EB1: Get the Beep Out: A Quality Improvement Project to Decrease Nuisance Physiological Alarms in a Medical Intensive Care Unit

Jeanine Maine, Tyah Haro; Green Valley Hospital, Green Valley, AZ

Purpose: This project was conducted to reduce the number of nuisance physiological alarms in the intensive care unit within 1 month by following evidence-based policies and procedures for alarm management. The policies address proper techniques for electrode placement and management to decrease poor signals and nurse-driven alarm-limit adjustments according to patient condition. Summary: Baseline alarms were analyzed to determine if they were true, false, or inactionable. Data on physiological alarms were collected from 3 patient rooms over 1 week. The inactionable alarms couplet, bigeminy, and trigeminy produced an audible alarm; these alarms duplicated the premature ventricular contraction limit alarm. Other inactionable alarms based on the patient condition were found to indicate that nursing staff were not customizing alarm limits for patient needs. False alarms were commonly associated with artifact found on electrocardiogram strips. The project used a bundled approach. Duplicate audible alarms were eliminated from the default settings. To determine the effect of changing the default alarm settings, alarm data were extracted over 7 days.

After the implementation of default alarm changes, nursing staff completed a test of their knowledge of alarm management. The staff were educated on the proper technique of electrode placement and maintenance, alarm customization setting, and documentation per policy. After staff training, alarm data were extracted and analyzed, and staff completed another test of their knowledge of alarm management. Evaluation/Outcome: Friedman test results indicated there was a statistically significant difference in nuisance alarms across 3 time points: before the intervention, after changing default settings, and after 2 staff training sessions (n = 21; $\chi^2 = 15.61; P < .001$). A post hoc analysis was conducted to compare the preintervention nuisance alarms with those occurring after staff training. A Wilcoxon signed rank test revealed a statistically significant reduction in nuisance alarms after staff training ($z = -3.04; P = .002$), with a medium effect size ($r = 0.47$).

EB2: Good Things Come in 3s: Applying a Simple Evidence-Based Tool to Build Staff Resilience

Haley Hamilton, Linnea Van Pelt; UNC Health Care System, Chapel Hill, NC

Purpose: Study results show that most nurses are at significant risk for workplace stress, which can strain personal resilience and lead to increased burnout. Study findings also show that a significant number of newly licensed registered nurses are considering leaving their jobs. To address these trends, increase individual and team resilience, and promote a healthier work environment,
an evidence-based positive psychology intervention was adapted and introduced to an acute care nursing unit. **Summary:** An evidence-based positive psychology intervention called “3 Good Things” was developed by Dr Martin Seligman, who showed that regular and intentional positive reflection can increase happiness and decrease depressive symptoms. Although individuals are hardwired to remember negative events, practicing positive reflection leads to an increased ability to notice and recall positive events. The “Air Your Clean Laundry” exercise adapted the 3 Good Things intervention to promote positive reflection in the health care work environment. The goal of the project was to see if this exercise would lead to more positive work-life balance behaviors, increased overall resilience, and less burnout in nursing staff. A preintervention survey was conducted to determine baseline resilience measures. During the following 2 weeks, nursing staff were asked to record positive reflections about each shift on a single sheet of paper shaped like an article of clothing. These articles were displayed on a highly visible “clothesline” bulletin board in the staff break room, allowing all staff members to think about and appreciate one another's reflections. At the end of the 2 weeks, a postintervention survey was conducted to measure the impact of the intervention. **Evaluation/Outcome:** The Air Your Clean Laundry exercise was a simple, low-cost, high-impact intervention that engaged unit staff in positive reflection during each shift over 2 weeks. Surveys were administered before and after the intervention to a representative sample of staff, with a response rate greater than 65%. Results showed an increase in overall staff resilience from 49% to 71% and improvement in all work-life balance behaviors. National Database of Nursing Quality Indicators Patient Safety Culture Survey data showed sustained or improved results in all resilience measures 6 months later. This project also inspired other positive psychology interventions on the unit, including a gratitude tool that has been used daily by staff for over a year.


Ned Sormaz, Anita Reddy; Cleveland Clinic, Beachwood, OH

**Purpose:** Central line–associated bloodstream infections (CLABSIs) are an important cause of morbidity, mortality, and increased health care cost in the United States. Estimates indicate that, annually, 80,000 infections related to central catheters occur in patients in intensive care units and are associated with mortality rates as high as 25%. For this study, the goal was to determine if weekly bedside rounding in the medical intensive care unit (MICU) assessing central catheter necessity and subsequent removal would result in decreased catheter days and CLABSI rates. **Summary:** This project was conducted in a 64-bed MICU from December 2016 to June 2017. A weekly central catheter audit list was compiled by the MICU quality officer and clinical nurse specialist, using the electronic medical record to assist in evaluating patients eligible for catheter removal. The list was distributed to the bedside team and nursing management before rounding, allowing for assessment of catheter necessity. After rounds, bedside interaction (called Safety Rounds) occurred with patients’ caregivers regarding catheter necessity, such as need for vasopressors and/or total parenteral nutrition, days in place, and anatomic location. Assistance in placing peripheral intravenous catheters was also offered. **Evaluation/Outcome:** A total of 328 patients and 469 catheter were assessed for necessity during this study. Successful removal of 195 central catheter was achieved as a part of Safety Rounds. Comparing central-catheter days during a similar 7-month period in the prior year (preintervention period) with the intervention period resulted in a 15.5% decrease in total catheter-days (1083 [SD 97] vs 916 [SD 66] days; \( P = .003 \)). Reasons that catheters were not removed included resumption of vasopressor, failed peripheral intravenous access attempts, and anticipation of long-term catheter placement. The number of CLABSIs for the same period decreased by 42% (2.7 [SD 1.6] per month vs 1.6 [SD 1.3] per month; \( P = .16 \)).

**EB4: Extracorporeal Membrane Oxygenation Education and Simulation Training in the Cardiothoracic Intensive Care Unit**

Lidia Hernandez; Loyola University Medical Center, Maywood, IL

**Purpose:** The purpose of this project was to improve the knowledge and self-efficacy of the nursing staff in the cardiothoracic intensive care unit (ICU) about extracorporeal membrane oxygenation (ECMO) through the implementation of a standardized ECMO education and training program. This project was conducted in a 16-bed cardiothoracic intensive care unit (ICU) assessing central catheter necessity and subsequent removal would result in decreased catheter days and CLABSI rates. **Summary:** This project was conducted in a 64-bed MICU from December 2016 to June 2017. A weekly central catheter audit list was compiled by the MICU quality officer and clinical nurse specialist, using the electronic medical record to assist in evaluating patients eligible for catheter removal. The list was distributed to the bedside team and nursing management before rounding, allowing for assessment of catheter necessity. After rounds, bedside interaction (called Safety Rounds) occurred with patients’ caregivers regarding catheter necessity, such as need for vasopressors and/or total parenteral nutrition, days in place, and anatomic location. Assistance in placing peripheral intravenous catheters was also offered. **Evaluation/Outcome:** A total of 328 patients and 469 catheter were assessed for necessity during this study. Successful removal of 195 central catheter was achieved as a part of Safety Rounds. Comparing central-catheter days during a similar 7-month period in the prior year (preintervention period) with the intervention period resulted in a 15.5% decrease in total catheter-days (1083 [SD 97] vs 916 [SD 66] days; \( P = .003 \)). Reasons that catheters were not removed included resumption of vasopressor, failed peripheral intravenous access attempts, and anticipation of long-term catheter placement. The number of CLABSIs for the same period decreased by 42% (2.7 [SD 1.6] per month vs 1.6 [SD 1.3] per month; \( P = .16 \)).
simulation training that meets evidence-based extracorporeal life support organization standards. **Summary:** Twenty nurses completed a 20-question survey on ECMO physiology and a self-efficacy survey that allowed them to share how confident they were with their current training and in their ability to provide effective care to patients receiving ECMO. The training was composed of 2-hour didactic lectures, 1-hour hands-on training, and 2-hour simulation training. The mannequin was a basic, full-body dummy connected to a ventilator and an ECMO circuit, with a bladder reservoir and with a crash cart in the room. All scenarios were conducted in a room simulating an ICU. The mannequin was connected to a monitor that allowed participants to visualize an electrocardiogram, arterial-catheter blood pressure, pulmonary artery pressures, central venous pressures, and oxygen saturation in real time. Participants were expected to provide care as deemed appropriate by the scenario. Each scenario lasted 15 to 20 minutes. Short debriefings were conducted after each scenario. After the simulation training, nurses took a test of their ECMO knowledge and self-efficacy, and a respondent to a questionnaire to obtain feedback on the training overall. The postassessment tools were the same as the preassessment tools. **Evaluation/Outcome:** All 20 nurses completed the trainings and surveys. Knowledge and self-efficacy significantly improved ($P < .05$ for both). Pretraining scores on the knowledge examination averaged 70%. Posttraining knowledge examination scores averaged 85%. Self-efficacy scores improved on each item of the survey after training. The oxygenator failure versus lung injury scenario was the most challenging for the nurses to troubleshoot in the simulation laboratory. At the end of the training, 100% of nurses who participated recommended the course for future ECMO education on the unit.

**EB5: Honor Guard: A Multidisciplinary Ritual to Honor Patients and Families Who Choose Organ Donation**

Virginia Wood; UC Davis Health System, Sacramento, CA

**Purpose:** How do we honor families and patients who make the decision to save a stranger’s life through organ donation? Similar to the respect given to police officers, military personnel, and firefighters who die in the line of duty, the Honor Guard Ritual honors patients and family who make the ultimate selfless decision in choosing organ donation. Although the circumstance of a patient’s death cannot be changed, the empowerment of nurses and a sense of camaraderie can positively affect staff and family. **Summary:** Pediatric intensive care unit (ICU) nurses often care for families of dying children and help families grieve the loss or anticipated loss of their child. These are emotionally challenging situations nurses frequently face and may be a contributing factor to the high rate of moral distress in the ICU.

According to some studies, as many as 50% of health care providers experience moral distress. The Honor Guard Ritual represents a visual moment of silence and entails all members of hospital staff lining the hallway to stand as one to honor the patient and family as they exit the ICU on their way to the operating room for organ donation. The implementation of the Honor Guard Ritual allows staff to mourn, as nurses and human beings, in a safe and accepting environment, while honoring the life that has passed and the selfless decision that has been made by the family. The Honor Guard Ritual was implemented in October 2016 in the pediatric ICU of a large tertiary care academic facility, with approximately 9 donation patients at the time of the study implementation. A survey was conducted of staff ICU nurses regarding end-of-life tools. **Evaluation/Outcome:** In the survey, the Honor Guard was the highest rated resource, with 90% of staff reporting “extremely satisfied.” The Honor Guard Ritual has been implemented in the pediatric ICU with minimal disruption of the everyday flow of the unit and has received positive feedback from staff and families. We hope to expand the Honor Guard Ritual to other ICUs in this institution and are in the process of ongoing nurse education. Given the positive response, implementation of a multidisciplinary team Honor Guard allows the commemoration of patients and families during end of life and has the potential to reduce staff burnout and moral distress of a unit.

**EB6: Nurse-Driven Initiative: The Implementation of Volume-Based Feedings in an Intensive Care Unit**

Marlene Porter, Harper Neal, Margaret Guest, Michelle Travnicek; Baylor Scott and White Memorial Hospital, Temple, TX

**Purpose:** Monitoring of critical care patients fed enterally at Baylor Scott and White Medical Center – Temple revealed patients were receiving 65% of their minimal caloric goals. A quality improvement initiative
was implemented at our facility to improve nutrition in critical care patients. **Summary:** A review of the literature was conducted to investigate feeding protocols that could improve nutrition in critical care patients. Volume-based feeding (VBF) was identified as an effective method of improving the percentage of nutrition received by a patient. A comparison was made between the standard rate-based feeding protocol and VBF. Two protocols identified in the literature, PEPuP (Enhanced Protein-Energy Provision via the Enteral Route in Critically Ill Patients) and FEED ME (Feed Early Enteral Diet Adequately for Maximum Effect), demonstrated the benefits of VBF and nursing autonomy to increase feeding rates to reach feeding goals. The registered dietitian and clinical nurse educator collaborated to educate the interdisciplinary team during October 2017. A poster was created for the break room, tip sheets were created for daily huddles, and self-directed slide presentation modules were designed to educate 79 registered nurses in the 23-bed surgical trauma intensive care unit (STICU). The registered dietitian, with the support of the medical director of the ICU, educated the residents who rotate through the STICU monthly at the 644-bed teaching hospital. The VBF pilot program went live November 6, 2017, in the STICU. **Evaluation/Outcome:** Data on the total volume and minimal caloric and protein needs of patients were collected in the STICU from November 2017 to January 2018. According to the data, patients were receiving 89% of their minimal caloric needs. This was an improvement from 65%, before the new protocol was implemented. In addition, the mortality rate is 10%, whereas the predicted mortality rate is 22%, and no hospital-acquired pressure injuries have occurred in patients receiving VBF. Plans are to implement the VBF initiative in the medical ICU and cardiothoracic ICU and, potentially, the whole 49-hospital system.

