 or STAT 5), as categorized by the Society for Thoracic Surgeons–European Association for Cardio-Thoracic Surgery. In 2016, we formed a multidisciplinary Code Committee to focus our efforts on cardiac arrest recognition and prevention. We analyze every detail of cardiac arrest occurrence in the PCICU to identify opportunities for improvement. The CAPE nurse champions execute learning plans derived from code analysis to educate staff on best practices. We later honed our efforts on prevention of cardiac arrest in the immediate postoperative period after data analysis revealed that 55% of postoperative arrests occurred within 24 hours of cardiac surgery. In 2019, the CAPE nurse role was expanded to include highly trained postoperative nurses who provide care to our postsurgical patients for the first 24 hours. These CAPE nurses apply for the role and are selected on the basis of experience, peer review, and engagement in improving patient care outcomes. The nurses attend formal classroom training and are precepted to postoperative patients of all complexities.

**Evaluation/Outcome:** Bedside vigilance and CAPE nurse education have contributed to a decreased overall postoperative arrest rate in the PCICU despite increasing surgical volume and complexity over 3 academic years. For all STAT categories, the postoperative arrest rate decreased from a peak of 10.3% to 5.3%, and for highest complexity cases (STAT 4 and 5), the postoperative arrest rate decreased from a peak of 22.2% to 9.9%. Postoperative arrest rate within 24 hours of surgery has decreased from 4.4% to 3.3% for all STAT categories and from 12.1% to 4.5% for the highest complexity cases.

### **EB7: CAUTI Reduction, One Innovation at a Time in a Medical Progressive Care Unit**

Carmen Davis, Brandie Kopsas-Kingsley, Kristy Fields; Indiana University Medical Center, Indianapolis, Indiana

**Purpose:** Historically, the medical progressive care unit (MPCU) has not been able to reach its catheter-associated urinary tract infection (CAUTI) harm goals, despite implementing what was thought to be best practice guidelines. In 2019, an innovative, multimodal, and multidisciplinary approach was taken to help further reduce CAUTIs with a goal to decrease the total number of infections, reduce indwelling-device use, refine urine-culturing practices, and, ultimately, empower nurses to advocate for their patients as clinical leaders. **Summary:** The solution was built upon a 3-tiered approach. First, we examined the basics and challenged ways to disrupt the life cycle of the indwelling urinary catheter. Specifically, we challenged appropriate indications for insertion, ensured compliance with maintenance bundles when insertion was necessary, and with support of administration and providers, fully implemented protocols for catheter removal by nurses. Second, the MPCU staff became early adopters of using alternatives, not only for our male patients but also our female patients, which significantly reduced our use of indwelling urinary catheters. Despite these improvement initiatives, the unit was still unable to completely eliminate CAUTIs. The third strategy included a close examination of culturing practices. This was done in partnership with our infectious disease medical director, infection prevention staff, and other medical providers who care for the patients on the unit. A culturing algorithm was developed after success of this multidisciplinary approach in another unit in our facility. The algorithm focused on appropriate urine-culturing practices and helped empower clinical nurses to collaborate and communicate with the medical team, keeping the patient as the central focus. **Evaluation/Outcome:** Our main outcome, CAUTI harm reduction, which has been 0 for 2019 compared with 7 in 2018. In addition, we have measured success by the decrease in our device-use ratio from 0.29 in 2018 to 0.19 in 2019, a 34% reduction. We have also seen a 54% decrease in urine cultures ordered and 48% decrease in urine-catheter days for 2019. Aside from the successful outcomes and process measure reductions, what is most powerful may be the impact on nursing after seeing the

effective reduction in harm resulting from CAUTIs. The MPCU nurses feel they have become unstoppable and are now ready to take this approach to eliminate the next patient-safety concern.

### **EB8: Change Has Arrived: Antimicrobial Bathing and CLABSI**

Patricia Sung, Mary Virgallito, Theresa Murphy, Raffi Boghossian, Rose Young; USC Verdugo Hills Hospital, Glendale, California

**Purpose:** Persistent central catheter–associate blood-stream infections (CLABSIs) occurred each quarter from 2014 to 2016 in our 12-bed intensive care unit (ICU), prompting an infection prevention (IP) assessment in November 2016. Low compliance with the bathing protocol was identified as a gap in practice. Staff surveys indicated confusion about chlorhexidine (CHG) application and dissatisfaction with effects on patients' skin. A topical immune health system was introduced to replace CHG bathing products in an effort to improve staff satisfaction, raise compliance, and reduce CLABSI rates.

**Summary:** Audits of central-catheter maintenance identified that appropriate technique was used for insertion practices, dressing changes, and catheter access. An opportunity was identified in patient bathing. Bathing with CHG is a measure to reduce microbial burden on the skin of patients with invasive devices and is used for CLABSI prevention. Correct, consistent application of CHG has been identified as a challenge in many health care settings, including our ICU. Although much of the infection prevention literature has focused on CHG for antimicrobial bathing, IP and ICU staff found an opportunity to implement a product that was easier for nursing to use and to work toward the goal of increasing compliance and reducing CLABSIs. In January 2017, bathing of patients in the ICU was changed to a topical immune health system wipe-based product for total body cleansing, including face and perineum. Education was provided to all nurses on use of wipes and the science behind the new product to increase acceptance. Staff provided product feedback to unit leadership and IP staff. Nurses were instructed to bathe patients every shift and as needed with the wipes. Wipes were stored in a warmer before use to increase patient satisfaction with daily bathing. **Evaluation/Outcome:** Preimplementation assessment identified gaps in practice. Staff

indicated CHG was “too sticky,” and “too complicated; patients don't like it.” In July 2019, a questionnaire was administered to ICU nurses after the change to the new antimicrobial bathing product. Of 20 responses received from nurses, all stated they like the product. In response to an open-ended question asking why staff and/or patients like the product, 4 nurses (20%) cited the ease of use, and 7 (35%) cited the protective effects on the patients' skin. A random sample audit of patient bathing compliance before (5 of 10) and after (10 of 10) implementation identified a statistically significant difference ( $P = .02$ ). The ICU achieved a rate of 0 CLABSIs in February 2018 and has maintained a 0% CLABSI rate to date.

### **EB9: Closing the Gap: Targeting CAUTIs With a Novel Approach to Perineal Care**

Lisa Hargett, Theresa Anderson; University of Maryland St. Joseph Medical Center, Towson, Maryland

**Purpose:** Persistent catheter-associated urinary tract infections (CAUTIs) occurred in University of Maryland St. Joseph Medical Center's 28-bed critical care unit despite a robust prevention bundle. Root-cause analyses identified poor compliance with perineal and urinary catheter care as a gap in evidence-based practice. A change from applying soap and water with a washcloth from a basin to a topical immune health system wipe–based product was implemented to standardize process, improve compliance, and eliminate CAUTIs. **Summary:** Despite continuous efforts to reduce infections, patients in the medical-surgical intensive care unit (MSICU) continued to have CAUTIs. Although a 44% reduction from fiscal year (FY)14 to FY15 was achieved, 1 infection was still too many. Root-cause analyses were performed on each CAUTI to identify a potential reason for the infection. Compliance with perineal and urinary catheter care was identified as a potential root cause and an opportunity to improve. In November 2015, the MSICU implemented a new process for managing bowel incontinence and enhancing perineal and urinary catheter care. These interventions included baby wipes for incontinence care and a topical immune health system wipe for perineal and urinary catheter care. The topical immune health system is used during the following situations: before and after insertion of a urinary catheter; to clean every 6 hours, or every 4 hours for catheters indwelling longer than 5 days, patients with urinary catheters; as a final

cleaning step for any incontinence events; as a final cleaning step during the daily CHG bath; and before straight catheterization. With this new practice, perineal and urinary catheter care increased from once per day to up to 6 times per day, based on the duration of the catheter. Frontline staff were involved in the solution and implementation processes. **Evaluation/Outcome:** Staff satisfaction was very high with the new standard of care. Staff survey results were notable for ease of use (100%), preference over previous practice (97%), and catheter care being worth the extra step (100%). Compliance with perineal care also improved. After implementation, the MSICU celebrated 351 days without a CAUTI. The success has continued: the unit recently celebrated 365 days CAUTI free. Our standardized infection ratio also decreased by 49% from before to after implementation of the new interventions. It is important to acknowledge that this success is not the result of a single intervention but rather multiple interventions designed to reduce CAUTIs.

#### **EB10: CODESTROKE: Postprocedure Guideline, a Quality Initiative to Improve Documentation Compliance**

Nathaniel Woods, Louis Lee; University of Maryland Medical Center, Baltimore, Maryland

**Purpose:** To implement a strategy or tool to ensure 100% compliance with mandated documentation by all critical care staff caring for patients with acute ischemic stroke in need of time-sensitive interventions. The CODESTROKE flowsheet was designed to visually cue the registered nurses of all necessary data points to be documented for patients receiving intravenous (IV) tissue plasminogen activator (tPA) and/or those who undergo mechanical thrombectomy to maintain compliance with The Joint Commission (TJC) regulations. **Summary:** This unique unit within a large academic medical center with Comprehensive Stroke Center designation facilitates immediate transfer of critically ill patients in need of emergent, time-sensitive interventions. The Joint Commission surveyed our Comprehensive Stroke Center in March 2018 and found that the 24-hour postprocedural documentation was not adhering to the mandated stroke guidelines. To ensure compliance with the best practice advisory and TJC regulations, the unit collaborated with the neurology critical care unit (NCCU) leadership to demonstrate a commitment to patient safety and adherence to the documentation standards for

patients with acute ischemic stroke. After a TJC visit in March 2018, the unit implemented the CODESTROKE flowsheet to be used for all patients who had had a stroke, were admitted to the unit, and had received IV tPA and/or were in need of mechanical thrombectomy. The CODESTROKE flowsheet was implemented in May 2018 after a 2-week educational period to facilitate documentation competence and agreement with the intervention. **Evaluation/Outcome:** Data were collected over 8 months on 55 patients with acute ischemic stroke. The unit maintained 100% compliance with use of the flowsheet for all required stroke documentation. Unit staff were given a test regarding knowledge of stroke documentation standards and comfort with use of the flowsheet before and 8 months after implementation. Comfort with the use of the flowsheet improved from 5% to 63% and knowledge scores increased from 68% to 99%. Designing a user-friendly CODESTROKE flowsheet has helped improve unit documentation compliance and is beneficial in the transition of care during shift-change handoff and patient transfers from the unit to the NCCU.

#### **EB11: Decreasing Indwelling Urinary Catheter Use in Critically Ill Patients in the Cardiac Medical Critical Care Unit**

Megan Baehl, Jessica Vickery; IU Health Methodist Hospital, Indianapolis, Indiana

**Purpose:** In this project, we focused on decreasing the incidence of catheter-associated urinary tract infections (CAUTIs) in the population of critically ill patients in a cardiac medical critical care unit. In 2018, there were 8 CAUTIs among patients in the cardiac medical critical care unit at our facility. Through multidisciplinary review, we found that a majority of patients did not meet the indication for an indwelling urinary catheter (IUC). This inappropriate use was due to a lack of clarity as to which critically ill patients require accurate output measurement with an IUC. **Summary:** To assist in clarifying the necessity of an IUC, an interdisciplinary team was formed that included direct-care nurses, physicians, a pharmacist, an infection preventionist, and advanced practice nurses. Using the Centers for Disease Control and Prevention (CDC) guidelines and clinical expertise, a tool was created to assist clinicians in determining the appropriateness of an IUC for output measurement. This tool further defined the CDC's indication of "accurate output in the critically ill" by providing

guidelines specific to the population of patients in the cardiac medical care unit. Education was provided on the tool to direct-care nurses and physician colleagues while also reinforcing current, institution-based urinary management policies. Furthermore, emphasis was placed on specific patients on the unit who have experienced the harmful effects of a CAUTI. To reinforce the education and account for patient-specific situations, routine monitoring of appropriateness was completed during physician and charge nurse rounds at least daily. This routine evaluation of the indication, built into current unit processes, proved to be a necessity in the sustainability of the intervention. **Evaluation/Outcome:** The primary outcome of this project was the number of CAUTIs; however, because the intervention was aimed at reducing IUC use, the IUC use rate was monitored monthly. The use rate is determined by dividing the number of IUC-days (number of patients with an IUC per day, totaled for a month) by the number of patient-days (number of patients per day, totaled for a month). This evidence-based project was initiated in early March 2019. The average IUC use rate for 2018 was 0.50. The average use rate for March through July 2019 was 0.39. In addition, only 1 patient has had a CAUTI since the start of the project, compared with the 8 CAUTI cases in 2018.