**EB7: Implementing an Alarm Management Program in the Intensive Care Unit**
Ashley Caviness, Merri Morgan, Myleen Rosales; Sentara Princess Anne Hospital, Virginia Beach, VA

**Purpose:** Alarm fatigue has resulted in prolonged hospital stays, permanent patient disability, and death. Patients in the intensive care unit (ICU) can be subjected to 150 to 400 alarms per day, and nurses spend 35% of their time responding to nuisance alarms. The alarm management project goal was to create a safer ICU environment by changing the culture through improving nurses’ perception of alarm fatigue, decreasing nurses’ response times to true critical emergencies, and improving nurses’ knowledge of basic lethal arrhythmias. **Summary:** Evidence-based literature and current guidelines highlight the importance of implementing a plan to reduce alarm fatigue and improve patient care. An alarm management education session was developed on the basis of the American Association of Critical-Care Nurses (AACN) alarm management guidelines. All ICU nurses were required to take the alarm management classes, which included reviewing interventions to positively influence the culture on the unit and a basic arrhythmia review. After completion of the class, the AACN alarm management guidelines were implemented at the bedside. A daily report identifying each patient’s biophysical alarms was collected during the pre- and postimplementation periods. The Healthcare Technology Foundation Clinical Alarms Survey was given to all ICU registered nurses before and after implementing the guidelines to determine the nurses’ perception of alarm fatigue. The nurses completed a preeducation basic arrhythmia test and a 30-day knowledge sustainment follow-up basic arrhythmia posttest. All data were analyzed using SPSS, version 24, and descriptive statistics, independent t tests, and paired-samples t tests were performed. Data are reported as mean (SD). **Evaluation/Outcome:** A 17.1% decrease in biophysical alarms occurred after implementing the guidelines. There was a significant difference in the number of preimplementation yellow arrhythmia alarms (368.7 [273.7]) and postimplementation yellow arrhythmia alarms (221.8 [87.5]; \( t_{57} = 2.72; P = .009 \)). The mean basic arrhythmia test score before implementing the guidelines was 73.8 (11.67) and was 94.5 (7.18) 30 days after implementing the guidelines. There was a significant score increase between the pretest and the posttest (\( t_{38} = -13.61; P < .001 \)). Most of the nurses (95%) feel the program improved their response times to true emergencies. Findings suggest there was a positive impact on patient safety with an overall decrease in patient alarms and an increase in nurses’ understanding of basic arrhythmias.

**EB8: Can a Busy Surgical Intensive Care Unit Become a Restraint-Free Environment?**
Constance Rickelmann; University of Michigan Medical Center, Ann Arbor, MI
**Purpose:** In this study, the ability of a high-acuity surgical intensive care unit (SICU) to safely reduce use of restraints through education, environmental design, sufficient staffing, and a patient-centric approach was examined. **Summary:** In February 2014, the SICU’s unit-based committee (UBC) created a subgroup to find ways to decrease the use of restraints. According to findings in a literature review, restraints did not keep patients safe. Indeed, they often aggravated the delirium. To address the needed change in practice, the UBC developed the following protocol to educate nurses on delirium and alternatives to restraints: (1) assess patient for causes of delirium; (2) initiate a nursing consultation to help assess causes of delirium (e.g., pain, awkward positioning, lighting, presence of family, medications, electrolyte abnormalities); and (3) implement interventions such as pain management, repositioning the patient, environmental changes, engaging family members through presence, providing one-to-one nursing care, and using a sitter. If these measures were insufficient, nursing staff would call on the SICU leadership (e.g., clinical nurse specialist [CNS] or supervisor) to brainstorm other ideas to keep the patient safe and reduce use of restraints. Staff were educated about the new process and data were collected via the computerized documentation system. The SICU implemented the new protocol in late June 2014. Restraint-related rounding was done by the unit charge nurses and the CNS. Nursing leadership reinforced education and expectations. **Evaluation/Outcome:** During the preintervention period (May and June 2014), the SICU’s restraint use rate averaged 111 restraint-days per 1000 patient-days. During the postintervention study period (August 2014 to March 2015), the SICU’s restraint use rate averaged 42.9 restraint-days per 1000 patient-days. This initial work resulted in a 61.4% reduction in the use of restraints. In 2017 and 2018, restraint use was reduced by another 30%. Rates of unplanned catheter pulls and extubations did not increase. These study results demonstrate that with a culture change, it is possible to safely reduce restraint use in an SICU.

**EB9: Improving Sepsis Bundle Compliance and Associated Mortality Rate**

Ann Skilton; Mease Dunedin Hospital, Dunedin, FL

**Purpose:** In the United States, sepsis affects more than 1.7 million people and approximately 270,000 die of sepsis each year. A lower sepsis-related mortality rate is observed in hospitals that have a higher rate of bundle compliance. In 2017, ongoing sepsis education, monthly review of sepsis case studies, and increased collaboration between nursing and nonnursing departments were implemented at Mease Dunedin Hospital to increase bundle compliance and, in turn, decrease sepsis-related mortality. **Summary:** Baseline data from the first quarter of 2017 revealed a 50% bundle compliance and a mortality rate of 10.4%. The objective was to increase early sepsis bundle compliance to 65% and decrease sepsis-related mortality to less than 10% by the first quarter of 2018. In July 2017, an ongoing competency that included mandatory sepsis education was developed for the critical care, telemetry, and medical units. Sepsis education focused on early recognition, initiation, and timeliness of implementation of the sepsis bundle, and review of screening tools in the electronic medical record. All nursing units reviewed sepsis fallouts with individuals involved. Case studies were developed on the basis of the fallouts specific to each unit and presented at quarterly team meetings. At the quarterly hospital-wide meetings (nursing and nonnursing personnel), sepsis outcome data were reviewed. Team members on the medical and telemetry floors were educated to call a rapid response when a sepsis alert appeared on the chart. **Evaluation/Outcome:** Upon completion of the sepsis education and process revision, bundle compliance improved to 67% and the sepsis-related mortality rate decreased to 9.2% in the first quarter of 2018. The improvement is attributed to focused, ongoing education, which included unit-specific case studies reviewed by all team members. The change in process of notifying the rapid response team for all sepsis alerts assisted in early recognition and the timeliness of bundle implementation. Hospital-wide team meetings, which included nursing and nonnursing personnel, improved communication and collaboration between departments but was not measured formally.

**EB10: An Intervention to Prevent Heparin Drip Errors**

Patricia Rosier, Michelle Dupont; Berkshire Health System, Pittsfield, MA

**Purpose:** In response to a nurse survey concerning the adequacy of communication during bedside handoff regarding heparin drips, an improvement project was initiated to bridge gaps in nurses’ knowledge, process,
Improving Patient Care and Work Culture
Heather Pena, Kelly Kester; Duke University Hospital, Durham, NC

Purpose: Many hospitals are challenged with nurse retention; therefore, new graduate nurses are being employed in intensive care units (ICUs) more frequently. In this report, successful strategies are described that are used in the ICU to onboard a large percentage of new graduate nurses while simultaneously improving patient outcomes and work culture. These strategies include best practices for hiring, collaboration with the current work force to enhance patient outcomes and the work environment, and development of a successful onboarding program. Summary: Retaining qualified nurses is a challenge for ICUs. The former model of nurses obtaining experience on medical-surgical floors before working in an ICU setting is no longer an effective strategy. In 2015, the turnover in the Duke University Hospital cardiothoracic ICU (CTICU) was 40.6% and retaining experienced nurses was a struggle. A decline in experienced applicants led to the development of a model of hiring new graduates that uses behavioral-based interviewing to obtain the best fit for the unit. Bringing in many new graduates to a high-acuity environment would require additional support, which led to collaboration with the clinical education and professional development team to develop and implement a new 12-week onboarding program. Preceptor education, weekly milestones for the orientee to achieve, and enhanced didactic learning that did not interfere with time at the bedside were important components of the redesigned plan. The tools used for orientation assisted the leadership team in early identification of learning opportunities and provided objective methods to create individualized learning plans. In addition, a unit-based committee was formed to implement the American Association of Critical-Care Nurses Healthy Work Environment standards. Evaluation/Outcome: Between 2015 and 2017, the CTICU turnover decreased by 17.1%. The collaboration among nurse recruitment, leadership, and the education department was vital to the success of improving hiring strategies and implementing a successful onboarding program. During this time, unit retention increased, on average, by 200 days per nurse, the catheter-associated urinary tract infection rate decreased by 64%, and the rate of avoidable pressure ulcers decreased by 25%.
EB12: 30 Minutes or Less: Closing the Gap Between Blood Glucose Check and Insulin Administration
Magally Rolen, Betsy Richter-Gifford; Texas Health Resources, Arlington, TX

**Purpose:** Insulin is a high-risk medication with potential for serious harm or death. According to the Institute for Safe Medication Practices (ISMP), insulin should be given within 30 minutes of blood glucose (BG) check. Meeting this standard is a national problem. The Texas Health Resources cardiac intermediate care unit was not consistently meeting the 30-minute standard. The purpose of this project was to decrease the time interval between BG check and insulin administration.

**Summary:** Patients are educated on administering insulin to themselves after BG check, which might take up to 5 minutes at home, but this practice changes for no reason when patients are in the hospital. To close the gap between BG check and insulin administration for patients in the cardiac intermediate care unit, random chart audits were performed to compare how close the unit was to meeting the ISMP recommendations. The following were found: BG checks were done at inconsistent times, insulin was being administered between 1 and 2 hours after BG checks, and the staff was unaware of the ISMP recommendations. To improve unit practice, an algorithm was created of new processes with revised and set times for BG checks. Staff was educated on evidence for change, the recommended practice guideline of administering insulin within 30 minutes of BG check, and new processes. Communication between staff was vital, especially during BG check and insulin administration. Using baseline and ongoing chart audits, consistent, frequent feedback was provided to staff, individually and as a group. **Evaluation/Outcome:** Preintervention data gathered from patients' chart audits from November 2017 and after the intervention during February to April 2018 revealed the following: (1) The rate of BG checks performed on time improved from 45% to 91.8%. The odds of BG checks being performed on time was 8 times higher after the intervention, based on the odds ratio. (2) The rate of insulin administration within the appropriate 30-minute window improved from 33.1% to 82%. The odds of insulin being given within 30 minutes was 9.2 times higher after the intervention. (3) Time from BG check to insulin administration improved from 52.29 to 19.72 minutes after the evidence-based project was implemented.

EB13: Our Certification Journey: 4 Steps in the Right Direction
Patricia Prause, Natalie Ball, Amelia Little; Medical University of South Carolina, Charleston, SC

**Purpose:** The pediatric intensive care unit (PICU) at the Medical University of South Carolina is committed to advancing the education and expertise of the nursing staff. Certification is a visible demonstration of commitment to excellence. Nursing leadership in the PICU needed to find a way to encourage and support the staff seeking certification. The development of a 4-step certification program was the proposed solution. **Summary:** The PICU nursing leadership developed a 4-step program, including (1) an onsite review course, (2) paid education days, (3) paying for the test upfront, and (4) a certification bonus. The PICU leadership looked at the barriers to certification. They recognized the scarcity of onsite review courses for the pediatric critical care registered nurse (CCRN) certification, which were available at major nursing conferences but not locally. Although self-study review courses were available, the cost for individual purchase was seen as a barrier. Time allotted for study was also identified as a barrier. An onsite review course and paid education days addressed those barriers. A senior staff nurse (CCRN-pediatric) took charge of the course and mentored the staff as they prepared to take the examination. One stipulation on the part of the nurse manager was any staff member taking the review course had to sign a contract agreeing to take the CCRN examination within 3 months. The course was offered to the staff in small groups several times per year. Paying for the test upfront also addressed financial barriers. The certification bonus was added incentive. **Evaluation/Outcome:** Offering this program motivated and encouraged many PICU nursing staff and addressed the barriers and challenges of achieving this specialty certification. Before implementing this program, only 4 nurses had taken and passed the CCRN examination, representing 10.8% of the nursing staff. The success of this program has been encouraging: since starting in December 2016, 14 nurses have taken the course and the overall pass rate is 85.7%, bringing the total number of certified nurses to 16 (43.2% of the staff). Interest in this program remains high. The goal is for 100% of eligible staff to be certified.

EB14: Standardizing Postoperative Handoff Communication via Checklist in the Surgical Intensive Care Unit
Marianne Banas, Jennifer Cone, Nicole Pierce, Kinga Skowron; University of Chicago Medical Center, Chicago, IL

**Purpose:** Improved handoff communication is a Joint Commission National Patient Safety Goal that went into effect in 2006. Handoffs from the operating room (OR) to the surgical intensive care unit (SICU) are especially prone to error because of the complexity of information surrounding a critically ill patient. The aim of this project was to develop and implement a postoperative handoff process for patients admitted from the OR to the SICU. **Summary:** A survey was sent to key multidisciplinary team members, including SICU physicians, surgeons, anesthesia providers, and bedside nurses, to assess current perceptions of the handoff process and assess areas for improvement. More than half of respondents (67.5%) felt a more standardized process was needed to improve patient safety. To meet this need, a postoperative handoff checklist was adapted to contain key information that needs to be presented by the operative, anesthesia, and SICU teams. The handoff process was implemented to communicate patient arrival and to ensure arrival of multidisciplinary team members at bedside for checklist-based report. During a month-long pilot, 38 adults were directly admitted to the SICU from the OR. The checklist was used for 100% of these admissions. To evaluate the effectiveness of the checklist, an electronic survey, with responses to 7 questions regarding efficiency and safety reported on a Likert scale, was sent to key stakeholders before and after the implementation. A total of 145 care team members responded to the preimplementation survey and 55 responded to the postimplementation survey. **Evaluation/Outcome:** Implementation of a standardized checklist for handoffs between OR and SICU improved multidisciplinary team communication. Compared with the previous handoff procedure, team members felt the new process enhanced collaboration and decision-making among the health care team ($P<.001$), provided all information needed to provide safe patient care ($P<.001$), and ensured care team agreement on a plan of care ($P<.001$). This postoperative handoff process implemented by a multidisciplinary team ensures successful handoff from the OR to SICU, enhances multidisciplinary team collaboration, and thereby improves patient outcomes.

**EB15: Healthy Preceptor Program Fosters a Healthy Work Environment**

Sheryl Brown; Northshore University Health System, Evanston, IL

**Purpose:** The enlarging knowledge base and complexities of technical skill required in a mixed intensive care unit for the care of patients with neurosurgical conditions, trauma, and advanced heart failure demand a sophisticated, well-structured orientation program to ensure the preparedness of new registered nurses (RNs) and the satisfaction of preceptors. In keeping with the healthy work environment goals of the American Association of Critical-Care Nurses, a preceptor program was developed, tested, and evaluated to address the problem of undermotivated and “burned out” RN preceptors. **Summary:** A root-cause analysis was conducted using the fishbone diagram model. A literature review identified various problems inherent within the nursing preceptor/orienteer teaching model and confirmed the findings of the fishbone diagram. The initial hypothesis rested on imbalance between workload and available reward systems. Primary data were collected with a staff survey ($n = 100$) and the initial hypothesis was tested and affirmed. Three alternative solutions were developed using the root-cause analysis, ideas gleaned from the literature review, and the primary data analysis. A final case solution was chosen, which included a unit-based recognition and reward program using a bulletin board with staff pictures, gift cards, and personal thank-you notes after precepting work, and an annual reward dinner sponsored by the leadership team. The manager met with the preceptor/oriентee teams weekly; preceptors were given preference for educational program attendance, and daily assignments were customized by preceptors, allowing for increased autonomy. After this effort, the organization developed a preceptor training program to enhance preceptor preparedness for the role. **Evaluation/Outcome:** A follow-up staff survey was conducted after a 2-year implementation period. Results demonstrated significant increase in preceptor perception that leadership was supportive, staff understood the increased orientation workload, and that preceptors received the proper respect and recognition for their work. The intensive care unit preceptor pool was increased by 67% over 2 years, resulting in decreased RN burnout. Orientees reported excellent orientation experiences and staff satisfaction rated very high on a subsequent employee engagement survey conducted by the hospital. In addition, as of this writing, the program has maintained momentum and effectiveness for 5 years.
Purpose: The American Association of Critical-Care Nurses identifies true collaboration and meaningful recognition as 2 of the standards for establishing and sustaining healthy work environments, which are linked to patient safety, team effectiveness, and patient outcomes. The purpose of the clinical ladder mentoring program is to increase the number of clinical ladder–designated registered nurses (RNs) in the respiratory care unit (RCU) and create supportive and encouraging work relationships between the RCU and coronary care unit (CCU). Summary: The purpose of the clinical-ladder mentoring initiative is to cultivate professional development and establish positive working relationships between 2 units that were merged in the same physical space under 1 leadership team within the critical care division. A preventive approach was adopted to establish a healthy work environment. The CCU/RCU leadership team collaborated to develop a plan to use the expertise of the CCU RNs to support and guide the RCU RNs to submit portfolios for clinical-ladder designation. Current clinical-ladder CCU RNs were approached to identify interest in mentoring. Huddles with RCU RNs were held to explain the personal and professional benefits of clinical-ladder designation, answer questions, and, ultimately, identify interest in participating. All supplies to create portfolios were provided. Time was allotted while at work to meet with a mentor for support and encouragement throughout the process of building portfolios. Each RCU RN’s progress was tracked with a checklist and portfolios were reviewed by CCU mentors before submission. Of 20 full-time RCU RNs, 16 met eligibility criteria to apply for the clinical ladder, and 14 RNs participated in the initiative from February 2017 to June 2018. Evaluation/Outcome: Respiratory care unit clinical-ladder designation increased from 0% to 87.5%. All RNs were successful on their first attempt, and 50% of RNs who received the clinical-ladder designation went on to obtain certification. Positive working relationships were established as evidenced by improved employee engagement scores. Last, patient satisfaction improved as evidenced by 8 of 9 domains on the Press Ganey survey exceeding stretch goals. The success of this program has positively influenced nursing practice in the CCU and RCU through empowerment, professional pride, increased clinical expertise, accountability, and instilling a culture of mentorship. The clinical-ladder mentoring initiative is now a standard part of our unit structure.

EB17: Shedding Some Ultraviolet Light on Shared Equipment: A Vancomycin-Resistant Enterococcus Transmission Reduction Strategy
Marian Racco; Hunterdon Medical Center, Flemington, NJ
Purpose: Vancomycin-resistant enterococcus (VRE) survives for prolonged periods in the environment, including on reusable, shared equipment. Environmental contamination is associated with VRE transmission to patients. In 2017, the Hunterdon Medical Center intensive care unit (ICU) began using the xenon ultraviolet (UV) light in terminal room cleaning. The rates of VRE infection remained high. The goal was to target reusable, shared equipment as sources of VRE transmission. In March 2018, this equipment was included in the UV-light portion of a terminal room cleaning. Summary: Vancomycin-resistant enterococcus can survive on dry surfaces for weeks to months, including the high-touch surfaces of reusable, shared equipment. Contaminated environmental surfaces and shared equipment play a role in VRE colonization transmission. Colonization of VRE predicts VRE bloodstream infection, which is associated with high rates of morbidity and mortality. The literature supports the need to prevent VRE transmission. In this center, terminal room-cleaning process has included wiping down all surfaces with a single-step disinfectant followed by 5 minutes of pulsed xenon UV light on each side of the bed. The VRE transmission rate remained high. The UV light disinfects touchable surfaces within a patient room, but what about the surfaces of our reusable, shared equipment? In March 2018, equipment, including stethoscopes, ultrasound machine, cardiac output monitor, and bladder scanner, were added to the terminal room cleaning procedure on Mondays and Thursdays. An additional 5-minute UV-light cycle was added to the room cleaning procedure on these days. The clinical coordinator or charge nurse ensured the exposure of equipment to UV light was completed and documented for data collection purposes. Evaluation/Outcome: The ICU staff was eager to see if biweekly UV-light exposure to high-use, shared equipment would reduce VRE transmissions, and buy-in was immediate.
Inclusion of equipment in the terminal cleaning of patient rooms on Monday and Thursdays was documented on a daily staffing sheet. On days when there were no discharges, the equipment was brought to an empty room and received 10 minutes of UV-light exposure. Compliance with the initiative was 100%. The VRE transmission rate in 2017, before this initiative, was 6.7%. As of July 2018, the VRE transmission rate was 2.9%, with only 2 VRE transmissions since March, the onset of the initiative. Monthly data collection is ongoing.

**EB18: Code Blue in the Postanesthesia Care Unit:**
**Improving Registered Nurse Competency and Confidence**

Ayumi Fielden, Laura Ortiz, Xavia Holmes; Houston Methodist Hospital Central, Houston, TX

**Purpose:** Patient acuity and surgical case volume have increased in an academic medical center postanesthesia care unit (PACU). According to published reports, phase I PACU time frames pose the greatest risk for cardiopulmonary arrest, requiring registered nurse (RN) competence in advanced cardiac life support (ACLS). The goal of this project was to create a program that increases RN competency and confidence levels in response to a Code Blue event for cardiopulmonary arrest. **Summary:** There was concern about PACU RNs’ lack of knowledge and confidence in managing Code Blue situations in the PACU. A gap analysis indicated a need for the development of an observational tool to evaluate PACU RNs’ performance during mock codes based on ACLS guidelines. Furthermore, supplemental education and practice are needed to help PACU RNs increase their confidence, knowledge, and skills, because Code Blue calls do not occur daily in the PACU. According to the literature, health care facilities need to create robust Code Blue refresher programs to bridge the gap between initial ACLS certification and recertifications, because the skills and knowledge of participants sharply decrease over time and between certifications. Monthly ACLS refresher workshops given over 3 months were developed in response to the gap analysis. Workshops addressing key ACLS aspects such as medication administration, basic life-support skills, mock Code Blue demonstrations by ACLS instructors, participation in in situ mock Code Blue drills, and teamwork were components of the ACLS workshops. Debriefing was also performed after each intervention; participants gathered, analyzed, and provided self-reflection regarding their experience. **Evaluation/Outcome:** A 46-item pre- and postintervention mock Code Blue performance evaluation and an 8-question pre- and postintervention Likert-scale confidence survey were used to measure the effectiveness of the program. The postevaluation for performance and confidence was completed a month after the workshops. PACU RN performance evaluation showed an increase in Code Blue competence from 33.4% to 92.2%. Nurse confidence increased from 4.16 to 4.34 on the Likert scale. Participants voiced high satisfaction with the program. The addition of a refresher ACLS program between ACLS recertification provides hands-on experience and retention of knowledge, resulting in improved patient outcomes.

**EB19: Creating an Organization-Specific De-Escalation Training**

Courtney Lykins; Pinnacle Health System, Harrisburg, PA

**Purpose:** Workplace violence within the health care setting has risen significantly over the past several years. Some health care organizations combat this statistic by offering an outsourced de-escalation training course for staff. Although organizations offer this training as an option, it is not specific to the health care setting. Feedback from Pinnacle Health System staff members who have attended a training of this type indicates that, although valuable, the training can be difficult to translate into practice. **Summary:** An organization-specific de-escalation course need was identified based on staff feedback along with an examination of employee injuries that occurred as a result of highly agitated patients and visitors. A literature search was performed in conjunction with an investigation into the patient population that is served within the organization. Together with this information, an organization-specific de-escalation course was created to train staff members for potential real-life situations that could be encountered every day related to the specific patient population. The de-escalation course uses a blended learning format that provides de-escalation techniques via a computer-based learning module. After completion of this learning module, staff members complete a hands-on, role-play course component that integrates various de-escalation, disengagement, and holding positions for the highly agitated patient or visitor. Staff members must demonstrate techniques safely, in a way that protects the staff member and the
highly agitated individual. The course is offered to all new nursing and nonlicensed health care staff at orientation. In addition, courses are offered to current licensed and nonlicensed personnel. **Evaluation/Outcome:** Before the course, there were 233 restricted days of work resulting from employee injury related to highly agitated patients from January to July 2017. This totaled $11,416.93 for the organization in health care–related costs and excludes the cost of employee hourly wage and time lost for the nursing unit. After implementation of the course, there were 86 restricted days resulting from employee injury in the period January to July 2018. Health care–related costs for these incidents totaled $9208.71. Qualitative feedback from the course has also been positive, as reflected in postcourse evaluations.

**EB20: Saving Lives: Transfer of Patients From the Emergency Department**

Albert Belaro; Kingsbrook Jewish Medical Center, Brooklyn, NY

**Purpose:** Decrease the time of patient transfer from the emergency department to the critical care unit in 30 minutes or less when a clean bed is assigned. **Summary:** As an evolving high-reliability organization, Kingsbrook Jewish Medical Center capitalized on this opportunity to use robust process improvement (RPI) methods in combination with change-management principles to support the goal of zero defects. We used Lean/Six Sigma methodology (specifically, Define, Measure, Analyze, Improve, and Control [DMAIC]) as 1 of the RPI methods to streamline the process of patient transfer by the inpatient critical care nursing team. The project began on April 5, 2018. A project charter was developed that outlined the following: (1) team roles and responsibilities, (2) in- and out-of-scope activities, (3) problem statement, (4) business case, and (5) timelines for each phase of the DMAIC process. A value flow map (current state and future state) deconstructing the start and end of the process was developed. Implementation of the future-state flow map began on April 9, 2018. **Evaluation/Outcome:** Statistical process control as a Six Sigma approach to measuring real significant improvement was used to measure minutes from assigned bed to occupied bed. Consecutive and single-point data analyses for special and common-cause variations were used. Root-cause analysis of frequently occurring causes of delays was performed and learning was used to further refine the future-state flow map. The mean wait time before project implementation was 120 minutes. At 9 months after implementing the project, the mean wait time has improved to 36 minutes.

**EB21: Engaging Sepsis Champions to Reduce Patient Mortality**

Lauren Gembala, Kelly Orlosky; Cleveland Clinic Fairview Hospital, Cleveland, OH

**Purpose:** To engage registered nurses (RNs) as sepsis champions to ensure patients with sepsis receive evidence-based quality care. The metrics of a sepsis-related mortality rate of 21.9% and SEP-1 core measure compliance of 28.6% in the first quarter of 2018 were identified as improvement opportunities. The correlation between SEP-1 compliance and patient mortality rates related to severe sepsis drove this initiative. By engaging RNs as sepsis champions, the goal is to increase SEP-1 compliance, resulting in improved patient outcomes. **Summary:** The Sepsis Champion Program was created by the quality coordinator for sepsis, an advanced practice registered nurse–clinical nurse specialist, emergency department (ED) RN educator, and nursing professional development specialist after planning meetings in March 2018. Five sessions were offered for ED and critical care unit RNs. Each 2-hour session included didactic, high-fidelity simulation with role playing, video, and the Kahoot! game to reinforce content. The simulation provided a safe space for RNs to execute a sepsis scenario common in their nursing units and for interprofessional team members’ roles in early sepsis care to be demonstrated. Each RN selected a card at random with their assigned role to play in the simulation. Simulation roles included a clinical RN, phlebotomist, respiratory therapist, and medication RN. An educator played the role of the resident directing the mannequin’s simulated care. The simulation promoted the recognition of each team member’s contribution to the overall care of the patient. The sepsis champions were then responsible for educating their peers about SEP-1 bundle components, locating the electronic sepsis bundle tool, using the paper sepsis tracker tool, and initiating the ED sepsis alert process. **Evaluation/Outcome:** Mortality and SEP-1 compliance rates were measured to determine outcomes of sepsis champion engagement. After the initiatives, SEP-1 compliance in the second quarter of 2018 increased to 59.6% from 28.6%, with a correlation in sepsis mortality rate...
decreasing to 9.8% from 21.9%. Interest and engagement spread from the champions to the RNs in the critical care units through a train-the-trainer format. The ED sepsis alert was used to increase communication through notification of the teams more than 70 times during initial implementation. Hospital-wide interest in the Sepsis Champion Program has triggered the adaptation of the content for the medical-surgical nursing units beginning in the third quarter of 2018.