### **EB12: eICU Remote Sepsis Support: Centralizing Sepsis Alert Responses in the Inpatient Setting**

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**Purpose:** The objective of this project was to improve timeliness of sepsis recognition and treatment via a team-based workflow between the electronic intensive care unit (eICU) and the inpatient direct-care nurse, thus improving patient outcomes and compliance with the Centers for Medicare and Medicaid Services (CMS) SEP-1 bundles. **Summary:** A community hospital with limited resources recognized delays in electronic sepsis alert responses and treatment in non-ICU patients. Alerts were only viewed when a clinician was logged into the patient's record. The nurses' workflow did not allow for prompt viewing, thus the alert would go unrecognized for extended periods, resulting in late recognition of sepsis, patient deterioration, and late initiation of the CMS SEP-1 bundles. A multidisciplinary team developed a workflow to remotely leverage the eICU team to allow for rapid identification, evaluation, and emergent

treatment of patients. A new algorithm included electronic medical record-generated laboratory orders in response to patient assessment of systemic inflammatory response syndrome criteria and current antibiotic orders. The automatically generated laboratory tests enabled identification of organ dysfunction and initiation of a sepsis alert, which was viewed by an eICU clinician in close to real time. The eICU physician would review the patient's record and, in collaboration with the site charge nurse, a huddle occurred at the bedside with frontline clinical staff. If the huddle identified severe sepsis or septic shock, the Sepsis Response team was called to initiate Sepsis Bundle orders and possible transfer of the patient to higher level of care. **Evaluation/Outcome:** Using a centralized resource and bedside huddles is key to early intervention and improved patient outcomes. Collaboration of the eICU physician, who provided direction, with the bedside care team allowed for early recognition, prompt initiation of SEP-1 bundle therapy, emergent lifesaving interventions, and improved patient outcomes. Outcomes included decreased alert response times, decreased progression from sepsis to septic shock, and a nonsignificant improvement in SEP-1 bundle compliance.

### **EB13: Escaping Sepsis**

Desirea Fields, Tiffany Wagoner, Kimberly Story, Christina Tyson; Saint Thomas Health Services, Nashville, Tennessee

**Purpose:** The purpose of this project was to use the Donna Wright competency model within the design of an innovative educational opportunity for intensive care nurses to enhance clinical reasoning regarding early sepsis recognition. The education focused on the evidence-based bundles of care, enhancing early communication with providers, and participants gaining a deeper understanding of the steps in treating sepsis. **Summary:** Donna Wright's competency assessment model is gaining wide acceptance as a best practice approach to assessment and management of nurse staff competence. The Sepsis Escape Room was the result of our institution's move to this model and created opportunities to provide associates with innovative ways to demonstrate competency. Preparation for the room included various online resources that guide users about escape-room technology. Along with the institutional bundles for sepsis care, educators chose resources to extract content and standards on

which to design the escape room. Resources included an institutional sepsis mortality tool kit and clues focused on key drivers for identifying early sepsis, such as lactate levels, quick sequential organ failure assessment (qSOFA) score, order of blood collection, a collaborative communication tool, antibiotics and fluid delivery, and priorities of nursing care. The premise of the escape room was based on a fabricated patient profile. Essentially, 6 participants had 20 minutes to collaboratively work through a strategic set of activities that provided clues to save the patient and escape the room. Informal debriefing with the facilitator was used to evaluate the nurses' knowledge of sepsis. **Evaluation/Outcome:** The participants were actively engaged and enjoyed the sense of competition and teamwork derived from the activity. The sepsis mortality rate for the institution decreased from 17.7% to 12.5% after the 12 offered escape-room experiences with 65 participants. Complementing the nurses' experiential knowledge before entering the escape room was a front-loaded e-learning module focused on early recognition of sepsis.

#### **EB14: Falls Stop Here: A Sustainable Approach to Fall Prevention**

Jessica Seabrooks, Jason Stokes; Duke University Health System, Durham, North Carolina

**Purpose:** Each year, 700 000 to 1 million falls occur in the hospital, and 30% to 50% of falls result in an injury. A fall-induced injury can add up to \$14 000 to hospital costs and increase patient length of stay. Our unit experienced a 100% increase in falls in over 4 months. The purpose of this project was to increase patient safety and decrease patient falls. **Summary:** Successful strategies to prevent falls include the use of a standardized assessment tool and a falls bundle. In our unit, we were using the modified Bedside Mobility Assessment Tool (BMAT) for patients with sternal precautions and the falls bundle (ie, yellow socks, bracelet, and door sign). To understand the increase in falls in our unit, we did a root-cause analysis (RCA) of each fall. We found that the falls were more likely to occur in the early morning (5 AM to 8 AM), with less experienced staff (< 6 months), and in patients who had received a lung transplant and had prolonged lengths of stay. Because the falls were more likely with newer staff, falls and safe-mobility education, including use of lift equipment, was added to orientation and a unit safety blitz. In addition, we increased unit audits of nursing

compliance with the BMAT and falls. During the audits, if practice deficits were identified, the auditor provided education and answered questions. During this one-on-one education, staff were also given the opportunity to address any additional patient-mobility safety concerns. Educational needs identified during the audit were addressed in staff meetings and daily huddles. **Evaluation/Outcome:** After conducting an RCA and increasing audits and staff education, we have had a 75% reduction in falls. We went 315 days without a fall after implementation. We are currently 180 days without a fall. In addition to this decrease in falls, staff report feeling more comfortable with mobilizing patients earlier and with using proper lift equipment to safely mobilize patients without falls or injuries to patients or staff. Lift equipment use has increased by 48.3% in the past year. Currently, our RCAs have revealed a new trend of falls occurring with our physical therapy (PT) team; thus, our next steps will involve collaborating with our PT team.

#### **EB15: Family Orientation Partnering With Resources and Critical Care Experts: FORCE**

Anita White, Denise Cooper, Catherine Crawford-Hales; Northeast Ohio VA Healthcare System, Cleveland, Ohio

**Purpose:** The surgical intensive care unit (SICU) leadership team and staff sought to improve communication with families of patients who were military veterans. With the Family Orientation Partnering with Resources and Critical Care Experts (FORCE) project, we sought to highlight support for the needs of the family and post-surgical veteran patient by bringing families into the SICU to lessen the burden of stress and anxiety. **Summary:** The SICU FORCE project embraces families by providing family tours, joining Clinical Leaders Improving Measures to Enhance Bedside Care (CLIMB) rounds, and providing educational material. We implemented FORCE using 4 phases: resources gathering and multidisciplinary collaboration; meeting with families in a waiting area with nursing leadership and staff nurses for a mini-tour of the SICU; family(s) join daily CLIMB rounds; and a distribution of a survey to enhance communication and services to veterans and families. While the veteran is in surgery, the family is given resources and support, and they meet with critical care experts in the SICU. **Evaluation/Outcome:** Survey results showed the following: receive information about veteran's progress (98%); answer questions (96%); receive updates (94%); meet case manager (95%);



called when a procedure is performed (89%); support available when feeling scared (86%); be part of decision-making (86%); tour unit (84%); meet nursing management (82%); introduced to caregivers (81%); private place to speak (77%); receive SICU brochure (74%); and have refreshments in waiting area (41%). Families have expressed positive reactions from the inclusivity of FORCE, such as “you will never know how terrible this situation is, doing the tour lessened my anxiety”; “thank you”; and “better understanding of the unknown.”

### **EB16: From Levitate to Elevate: A Novel Approach to Pressure Injury Prevention**

Jason Stokes, Jessica Seabrooks; Duke University Hospital, Durham, North Carolina

**Purpose:** Each year, approximately 2.5 million people develop pressure injuries (PIs). Pressure injuries are associated with increased hospital cost and length of stay. Risk factors for the development of PIs include age, activity and mobility, perfusion, and use of vasopressors. Pressure injury prevention bundles are a strategy to decrease incidence of PIs; they include elements such as assessments, turns, and supportive devices. The purpose of this project was to define a specialty protocol for PI prevention in patients with delayed sternal closure. **Summary:** In our cardiothoracic intensive care unit, we often have patients with delayed sternal closure. These patients cannot to be fully turned and assessed. The timing for sternal closure is variable and can last for days. The current practice for these patients includes a “do not turn” order and waiting until the sternum is closed to turn the patient. When patients had soiled linens, a large group of nurses would gently “levitate” the patient. This was time consuming, required 6 to 8 nurses, and it was difficult to ensure safety. Also, the nursing team and the wound ostomy continence nurse (WOCN) identified a high rate of PI development in this population. A multidisciplinary team including nurses, a WOCN, surgeons, and an ergonomic specialist met to develop a guideline for using lift equipment to fully assess all skin on the patients with open chests while maintaining staff and patient safety. The guideline includes proper use of lift equipment and sling placement, use of supporting devices, staff required, and step-by-step instructions on how to lift the patient. Education was provided for staff before each elevation via video demonstration and review of the guidelines. A debriefing session after each use allowed modifications

to the protocol. **Evaluation/Outcome:** Since implementation in April 2019, this intervention has been used successfully with 6 patients. We can perform complete skin assessments of patients with delayed sternal closure and with fewer people. In 2 patients PI development was identified early, allowing interventions sooner and prevention of progression to higher severity. Lift equipment use has increased by 48.3% overall. Furthermore, we have had no staff injury related to patient mobility in the past fiscal year. The “elevate” method of skin assessment using lift equipment and slings has potential to translate to multiple patient populations that have turning restrictions.

### **EB17: Good Skin for the Win: Respiratory Device-Related Pressure Injuries in High-Acuity Inpatients**

Tamera Brown, Aundrea Bertram, Summer Whelchel, Kathryn Absher; Ball Memorial Hospital Indiana University, Muncie, Indiana

**Purpose:** Prevention of all skin injury is a priority for acute care hospitals nationwide. Despite instituting best practice interventions, patients in adult high-acuity units at a midwestern teaching hospital experienced respiratory device-related pressure injuries (RDRPIs) at rates consistently above desired benchmarks. Here, we describe the strategies, implementation plan, and outcomes of an interprofessional process improvement initiative aimed at reducing RDRPIs. **Summary:** In 2016, clinical nurses on adult high-acuity units in a midwestern teaching hospital identified respiratory devices (RDs) as causing 31 of 42 pressure injuries in the past year. An interprofessional team formed to identify contributing factors, synthesize evidence, formulate preventive strategies, and design an implementation plan. Team members included registered nurses (RNs), clinical nurse specialists, respiratory therapists (RTs), unit-based skin champions, certified wound nurses, and managers. The team gathered baseline data on 2 critical care units and 2 intermediate intensive care units with a total annual census of 2776 patients. The new process improvement plan expanded standard work to include collaborative skin assessments conducted simultaneously by an RT and RN twice daily at specified times. Ear pads and wound gels were added to room supplies. The team developed standard expectations for documentation, visual tools to display RDRPI data, an auditing process to monitor compliance, and a system for tracking RDRPIs. The implementation phase of the initiative addressed identified barriers, including

nurses' lack of commitment to conducting skin checks on a set schedule and lack of timely, complete documentation. **Evaluation/Outcome:** The baseline percentage of pressure injuries caused by RDs was 73% for all 4 units, which declined to 45% in 2017 and 34% in 2018. On intermediate intensive units, the number of RDRPIs decreased by 31% the first year and then stabilized. RDRPI incidence steadily declined in critical care units through the second year, suggesting differences in adoption of the plan across units. Nasal cannulas caused the most RDRPIs, followed by bilevel positive airway pressure devices and endotracheal tubes. This improvement plan, featuring an interprofessional team, twice-daily collaborative skin checks, consistent audits, data sharing, accountability for documentation, and prevention products at the bedside, achieved and sustained a substantial decline in the number of RDRPIs.