**EB22: Critical Care Concepts in the Postanesthesia Care Unit: Increasing Confidence and Critical Care Knowledge Outside the Intensive Care Unit**

Ayumi Fielden, Laura Ortiz, Holly Rodriguez; Houston Methodist Hospital Central, Houston, TX

**Purpose:** Postanesthesia care units (PACUs) are often used as a holding unit for patients in the intensive care unit (ICU) who require invasive monitoring and airway, breathing, and circulation support. The need for additional critical care training was evident when PACU registered nurses (RNs) voiced generalized lack of confidence in caring for ICU-level patients. The goal of this project was to create a program that increases critical care knowledge and confidence levels in PACU RNs. **Summary:** The PACU at an academic medical center has seen an increase in patient acuity and complexity, and surgery case volume. The importance of PACU RN competency in critical care skills is increasing because the lack of ICU bed space necessitates ICU-level patients to be cared for in the PACU for an extended time. There was concern about the PACU RNs’ lack of knowledge about and confidence in care of ICU-level patients. Simulation can enhance adult learning in a complex health care setting. A program was developed to enhance RNs’ critical care knowledge and skill, and their confidence in clinical ability. The curriculum includes various topics, including assessment of deteriorating patients, critical care device management, hemodynamics, interpretation of acid-base balance, ventilator management, and postsurgical complication management to address fundamentals and advanced concepts of critical care and perianesthesia nursing. The program was offered every other month over a total of 4 days. Didactic content was repeated in high-fidelity simulation to enhance learning. Debriefing was also performed after each simulation, and participants provided self-reflection regarding their experience. **Evaluation/Outcome:** A 50-question pre- and postintervention critical care knowledge test and a 13-question pre- and postintervention Likert-scale confidence survey were used to measure the effectiveness of the program. Scores on critical care knowledge tests increased from 45.8% to 74.6%. Confidence of RNs increased from 2.83 to 3.99 on the 1 to 5 Likert scale. Participants voiced high satisfaction with the program. A critical care program that consists of didactic and high-fidelity simulation provides knowledge and hands-on experience, resulting in increased RN confidence, knowledge, and competence.

**EB23: Rising to Meet a Device Challenge: Decreasing Intensive Care Unit Central Catheter Use Rates**

Kathryn Miller, Phillip Godak; Geisinger Community Medical Center, Scranton, PA

**Purpose:** The intent of this project was to decrease unnecessary central catheter use within an 18-bed combined cardiac/medical-surgical intensive care unit (ICU). Decreasing use of central catheters that no longer meet use criteria greatly decreases the risk for central line-associated bloodstream infections (CLABSI). Once criteria are no longer met for need of the central catheter, appropriate medical staff move forward to gain peripheral access and discontinue using the central catheter. **Summary:** Central catheter use rates at Geisinger Community Medical Center ICU were higher than in the rest of Geisinger Health System. The operations manager, working directly with the ICU nurses, developed a plan that includes continuous assessment and evaluation of the necessity of each ICU central catheter by the resource intensive care (RIC) RN and the nurse leaders. The RIC RN or nurse leaders examine the ICU census for patients working directly with the ICU nurses, developed a plan that includes continuous assessment and evaluation of the necessity of each ICU central catheter by the resource intensive care (RIC) RN and the nurse leaders. The RIC RN or nurse leader discusses their findings with the bedside nurse to evaluate if central catheter use is truly indicated. The approved indications for central catheters include inadequate peripheral venous access, administration of vasopressors, hemodynamic monitoring, extracorporeal therapies, and transvenous cardiac pacing. The importance of decreasing central catheter use lies with the risk of potentially developing a CLABSI. The best way to prevent a CLABSI is by not using a central catheter. But when central catheter use is necessary, constant assessment is used to determine the earliest removal time to limit CLABSI. Early recognition and
evaluation aids reaching the goal of lower central catheter use rate. **Evaluation/Outcome:** The outcome of this project was remarkably positive. The rate for evaluation is defined as the number of device days divided by the number of patient days and can be observed as a percentage. After implementation of the plan, central catheter rates decreased from a peak of 54% in December 2017 to 31% in July 2018, which is a 23% decrease. The plan outcome data for July 2018 allowed us to celebrate a rate of 11% below the 2012 National Healthcare Safety Network data. We are striving to improve the processes used to assess and evaluate the presence and necessity of central catheters. The ICU is attempting to use the electronic health record (EHR) to more efficiently assess central catheter presence at a glance. After the assessment, the EHR is used to easily determine if central catheter criteria are being met.

**EB24: Safety Mittens: A Restraint-Reduction Initiative**
Federica Falomo; Hunterdon Medical Center, Flemington, NJ

**Purpose:** The purpose of this initiative is to reduce the use of restraints in the intensive care unit (ICU) patient population. The use of unrestrained, safety mittens was evaluated to replace the soft wrist restraints. The forced immobility caused by the use of restraints is associated with negative patient outcome, both physiological and psychological. Safety mittens allow the patient to retain full range of motion while reducing the likelihood of accidental removal of medical equipment by the patient. **Summary:** The ICU exposes patients to a frightening and unfamiliar environment. Pain, immobility, and medication adverse effects can lead to delirium, as well as the use of restraints, which further compromise the patient’s coping mechanisms and, consequently, increased morbidity and mortality. Mechanical restraints are used to limit the patient’s mobility and ability to remove medical equipment necessary for treatment. On August 1, 2017, the use of unrestrained, double-padded, fenestrated mittens were introduced in the Hunterdon Medical Center ICU as restraint alternatives. These are considered safety devices because they allow for full range of motion while curtailing the accidental removal of lifesaving equipment. The author shared her experience with the introduction of these safety devices and, after an appropriate evidence review, a trial was initiated in the ICU. There was an immediate reduction in restraint use of more than 80% between the second and third quarters of 2017, per the National Database of Nursing Quality Indicators (NDNQI) report. There was no increase in adverse incidents. Over the following year, the safety mittens were introduced to all the hospital units and the emergency department. The result was duplicated throughout the hospital. **Evaluation/Outcome:** Since the introduction of the safety mittens, Hunterdon Medical Center has seen a significant reduction in the number and duration of nonviolent restraints to a level below the national average per NDNQI survey results. In the year before the introduction of the safety mittens, the use of restraints in the ICU was consistently above the 90th national percentile. After the introduction of the safety mittens, use consistently remained below the national mean and even the 10th percentile. No increase in occurrence of self-extubation or removal of other medical equipment was reported. The rest of the hospital units have experienced comparable improvement.

**EB25: Quiet Room for Nurses: Can It Decrease Nurse Burnout?**
Amy Hu; John Muir Medical Center, Concord, CA

**Purpose:** There has been growing attention on burnout in the nursing profession. A 2016 article published by the Critical Care Societies Collaborative announced a call to action for organizations to support interventions to address nursing burnout. As nurse burnout increases, so do health care–associated infections, patient mortality rates, and hospital costs. Nursing turnover alone costs hospitals an average of $5.2 to $8.1 million annually. **Summary:** No single intervention can erase burnout, but researchers have proposed that interventions should focus on enhancing the nursing environment or help nurses cope with their environment. On the basis of research, a quiet room was created where nurses can go to relax and get away from the stress of a busy cardiovascular intensive care unit and progressive care unit. All elements of the room were based on evidence-based practice. The colors on the walls of the room, as well as inclusion of a massage chair and an aromatherapy diffuser, were chosen because research shows these elements decrease stress and facilitate relaxation. Success of the quiet room was assessed using the Professional Quality of Life Survey (ProQOL), a reliable and validated tool used in research. The ProQOL measures 3 areas:
compassion satisfaction, burnout, and secondary stress. A preintervention survey was administered in April 2018. The quiet room was launched during Nurse’s Week in May 2018. Postintervention ProQOL surveys were sent in 4-week increments in June, July, and August 2018. **Evaluation/Outcome:** There was an increase in compassion satisfaction and decrease in burnout and secondary stress, according to the June 2018 survey results, compared with preintervention scores in April 2018. Because of high census in July and August 2018, scores for compassion satisfaction decreased to below baseline in July and returned to baseline in August. According to the survey results for July and August, burnout and secondary stress remained below or returned to baseline in those months. Individuals who reported that they did not use the quiet room had lower scores in compassion satisfaction and higher scores in the areas of burnout and secondary stress compared with those who used the room. There was an inverse relationship between quiet room use and ProQOL scores.

**EB26: Implementation and Evaluation of a Critical Care Nurse Fellowship Program**
Jessica Strickler, Candie Jones; Nebraska Medicine, Omaha, NE

**Purpose:** The purpose of this project was to design and implement a formalized Critical Care Nurse Fellowship Program at a tertiary academic medical center to provide educational opportunities (1) to improve novice nurses’ critical thinking, (2) increase preparedness in caring for critical patients, and (3) improve retention and turnover rates in the intensive care unit (ICU). Data were collected before, during, and 1 year after fellowship initiation to evaluate program outcomes. **Summary:** Novice nurses require additional support and education to improve understanding of critical concepts. At Nebraska Medicine, the need for formalized education for all new ICU nurses was driven by a rapid hiring of new graduate nurses directly to the ICU, a lack of established educational offerings specifically for new nurses, and clear deficiencies in preceptor expertise. Before creating course content, a needs assessment was completed by ICU nurses with less than 1 year of experience. Then, guided by Benner’s stages of clinical competence, a group of ICU educators developed 5 multimodal, interactive educational courses. Content pertaining to critical assessments, bedside procedures, emergencies, shock states, ICU equipment, and nurse resiliency was presented in a combination of didactic lectures, kinesthetic demonstrations, and interactive simulations. Courses were offered every 2 weeks. Clinical knowledge was assessed by tests completed before and after each course. All participants were given course evaluations that included 11 questions scored on a 5-point Likert scale (1, strongly disagree; 5, strongly agree) assessing topics like teaching strategies, presentation quality, and applicability to bedside practice. **Evaluation/Outcome:** Over 1 year, 66 nurses completed the program. Test results from all courses were summarized (pretest mean [SD], 46.3 [17.7]; posttest mean [SD], 84.1 [12.9]) and compared using a Wilcoxon signed rank test, which indicated that posttest scores were statistically significantly higher than pretest scores ($Z=14.18; P<.001$). Approximately 50% of participants completed the 11-question course evaluations. The average item score was 4.4 of 5, signifying nurses felt content was beneficial and applicable to practice. Additional qualitative responses indicated that nurses felt confident coming off orientation and adequately prepared to care for critical patients.

**EB27: Using the Modified Early Warning System to Enhance the Recognition of Failure to Rescue Sooner**
Linda Woloschek-Greenberg; Mid-State Technical College, Wisconsin Rapids, WI

**Purpose:** The goal of the pilot project was to observe a decrease in failure to rescue (FTR) associated with the implementation of a modified early warning score (MEWS). It was recognized during monthly chart reviews that rapid response teams (RRTs) were not consistently being activated in a timely manner, and patients’ clinical conditions subsequently further deteriorated into a respiratory or cardiac arrest. **Summary:** The setting for the pilot project was a 300-bed, regional adult and pediatric level II trauma center, specifically on 2 adult medical-surgical floors involving the implementation of MEWS. Components of MEWS included temperature, heart rate, respiratory rate, systolic blood pressure, and level of consciousness. Research on improvement for the RRT revealed MEWS enhanced the recognition of the RRT sooner with use of the call-out algorithm for MEWS. The call-out algorithm provided the nurses with a guideline for the interventions according to the MEWS. Patients with a MEWS score greater than 6 would be best served by activation of the RRT and notifying the
EB28: Increasing Delirium Scoring of Patients in the Intensive Care Unit

Bethany Hiriak; Christiana Care Health System, Newark, DE

Purpose: The overall purpose of this project was to increase the knowledge of surgical intensive care unit (ICU) bedside nurses regarding the Intensive Care Delirium Screening Checklist (ICDSC) scoring tool over 2 months and observe a 5% decrease in instances of “unable to assess” delirium scores for patients in the surgical ICU by implementing face-to-face education with each staff member on how to correctly score patients. Summary: Screening patients in the ICU for delirium using a valid, reliable, and feasible delirium assessment tool is essential for nurses to identify, manage, and treat delirium. In the ICU, delirium is associated with prolonged use of mechanical ventilatory support, extended ICU and hospital stays, and increased costs. In addition, the Intensive Care Society recommends daily screening for ICU delirium, using a validated screening tool. Baseline data collected in the surgical ICU at Christiana Care Health System over 3 months revealed that 46.6% of patients in the surgical ICU were not receiving daily ICDSC scores. To diagnose and treat delirium in the ICU, delirium must first be identified by using a standardized delirium scoring tool. Data analysis and verbal discussion with bedside nurses revealed a knowledge gap on how to score the ICDSC, especially for intubated patients; nurses choose the “unable to assess” option on the ICDSC instead of using the tool to identify and treat delirium. Strategies included face-to-face education over 2 months (from November through December 2018) with each bedside nurse on how to correctly score the ICDSC. Evaluation/Outcome: Data analysis over 3 months before initiating education revealed that 46.6% of patients in the surgical ICU were not being scored daily according to the ICDSC. Postintervention data analysis over 6 months revealed a significant 23.06% decrease in patients not being assessed daily for ICDSC scores. Results indicate that after ICDSC interventions, there was a 23.54% increase in patients were assessed daily to determine delirium scores. The goal of achieving a 5% decrease in “unable to assess” ICDSC scores was achieved and exceeded; the total percentage of patients not scored for delirium decreased by 23.54%, which is an overall 49% decrease from the previous rate of 46.6%—4 times the original goal.