### **EB18: Influencing Emergency Department Capacity Through Expedited Critical Care Transfers**

Elizabeth Mover, Kerri Voelkel; Massachusetts General Hospital, Boston, Massachusetts

**Purpose:** The purpose of this project was to reduce transfer times between the emergency department (ED) and the critical care setting by standardizing outreach by the inpatient nurse to the ED nurse within 30 minutes of bed assignment. Emergency department overcrowding affects quality of care provided to patients, such as increased wait times, increased length of stay, and delays in transfer to the inpatient setting. **Summary:** The Massachusetts General Hospital ED annual report from February 2017 showed the medical intensive care unit (MICU) had a total of 546 patients with a mean ED length of stay of 7.79 hours. Preliminary data collected between April 2017 and May 2017 revealed the median time between bed availability to registered nurse (RN) handoff was 44 minutes and the median time between RN handoff and patient arrival to the unit was 57 minutes. Beginning in June 2017, the procedure has been as follows: The critical care nurse calls the ED nurse within 30 minutes of a patient obtaining a MICU bed assignment. If the MICU RN is unable to communicate with the ED nurse, the MICU RN notifies the ICU Resource RN. The MICU Resource RN sends a secure text message to the Acute ED Resource Nurse to let them know the MICU bed is ready for RN handoff and to encourage physician handoff. **Evaluation/Outcome:** From October

2017 to September 2018, the median time between bed availability to RN handoff decreased to 27.12 minutes and the median time between RN handoff and patient arrival time to the inpatient unit decreased to 40.87 minutes. As of September 2018, the median time between RN handoff and patient arrival to the inpatient unit continued to decrease, to 22 minutes. By standardizing the approach to receiving RN handoff from ED nurses, we were able to decrease the wait time to inpatient, acute medical care by 30 minutes. Patients access to prompt ICU level care increased. This model may be used to expedite transfers to other inpatient settings.

### **EB19: Implementation of a Champion-Guided Pressure Ulcer Prevention Bundle to Reduce HAPI in the ICU**

Brooke Mlinarich, Zachary Miller, Kate Lynn Augustine, Brooke McMichael; Geisinger Medical Center, Danville, Pennsylvania

**Purpose:** Critically ill patients are at a high risk for development of hospital-acquired pressure injuries (HAPIs). Despite current pressure ulcer prevention strategies, heel and sacral ulcers continued to develop in the Geisinger Medical Center medical/surgical and neuroscience critically ill patient population. An extensive literature review was performed, and skin champions used the data to implement and govern an evidence-based skin bundle. **Summary:** Skin champions reviewed the hospital's pressure ulcer prevention policy and compared it with evidence-based strategies. Consistent use of prophylactic silicone-foam dressings, waffle boots, and specialty support surfaces were identified as additional HAPI-reduction strategies that were not required per policy. Foam dressings were implemented and evaluated for 5 months; however, HAPIs continued to occur. Despite development of guidelines, real-time audits identified that dressing use was limited and staff had inconsistent product knowledge. A comprehensive care bundle incorporating evidence-based pressure-reduction strategies was developed, reviewed, and approved by the unit practice council. Then additional skin champions underwent orientation to educate and monitor bundle compliance. Before bundling, nurses determined which pressure prevention interventions to use for their patients. Bundling educated nurses on the importance of using consistent, standardized interventions for all high-risk patients. Also, skin champions and the Pressure Injury Coordinator

performed intensive education and frequent real-time audits to assess bundle compliance. Noncompliant staff received individual reeducation and the bundle was immediately implemented. **Evaluation/Outcome:** By orientating additional skin champions and developing a formal bundle, bundle element adherence was maintained at 90% or higher from November 2018 to April 2019. In the 6 months before implementing the prebundle HAPI, there were 13 heel and 10 buttocks/sacral HAPIs. In the 6 months after the bundle implementation, there were 3 heel and 5 buttocks/sacral HAPIs. Incidence of heel and sacral HAPIs was reduced 77% and 50%, respectively. Acute Physiology and Chronic Health Evaluation data indicated bundle acuity was higher after implementation of the bundle than before implementation. Implementation of the care bundle has supported staff with consistency of care and allows for more accurate auditing to ensure compliance. These interventions have led to significant improvement in buttocks/sacral and heel HAPI reduction.

### **EB20: Implementation of an Early Warning System Program in the Community Hospital Setting**

Tammie Alley, Michael Loiacono, Caitlin Donis;  
Upper Chesapeake Med Center, Bel Air, Maryland

**Purpose:** The University of Maryland Upper Chesapeake Medical Center (UMUMCMC) noted an alarming number of rapid response team (RRT) calls in 2018. In response to the high number of RRTs, the UMUMCMC implemented an early warning system (EWS) entitled the Guardian program. The purpose of this program was to decrease patient mortality incidence and RRT calls by monitoring for signs of patient deterioration and intervening before rapid clinical decompensation. **Summary:** The UMUMCMC RRT calls often result in patient transfer to a higher level of care or identification of complex medical problems. Use of the RRT enables rapid treatment, but evidence shows patient outcomes are time sensitive. Implementation of an EWS can assist in early identification of clinical deterioration. The UMUMCMC intensive care unit (ICU) adapted the Guardian EWS from a similar community-based hospital system. This EWS used a critical care registered nurse (RN), known as the Guardian, who was not counted among the active staffing of the ICU. The Guardian RN reviewed patient data, such as vital signs, laboratory test trends, and specimen cultures. The Guardian tracked abnormal data trends and discussed

patient cases with the bedside nurses or providers. The Guardian RN also was trained in specialized tasks such as ultrasound-guided intravenous access, and provided unit education as needed. Hospital staff were made aware of the program and encouraged to consult the Guardian RN regarding any clinical concerns. Consultation with the Guardian RN resulted in fewer disruptions for the ICU charge RN. The program began with dedicated Guardian coverage on night shift (7 PM to 7 AM). **Evaluation/Outcome:** From February 2018 to July of 2018, 247 RRTs were called, leading to 78 transfers to a higher level of care, and 133 patients died who experienced an RRT call during their hospitalization. The Guardian EWS program was implemented in fall of 2018. From February to July 2019, 359 RRTs were called, leading to 120 transfers to a higher level of care, and 109 patients died who experienced an RRT call during their hospitalization. Though transfers to higher levels of care remained proportionally similar, the percentage of patient deaths after RRT calls decreased from 53% to 30%. The overall number of RRTs increased, indicating additional evaluation is warranted regarding the Guardian program.

### **EB21: Implementation of an Inpatient Acute Coronary Syndrome Alert**

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Charlotte, North Carolina

**Purpose:** Patients who had had an acute myocardial infarction (AMI) were not consistently being identified in the inpatient setting. No standardized process existed for cardiology consultation, activation of the cardiac catheterization team, and data collection to measure quality outcomes. The intent was to develop a standardized process to expedite identification and intervention for patients experiencing signs and symptoms of acute coronary syndrome to improve clinical outcomes. **Summary:** National research indicates the inpatient mortality rate from AMI is 33.6%. The American College of Cardiology national benchmark for inpatient ST-elevation MI recognition to reperfusion is no more than 90 minutes. Facility baseline data from 2018 revealed only 20% of inpatient AMIs received intervention within 90 minutes. A review of data indicated no process existed to obtain an emergency cardiology consultation for patients experiencing signs and symptoms of acute coronary syndrome, causing delays in emergent interventions for the inpatient population. Collaborating cardiology,

information services, and critical care personnel took an innovative approach to create an algorithm that standardizes the identification and treatment of patients with AMI. In addition, a paging tree was built that is activated upon identification of an AMI and brings cardiology specialists to the bedside to assess and treat the patient. **Evaluation/Outcome:** After implementation of the algorithm and paging tree in October 2018, the inpatient AMI intervention rate increased from 20% receiving intervention within 90 minutes to 100%. A secondary goal of obtaining a cardiology consultation within 30 minutes of paging was measured and met with 100% compliance.

### **EB22: Implementation of ICU Patient Diaries in an Adult Intensive Care Unit**

Erica McCartney, Nicole Mikicic; Swedish Medical Center, Edmonds, Washington

**Purpose:** Post-intensive care syndrome (PICS) consists of several physical, emotional, and cognitive factors that can have a profound impact on a person's recovery after surviving a critical illness. The syndrome can also have a devastating effect on the person's quality of life and ability to return to previous baseline functioning. The use of patient diaries in the intensive care unit (ICU) may help mitigate these symptoms once a patient has been discharged, because the diary will help create a timeline of the patient's hospitalization. **Summary:** A review of the literature addressed the affect of diaries on quality of life of patients in the ICU and symptoms of depression, anxiety, and posttraumatic stress disorder for adult survivors. The evidence gave inconclusive, consistent, quantitative data supporting the use of diaries; however, in many studies, qualitative data were used to validate the use and importance of diaries to the patient. Evidence revealed that diaries reduced self-reported symptoms of depression and anxiety in several survivors. Strict inclusion guidelines were provided to nurses about the use of the diaries. Patients had to be English speaking, able to read and write proficiently, expected to be in the ICU for longer than 48 hours, have a positive Confusion Assessment Method score, or have a Richmond Agitation-Sedation Scale score less than -2. One-on-one education with the nursing staff was provided to identify patients, and coaching was done to discuss appropriate diary excerpts. Diaries were to be written in layman's terms, no diagnoses or results were to be included, family

members were encouraged to use the diaries, and each author's name, date, and time were to be included for each entry. Information regarding PICS was included in the diary, and additional diary resources were provided to the patient. This project was approved by the Facilities Risk Management Department staff. **Evaluation/Outcome:** Over 6 months, 19 diaries were distributed to patients in the adult ICU. Patient and family feedback was obtained through informal interviews. One patient and family member called to vocalize how important it had been in helping create memories of his hospitalization, and 1 family member thanked staff for giving him a way to express his feelings and concerns for his loved one. Family feedback was obtained more frequently than patient qualitative information. Although not all family members or friends chose to participate in writing in the diaries, many others found it an outlet for their feelings. Patients were even seen reading their diaries after being transferred out of the ICU.

### **EB23: Implementation of Proper Lead Selection Based on 2017 Bedside ECG Practice Standards**

Teresa Jahn, Valerie Clintsman, Lauren Hoeschen, Samantha Pohlmann; CentraCare, Saint Cloud, Minnesota

**Purpose:** The purpose for this project was to ensure patients in a 36-bed telemetry unit and 14-bed cardiac intensive care unit (CICU) with diagnosis of acute coronary syndrome (ACS) are being monitored via the appropriate leads to detect acute or silent ischemia and monitor for arrhythmias, on the basis of the 2017 Practice Standards for Bedside ECG Monitoring. **Summary:** A team of 1 clinical nurse specialist and 4 bedside nurses audited lead-selection practices on patients with the diagnosis of ACS in their telemetry unit and CICU. Audits revealed a gap in knowledge related to proper lead selection and current goals for bedside electrocardiogram (ECG) monitoring. Current practice was to monitor patients, regardless of diagnosis, in the default leads of leads II and V<sub>1</sub>. During mandatory unit meetings and 12-lead ECG classes, registered nurse (RN) staff of both units were taught how to determine lead selection for patients with ACS. Staff were also given a laminated card that illustrated proper lead selection based on the affected coronary artery. Additional one-on-one education was done on the unit by members of the lead-selection team for 2 months after the unit meetings. Three months after education, the team once again completed audits. For

arrhythmia detection, the team expected the V<sub>1</sub> or V<sub>6</sub> leads to be placed on the patient. For ischemia monitoring of a patient diagnosed with an ST-elevation myocardial infarction (STEMI), the lead selected should be based on the 12-lead fingerprint. For the chest pain, unstable angina, or non-STEMI, the leads selected should be lead III or V<sub>3</sub>. **Evaluation/Outcome:** Before the audit, results were as follows for the telemetry unit and CICU, respectively (N = 75 patients): proper lead selection for arrhythmia detection, 72% and 88%; proper lead selection for ischemia, 25% and 31%. After lead-placement education, the following results were obtained for the telemetry unit and CICU, respectively (N = 66 patients): proper lead selection for arrhythmia detection, 100% and 93%; proper lead selection for ischemia, 69% and 63%.