EB29: Preventing Unplanned Extubations: Interpreting the Data

Jessica Riley, Saint Francis Healthcare, Cape Girardeau, MO

Purpose: Saint Francis Medical Center (SFMC) observed a higher-than-expected unplanned extubation rate in adult intensive care units (ICUs) from January 2016 to May 2016. In those 5 months, the combined adult ICUs had 11 unplanned extubations in 1079 ventilator-days, for an unplanned extubation rate of 1.02% (calculated as the number of unplanned extubations divided by the number of ventilator-days, and that quotient multiplied by 100). The goal for this project was to implement evidence-based solutions to achieve a top decile benchmarking in unplanned extubation rate. Summary: A literature review was conducted first to identify risk factors for unplanned extubations. Then, an in-depth chart review was conducted of patients who had an unplanned extubation from 2013 to 2016 (n = 40). In an internal unplanned extubation review, 7 common risk factors were found that were supported in the literature and 3 risk factors not found in the literature. The first intervention for this project was to develop an interdisciplinary team to review collected data and plan health care team interventions. It was discovered that unplanned extubations had no clear “owner” and it was
decided that nursing and respiratory therapy (RT) staff should co-own these events. A real-time debriefing tool was developed for the nurse and RT to collect data. Other interventions were based on literature and internal chart review findings. These included improving education of new ICU nurses regarding pain and sedation management; a “medicate then sedate” slogan to remind staff to treat pain before increasing sedation; annual staff education on sedation and unplanned extubation risk factors; implementing continuous monitoring of end-tidal carbon dioxide for all intubated patients, including during transport; and working with the health care team on sedation management and aggressive planned extubations. **Evaluation/Outcome:** The goal of this project was to achieve the top decile rate of unplanned extubations. An assumption of this project was that this top decile rate would be easy to find; however, this was not the case. Unplanned extubations are not required reportable events; therefore, it is difficult to obtain benchmarking data. However, the best-in-class rate per literature review was documented as 0.3%. After implementing the evidence-based solutions, SFMC adult ICUs experienced an all-time low unplanned extubation rate of 0.29% for calendar year 2017, and a rate of 0.28% for the first 6 months of 2018.

**EB30: Innovations in Throughput**

Jay Brownson, Maria Miralles, Trevor Ahrendt, Kristen Kalisz; Renown Regional Medical Center, Reno, NV

**Purpose:** As the community continues to grow, Renown Regional Medical Center (RRMC) has also seen an increase in patient census. In turn, emergency department wait times are longer and there is a lack of inpatient beds. Historically, RRMC has had a peak discharge time of 2 PM and an average length of stay (LOS) of 3.7 days. The goal for this project was to change the peak discharge time to 10 AM or earlier and to decrease LOS, thus helping with throughput in the hospital. **Summary:** For this project, an aim was to identify patients who could be discharged the next day and expedite their discharge process. Staff focused on the benefits of early discharge and early discharge planning for patients admitted to an acute care setting. A “10×10” process was implemented, which is an interdisciplinary approach to patient discharge that allows nursing, physicians, pharmacy staff, and social workers to work together to discharge 10 patients successfully by 10 AM. Together, the team evaluates what is necessary to help make the patient successful outside of the hospital. The team then works diligently to meet the needs of the patient so their family members can pick them up before 10 AM. This project put the patients and their needs at the forefront of their discharge planning by involving them and their family members. **Evaluation/Outcome:** Success for this project was measured through manual tracking of discharge times. The trial took place on two 58-bed telemetry units. Discharge times and barriers were documented and evaluated. Throughout the duration of this project, 31% of patients who were identified as a “10×10” were discharged before 10 AM and 62% were discharged by 12 PM. There also was a decrease in LOS on the units by 0.45 days and by 0.19 days within the first month of the trial on the 2 units. The decreased LOS equates to an estimated $1 million saved for every 10% decrease in LOS. On the basis of the trial results, RRMC initiated a hospital-wide roll out of the “10×10” process.

**EB31: Multidisciplinary Team Huddles Reduce Ventilator Times to Less Than 6 Hours for Cardiac Surgical Patients**

Cynthia Copeland, Lauren Dyer, Ashley Lancaster, Jason White, Elaine Thomas-Horton; Barnes Jewish Hospital, St Louis, MO

**Purpose:** Reducing ventilator times for cardiac surgical patients to 6 hours or less is a nurse-sensitive indicator for quality improvement. A multidisciplinary team implemented guidelines to fast-track patients undergoing open-heart surgery to earlier extubation. By reducing intubation times for identified patients, the aim was to limit postsurgical complications, reduce length of stay, promote earlier mobilization, and reduce risk of ventilator-associated pneumonia. **Summary:** The Ventilator Management Taskforce conferred with a performance improvement specialist, cardiac thoracic surgeon, intensivist, clinical nurse specialist, respiratory therapists, electronic intensive care unit (eICU) staff, and registered nurses from our leadership team. The taskforce identified key drivers of performance: increasing awareness and understanding importance of meeting the 6-hour goals and 24-hour extubation deadlines, and shifting mindsets to perform extubations regardless of time of day. A “green sheet” fast-track identification system was created. A green sheet on a patient’s door alerts the care team to the deadline extubation time. A huddle
conducted every 4 hours was added to cardiothoracic intensive care unit (CTICU) patient care workflow. During the huddles, which are initiated by the eICU, extubation plans are discussed with bedside nurses, the charge nurse, and other care providers. The eICU provides extubation reminders at 6-, 12-, 18-, and 22-hour intervals to the charge nurse. Notifications can be elevated to the fellow or attending physician caring for the patient. Evaluation/Outcome: A significant amount of improvement has been seen over the last 8 months. Overall median initial ventilation hours have been reduced, with fewer patients missing the 6-hour goal and even fewer missing the 24-hour goal. Incidence of prolonged ventilatory support (>24 hours) associated with coronary artery bypass grafting was 78% lower in 2018 compared with the same period in 2017 (5 vs 23 patients, respectively). A statistically significant mean reduction of 11.1 hours was observed ($P < .00$) between July 2013 through 2017 and January through June 2018 (22.4 vs 11.3 hours, respectively). This work has also been incorporated into the CTICU daily improvement process and nursing shift huddles. The task force is confident that the process is organized for ongoing success.

**EB32: Our Voice, Our Strength: Improving Early Extubation Times in Cardiac Surgery Patients**

Lorena Tilton, Zenaida Carbon, Mary Draper; John Muir Medical Center, Concord, CA

**Purpose:** The Cardiovascular Surgery Performance Improvement Committee evaluates clinical practices to improve outcomes for cardiac surgery patients. The interprofessional team composed of physicians, clinical nurses, nurse leaders, respiratory therapists, and the quality management team focused their efforts on practice changes that would enable extubation within 3 hours after surgery, a more aggressive goal than the 6-hour standard set by the Society of Thoracic Surgeons.

**Summary:** Endotracheal intubation and mechanical ventilation are required treatment modalities during major surgical procedures and must be maintained in the early postoperative period until the patient can support their own respiration. Although intubation and mechanical ventilation are essential forms of treatment, they pose risk for iatrogenic complications such as ventilator-associated infection, barotrauma, and discomfort. The goal set by the interdisciplinary team required a 2-phase approach. Initial interventions included extubation-time tracking by staff, education of staff about practice changes to facilitate the new extubation goal, and communication with the physicians and respiratory therapists to identify causes of outliers. Discussion among team members helped them identify the availability of extubation equipment as a factor in delayed extubation, which was remedied by including an extubation kit in the standard room setup. Registered nurses carried physician contact information, and notification of physicians of any delayed extubation led to modifications in anesthesia and the proactive treatment of pain with intravenous acetaminophen to avoid respiratory depression caused by opioids. Postintervention data were collected from August 2017 to July 2018. Evaluation/Outcome: The data indicate the success of this unit-level project, which was initiated and led by 3 charge nurses in the cardiovascular intensive care unit. Interdisciplinary discussions during daily shift huddles provided opportunity for participation by all care providers and repetitive reinforcement of best practices, which produced sustained and steady improvement. This early extubation project, with leadership by the charge nurses and collaboration between nursing, respiratory therapists, and physicians, yielded the improved outcome of reducing time to extubation from 3.4 median hours to 2.6 median hours for patients after cardiac surgery.

**EB33: Sleep Promotion Project**

Chelsea Brand, Jayne Spadaccini, Kristine Anderson, Virginia Smith; Lakeland Regional Medical Center, Lakeland, FL

**Purpose:** The American Academy of Nursing’s Choosing Wisely Campaign recommends a patient’s sleep should not be disrupted for routine care. Sleep disruptions may lead to sleep deprivation, increased risk for falls and delirium, and decreased motivation to participate in care. The aim of this project was to improve quietness and increase patient satisfaction, using periods of uninterrupted sleep. Nonpharmacologic relaxation techniques (ie, earplugs, back rubs, music) were also offered, according to patient preferences. Summary: A 48-bed cardiac unit predominately caring for patients with heart failure and cardiac arrhythmias noted an opportunity to improve Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) quietness scores. Using Rosswurm and Larrabee’s model for change, the evidence was synthesized and the implementation
of an uninterrupted rest period between midnight and 4 AM was proposed. Once approval was obtained from the Professional Inquiry Council, staff were engaged via education explaining the new process and the benefits associated with the practice change. The unit-based council, which consists of bedside staff from the unit, held monthly meetings to discuss any limitations or suggested improvements to the project. Multidisciplinary team members collaborated to ensure medications and nonurgent procedures did not occur during this time and team leaders rounded to ensure noise levels were low. If a patient expressed difficulty falling asleep, different evidence-based relaxation techniques were offered. Hourly rounding continued for patient safety; however, patients were not woken unless absolutely necessary. Patients were excluded if essential care (ie, immediately necessary sample collection for laboratory testing, emergent procedures) was required. Evaluation/Outcome: Scores from the HCAHPS survey—specifically those regarding quietness on the unit—were used to evaluate the impact of the evidence-based project over 4 months. The unit rating increased by 16.7% and the overall unit score increased by 28.4% upon completion of the study. An unintentional benefit observed was a 74% decrease in patient falls. Adopting uninterrupted rest periods aided in improving patient safety and satisfaction, and, with additional research, may prove advantageous for similar units.

EB34: Tea for the Soul: Caring for Those Who Care for Our Patients
Stephanie Vaupel-Juart, Julija Volfa, Cheryl Newton; Ohio State University Wexner Medical Center, Columbus, OH
Purpose: The goal of this project was to improve staff resilience and engagement. Interdisciplinary intensive care unit (ICU) teams are exposed to high levels of stress. Multiple exposures to stress can lead to posttraumatic stress disorders such as burnout, fatigue, depression, and anxiety, all of which are common to members of the ICU team. Providing accessible and convenient opportunities to decompress and have spiritual time of respite and nourishment during work hours improves resiliency. Summary: The director of chaplaincy at our institution shared an idea she learned about called Tea for the Soul. She collaborated with nursing to provide this intervention for the surgical ICU interdisciplinary staff to promote resiliency and decrease stress. A comprehensive pilot program funded by the Patient Experience department was developed that included evidence-based activities. Chaplains assigned to the unit provided this service trimonthly during each shift. Services included a soothing environment, refreshments for physical nourishment, reflective activities, and sacred rituals. The soothing environment consisted of aromatherapy, low lights, music, and imagery. Refreshments included hot tea and simple snacks. Motivational quotes, devotional readings, wooden puzzles, coloring, and humorous quips were used as reflective activities. There were rituals of remembrance and gratitude offered by the chaplain that included a gratitude box and smooth rocks that promote positive thinking and comfort. Together, these activities provided multiple avenues to decrease and redirect stress, and increase compassion and empathy. For convenience, interventions were provided directly across from the patient care area. Evaluation/Outcome: A 2015 Press Ganey survey revealed high levels of perceived staff stress. This intervention was initiated to address this stress. During the pilot project, effectiveness of the program was evaluated by a 6-question survey designed to measure perceived level of stress before and after attendance. Data were collected once monthly per shift. The results revealed a 64% complete or significant reduction in stress. Of participating staff, disciplines included registered nurses (50%), physicians (17%), social work staff (5%), patient care associates (12%), advanced practice registered nurses (5%), and environmental services (1%). Comments indicated overwhelming positive feedback about the program. On the basis of the results of the program, senior leadership secured funding for the continuation of the program.