#### **EB24: Implementing the CSU-ALS Protocol Through Simulation to Decrease Time to Resternotomy**

Richard Bell; University of Maryland Medical Center, Baltimore, Maryland

**Purpose:** We describe how a cardiac surgery intensive care unit (ICU) began implementing the new resuscitation guidelines for emergency resternotomy in the postoperative setting. In March 2017, the Society of Thoracic Surgeons adopted Cardiac Surgery Unit Advanced Life Support (CSU-ALS) for early postcardiac surgery resuscitation. We offer the experience of University of Maryland Medical Center (UMMC) as a high-acuity, large-volume center since we began teaching in February 2015, and how we used a simulation laboratory to teach our large staff. **Summary:** A sentinel event in 2009 occurred that set the stage for this change in 2015 at UMMC. Our goal was to decrease the incidence of failure to rescue (FTR; or death) and improve outcomes in the postoperative cardiac patient population. The original authors of this approach (Drs Dunning and Levine from the United Kingdom) obtained approval for this protocol in 2010 through the European Association for Cardio-Thoracic Surgery. No formal protocol existed or was approved in the United States for resternotomy at this time, and there are various deviations from Advanced Cardiac Life Support guidelines with supported research. A 1-day course was later approved for use in the United States and is what is used today. The implementation of this resuscitation guideline occurred in the setting of a high-acuity, high-volume, large, urban, academic medical center. We focused on the use of simulation with a

specialty mannequin to prepare staff for postoperative cardiac emergencies. To capitalize on technology and simulation opportunities, a partnership with the medical center's simulation laboratory was formed. The course uses a combined approach of didactic content, simulation scenarios, and debriefings and is multidisciplinary, including all members of the cardiac surgery care team. **Evaluation/Outcome:** To evaluate the effectiveness of the course, we used simulation time to resternotomy at the beginning of the course (in the morning) and then again at the end of the course (in the afternoon). Across multiple classes and students, afternoon times to resternotomy were shorter than in the morning, and all afternoon times were less than 5 minutes. Improvement in communication and resternotomy efficiency in the laboratory translated to improved preparedness, teamwork, and resternotomy time in the ICU. In 2014 (before the course was implemented), we had 8 deaths in 18 FTRs (44%). In 2015, we had 2 deaths in 8 FTRs (25%). In 2018, we had 0 deaths in 9 FTRs. We have shown the CSU-ALS protocol works and, indeed, saves lives.

#### **EB25: Improving Compliance With the Wake Up and Breathe Protocol**

Kathleen Hackett, Lauren Camposano, Maureen Seckel; Christiana Care Health System, Newark, Delaware

**Purpose:** Despite implementation of the Wake Up and Breathe Protocol (WUABP) in a medical intensive care unit (ICU), elements of the protocol were not regularly completed. Goals of this project were to increase compliance with the following: completion of the spontaneous awakening trial safety screen (SATSS) with initiation of the spontaneous awakening trial (SAT) for qualified patients, and initiation of the subsequent spontaneous breathing trial safety screen (SBTSS) and spontaneous breathing trial (SBT) by 9 AM daily. **Summary:** Evidence shows that patients who receive daily SATs are extubated sooner and have a shorter ICU length of stay (LOS). A landmark study in 2008 demonstrated that patients who received a coordinated SBT after SAT were extubated 3.1 days earlier, had a decrease in ICU LOS by 3.8 days, and were less likely to die. After reviews revealed poor adherence to the protocol, project leaders created a tools to quantify WUABP compliance, focusing on 2 data points: (1) initiating an SAT for patients who pass the SATSS, and (2) performing an SBTSS or SBT after an SAT is initiated, by 9 AM daily. Reporting tools to

identify patients in the electronic medical record (EMR) and improve communication regarding compliance were developed. Documentation was revised to prompt correct documentation and to obtain SAT and SBT compliance. Education of revisions and expectations was provided. Barriers identified by users were also related to differences in the workflow of registered nurses (RNs), respiratory therapists (RTs), and providers. Workflow redesign for providers, RNs, and RTs was also initiated to improve compliance through reprioritization of WUABP-related activities, including pretrial briefing, SAT start during nursing bedside shift report, and having an RT attend the SBT briefing. **Evaluation/Outcome:** Using EMR data, metrics were collected on SAT and SBT documentation. A retrospective cohort group was used for before implementation and after. For the period January 1, 2018, to June 30, 2018, 21.9% of patients in the medical ICU who passed the SATSS from the hours of midnight to 9 AM were initiated on an SAT before 9 AM daily. In addition, the rate of strict compliance to the WUABP (defined as SAT before SBTSS) once SAT was initiated was 32.9% by 9 AM daily. Patients received mechanical ventilation for a mean of 4.21 days (range 3.8-4.5). For the period January 1, 2019, to June 30, 2019, SAT start improved to 45.7%, strict compliance was 34%, and patients' mean time receiving ventilation was 3.88 days (range 3.3-4.1).

### **EB26: Improving Organ Referrals in the Medical Intensive Care Unit: A Nurse-Centered Approach**

Jose Teopengco III, Patrick Ryan, Maria Cristina Aguil Chumacera; New York Presbyterian Hospital, New York, New York

**Purpose:** In our 24-bed medical intensive care unit (MICU), nurses were tangential to the organ referral process and organ-donation referrals were infrequent. Studies show a positive correlation between nurses' knowledge of the organ-donation process and the number of organ referrals. The goal of this quality improvement project was to increase the number of referrals by improving nurses' knowledge of the organ-donor referral process and empowering nurses to be active participants in the referral process. **Summary:** Lewin's model for change guided this quality improvement initiative. The MICU Shared Governance Council, consisting of staff nurses, the unit manager, a clinical nurse specialist, and a representative from the organ procurement organization (OPO), discussed evidence-based measures to improve

organ-donation referrals. A literature review showed a positive correlation between organ-donation referral rates and nurses' knowledge and awareness of organ donation. A review of unit practice showed that staff nurses did not participate in any meaningful way in the organ-donation referral process. Staff surveys demonstrated a lack of knowledge of the clinical triggers and guidelines to initiate the process. Because of limited nursing knowledge of the referral process and the lack of autonomy to make a referral, eligible organ-donation referrals opportunities likely were missed. Subsequently, a staff nurse-tailored educational program was developed in response to knowledge deficits identified by the knowledge assessment. The educational program consisted of (1) updates to the nurse handoff report sheet, (2) creation of an organ-donation resource handbook; and (3) integration of organ donation education into daily staff huddles. **Evaluation/Outcome:** We compared organ-donation referral rates and nurses' knowledge of donation referral procedures before and after deployment of our educational program. A series of posteducation surveys with a response rate greater than 90% showed a sustained improvement of 93% in the nurse's knowledge retention of clinical triggers. The more significant evaluation was the number of MICU-initiated organ-donation referrals. In the quarter before the intervention, surveys indicated there were no staff nurse-initiated referrals. OPO data showed an increase of 42% in MICU-initiated organ-donation referrals during the evaluation period.

### **EB27: Improving Patient Acuity and Condition Reporting Between Bedside and Managing Nurses**

Rebecca McClay, Jessica Natividad; Midland Memorial Hospital, Midland, Texas

**Purpose:** The goals of the implementation were to improve usability of a shift summary form facilitating staffing assignments by improving bedside critical care unit (CCU) nurse perception, timely completion, and patient-assignment acuity balance. This fits the American Association of Critical-Care Nurses' values of excellence and innovation with collaborative work to maintain the vision of patient needs driving the health care system response and nurse optimal contribution through appropriate assignment. **Summary:** A new form was created that uses standard indicators and charting by exception to focus on vital patient condition and level of nursing care required. The IOWA Model for research was used to

create change in the population of bedside nurses of Midland Memorial Hospital's CCU. No evidence-based forms for this level of care were found in the literature. Therefore, the current form was modified using the evidence-based postanesthesia care unit scoring grid from Halfpap (2016) as a guide. The bedside-nurse population was given the opportunity for 2 weeks to complete a voluntary, anonymous, and confidential paper survey. Nineteen survey items were scored on a 5-point Likert scale and a blank area requested any form modification suggestions. Likert indicators were tallied and recorded, and a list was made of any written suggestions. The form was then modified to the new format and a 2-week follow-up from initial implementation was available to all bedside nurses for 1 week. Suggestions from this survey led to additional changes of column components and spacing. Seven weeks after final implementation, a survey closely mirroring the original survey was made available to the same population for a full 2 weeks. **Evaluation/Outcome:** Employee satisfaction with the report process increased from 30.43% to 66.66%, timely completion of the report increased from 26.09% to 77.77%, and assignment by patient acuity increased from 21.74% to 66.67%. An additional benefit of clinical-manager risk-report facilitation was identified.

### **EB28: Journey to Zero Harm for HAPI: "HAPI Hour" Team in a Children's Hospital**

Margaret Ecklund, Krista Zimmerman; Legacy Health, Portland, Oregon

**Purpose:** Although hospital-acquired pressure injuries (HAPIs) have been considered a nursing outcome measure, it is clear that partnership by all disciplines is needed for HAPI elimination. Many harm events at our children's hospital were HAPIs. To address the challenge of HAPI reduction and approach the goal of zero harm, we convened an interdisciplinary team, called HAPI Hour, to analyze the data, identify root causes, and approach the solution together. **Summary:** In fiscal year 2018 (FY18), there were 9 harm-level (stages 3, 4, and unstageable) HAPIs of a total of 47. The reportable HAPI rate was 0.27/1000 patient-days. We are members of Solutions for Patient Safety, a collaborative dedicated to eliminating harm for children. Data show most of our HAPIs are device related. Devices are used by the interdisciplinary team. Our interdisciplinary HAPI Hour team implemented an evidence-based best practice bundle

(BPB) for HAPI prevention. The BPB included device padding, rotation, and fit. Our educational plan included tools illustrating appropriate padding and positioning of devices, and the specific elements of the BPB—standard work for HAPI prevention. BPB reliability was measured every shift in all inpatient units via a standard work confirmation tool (SWCT). The SWCT was completed by the bedside team. BPB reliability (the leading indicator) revealed challenges. Interdisciplinary teams reviewed barriers to consistent completion. Units posted their SWCT results on whiteboards. All HAPIs, regardless of severity, were reviewed for learning opportunities. Learning was shared by Talking Points posted on each unit's whiteboard, and deidentified pictures of HAPIs were shared with our teams to illustrate learning. **Evaluation/Outcome:** Since implementation of the BPB and SWCT, the rate of reportable HAPIs dropped from 0.27/1000 patient-days in FY18 to 0.04/1000 patient-days in FY19 year to date—an 85% reduction in reportable HAPIs. The total number of HAPIs of all stages decreased from 47 to 21, and our device-related HAPI rate decreased by 59%. By implementing the BPB, we reduced the number of respiratory device-related HAPIs by 75%. This decrease was made possible by building an effective interdisciplinary team that could work together to solve the problem of HAPIs. Team engagement of skin-care champions at monthly meetings and unit-level active coaching create sustained results.

### **EB29: Lunch Flex: Partnership Committee's Innovative Solution to Missed Meal Breaks**

Monica Wininger, Marley Hohn, Caitlyn Roth; Rose Medical Center, Denver, Colorado

**Purpose:** Promoting a healthy work environment for nurses is a priority and missed meal breaks were an ongoing challenge in the intensive care unit (ICU) that affected nurse performance, quality of care, and patient outcomes. Department leadership attempted to solve the issue by trending data, emailing nurses who had missed meal breaks, and tasking charge nurses to manage meal breaks. This approach showed little improvement and the issue was taken to our self-governing committee, ICU Partnership, to brainstorm solutions. **Summary:** An evaluation over 3 months showed an average of 56 missed lunches per month. Common reasons for missed breaks included interruptions from patients, family members, physicians, and emergency

responses. Previously, charge nurses attempted to stand in for nurses at lunch or staff nurses picked a lunch buddy at the start of the shift; neither approach was successful in providing breaks consistently. After these failed attempts, the staff was surveyed regarding missed lunches and the common barriers to taking a full 30-minute break. With these data, Unit Partnership conducted a brainstorming session and coalesced around the idea of a Lunch Flex. The program includes the staff signing up on a posted monthly calendar and covering breaks from 11:30 AM to 2:30 PM. The Lunch Flex takes the bedside nurse's patients and phone to allow the nurse an uninterrupted break. This new process was not met with complete adoption, because staff would turn away the Lunch Flex until they felt caught up with their tasks. A shift in our culture occurred, and nurses now hand over all tasks to the Lunch Flex. Our staff values this time away from the bedside to reenergize and return to patient care refreshed and engaged. **Evaluation/Outcome:** In the first month of the Lunch Flex program, missed meal breaks decreased by 47% compared with the prior month. Before implementing Lunch Flex, 20% of nurses perceived missing more than 6 lunches in the last 12 shifts; after implementation, 0% of nurses reported missing lunches. In addition, nurses reported a 7.5% decrease in breaks being interrupted by patient care. As our culture continues to evolve to giving up tasks to the Lunch Flex, our postimplementation survey shows nurses are relinquishing their phones 23% more than they reported on the preimplementation survey. Last, results showed a 12.5% increase in nurses' perception of having enough people for the workload and a 22% decrease in dissatisfaction with staffing after the Lunch Flex was implemented.

### **EB30: Malignant Hyperthermia Simulation-Based Training in the Electroconvulsive Therapy Department**

Mary Abbott, Kay Redelings, Victor Monrreal; Sharp Memorial Hospital, San Diego, California

**Purpose:** The purpose was to improve the method of training to increase staff confidence in their ability to respond to a patient experiencing malignant hyperthermia (MH). Specifically, the aim was for staff learn to recognize the early signs and symptoms of MH, calculate and mix correct doses of dantrolene, create ice packs and infuse cooled normal saline to mitigate hyperthermia, and improve communication among staff responders.

**Summary:** An interdisciplinary team collaborated to

develop an educational, simulation-based training event to teach the MH protocol to clinicians in the Electroconvulsive Therapy Department. The planning timeline included a monthly MH meeting during which we identified structure and process gaps. The team then developed the following interventions: modification of the MH Learning Center education module; MH competency update; simulation scenario; role delineation and task cards for use during the MH simulation; emphasis on teamwork within the department and use of float staff during an MH event; education about drugs needed for stabilization; drug reconstitution, conversion calculations, and route of delivery; use of expired medications (ie, bicarbonate) to practice drug reconstitution; use of 60-mL syringes with vented spikes for more rapid syringe filling; equipped a simulation manikin with intravenous access so staff could practice administering medication and for cooled normal saline infusion; developed a process with necessary supplies (eg, basins, plastic zip-closure bags, key to the kitchen, hairnets, pathway identification and operationalization strategy) to quickly make ice packs to cool the patient. **Evaluation/Outcome:** Most (83%) of staff agreed the new learning module was more effective than the prior version; 100% of staff agreed that the simulation-based training prepared them to respond to an MH event; 100% of staff are more confident in their ability to recognize the early signs and symptoms of MH, to reconstitute and administer dantrolene, and to operationalize the various roles involved in responding to an MH event; 83% of staff reported they are more confident in their ability to obtain ice, make ice packs, and cool the patient; and 83% of staff reported being more confident to infuse cooled normal saline.

### **EB31: MenTIR: Mentoring to Improve Retention Study**

Heather McKinney, Wesley Jordan, Elizabeth McChesney, Xiaoxin Liu; Duke University Hospital, Durham, North Carolina

**Purpose:** Nationally, turnover for new nurses within the first 2 years of employment is greater than 33% and is expected to increase in the next 5 years due to myriad workforce dynamics that place more stress on new nurses. The 2-year turnover rate for our cardiothoracic step-down unit at a southeastern academic medical center was 53%. The purpose of the MenTIR (mentoring to improve



retention) project was to evaluate factors associated with turnover and implement an evidence-based intervention to reduce new-nurse turnover by 10%. **Summary:** We conducted a comprehensive literature review to identify factors associated with nurses leaving a new job within 2 years. Factors included stress, perceptions of inadequacy, and poor relationship development in the workplace. The most promising evidence-based solutions included the systematic integration of 1 or more components of mentorship skill building, such as developing mentor communication skills, building relationships, and providing ongoing monitoring of new nurses for early signs of burnout or excessive stress. We chose to implement the Academy of Medical-Surgical Nurses Mentoring Program for a trial period of 1 year. Nurses with at least 3 years of experience were matched with nurses of 1 year experience or less. Surveys were given to new nurses (mentees) to assess perceptions of confidence, job satisfaction, and intent to stay in the job. Mentors completed a self-assessment at the outset, and the relationship between mentor and mentee and overall program satisfaction were measured at 3-month intervals throughout the program. Dyads met monthly to complete an assessment, track goals, and identify next steps. Factors associated with turnover and actual turnover rate were reevaluated at 12 months. **Evaluation/Outcome:** Participants (N=35) in the evidence-based mentoring program were mostly female (77.1%) and a median of 28 years old. Mentors' median nursing experience was 4.75 years. Overall, mentors perceived themselves as experienced in 30 of 37 key skills, such as sharing life experience and personal examples, being proud of mentees' success, and maintaining confidentiality of sensitive information. Mentees' baseline confidence, rated on a 0 to 5 scale, was high (median, 3.5; range 2.36 to 4.62). Factors associated with turnover were successfully mitigated at 12 months (ie, communication, relationships, and confidence). At 12 months, new-nurse turnover decreased by 35% as compared with baseline.

### **EB32: Minimizing Delirium in the ICU: A Therapeutic, Personalized, Music-Listening Protocol**

Kelsie Kirchartz, Staci Mamula, Deborah Panos, Amber Dickson; Shadyside Hospital, Pittsburgh, Pennsylvania

**Purpose:** The risk of delirium developing in patients in the intensive care unit (ICU) is significant. Delirium is

associated with an array of short- and long-term consequences, increased health care costs, and decreased quality of life after discharge. Fortunately, the risk of delirium can be mitigated through nurse-driven preventive measures. The goal for this project was to reduce the rate of delirium-positive patient-days in our unit via introduction of a therapeutic, personalized, music-listening protocol. **Summary:** Listening to music has been proposed as an intervention that reduces delirium incidence and severity through stimulation of areas of the brain involved with memory, cognitive function, and emotions, and through a reduction in inflammation. Furthermore, listening to music that is personalized for patient preferences has been cited to reduce delirium and agitation. Our hospital system recommends music listening as a part of our nonpharmacological delirium-prevention bundle, yet our unit lacked a reliable medium through which to offer this intervention outside of the television relaxation channel. A music-streaming internet radio service was introduced by installing a digital media player in each patient room. A personalized music-listening program was introduced as a part of each patient's plan of care and nurses were educated to implement the protocol. Nurses assess each patient's music preference and play a minimum of 2 hours of music per shift. Patients can request more than 2 hours of music listening. For patients whose music preferences cannot be determined, relaxing music is played. **Evaluation/Outcome:** The presence of delirium was measured using the Intensive Care Delirium Screening Checklist, scored, and recorded in the electronic health record by bedside nurses every 12 hours. A score of 4 or more on this tool is considered positive for delirium. All patients (N=376) were included in the outcome data, including those with delirium present on admission. A patient-day was counted as delirium positive if either score per calendar day was at least 4. The rate of delirium positive patient days was reduced from 328.3/1000 patient days when comparing the same 8-month period in consecutive years.

### **EB33: Multidisciplinary Collaboration to Optimize Hospital-Wide Massive-Transfusion Protocol Response**

Judy Borish; Highline Medical Center, Burien, Washington

**Purpose:** Our goal was to improve the process of massive transfusion procedures by (1) optimizing timely

management of, and blood loss replacement with, appropriate blood components; (2) facilitating communication between departments and services; (3) using military-tested, ratio-driven, physiologically based guidelines to reduce morbidity and mortality rates; and (4) promoting early recognition and activation of the protocol to facilitate prompt treatment, leading to positive outcomes during bleeding emergencies. **Summary:** After a massive-transfusion event, we realized there were gaps that prevented timely management of replacing blood loss. A multidisciplinary committee was formed that included representatives from the laboratory, family child birth center, perioperative services, emergency department, and critical care. After a literature search and inquiry into what area hospitals had in place, we developed essential roles and responsibilities for our facility. We created a massive-transfusion kit for each unit. The kit includes a binder with the transfusion policy and guidelines, as well as forms and information necessary to call a massive-transfusion protocol code, outline roles and responsibilities, and to document laboratory results and debriefing notes. We organized color-coded bags for each role. Each bag includes a lanyard with role responsibilities, a color-coded name tag, and equipment needed for this role. Laboratory staff have their own kit with their roles and responsibilities. We instituted monthly massive-transfusion drills. The site rotates among the emergency department, the family birth center, the operating room, interventional radiology, and the intensive care unit. Laboratory staff participate in all drills. Nurses are encouraged or assigned from the units to participate. Each drill lasts 1 hour and a debriefing session is held at the conclusion. **Evaluation/Outcome:** Debriefing each drill has provided information to refine the roles, responsibilities, and processes. We collect data measuring the time from massive-transfusion protocol code called to first unit of packed red blood cells released, which has decreased from 15 to 6.5 minutes. We also assess time from the first blood unit arriving to time infusing, which has decreased from 20 minutes. On 2 occasions, blood infusion began within 2 minutes. Subjective outcomes elicited during debriefing sessions include more cooperation among participants and more comfort with the protocol. Lessons we have learned include revisions needed for the recorder sheets, electronic medical record documentation, and for the laboratory staff to be able to thaw multiple

blood products simultaneously.

### **EB34: Nasal Decolonization Protocol to Reduce MRSA Isolation Days and Hospital-Acquired Infections**

Remo Rios; Meritus Health, Frederick, Maryland

**Purpose:** The poster describes an evidence-based practice initiative to reduce methicillin-resistant *Staphylococcus aureus* (MRSA) hospital-acquired infections (HAIs) and the need for isolation. Contact precautions for MRSA of the nares continues to be standard practice for most hospitals in the United States. The associated infection risks, equipment cost, and poor patient satisfaction have led to the development of new protocols to treat patients with MRSA of the nares. **Summary:** A clinical nurse in a critical care unit questioned the practice of contact precaution isolation for all patients at risk for MRSA. A review of the literature identified nasal decolonization as an effective strategy to reduce MRSA HAIs. The majority of research has been focused on the use of a topical, antibiotic nasal decolonization agent that is effective but can result in resistance. Alcohol-based nasal antiseptics are an effective alternative for nasal decolonization and reduction of MRSA infections. The nurse shared the evidence for use of an alcohol-based nasal antiseptic with key stakeholders, including the chief nursing officer and nursing leaders, infection control director, and physicians. A nurse-driven protocol with inclusion and exclusion criteria for use of the nasal antiseptic for all inpatients was developed. All clinical nurses received education on the protocol before protocol implementation. A best-practice advisory was built into the electronic health record to guide nurses in implementation of the protocol. Baseline data on the number of patients in MRSA isolation and HAIs were collected before and after protocol implementation. **Evaluation/Outcome:** The nasal decolonization protocol has resulted in a reduction of the number of patients in MRSA isolation by 60%. Patient-isolation days have decreased from 6.4 to 3.9 days per 100 patient-days. There have been no MRSA HAIs since the protocol was implemented. Reduced isolation days have led to significant cost savings, with the cost of isolation averaging \$125 per patient per day as compared with a \$4.30 cost per day for nasal decolonization. Projected savings based on the initial 3 months are approximately \$250 000. The project demonstrates the impact of clinical nurse

autonomy and use of evidence-based practice to improve quality and patient-centered care, and to reduce costs.

### **EB35: Nurse-Driven Palliative Care Education: A Continuous Collaborative Approach**

Patricia Spellman-Foley, Kimberly Chow, Stephanie Chu, Justina Simondac, Carina Stone, Elizabeth Farrat; Memorial Sloan Kettering Cancer Center, New York, New York

**Purpose:** Critical care nurses at our Magnet-designated, National Cancer Institute teaching hospital are often faced with challenging situations regarding complex symptom management and end-of-life (EOL) care. Routinely encountering the delicate balance between life and death led to increasing reports of moral distress by staff nurses. A nurse champions program was created to educate and empower staff, decrease distress, and ultimately improve the quality of life and care for patients.