EB35: Sleep Mode On: A Quiet at Night Initiative
Fung Wan Iris Ng, Ma Teresa Laxamana, Roxanne Renshaw, Amy Donaldson; Kaiser Permanente Vallejo Medical Center, Vallejo, CA
Purpose: In an intensive care unit setting, it is challenging to provide patients with regular sleep/wake cycles. Before June 2017, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores related to quiet at night reflected only a 53% satisfaction rate from patients at our facility. Sleep has been identified in numerous studies as a significant component in immune health and delirium prevention. The
The team’s goal for this project was to change the unit environment during night hours, as evidenced by achieving 58% on HCAHPS scores related to quiet at night, which would be a 5% improvement. **Summary:** An environment was created where the expectation was a quiet, sleep-promoting unit between 9 PM and 7 AM. The team relied on combined years of clinical experience from bedside nurses and partnered with a care experience coordinator. Recommendations for improvement from HCAHPS were reviewed. Initial actions included fostering champions, clinician education, and tabletop signage; these methods were clinician focused. A handout to staff, “Guidelines to Promote Sleep,” was part of the education. Some examples of information on the handout include dimming the lights early, nighttime baths, customizing alarms, clustering care, and providing eye masks and ear plugs to patients. The tabletop signage “Keep Calm and Quiet Please” was trendy and eye catching. To ensure quality patient- and family-focused care, we collaborated with hospital administration to create and place a banner at the entrance of unit that explained “Quiet at Night” to family and visitors. We also implemented a hospital-wide operator announcement and chime to indicate when Quiet at Night is in effect. **Evaluation/Outcome:** This project was initiated in June 2017. Before this project, the HCAHPS score indicated a 53% patient satisfaction rate related to the unit being quiet at night. After 3 months from project initiation, the unit achieved an HCAHPS score of 59.2%, which was 1.2% higher than the goal of a 5% increase. Over 1 year, the unit achieved 7 months at 100% satisfaction on HCAHPS scores related to Quiet at Night. This is a 60% increase in HCAHPS scores. The team is very pleased with the outcomes of the project and proud to provide quiet at night for patients and families. The initiatives were so well received that the implemented measures were dispersed throughout the health system at the regional level.

**EB36: Skill-Building Sessions: Supplementing a Tiered Skills-Acquisition Model Orientation Program**

Ann Klennert, Kristen Slee; Mayo Clinic Rochester St Mary’s, Rochester, MN

**Purpose:** This exemplar highlights 1 intensive care unit’s (ICU’s) success in providing and implementing skill-building sessions with hands-on and critical-thinking activities for registered nurse (RN) orientees in critical care at a large academic medical center. The hypothesis was that optimizing classes, methods, materials, and timing of education would result in an improvement in the overall orientation flow and more appropriate timing of knowledge acquisition and experiences. **Summary:** The traditional ICU orientation models consisted of much classroom time, which may be at the expense of early bedside clinical experience. A work group consisting of staff RNs and a nursing education specialist was formed to review methods and materials used for orientation to the organization’s cardiovascular surgery/transplant surgery ICU. A focus group of experienced preceptors then identified key concepts essential to successful orientation. Preceptor teams were assigned specific topics on the basis of interest and expertise; teams were responsible for creating class content and hands-on activities. Each skill-building session was systematically assigned to correlate with the timely learning needs of the RN orientee. Finally, prescheduled skill-building sessions were set for specific dates throughout the orientation. For example, the initial sessions focus on basic elemental skills of assessment and documentation, and progress to more complex critical-thinking skills of handling emergency situations. The final session focuses on phases following orientation with unit engagement. **Evaluation/Outcome:** One month after orientation, RN orientees were surveyed. Results demonstrated 94% of the orientees agreed that the skill-building sessions adequately prepared them to provide patient care. Of those orientees surveyed, 37% had previous nursing experience and 63% were new graduate RNs. Project findings confirm that successful orientation incorporates a formal orientation program with unit-specific content in correlation with learners’ needs, readiness to learn, and clinical experiences. Each new cohort of RN orientees follows an established schedule, attending 4 skill-building sessions. Session content is modified on the basis of identified learner needs and is updated with practice changes.

**EB37: Implementation of a Trauma/Code Nurse Role to Enhance Patient Safety and Satisfaction**

Monique Pena, Colleen Yturralde, Hsin-Ping Lin; Children’s Hospital Orange County, Orange, CA

**Purpose:** The pediatric intensive care unit of a free-standing children’s hospital experienced an increase in hospital-acquired conditions (HACs), which affected patient safety and satisfaction scores. Contributing
factors included the rapid orienting of new nurses in response to increased census and acuity. The purpose of this project was to implement a clinical resource role to provide real-time bedside support to novice nurses with the goal to decrease the number of central line–associated bloodstream infections (CLABSSIs) to none and hospital-acquired pressure injuries (HAPIs) to no more than 2, and increase patient and family satisfaction scores. **Summary:** In a fast-paced, high-acuity unit, ensuring competent staffing is essential to the commitment to provide excellent patient care. Several health care organizations have implemented staffing innovations, such as a resource nurse role as an adjunct to existing staffing to promote unit productivity and increase staff competence. These roles have proven to enhance patient outcomes and satisfaction. On the basis of information in the literature, a 12-hour trauma/code nurse (TCN) role was implemented in the pediatric intensive care unit. The TCN provides real-time clinical support to nurses throughout the shift, focusing on those with less than 2 years of experience. The unit clinical practice council developed a TCN job description with clear roles and responsibilities. In the spirit of shared governance, nurses are elected by the staff and prescheduled into this role quarterly. A resource binder was created and includes clinical policies, new education, coaching strategies, near misses and teaching moments, and a checklist of TCN responsibilities. **Evaluation/Outcome:** Implementation has decreased HACs and increased patient satisfaction while maintaining a neutral budget. The rate of CLABSSIs decreased from 1.75 in fiscal year (FY) 2017 to 0 in FY 2018, and the number of reportable HAPIs decreased from 9 to 2. Hospital Consumer Assessment of Healthcare Providers and Systems results demonstrate improvements in the following areas: “nurses listened carefully” (78% to 87%); “got help as soon as wanted” (58% to 80%); “kept informed” (68% to 91%). Incidentally, associate engagement increased and was sustained above national benchmarks. This evidence-based solution leverages knowledge of experienced nurses to enhance competence and improve outcomes and can be easily adopted by other organizations.

**EB38: Using Our Voice and Our Strength: Reducing Medical Intensive Care Unit Hospital-Acquired Pressure Ulcers Via Visual Management and a Skin-Care Bundle**

Katie Cecere, Inge Smit; University of Virginia Health System, Charlottesville, VA

**Purpose:** Hospital-acquired pressure ulcer (HAPU) development worsens patient suffering and quality of life, resulting in negative sequelae such as increased infection risk, financial costs, and nursing workload. Evidence-based practice for prevention of HAPUs for critically ill patients through use of prevention skin-care bundles and risk-scoring tools exists. The fiscal year 2018 point prevalence rate for HAPUs in a medical intensive care unit (MICU) was 7.2%. The intensified collaboration of a unit-based skin-champion team to reduce the rate was implemented using Lean methodology. **Summary:** Skin-care champions in the MICU created a skin-care bundle checklist focused on the patient population. The bundle included interventions such as protective foams on bony prominences and turn assist devices. Skin-care champions educated unit staff on the bundle, daily checklist, and implementation process. Compliance was tracked on a visual management board for all at-risk patients, defined by a Braden score of 18 or lower. Patients with a low Braden score were flagged on the visual management board; those with barriers to bundle compliance, such as patient refusal or lack of supplies, were noted and recorded on the board with a green or red indicator. At end of the shift, the charge nurse discussed patients with red indicators with frontline staff and facilitated resolution. This was especially instrumental in cases of supply shortages and replenishment. HAPU rates and bundle compliance were tracked on the visualization management board to correlate and demonstrate project effects for frontline staff. Visual graphs reporting weekly compliance, real-time support to novice nurses, and potential barriers, and any HAPU occurrences were displayed. The institution-based wound, ostomy, and continence team was involved to deem HAPUs as avoidable or unavoidable, on the basis of patient status and bundle compliance. **Evaluation/Outcome:** The MICU HAPU point prevalence rate for July 2017 through December 2017 was 7.2%, prompting a practice change. After champion commitment to skin-care bundle compliance tracked with the visual management board, the point prevalence rate for January 2018 through June 2018 was 3.4%. This represents a 52.7% decrease in point prevalence for an academic medical center’s MICU HAPUs. The results of this quality improvement initiative show that the use of a daily bundle checklist designed for the MICU
population and staff engagement in the use of a visual management tool for at-risk patients can successfully decrease HAPU development even in the most critically ill patient population.

**EB39: Drug-Diversion Prevention: Improving Propofol Disposal Practices in the Intensive Care Unit**

**Purpose:** In the intensive care unit (ICU) setting, the practice of wasting propofol at the bedside is common and, in some cases, disposing and storing unused drug in unsecured bins puts staff and patients at risk for drug-diversion events. The intent of this project was to decrease the risk of drug diversion and to lessen environmental impact from medication being wasted down the sink. Decreasing the risk of drug diversion saves lives, licenses, and livelihoods, and remains a key priority for hospital leadership. **Summary:** Disposing of unused propofol into an activated carbon pouch was a successful and sustainable operating room practice at the authors’ institution. Findings in the literature supported this intervention, because of propofol’s potential for addiction; ongoing diversion events, including high mortality rates among health care professionals; ease of access and poor control mechanisms; lack of standardization; unnecessary waste; and ecological impact. Though a proposal was made in 2011 to control propofol as schedule IV by the Drug Enforcement Agency, this has not come to fruition. A pilot ICU with the highest propofol use was chosen to translate this process from the operating room setting. Staff were educated through oral presentation, video demonstration, and hands-on learning. A bin to hold the pouch was attached to the nurse’s workstation for ease of access, and a bottle-cap opener was attached to the bin so the nurse could easily remove the cap to dispose of the remaining drug. **Evaluation/Outcome:** A 2-week audit of unsecured waste bins and a staff survey to determine institutional policy awareness, disposal processes, barriers, and concerns were completed before and after the intervention. The survey results indicated strong concern for drug-diversion risk. The pilot demonstrated success: 44.1% of propofol bottles were discovered to be “full” (> 5 mL) before the pilot program, whereas after the pilot program, that proportion decreased to 0%. After the pilot program, 89.9% of propofol bottles were found with the lid off and the remaining bottles with the lid remaining on were already be empty. Following institutional approval, this propofol disposal process has been expanded to all ICUs.

**EB40: It’s Alarming**

Gina Hernandez, MemorialCare Saddleback Medical Center, Laguna Hills, CA

**Purpose:** The purpose of this study was to reduce the number of bedside alarms, which may affect alarm fatigue. Sensory overload from frequent alarms results in staff frustration, delayed alarm response, and patient safety events. Hundreds of deaths have been directly attributed to alarm fatigue. In January 2017, a Saddleback Memorial Medical Center clinical alarms task force met for a call to action to address alarm fatigue. **Summary:** Clinical alarm data were collected from the intensive care unit (ICU) central monitor for 30 days. Results were analyzed and the top 3 red and yellow alarms were reviewed. ICU nurses presented a literature review to the ICU nurse manager and medical directors along with the alarm data. This included the American Association of Critical-Care Nurses (AACN) 2012 Practice Alert, “AACN Roadmap for Implementing Change: Alarm Fatigue.” New yellow alarm limits were collaboratively determined (based on clinically acceptable ranges) to attempt to decrease the number of nuisance and false alarms resulting from parameters not set to actionable levels. Nursing staff were educated about the plan to change alarm parameters and the impact of alarm fatigue. In June 2017, the alarm defaults in the bedside monitors were reset from heart rate greater than 120/min to greater than 130/min, respiratory rate (RR) greater than 30/min to greater than 35/min, and oxygen saturation ($SpO_2$) from less than 93% to less than 90%. **Evaluation/Outcome:** Thirty days of postimplementation alarm data were collected and analysis revealed an overall 60% reduction in yellow alarms per patient day. Heart rate alarms decreased by 61%, RR alarms by 63%, and $SpO_2$ alarms by 54%. By slightly modifying 3 yellow clinical alarms, there has been a substantial decrease in the number of alarms triggered, without increased risk to patient safety.

**EB41: An Interprofessional Evidence-Based Approach to Reducing Harm Related to Critical Illness**

Kelly Drumright, Jaime Inman; VA Tennessee Valley Healthcare System, Nashville, TN
**Purpose:** Advances in intensive care unit (ICU) care have led to improved critical care survival rates, yet patients have physical and cognitive disabilities that affect quality of life for months to years after hospital discharge. Our hospital participated in the national ICU Liberation Collaborative to evaluate whether implementation of a patient-centered interprofessional bundle for ICU care would influence prevalence of delirium, duration of mechanical ventilation, length of stay (LOS), and interprofessional teamwork. **Summary:** The pain, agitation, and delirium guidelines for adult patients in the ICU recommend a multicomponent, interprofessional team approach to align processes, people, and technology to improve outcomes of critical illness. The ABCDEF bundle (ie, assess, prevent, and manage pain; both awakening and breathing trials; choice of analgesia and sedation; delirium: assess, prevent, and manage; early mobility and exercise; family engagement and empowerment) combines evidence-based practices to move patients toward a return to baseline physical and cognitive function after critical illness. Using the Model for Quality Improvement Framework, the bundle was implemented between 2015 and 2017. Implementation included (1) use of the critical care pain observation tool to assess pain in nonverbal or delirious patients; (2) daily spontaneous awakening and breathing trials in patients receiving mechanical ventilatory support; (3) development of a sedation and analgesia protocol to guide sedative administration; (4) routine screening for delirium and focused prevention and management by nonpharmacologic strategies; (5) screening daily patient engagement in an early, progressive mobility protocol; and (6) family participation in rounds and patient care.