**Summary:** The priority for this project was to ensure that intensive care unit (ICU) nurses receive education, training, and continuous support when caring for patients with cancer at multiple disease stages, particularly at EOL. The need to increase access to palliative care for patients in the ICU is well documented in the literature. Nurses can and should play a leading role in these initiatives. When provided with the right resources and knowledge, clinical nurses and nurse champions have repeatedly demonstrated the ability to create meaningful and sustainable change. Four nurse champions were identified and tasked with certifying all ICU nurses in the End-of-Life Nursing Education Consortium–Critical Care (ELNEC-CC) to improve awareness and confidence in core palliative-care competencies. In addition, champions developed and implemented unit-based tools that included creating comfort carts, placing Forget-Me-Not flower signs on patients' doors to encourage mindfulness and respect for patients at EOL, and offering handprints as a form of remembrance. The "Honoring Words" poem was offered to staff members and families immediately after death to support grief and bereavement. **Evaluation/Outcome:** As of January 2019, 96 ICU nurses were certified in ELNEC-CC. Results from surveys before versus after taking the class indicated heightened awareness and confidence in providing palliative care in critical care (34.61% vs 7.69%), pain (44.23% vs 11.53%), and symptom management (36.53% vs 3.84%); dealing with ethical issues (26.92% vs 7.69%); cultural and spiritual

considerations (23.07% vs 1.92%); communication (30.76% vs 1.92%); loss, grief, and bereavement (30.76% vs 3.84%); and EOL care (30.76% vs 3.84%). Use of comfort care, handprints, and Forget-Me-Not signs has increased. On the basis of staff feedback, our program grew to include an interdisciplinary team approach involving ethics, chaplaincy, and social work.

### **EB36: Nurse-Driven Protocol Improves Quality-of-Care Outcomes in the Emergency Department**

Sharon Engle, Jacquelyn Owens; Mobile Infirmiry Medical Center, Mobile, Alabama

**Purpose:** Timely initiation of the code stroke in the emergency department (ED) is important in stroke outcomes. Mobile Infirmiry Medical Center's (MIMC) ED-physician–driven code stroke process failed to meet The Joint Commission and Get With the Guidelines (GWTG) stroke measures. A taskforce completed a gap analysis for the code stroke process. The findings allowed the ED to implement a nurse-driven protocol resulting in improved patient outcomes, engagement, and team collaboration. **Summary:** Guided by the Clinical Practice Guidelines for Acute Ischemic Stroke, MIMC created an ED Door-to-Needle Task Force consisting of the medical director of the Stroke Program; stroke coordinator; ED physicians, leadership, and staff; laboratory leadership and staff; ED pharmacist; and emergency medical service (EMS). This task force met weekly to discuss any patient arriving in the ED to be ruled out for stroke. All fallouts were discussed even if the patient was ruled out for stroke. The focus of these reviews was to identify how a nurse-driven code stroke protocol could improve compliance with the time frames for each component in the GWTG standards. The nurse-driven protocol initiatives included collaboration with EMS to promote prearrival verification of stroke symptoms and last known well time; implement (1) a prehospital blood-sample collection by EMS for laboratory tests with an immediate handoff to MIMC laboratory personnel on arrival, (2) EMS transporting the patient directly to obtain a computed tomography (CT) scan, and (3) an abbreviated assessment by the ED physician with in-time notification to the neurologist; and initiation of thrombolytic therapy while the patient is undergoing CT scanning. **Evaluation/Outcome:** Since the implementation of the nurse-driven code stroke protocol, data indicate improvement in all stroke measures, increase in

thrombolytic use, and improved collaboration. Door-to-stroke code initiation time improved from 37 minutes to 5 minutes, door to CT arrival from 23 minutes to 6 minutes, door to CT results from 38 minutes to 23 minutes, and door to needle from 66 minutes to 38 minutes. There was an increase from 6 total patients with only 1 patient meeting the goal time to receiving a thrombolytic of less than 60 minutes to 12 patients meeting that goal, with a thrombolytic time of less than 45 minutes achieved for 7 of those patients.

### **EB37: Nurse-Led Reduction of CLABSI**

Patricia Howell; Memorial Hermann Health System, Houston, Texas

**Purpose:** Central catheter-associated blood stream infections (CLABSIs) are hospital-acquired infections (HAIs) that can increase morbidity and mortality risks. The Centers for Medicare and Medicaid Services does not reimburse for costs associated with CLABSIs; thus, CLABSIs also negatively affect the financial performance of the hospital. The purpose of this project was to evaluate current practice and implement evidence-based practice to reduce the CLABSI standardized infection ratio (SIR) rate by 50%. **Summary:** As part of a Magnet facility, nurses recognize they must lead change. Therefore, a nurse-led multidisciplinary group was assembled and a comprehensive literature review performed to find the latest evidence to reduce CLABSIs. The hospital's procedural guidelines were updated to reflect best practice (eg, dressing changes every 7 days, cap changes only when visibly soiled or with intravenous tubing, removal of the catheter as early as possible). A large educational effort was initiated and nurses were instructed on the proper techniques for caring for central catheters. Emphasis is placed on 4 interventions: (1) a 5-second vigorous cap scrub and allowing enough time for the chlorhexidine to dry completely; (2) daily chlorhexidine baths for all patients with central catheters; (3) daily wipe down with chlorhexidine of all central catheters, starting at insertion site and at least 12 inches of the catheter; and (4) central catheter removal as soon as possible, with consideration given to the use of midline catheters whenever feasible. Return demonstration of one-on-one education for dressing changes was conducted for 85% of the nursing staff. Daily audits are conducted by charge nurses and infection control partners to assess compliance with daily bundle and catheter care. **Evaluation/**

**Outcome:** With nurses leading the way, the hospital has observed a steady, downward trend in the 12-month rolling CLABSI SIR rate. The goal, upon creation of the CLABSI task force in August 2018, was to reduce the CLABSI rate by 50%. The education plan was developed and deployed in October 2018. That same month, the SIR rate was 2.17. By July 2019, the SIR rate was 1.16. A multidisciplinary, nurse-led approach to CLABSI reduction focused on current evidence can reduce the incidence of CLABSI.

### **EB38: Nursing Interventions Key to Successful Implementation of Machine Learning**

Dina Sarro, Cara O'Brien, Mark Sendak, Elizabeth Alderton, Corinne Miller, Will Ratliff; Duke University Hospital, Durham, North Carolina

**Purpose:** The goal was to integrate machine learning at Duke University Hospital (DUH) by training rapid response team (RRT) nurses to use an application called Sepsis Watch (SW), developed by Duke Institute for Health Innovation (DIHI) to improve early detection and treatment of sepsis. The problems addressed were how to influence SW development so it was intuitive and easy to use, and how to successfully integrate SW into current workflows through collaboration among nurses, physicians, and DIHI. **Summary:** Machine learning uses the electronic medical record to predict patient events. The challenge has been merging human and technology to successfully implement such a tool. Successful implementation of machine learning depends not only on the validity of the tool but on how the tool is used and understood. Wilcox and Brock (2015) pointed out that nurses are key to successful incorporation of patient-centered technology. The key to the success of SW at DUH was nursing input and collaboration among nurses, physicians, and SW developers. As expert nurses and end users, we met with DIHI over the course of SW development to give feedback on the application. We anticipated the challenges of integrating SW into nursing practice and collaborated with nursing leadership, the emergency department (ED), DIHI, and hospitalists to create a feasible workflow. We created a module designed to educate nurses about sepsis, helped set up hands-on training with DIHI, met with ED leadership, created a training checklist, and met with each RRT nurse individually. The week of implementation, we responded swiftly to unforeseen challenges by identifying superusers, having follow-up

focus groups, recommending updates to the application, and meeting with stakeholders to resolve issues. **Evaluation/Outcome:** For us, the outcome was measured by the nurses' meaningful use of the application. At the end of the 6-month pilot, 70.6% of patients at highest risk for sepsis were deemed appropriate for treatment. Of those, 67.1% completed treatment per Centers for Medicare and Medicaid Services (CMS) guidelines. On a larger scale, the outcome of SW implementation was measured by bundle compliance. At the end of 6 months, DUH's compliance with CMS guidelines increased from 37% to 66%. The successful implementation of machine learning in this case can be attributed, in part, to engaging nurses in the development of SW, ongoing collaboration, problem-solving, and using our knowledge and skills as nurses to evolve nursing practice in an innovative way.

### **EB39: PICU Mentorship Program**

Nicolette Kelley, Amelia Wirth; The Children's Hospital Colorado, Aurora, Colorado

**Purpose:** The pediatric intensive care unit (PICU) at Children's Hospital Colorado is a large, 36-bed unit that has grown exponentially in the past 5 years, leading to a 38.1% increase in nursing staff. Without a formal mentorship program, once they have completed orientation, new nurses may have a difficult time identifying someone they can trust and help guide them. Our PICU has seen an increasing turnover rate among new staff, with almost 40% leaving in 2017. In November 2017, a formal mentorship program was developed to target staff retention. **Summary:** Our focus is to improve our overall turnover rate of new-hire registered nurses (RNs) in the PICU. A PICU new-hire RN is defined as having worked in the our hospital's PICU for less than 1 year. By capturing data for mentees, our aim was for a 5% reduction in turnover rate. The goal was for the PICU to achieve a 5% reduction in new-hire turnover from a 2017 to 2018 baseline of 39% to less than 34% in the year 2018 to 2019. After 6 months of implementation of the mentorship program, our aim was to improve PICU new-hire professional satisfaction rates from 73% to greater than 78% and improve the new-hire social satisfaction rate from 26% to greater than 31%. Within 3 weeks of completing orientation, the program leaders ask the mentee to select their potential mentor. The program leaders then approach the mentor with this recognition. The next step is for the mentor and mentee to sign a contract and discuss 3

development goals the mentee plans to work on over the course of the year. Checklists and information about the program are shared with mentor-and-mentee pairs, using a program packet. Program leaders perform routine monthly check-ins with the pairs. There are specialized educational offerings and social events, which are supported by our PICU New-Hire Development Committee, offered to the mentor-and-mentee pairs. **Evaluation/Outcome:** More than 1.5 years later, there has been a 25.5% reduction in the new-hire RN turnover rate in the PICU. This decrease has already far exceeded the goal of a 5% reduction, and the current baseline is at 13.8%. Professional and social satisfaction rates have also exceeded the goals. New-hire professional satisfaction rates increased from 73% to 82% and social satisfaction rates increased from 26% to 32%.

### **EB40: Quiet at Night: The Patient Experience**

Marya Searcy, Kevin Williams; Tampa General Hospital, Tampa, Florida

**Purpose:** This project's goal was to evaluate the effectiveness of hospital-based Quiet at Night (QAN) initiatives and success in improving patients' experiences and perceptions of their environment as measured by Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Press Ganey (PG) scores for a large, academic medical center. With this project, we implemented several creative, evidence-based initiatives designed to improve the overall patient experience by reducing noise at night, thereby allowing patients 4 hours of uninterrupted rest. **Summary:** Our evidence-based solution to address unnecessary disruptions and noise at night was to implement a multifaceted noise-reduction campaign that included monitoring decibel levels of patient care areas, improving or replacing noisy equipment, purposeful rounding, a door-closing campaign, development of a nighttime chime to signal start of QAN hours, development and use of QAN kits, working with the Patient and Family Advisory Committee (PFAC) on proposed initiatives, designating noise champions on each unit, moving the QAN committee to overnight hours, and chairing the committee with hospital leadership responsible for HCAHPS and PG outcomes. The initiatives we used have been developed through the QAN and PFAC committee's extensive member discussions and literature review. Implementation was phased into care practices after formal committee review and

finalization with senior hospital leadership. When hospitals are surveyed about their top patient-experience priorities, noise reduction consistently remains at the top of the list. The World Health Organization recognizes noise as an environmental stressor that negatively affects patient experience and overall health and well-being. **Evaluation/Outcome:** The QAN campaign initiatives demonstrated positive corollary outcomes evidenced by improved HCAHPS and PG survey results. Outcomes were measured and evaluated before and after implementation of the QAN initiatives. The PG data from before implementation of the QAN campaign demonstrated a national percentile ranking ranging from 35% to 45% when benchmarked against the PG database (N = 2790) and covered the fiscal years (FYs) of 2015 through 2017 (first quarters). Nursing clinical administrators took responsibility for improving QAN scores in the second quarter of FY17. The data collected after the QAN campaign were statistically significant, with the national percentile ranking improved to 50% by the fourth quarter of FY17, and the current sustained ranking ranges from 55% to 61%.

#### **EB41: Reducing CABG Ventilator Time, Complications, and Readmissions Through Collaboration**

Darlene Alimbuyao; Medical Center Hospital, Odessa, Texas

**Purpose:** Increased length of stay (LOS) associated with prolonged ventilation (> 24 hours) and complications in patients who have undergone coronary artery bypass grafting (CABG) led to a multidisciplinary review of processes associated with ventilator management and general infection-prevention practices. The CABG team identified a goal for early extubation (within 6 hours) as defined by the Society of Thoracic Surgeons (STS) and defined roles for infection-prevention interventions throughout each phase of a patient's hospitalization. **Summary:** A nurse-driven protocol for extubation after cardiac surgery existed, but it was rarely used because of ventilator management consultation with a pulmonologist or intensivist. A comparison by provider for ventilator times, intensive care unit (ICU) and postoperative LOS, and early extubation was presented and a proposal for intensivist management of care for all postoperative patients after CABG was accepted. Infection-prevention interventions were identified for each phase of hospitalization by including feedback from frontline staff. Elective-status

patients received instructions and supplies for showering with chlorhexidine during preoperative testing and, citing the American Association of Critical-Care Nurses Practice Alert on oral care for patients at risk for ventilator-associated pneumonia, nonemergent patients received oral chlorhexidine before intubation in the operating room. Inpatient staff identified gaps in providing preoperative instructions and expectations of care after the procedure. Staff education included milestones for patient care and responsibilities for each role. Written patient instructions with customizable sections were added to the electronic health record. A flier with goals was updated with manually collected data and shared monthly to show the impact of the interventions on ventilator times, LOS, and readmissions. **Evaluation/Outcome:** STS CABG data from 2017 (n = 110) was compared with 2018 data (n = 136), when interventions were fully implemented. Pneumonia rates decreased from 4.3% to 0.9% and infection complications decreased from 4.3% to 0%. Rates of extubation less than 6 hours after CABG increased from 40.9% to 73.9%. Initial median ventilator times decreased from 14.6 to 6.5 hours. Total ventilator times decreased from 17.3 to 7.9 hours. The median total LOS decreased from 10 to 9 days. Though median total ICU LOS decreased from 73 to 55 hours, the median post-procedure length of stay remained the same at 7 days. The readmission rate decreased from 17.4% to 7.8%.

#### **EB42: Reducing Foley Catheter Use: Striving for Zero CAUTI Status**

Stevie Sargent; Indiana University Health Bloomington Hospital, Bloomington, Indiana

**Purpose:** A catheter-associated urinary tract infection (CAUTI) is the most common hospital-acquired infection (HAI), according to the Centers for Disease Control and Prevention (CDC). Staff of an 18-bed progressive care unit in a midwestern hospital wanted to maintain zero CAUTI status by looking for areas for improvement. The goal identified was to reduce use and the length of time Foley catheters (FCs) are in place by using the urinary elimination protocol (UEP), external catheters, and leadership support. **Summary:** Our professional staff development team worked to implement strategies to reduce the use rate of FCs, in turn reducing the incidence of CAUTIs. Using evidence-based practice, our leadership team introduced external female catheters and reinforced the use of external male catheters to

capture intake and output of incontinent patients without invasive catheters. The development and reinforcement of the nurse-driven UEP, following the CDC guidelines to remove FCs, and investigating the need for FCs has decreased our use rate. Clinical advisors and clinical nurse specialists also audit the use and compliance of FC bundles while providing in-the-moment education to nurses when bundle compliance is not met or when patients do not meet CDC guidelines for the indication of a FC. When FC use does not meet CDC guidelines for indication with no other medical contraindications, the leadership team will empower bedside nurses to use their UEP to remove FCs. According to the UEP, nurses scan the patient's bladder and perform an intermittent catheterization, if indicated, to avoid the overuse of FCs. This process has allowed nurses to feel confident and take ownership in removing FCs to reduce invasive catheters to prevent CAUTIs. **Evaluation/Outcome:** Before implementing these strategies, the use rate for FCs ranged between 9% and 22%. After implementation and in-the-moment education, the use rates decreased to 11% to 13%. In November 2018, the leadership team focused on using the UEP and CDC guidelines to remove FCs, which has decreased our use rate to 8% to 13%. The awareness and implementation of these strategies and education about them have empowered nurses to look at alternatives; they think of FCs as a last resort instead of a first option. This thinking has enabled this progressive care unit to be CAUTI free since May 10, 2015.

#### **EB43: The Effects of Simulation on the CICU Nurse's Confidence Caring for the Postoperative Patient**

Deborah Bedard, Carissa Taylor, Christine Peyton, Robert Bishop, Meghan Williams; Children's Hospital Colorado, Aurora, Colorado

**Purpose:** On a pediatric cardiac intensive care unit (CICU), nursing education is essential to care for patients in the immediate postoperative period. Simulation-based education improves technical and nontechnical skills, and increases nursing confidence in high-risk situations. The purpose of this project was to evaluate the effect of integrating simulation on the confidence of the CICU nurse learning to care for patients in the immediate postoperative period. **Summary:** When preparing nurses to care for patients in the immediate postoperative period, the nurse must be ready for any number of high-risk

situations and respond to them quickly, efficiently, and accurately. Simulation provides an opportunity for nurses to experience clinically relevant situations in a safe environment and improve communication skills in high-risk situations. A training program was designed to increase the knowledge and confidence of nurses. All nurses in the CICU preparing to care for postoperative patients attended a 4-day, high-fidelity, simulation boot camp incorporating traditional classroom methodology with high-fidelity simulation to replicate patient-based scenarios and enhance the learning experience. Four days of simulation were designed with specific objectives: (1) crisis resource management, (2) postoperative pathophysiology fundamentals, (3) advanced respiratory fundamentals focused on cardiopulmonary interactions, and (4) arrhythmia and pacemaker management. Participants were surveyed about their confidence on all objectives before the simulation course, at the start and end of each day, immediately after the course, and 3 and 6 months after the course, using a Likert scale. **Evaluation/Outcome:** Overall, nurses reported an increase in confidence in all 17 objectives immediately after simulation. Confidence at 3 months continued to surpass presimulation confidence in all 17 objectives but was sustained or only slightly increased in 8 of the 17 objectives when compared with postsimulation confidence. In addition, confidence rebounded and increased at 6 months postsimulation when nurses reported an increase in confidence in all 17 objectives far surpassing confidence at any time. The outcomes at 6 months are attributed to reinforced learning with clinical orientation and direct patient-care experiences with an experienced preceptor, which follows simulation-based education.

#### **EB44: The Importance of Nutritional Support in the Intensive Care Unit**

Carol Blagrove; New York Presbyterian Columbia University Medical Center, New York, New York

**Purpose:** The purpose of this project was to increase patients' caloric intake by improving nursing compliance. The surgical intensive care unit (SICU) staff care for a variety of critically ill patients. Baseline data revealed less than 25% of patients had enteral nutrition (EN) initiated early in their ICU course. Despite staff education, the number of patients who received late EN remained high. An interdisciplinary team was formed to develop a process to increase early EN and compliance with the hospital protocol. **Summary:** Led by the surgical and

anesthesia intensive care unit (SAICU) medical director, an interdisciplinary work group was gathered and challenged to explore the root cause of poor EN protocol compliance and to develop a process to improve rates of early EN and patient caloric intake. Early introduction of nutritional therapy is recommended to treat and prevent nutritional deficiencies in critically ill patients. The Society of Critical Care Medicine, the American Society for Parental and Enteral Nutrition Guidelines, and the hospital-based protocol were reintroduced to nursing staff to review best-practice guidelines and organizational expectations. Each patient receives a nutritional assessment by primary nurse on admission. Per protocol, patients who meet the criteria and fall within the guidelines for EN should begin receiving nutritional support within 24 hours. The evaluation includes type of surgery, use of vasopressors and inotropes, complications of the gastrointestinal tract, and/or the need to start total parental nutrition. In addition, an audit tool was introduced to staff during the third quarter of 2018 to track compliance with the hospital EN protocol and to identify barriers to protocol implementation. **Evaluation/Outcome:** The outcomes of the project showed improvement in early EN. Nursing champions audited the implementation of early EN for patients weekly from the third quarter of 2018 through the first quarter of 2019. Champions provide real-time feedback and suggestions to the care team for continuous process improvement and enculturation of early EN best practices into SAICU workflow. As compliance continued to improve, audit frequency (including quality surveys and clinical observations) was reduced to every other week in the second quarter of 2019. Data collected before the intervention showed that early EN was initiated for less than 25% of all patients admitted to the SAICU in 2018. Data collected after the intervention show improvement of more than 75% of patients receiving early EN.

#### **EB45: The Pressure's On!**

Rachel Carter; Tampa General Hospital, Tampa, Florida

**Purpose:** The goal of this project was to eliminate occipital pressure injuries in the cardiothoracic surgery intensive care unit (CTICU) at Tampa General Hospital. We identified that our bed-bound, intubated, hemodynamically unstable patients were developing occipital pressure injuries. These pressure injuries were a source

of infection, balding, and embarrassment for the patient. The nurses in our unit felt moved to take action. **Summary:** We hired patient care technicians (PCTs) to provide around-the-clock coverage in our unit. The assistant manager and educator held a skills class with the PCTs, focusing on hair care and scalp massage. Hair care consisted of shampooing the patient's hair and combing out any mats or knots. With every shampoo, we provided a scalp massage to increase the circulation of blood and oxygen to the area. The PCTs were responsible for rounding on all patients and providing hair care daily. They rounded every 2 hours to provide turning and repositioning. Every-hour rounds were performed on patients identified to be a high risk for skin breakdown. The day-shift and nightshift PCTs documented this care and communicated to one another about which patients' care had been completed. The charge nurse followed up with the PCT each shift to identify the patients who received hair care. Our manager met with the PCTs quarterly to reinforce the importance of hair care and scalp massage for each patient every day. We worked with our medical supply department to stock shampoo caps and detangler on the unit for ease of availability. We changed out the type of comb we use on our patients' hair to a wider-tooth comb. The entire unit supported the initiative. **Evaluation/Outcome:** The incidence of occipital pressure injuries in the CTICU was reduced by 74.26%. The occurrence of occipital pressure injuries per unit per 1000 patient-days was measured for the 6 months before and after our go-live date for our intervention (June 21, 2017). We continue to implement hair care in the CTICU each shift and are proud to say our last occipital pressure injury was in September 2018.

#### **EB46: The RRTRN: A Model Successfully Replicated in the Community Hospital Setting**

Teresa Slifer, Tara Smith, Elizabeth Avis, Susan Robinson; Thomas Jefferson University Hospital, Philadelphia, Pennsylvania

**Purpose:** Treatment of increasingly complex patients requires access to critical care resources and training. To enable ease of access to intensive care unit (ICU)-level education, a redesigned role, the independent rapid response team nurse (RRTRN), was implemented at a 168-bed community hospital in 2016, after prior success of the role on a larger scale. RRTRNs are critical care nurses by background and improve medical-surgical



care by responding to deteriorating patients and by providing education and support to nurses. **Summary:** A quality improvement initiative led to the development and implementation of the independent RRTRN role in a Philadelphia metropolitan hospital in 2011. This role led to higher standards of medical-surgical nursing practice and improvements in patient care. Using this evidence, a multidisciplinary task force was formed to standardize the model at a community hospital within the same health system, with the RRTRNs rotating between both locations. Clinical nurse champions were recruited from nursing units to spread information about the new RRT process while RRTRNs received education pertaining to needs of each nursing unit. RRTRNs undertook responsibilities such as responding to RRT activations, proactive rounding on non-ICU units, educating nursing and physician staff, and compiling data on patients who had an RRT event or cardiac arrest. Medical-surgical nurses also benefited from collaborative and symbiotic relationships with RRTRNs; through receipt of critical care education, nurses honed crucial assessment skills and identified clinical decline more quickly. The RRTRN role thus provided a solution to caring for complex patients while strengthening the climate of safety. **Evaluation/Outcome:** The RRTRN role has greatly improved medical-surgical standards of care at this community hospital. Through RRT activation and RRTRN education, nurses identify patient decline earlier. Rate of RRT activations (rate of event per 1000 patient-days) has increased from 3.25 in 2016, the year of initial use of the RRTRN role, to 11.54 in 2019. The rate of patients not requiring transfers to higher level of care has increased from 1.55 in 2016 to 6.59 in 2019. The rate of intubation during RRT events has remained stable at 0.51 in 2019 and 0.12 in 2016. The non-ICU code blue rate has decreased from 0.86 in 2016 to 0.41 in 2019. These data suggest the benefit of more timely interventions to prevent clinical compromise.