**Evaluation/Outcome:** Outcome and process measures were collected to track whether ABCDEF bundle implementation resulted in improvement. There was improvement in ventilation-free days, ICU LOS, delirium-free days, sedative use, and adherence to bundle components. For example, median ventilator hours decreased from 58 to 37, median ICU LOS decreased from 5 to 3 days, and delirium-free days increased from 30% to 64%. Interprofessional teamwork and perceptions were measured before and after bundle implementation using American Association of Critical-Care Nurses healthy work environment and other surveys, all of which showed marked improvement. At the completion of the ICU Liberation Collaborative, the hospital was recognized as the top performer in implementation and performance of the bundle.

**EB42: Critical Care Outreach Algorithm to Optimize Post-intensive Care Unit Assessment**

Holly Losurdo, Heather Cook, Brittany Wells, Shonda Morrow; Rush University Medical Center, Chicago, IL

**Purpose:** An algorithm was created to enhance assessments performed by the critical care outreach team (CCOT) after patients’ transfer from the intensive care unit (ICU). The CCOTs play an essential role in transitional care of high-risk patients from an ICU to an acute care floor and have been associated with reduced risk of unplanned ICU readmission. The primary purpose of this evidence-based project was to improve early identification of patients at risk for deterioration and unplanned ICU readmission. **Summary:** Early warning scores, patient demographics, and subjective nursing concern independently share a positive correlation with ICU readmission. A standardized post-ICU assessment algorithm was created by synthesizing hospital-specific objective data with subjective data associated with ICU readmission. Specific patient demographics (namely, age older than 60 years), a calculated National Early Warning Score (NEWS), and subjective nursing concern were weighted within the algorithm to provide a standardized binary outcome for the assessment. The CCOT used the algorithm to perform post-ICU assessments within 24 hours of transfer from the ICU to a general medical floor to determine patient risk for unplanned ICU readmission. A 3-month trial was conducted to compare the accuracy of the new algorithm with the previous algorithm, which was based solely on subjective nursing concern. **Evaluation/Outcome:** Use of a standardized post-ICU assessment algorithm demonstrated a statistically significant increase in the diagnostic odds ratio and sensitivity for identifying at-risk patients within 24 hours of transfer. The diagnostic odds ratio increased from 6.91 to 16.74, and sensitivity increased from 15% to 72% after the intervention. The algorithm outperformed each individual component, including age older than 60 years, NEWS 6 or higher, and subjective nursing concern. Incorporating patient demographics, an early warning score, and subjective nursing concern into a standardized posttransfer assessment algorithm significantly increased the CCOT’s ability to identify patients at risk for readmission to the ICU.
Purpose: The medical intensive care unit (MICU) saw a sharp increase in catheter-associated urinary tract infections (CAUTIs) in 2017. In prior years, the unit had 1 CAUTI per year, but despite best practices, this number increased to 4 by the end of 2017. The use of a new female external urinary collection device was implemented in the unit to help decrease urinary catheter use and thereby reduce the risk of CAUTI development. Summary: The Centers for Disease Control and Prevention (CDC) guidelines for the prevention of CAUTIs recommend removing urinary catheters as soon as possible and using alternatives to indwelling catheters as appropriate. The CDC reports CAUTI risk increases 3% to 7% for each additional day the catheter is left in place. Prevention of CAUTIs in the ICU is challenging because of acutely ill patients and the desire for an accurate urine output while managing care. No product had been available to enable accurate urine output measurement for female patients without an indwelling catheter. A new external urinary device for female patients was brought into the MICU as an alternative for capturing urine output without maintaining an indwelling catheter. Decreased catheter use helps lower CAUTI risk. This rapid performance improvement project was implemented after first collaborating with the MICU leadership team. Hands-on training for the bedside staff was completed, and inclusion/exclusion criteria and troubleshooting techniques reviewed. As staff became more comfortable with the new device, it was used as an alternative to an indwelling catheter for select female patients. Evaluation/Outcome: Urinary catheter use was recorded daily, and CAUTI incidence was reviewed monthly. Data were collected 3 months before the new product was implemented, and data collection continued for 3 months after. A decrease in catheter use was noted in female patients. An average of 3.70 female patients had catheters before the product was initiated, compared with 3.25 patients after the product had been implemented—a 14% reduction. Before the intervention, 50% patients with an indwelling catheter were female; after the intervention, 40.3% of patients with a catheter were female. There were no CAUTIs after implementation of the new product during the study period, and this success continued for 2 additional months past the study time frame.

EB44: Journey to Zero: Eliminating Catheter-Associated Urinary Tract Infections in the Intensive Care Unit

Derek McDonough, Tiffany Roza; Adventist Medical Center – Hanford, Hanford, CA

Purpose: In 2017, the year-to-date (YTD) standardized infection ratio (SIR) for catheter-associated urinary tract infections (CAUTIs) reached a peak of 5.561 in the intensive care unit (ICU). This increase in health care–associated infections (HAIs) above the national benchmark sparked collaboration with infection prevention and ICU unit-based council (UBC) to evaluate current practices. Evidence-based practices were researched and initiated by frontline registered nurses (RNs) to eliminate CAUTIs. Summary: The UBC conducted interviews of RNs to determine baseline knowledge of urinary catheter insertion and maintenance, and CAUTI knowledge. Representatives from Bard Medical and the UBC evaluated the RNs’ use of current catheter insertion kits. They also examined each RN’s sterile technique during the insertion of a urinary catheter. An education board was created and displayed in a high-traffic area to provide additional CAUTI education. User-friendly insertion kits were ordered after analysis of RN feedback and the current kit was replaced. Two RNs were present during insertion of a urinary catheter to ensure proper sterile technique according to evidence-based practices. Standardized catheter care was implemented to ensure catheters were being properly cleansed by RNs. The UBC selected RN superusers to assist RNs with the practice changes. Internet-based education was assigned to RNs and an updated education board was displayed that detailed practice changes, and catheter care and maintenance. Multidisciplinary rounds occurred every weekday and facilitated decreased use and early removal of catheters. RNs were encouraged to use external urinary catheters and the ICU piloted external female catheters. Evaluation/Outcome: The CAUTI rate before the practice changes was 5.128 per 1000 catheter-days. One year after implementation, the CAUTI rate decreased substantially to 1.33 per 1000 catheter-days. Furthermore, the YTD catheter use ratio has decreased from 0.637 to 0.427, and the standardized use ratio has decreased from 1.018 to 0.682. There is no SIR to calculate at this point because of the decrease in CAUTIs after the practice changes. Before the implementation of practice changes, the CAUTI count was 6; currently, it is at 1 for 2018.
Based on the significant decrease in CAUTIs, data can show the importance of engagement and participation from the frontline RNs to improve patient outcomes.

**EB45: Sepsis Challenge**  
Cathy Ballenger; Lagrange Community Hospital, Lagrange, IN

**Purpose:** The purpose of this study was to develop and make integral practice for early detection and treatment of patients with sepsis at AMITA La Grange Medical Center, in compliance with the guidelines set forth by the Centers for Medicare and Medicaid Services (CMS). Early recognition and treatment are key to improving morbidity and mortality, and in decreasing associated costs. **Summary:** A gap analysis was performed in 2015 that prompted involvement of a multidisciplinary team consisting of nurses, pharmacy staff, educators, physicians, information technology staff, and staff from ancillary departments. Monthly sepsis meetings were held, and daily lactic acid and sepsis alerts were reviewed to assess opportunities in real time. Changes were made to the health care providers’ electronic entry orders to ensure consistency in sepsis orders. Hospital-wide nursing and physician process education was provided. Screening for systemic inflammatory response and sepsis screening was performed by nursing upon patient admission or transfer, and 3 times daily at specified times, using a screening tool developed by the team. Nurse-driven sepsis policy was developed and implemented, which allowed for immediate treatment, including point-of-care lactic acid measurement, administration of fluids, and transfer to the intensive care unit, according to the algorithm, using a Code Sepsis alert followed by a Rapid Response Team alert, when indicated. Pharmacy staff developed sepsis empiric antibiotic treatment guidelines that also were based on CMS requirements. Outliers were reviewed at monthly multidisciplinary sepsis meetings led by nursing and lessons gleaned from these meetings were shared with all involved disciplines. **Evaluation/Outcome:** In November 2015, patients who came to the emergency department with sepsis had a 26.2% mortality rate, with only a 52.5% compliance rate in meeting the 3-hour bundled care requirements. Since the implementation of the initiatives and changes made on the basis of follow-up reviews, the average CMS compliance rate improved from the 2016 average of 53% to an average of 61% in 2017 and an average of 74% through June of 2018, with the last 3 of those months being at or above 80%.

**EB46: Prevention on Standby: Developing an Evidence-Based Solution for Patients at High Risk for Pressure Injury**  
Marlene Cook, Jessica Smith; Sutter Medical Center, Sacramento, CA

**Purpose:** As medical technology has advanced, the use of mechanical circulatory devices for cardiogenic shock has increased. Patients with cardiogenic shock have a higher risk for pressure injury (PI) because patients with an open chest and large cannulas originating outside the body cannot be turned. The degree of poor tissue oxygenation and perfusion demonstrated in device-dependent patients with shock predisposes them to multiorgan system failure, including skin. The increase in PI incidence in this population was targeted for quality improvement. **Summary:** On the basis of a literature review, a high-risk PI prevention (HR-PIP) bundle was established, which comprises the following 4 components: (1) The standard application of a silicone adhesive-border dressing to the coccyx. (2) Requirement of a standby specialty bed and mattress available 24/7 to eliminate patient delays to a pressure redistribution surface. High-risk patients are placed directly on the standby bed in the operating room with the anesthesiologist at bedside, because these patients often too hemodynamically unstable to move later. (3) Microturn activity is based on hemodynamic tolerance for all patients. (4) A registered nurse must enquire daily if no-turn orders can be discontinued. The HR-PIP bundle was developed through a combination of evidence from literature review, clinical expertise, and clinical scene investigation. After trialing multiple rental beds, a clear decrease in PI incidence associated with a particular surface was identified. A mutually beneficial financial deal was made with the rental company so the hospital was not charged for the bed rental until the bed was used. Specific inclusion criteria were established to identify patients at high risk for PI. Nurses were educated through a training module to improve patient identification and specialty bed implementation. **Evaluation/Outcome:** Hospital-acquired pressure ulcers (HAPUs) stage 2 or greater were measured before and after the HR-PIP bundle was instituted. According to the National Database of Quality Indicators, the average HAPU occurrence in intensive care units was
1.6 to 2 per 1000 patient-days, depending on the quarter of the year measured. The unit incidence was reported at above the national average and dropped below the national average to zero incidence for 1 year after the HR-PIP bundle was implemented. The use of the standby specialty bed reduced delay to an appropriate surface from between 2 and 12 hours to 0 minutes. The preferred surface is now being used hospital-wide for compromised critical care patients meeting the inclusion criteria devised by the cardiovascular intensive care unit team.

**EB47: Reducing Interruptions of Enteral Nutrition to Improve Daily Intake by Patients in the Medical Intensive Care Unit**

Lindsey Kornbau; Penn State Hershey Medical Center, Hershey, PA

**Purpose:** Critically ill patients require adequate nutrition for healing and improved outcomes. Practice differences related to management of enteral nutrition (EN) and of interruptions in feeding time can result in deficits in total daily volumes, depriving patients of vital nutritional intake. This project was undertaken to explore evidence-based guidelines for managing EN that would reduce unnecessary interruptions and improve daily EN volume to meet prescribed goals. **Summary:** PubMed and Cumulative Index to Nursing & Allied Health Literature databases were searched for articles published within the past 5 years using the key words enteral nutrition, critical care, and best practices. The search yielded 653 articles, of which 164 were assessed and 11 addressed the research question. Research findings led to development of an EN practice guideline and algorithm piloted in the medical intensive care unit. A nurse-led interprofessional team of physicians and nutrition specialists developed a guideline including a starting EN rate of 25 mL/h to reach hourly rate goals faster. A scale was developed that included objective measures of signs and symptoms of gastrointestinal intolerance. Three levels of tolerance were developed using gastric residual volumes and the score from EN gastrointestinal tolerance scale. Level of tolerance is assessed every 4 hours, and the assessment is used to assist the nurse and provider in determining rate changes and deciding when to hold the EN. The guideline with accompanying algorithm also directs when to add interventions such as antiemetic or motility agents. Other evidence-based solutions addressed when to consider use of a postpyloric tube versus a gastric tube and length of time of nil per os (NPO; nothing by mouth) status for extubation based on type of gastrointestinal access (postpyloric tube or gastric tube). **Evaluation/Outcome:** One month of data collected before implementing the guideline and algorithm showed the average daily total volume collected was just greater than 50% of the goal. Interruptions were varied and length of NPO ranged from 2 to 32 hours. Goal rate time was 4 to 35 hours. During the pilot, all interruptions and length of time were documented on a daily flow sheet at the patient’s bedside. Daily 24-hour EN volume intake from 6 AM to 6 AM was noted for each patient for whom EN was ordered. Data were collected for 4 months. The number of interruptions decreased, as did the time to achieve the goal rate. NPO status was held to 1 hour before extubation. Future goals include trialing in other intensive care units across the organization.