#### **EB47: Time Is Lives: Quality Improvement for Sepsis Outcomes**

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**Purpose:** One of 3 patients who die in hospitals has sepsis. Critical care nurses play essential roles in detecting early signs of sepsis and initiating timely lifesaving treatment. In 2017, sepsis was a leading cause of death

at a midwestern hospital, indicating opportunities for strengthening early sepsis detection and response. The aim of this project was to improve sepsis recognition and prompt treatment, and effectively implement the new strategies. **Summary:** An interprofessional team convened to review the Surviving Sepsis Campaign guidelines and new research published by the Society of Critical Care Medicine. Using Lean methods, the team compared the hospital's current state of sepsis care with these guidelines and noted compliance was 29%. To begin the Time Is Lives initiative, the team identified gaps in sepsis care and barriers to change. The team designed a sepsis-risk assessment tool featuring a 3-tiered alert system, a process for triggering the sepsis protocol, standard work for physicians and nurses related to early sepsis care, an evidence-based sepsis order set, and a process board for visually tracking results. To implement the new strategies, computer-based education was provided to all nurses. A key element of the implementation plan was rapid response nurses (RRNs) rounding on all patients at risk for sepsis. If indicated, RRNs began the sepsis protocol and contacted physicians to initiate the sepsis order set. RRNs created awareness of new processes, personalized staff education at the point of care, and coached staff on quick institution of the protocol and order set. **Evaluation/Outcome:** Four quarters after implementation of the program, RRN rounding on patients at risk for sepsis was hardwired, and compliance with Surviving Sepsis guidelines for early sepsis recognition and intervention increased to 41% in 2018 and 49% in 2019. The greatest improvements were in obtaining initial lactate levels (14% increase) and administering fluids (13% increase). Sepsis order set use increased by 38%. The implementation plan was successful in facilitating quick uptake of new protocols, order sets, and communication processes among clinical nurses and physicians. Subsequently, these tools and processes have spread to other inpatient units at the target hospital and to other regional facilities.

#### **EB48: Unit-Driven Approach to Achieving CLABSI-Free Days**

Ann Allison; Indiana University Health West, Avon, Indiana

**Purpose:** Mortality rates for patients who develop a central catheter-associated bloodstream infection (CLABSI) can be as high as 25%, and the use of evidence-based prevention strategies is essential to eliminating CLABSIs.

Challenges exist in translating those strategies into everyday practices. Implementing a sustainable way to protect patients from CLABSIs was achieved through the development of a central catheter–maintenance bundle and unit-driven tactics to ensure every shift complied with that bundle. **Summary:** After analyzing root causes for CLABSI cases in an intensive care unit (ICU), it was concluded that central-catheter care was inconsistent. Using the evidence-based practice process, the clinical nurse specialist developed a central catheter–maintenance bundle and corresponding audit. To connect best practices with the clinical nurses who care for patients with central catheters, the role and responsibilities of central-catheter champions were established. Central-catheter champions validated competencies of fellow clinical nurses and completed daily audits of the bundle. Trends were tracked daily and discussed in huddles where clinical nurses identified gaps in care and brainstormed solutions. After introduction of the central-catheter champions and daily application of the central catheter–maintenance bundle, the ICU eliminated CLABSIs for 18 months and counting. The change in practice was demonstrated through improved central catheter–maintenance bundle compliance. With insight from the clinical nurses, the daily audits are now completed by every nurse, promoting greater understanding of the bundle by all who take care of patients with a central catheter. **Evaluation/Outcome:** When ICU staff own responsibility for closing gaps in patient care, results follow. The guidance of clinical nurses and the unit’s shared leadership council produce actions that change practice. As a result of the sustained compliance with the central catheter–maintenance bundle and the increase in number of CLABSI-free days in the ICU, this unit-driven approach is being applied to other patient outcomes, such as shift-change skin assessments to prevent pressure injuries and clinical nurse solutions to treat delirium in the ICU.

#### **EB49: Unstoppable Glycemic Management in Critically Ill Patients**

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**Purpose:** Glycemic management is crucial to quality outcomes for critically ill patients such as intensive care

unit (ICU) and hospital lengths of stay, duration of mechanical ventilatory support, and hospital-acquired infections. The PICOT (population, intervention, comparison, outcome, time) statement for this evidence-based practice project is as follows: Patients admitted to a medical or surgical critical care unit will receive a multimodal innovative approach to glycemic management as compared with the standard of care for better hypoglycemic and hyperglycemic control. **Summary:** An interprofessional team of ICU nurses, ICU patient care assistants (PCAs), intensivists, acute care nurse practitioners (NPs), the ICU nurse educator, the diabetes care and education specialist, critical care pharmacists, and dietitians collaborated to develop ongoing innovative strategies for better glycemic management beginning in December 2018. Strategies for hypoglycemic management included:

- Nurse and PCA ownership of hypoglycemia rechecks of less than 30 minutes
- Implementation of timers and, later, Vocera reminders
- Daily snippets from the nurse educator from the electronic health record to registered nurses (RNs) and PCAs acknowledging documentation positives and opportunities for improvement; staff clarify documentation and have improved on the basis of peer feedback
- Hypoglycemia monthly chart review exploring trends and opportunities for improvement
- Reeducation of nighttime intensivists, NPs, ICU nurses, and PCAs on use of the algorithm

Strategies for hyperglycemia management included:

- Basal bolus versus insulin drip
- Better documentation of insulin-infusion algorithms
- Importance of steroids, total parenteral nutrition, and enteral feeding impact
- Diabetic ketoacidosis (DKA) protocol using a 2-bag method
- Insulin infusions (non-DKA)
- Independent double checks for insulin infusions
- Bedside shift report (nurse-to-nurse) review of infusions, progress, and opportunities

**Evaluation/Outcome:** The team has improved glucose management in the ICU from December 2018 through July 2019. Hypoglycemic events are assessed by hospital-days in 2 categories: at least 1 glucose measurement of less than 40 mg/dL and at least 1 measurement less than 70 mg/dL. The rate of hypoglycemic events in patients with glucose levels less than 40 mg/dL has been

reduced from 1.54% to 0.36%; in patients with values less than 70 mg/dL, rates have increased slightly from 6.14% to 6.36%. Hyperglycemic events are monitored by hospital-days with a mean of all measured glucose levels greater than 180 mg/dL and all greater than 300 mg/dL. The rate of hyperglycemic events has dropped from 18.23% to 13.64% for patients with glucose levels greater than 180 mg/dL and from 7.10% to 5.27% for patients with values greater than 300 mg/dL. The team continues to review monthly data to consider other approaches to better manage glycemic events in critically ill patients.

### **EB50: Using a Skills-Stacking Model for a Graduate-Nurse Internship**

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**Purpose:** The goal of the project was 3-fold: (1) to decrease the length of internship, (2) decrease the need for education or performance plans, and (3) to increase clinical coach (preceptor) satisfaction. A skills-stacking evidence-based model was used throughout a 16-week cardiothoracic-transplant internship. The model was distributed to other critical care and progressive care units for application in future cohorts. **Summary:** Educators recognized the need to standardize an internship cohort of 30 graduate nurses using a skills-stacking model. Skills stacking is a workflow management process that enables graduate nurses to prioritize, develop time management skills, and showcase critical thinking. A guideline was created for the intern and clinical coach to use for the first 6 clinical shifts. Key components included patient assignment and acuity level, assessment, documentation, and medication administration. Each shift outlined areas on which to focus learning with specific objectives. To implement this model, clinical-coach classes were provided to explain the process and expectations. A clinical coach presurvey was distributed. Questions asked were related to years spent coaching, coaching style, satisfaction with previous progression, and skills stacking. The educator, intern, and clinical coach met biweekly during the internship to discuss strengths, areas for improvement, goals, and progression using the skills-stacking approach. Another survey was distributed on completion of the internship. Questions asked were related to coach satisfaction with skills stacking, intern progression, and continued use of skills

stacking for future internships. **Evaluation/Outcome:** Results indicated a favorable response. Eight interns were able to transition into independent practice sooner. Two education plans were required compared with a previous average of 5. Coach satisfaction increased due to a structured skills-stacking progression with defined objectives. Data from before project implementation indicated a low satisfaction score of 2.87 on a scale of 1 to 5 regarding the previous model. Postimplementation data indicated a higher satisfaction score of 4.9 with recommended use for future cohorts. Qualitative data revealed skills stacking was “beneficial, sets realistic goals, and is a great guide for the coach.” The model was presented to other service lines and will now be used in future internships.

### **EB51: Using Standard Work to Reduce Ventilator Times for Postoperative Patients Who Have Undergone Isolated CABG**

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**Purpose:** An intensive care unit (ICU) process improvement team noted patients undergoing isolated coronary artery bypass graft (CABG) had prolonged ventilator times (> 24 hours). Prolonged mechanical ventilatory support after cardiac surgery is associated with higher morbidity and mortality rates, increased ICU length of stay (LOS), longer over all hospital LOS, and greater risk for hospital-acquired infections. A multidisciplinary team, understanding the importance of early extubation, collaborated to improve outcomes of patients receiving ventilatory support. **Summary:** A multidisciplinary, process improvement (PI) team was formed consisting of cardiothoracic surgery practitioners, ICU nurses, nurse leaders, pharmacists, respiratory therapists, anesthesiologists, and an executive sponsor. The team used Lean methodologies to review current postoperative patient care workflow and develop a new process using standard work to decrease variability in practice and improve communication among the care team. Standard work reduced practice variation among team members across disciplines by delineating specific tasks to be completed within the first 30 minutes of the patient’s arrival to the ICU. The standard work for each team member increased consistency in care and improved efficiency and patient safety. Standard work concludes with the care team coming together for a bedside huddle. The huddle facilitates skilled communication among the care team members

and establishes goals of care for the patient's first 4 postoperative hours. During the huddle, the team discusses surgical case details including respiratory status and confirms the goal of extubation goal in less than 6 hours. Through standardization and team communication, mechanical ventilation time for patients undergoing cardiothoracic surgery has been reduced. **Evaluation/Outcome:** Using an abnormality tracker to monitor and address variations in practice, the Cardiology Service Line director conducted daily process observations for the first several weeks to address barriers and ensure the standard work was hardwired. Before implementation, 44.4% of patients who had undergone isolated CABG continued to receive mechanical ventilatory support for longer than 6 hours. After the implementation of standard work and bedside huddle, prolonged ventilator times dropped 14.8%. It was also noted during this same time that the percentage of patients who had undergone isolated CABG and were extubated within 4 hours increased from 33.6% to 45%. Continued use of the abnormality tracker prevents practice drift and reduces variability among the team.

### **EB52: Volume-Based Tube-Feeding Protocol**

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**Purpose:** Patients in the intensive care unit (ICU) who have been prescribed a rate-based tube-feeding protocol rarely receive their prescribed daily volume of enteral nutrition (on average, these patients receive approximately 50% of caloric requirements), with resultant negative effects. The purpose of this project was to determine how implementation of a volume-based feeding protocol versus a rate-based feeding protocol affects the total volume of tube feeding received enterally by patients in a 24-hour period. **Summary:** A review of existing literature related to volume-based tube feeding protocols (allowing the nurse the autonomy to independently increase the pump rate to compensate for reduced delivery through frequent cessation of feedings, thereby ensuring a 24-hour goal volume is delivered) was conducted by the author (an ICU staff nurse), an ICU dietitian, and a medical librarian. The evidence gathered overwhelmingly supported implementation of a volume-based tube-feeding protocol to accomplish the goal of this project: increase the volume of enteral nutrition received by patients, thereby improving patients'

nutritional status and capacity for healing, with the ultimate objective of improved patient outcomes. The author designed and implemented a volume-based tube-feeding protocol for all ICU patients receiving enteral nutrition. To implement the protocol, the author created and shared education with ICU staff nurses and providers via email, live staff meetings, virtual staff meetings, huddles, bulletins in nurses' mailboxes, postings at nurses' stations, and new-employee orientation. **Evaluation/Outcome:** Before implementing the protocol, 36% of patients receiving enteral nutrition were fed at best-practice level (80% to 105% of needs provided), 13% were significantly underfed (<50% of needs provided), 29% were overfed (>105% of needs provided), and 9% received no nutrition. After implementation of the protocol, 66% of patients receiving enteral nutrition were fed at best-practice level, 11% were significantly underfed, 12% were overfed, and 4% received no nutrition. These results indicate implementation of a volume-based tube-feeding protocol is an effective nursing intervention to increase the volume of enteral nutrition received by patients, with the potential to improve outcomes.