**EB48: Improving Sepsis Protocol Compliance With Smartphone Sepsis Alerts**

Melissa Zimmermann, You Chung, Jericho Garcia, Kate Tayban, Cara Fleming, MaryAnn Connor; Memorial Sloan Kettering Cancer Center, New York, NY

**Purpose:** To comply with New York State Department of Health regulations, a sepsis protocol was implemented in 2014 to help with early sepsis management. Initially, registered nurses or ancillary staff received the sepsis alert and contacted the primary team to assess and determine care through the use of a sepsis-bundle protocol. Review of the protocol revealed a compliance rate of 35%. To improve this rate, a sepsis team was created to respond to the alerts and a real-time secondary alarm notification was developed and routed to mobile phones. **Summary:** Clinical and technical experts at Memorial Sloan Kettering Cancer Center (MSKCC) met to discuss workflows and process improvements needed to improve sepsis-bundle compliance. Using middleware software, nursing informatics personnel worked with colleagues in information systems to convert the clinical information system email alert to a smartphone alert. The advanced practice provider (APP) logs in the mobile application for alerts selects the role of sepsis APP to receive sepsis alerts and that person is notified of early warning sepsis alerts in real time. This actionable, smartphone alert notification enables the sepsis APP to be available for immediate assessment, coordination of care with the primary team, and treatment and escalation of care, if
needed, for patients with sepsis. Integration testing was conducted on Android and iOS smartphone platforms and training was completed for all APPs on the sepsis team. Providers had the choice of using the hospital-owned shared Android devices or to pilot alerts on their “bring your own device” (BYOD) personal iOS or Android smartphones. Some limitations were identified on BYOD devices, and providers are now using a new hospital-owned shared iPhone device to receive sepsis alerts.

**Evaluation/Outcome:** The center uses sepsis APPs and supports a workflow to receive smartphone sepsis alerts in real time for coordination of care for patients with suspicion of severe sepsis and septic shock. Since implementation of the sepsis team on November 1, 2017, MSKCC sepsis bundle compliance has increased from 35% to 65%. There has also been good adoption by the sepsis APPs of acknowledging alerts: compliance is 95%. Because of reliability concerns related to frequent operating system and application updates on BYOD devices, sepsis APPs mainly use hospital-owned shared iPhone devices for quality control of software versioning, and we continue to support workflow as needed.

**EB49: Impact of Endotracheal Tube–Repositioning Schedule on the Reduction of Endotracheal Tube–Related Pressure Injuries**

Marilou Magnaye, Lauren Cunningham, Susan Pazuchanics, Kathleen Lake, Jennifer Gish; Penn State Hershey Medical Center, Hershey, PA

**Purpose:** Pressure injuries from medical devices are a growing concern in patient care. From July 1, 2017, to April 30, 2018, the Penn State Hershey Medical Center neuroscience critical care unit (NCCU) ranked third among the clinical units for medical device–related pressure injuries. The primary cause of these types of pressure injuries is presence of an endotracheal tube (ETT). The goals of this project were that ETTs will be consistently repositioned every 2 hours by nursing and respiratory therapy staff and ETT-related pressure injuries will be reduced by half. **Summary:** An interdisciplinary team of nurses, a respiratory therapist, and leadership formed a collaborative to assess current practice regarding ETT repositioning, which is done every 2 hours solely by nursing staff. The team created the following ETT repositioning schedule. Respiratory therapist will reposition the ETT at 8:00 AM, 12 PM, 4 PM, 8 PM, midnight, and 4 AM, and document repositioning in the patient’s chart. Nurses will reposition the ETT at 6 AM, 10 AM, 2 PM, 6 PM, 10 PM, and 2 AM, and document the repositioning in the patient’s chart. Skin around the ETT will be assessed and any abnormal findings will be discussed between the registered nurse and respiratory therapist. Appropriate measures to prevent further skin breakdown should be initiated immediately upon assessment of a pressure injury. Education was completed by each staff nurse and respiratory therapist. There will be a laminated “Endotracheal Tube Repositioning Schedule” sign (lime green) in the box outside the patient’s room. The sign should be placed at the head of the patient’s bed by the nurse. Chart audits of intubated patients were performed by the clinical practice nurse leader to measure compliance of staff to the repositioning schedule. The project was implemented on July 1, 2018. **Evaluation/Outcome:** After implementation of the process, respiratory device–related pressure injuries decreased by more than 45%. There was an average of 0.92 respiratory device–related pressure injuries per month before implementation of the intervention. There was an average of 0.5 respiratory device–related pressure injuries per month after the intervention. ETT-related pressure injuries decreased by 100%. There were 6 ETT-related injuries over the 12 months before the intervention (an average of 0.5 ETT-related pressure injuries per month); since implementation of the intervention, there have been no ETT-related pressure injuries. Interdisciplinary collaboration has been the primary factor in decreasing ETT-related pressure injuries in the NCCU.

**EB50: Professional Advancement: Improving Nurse and Patient Satisfaction Through a Nurse Recognition Program**

Megan Devol, Stephanie Woods, Karen Burton, Krystal Barnard; Major Hospital, Shelbyville, IN

**Purpose:** Employee engagement and satisfaction have historically been linked to customer service. Health care systems have strived to engage and satisfy staff now more than ever, because reimbursement is tied to patient experience. The Centers for Medicare and Medicaid Services is using patient experience scores to determine gain or loss of payment through surveys. The inpatient unit has brought nurse engagement and satisfaction to the forefront to influence patient experience through a nurse-recognition program. **Summary:** A nurse recognition program, Clinical Ladder, was developed and implemented...
in January 2017 on the inpatient unit. The Clinical Ladder consists of 3 professional levels of accomplishment identified as partner, associate partner, and senior partner, with financial incentives tied to each designation. A professional practice model grid with clinical expertise, professional accomplishment, education and certification, and community development criteria is structured around a point system, placing nurses into their earned designation. Nurses are recognized through multiple avenues: a public recognition wall, certificate from the chief nursing officer, identification badge with achieved level, a certification appreciation ceremony, and an annual certification luncheon. The overall goal of encouraging professional development is to improve nurse satisfaction, indirectly affecting patient experience. Satisfaction, retention, and professional development data have been compared before and after implementing the Clinical Ladder to assess its impact. **Evaluation/Outcome:** Implementation of the Clinical Ladder has been successful in affecting nurse satisfaction and retention, patient experience, and professional development. Nursing turnover was 33% before implementation of the Clinical Ladder in 2016, which steadily decreased to 4% for first half of 2018. The percentage of nurses with a bachelor’s of nursing science has increased from 58.5% in 2016 to 67.9% in 2018, and the percentage of nationally recognized certifications achieved by nurses increased from 27.8% to 37%. The percentage of nurses achieving Clinical Ladder recognition has doubled since inception, from 21.7% to 42.3%. Score for categories including communication with nurse, nurse explained things in a way you could understand, and nurse treated you with courtesy and respect have increased since January of 2017 on patient surveys.

**EB51: Preventing Device-Related Pressure Ulcers From Indwelling Arterial Catheters**

Fe Tan, Julieta Mako; VA Roseburg Healthcare System, Roseburg, OR

**Purpose:** The development of device-related pressure ulcers can be a risk because of the multiple technologies used in a critical care setting. An individual is 2.4 times more likely to develop a pressure ulcer when a medical device is used, and off-loading strategies are important preventive measures. In an effort to reduce the incidence of device-related pressure ulcers, an innovative approach to offloading arterial catheters was developed and implemented in the surgical intensive care unit. **Summary:** Assessment of arterial catheter pressure injuries included mechanical variables, identification of patients at high risk for pressure injuries, and product review. A mock-up of the intervention—placement of an arterial foam dressing under pressure tubing hubs, loops, and stopcocks—was created by an interdisciplinary team. Once implemented, daily rounding occurred on patients with indwelling arterial catheters. Pressure injury and nurse survey data were gathered. **Evaluation/Outcome:** Quantitative and qualitative information was gathered. The registered nurse rounded on patients to determine compliance with the innovation. The incidence of device-related pressure ulcers from indwelling arterial catheters has decreased from 3 over 12 months to 0 since implementation. The registered nurses reported strengths of the intervention, such as “prevents deep tissue injury,” “provides nice padding,” and they identified opportunities for improvement, including “sometimes it makes the A-line positional.” Application of this innovation to other invasive catheters and technology is being considered.

**EB52: Driving to Zero: Reducing Catheter-Associated Urinary Tract Infections in the Neuroscience Intensive Care Unit**

Lee Mathew, Anna Ellis; Baylor University Medical Center, Dallas, TX

**Purpose:** Catheter-associated urinary tract infections (CAUTIs) in the neuroscience intensive care unit (NICU) are associated not only with increased length of hospital stay and associated care costs but also with poor long-term neurologic outcomes. Between July 1, 2017, and September 30, 2017, the CAUTI rate on the NICU was 5.33 per 1000 urinary catheter-days, which was above the National Database of Nursing Quality Indicators (NDNQI) benchmark of 1.95 per 1000 urinary catheter-days. **Summary:** Targeted review of catheter use and subsequent provider notification of catheter necessity allowed for reductions in catheter use on the NICU unit. In a previous study, authors found targeted rounding with engaged providers and the nursing team enabled catheter use to be reduced, which subsequently led to decreased incidence of CAUTIs over 1 year. For this study, the team focused on standardizing education and skill validation of pericare, incontinence care, insertion, and specimen collection with a checklist. Device necessity was assessed every shift. The team also implemented a 2-person (registered nurses only) catheter insertion and
specimen collection process. The providers implemented a urine-culture ordering algorithm in which urinalysis was used to screen for infection. Fever is common in patients with intracranial hemorrhage, and obtaining a specimen without evaluating underlying disease process led to false-positive results. Establishment of the urine-culture ordering algorithm to screen for infection enabled consistency in practice. **Evaluation/Outcome:** The project increased bedside-leader knowledge and ownership of clinical practice. Success was measured with the NDNQI data and the facility infection control dashboard. The NDNQI data revealed that the unit’s CAUTI rate was 2.46 (benchmark: 1.61) per 1000 urinary catheter-days in the fourth quarter of 2017 and 1.62 (benchmark: 1.41) per 1000 urinary catheter-days for the first quarter of 2018. From February to July 2018, there were no reportable CAUTIs on the unit, whereas during the previous 6 months, there were 8 CAUTIs. In the previous year, 13 CAUTIs were reported in the NICU. In addition, there was an increase in team member engagement to 81.3% (up from 78.6% in 2017) in the annual employee engagement survey.

**EB53: Development of a Skin Protection Pack to Reduce Device-Related Pressure Injuries in Patients in the Prone Position**

Lorena Tilton, Jennifer Roach; John Muir Medical Center, Concord, CA

**Purpose:** In 2015, the medical-surgical intensive care unit increased its use of automated proning therapy in patients with severe acute respiratory distress syndrome (ARDS). Subsequently, there was an increase in device-related pressure injuries associated with the bed positioning and pad placement. Analysis of each pressure injury revealed the unique risks for skin injury associated with proning therapy and opportunities for changes in nursing practice to address the problem. **Summary:** Hospital-acquired pressure injuries (HAPIs) are a significant risk to patients with ARDS, because of to the severity of the illness, and the risk for device-related HAPI is increased in patients receiving automated proning therapy. A thorough analysis was conducted by critical care registered nurses (RNs) to determine all factors contributing to these injuries. A collaborative team comprising critical care RNs, educators, skin and wound assessment team (SWAT) nurses, and respiratory therapists reviewed current evidence and practice guidelines. This led to the development of a HAPI prevention protocol for patients receiving proning therapy. Interventions included creation of a standardized skin protection pack (ie, Mepilex dressings of various sizes) and initiation of daily rounds by the team to ensure proper patient positioning and correct placement of bed cushions and limb packs. Staff education included indications for proning therapy, proper patient positioning, early referral to the SWAT, and proper placement of Mepilex dressings over potential pressure areas. Postintervention data were collected for 18 months to determine sustainability in practice. **Evaluation/Outcome:** Thorough analysis of all factors related to risk for breakdown led to the development of a standardized skin protection strategy for patients receiving proning therapy. Education of staff to the new standard and daily rounding ensured consistency in practice. These interventions resulted in a significant decrease in the number of proning therapy–related pressure injuries. Before the intervention, HAPIs occurred in 50% of these patients—a 14.3% risk for breakdown per day of proning therapy. In the 17 months from April 2016 to September 2018, there were no proning-related HAPIs. Collaboration of the interdisciplinary team led to a sustained achievement of 0 proning therapy–related pressure injuries.

**EB54: Using Evidence to Decrease the Central Catheter–Associated Bloodstream Infection Rate in the Intensive Care Unit**

Monica Baran, Caitlin Murray, Lauren Burk; Virtua Health, Marlton, NJ

**Purpose:** To decrease the rate of central catheter–associated bloodstream infections (CLABSI) in the intensive care unit (ICU) by using evidence-based practice. **Summary:** In the acute care setting, CLABSIs are a “never event.” The hospital tracks any bloodstream infections associated with a central catheter and submits that data quarterly to the National Data Base for Nursing Quality Indicators (NDNQI). In 2016 and going into the first quarter of 2017, the ICU had a higher CLABSI rate compared with similar hospitals. Looking at the evidence, hospital staff developed several interventions that decreased the CLABSI rate, including the development of a CLABSI council to review best practices and policy recommendations. The council instituted the following best practices: A registered nurse must be present in the room when a licensed independent practitioner is
inserting a central catheter, to ensure sterile technique. Curos caps were used to protect any portal of entry. Staff were educated about the Curos caps. Femoral catheters must be discontinued within 24 to 48 hours. Patients and families are educated about ways to prevent infection of central catheters. A central catheter bundle was implemented. Central-catheter huddles are conducted to assess the need for the catheter. **Evaluation/Outcome:** The infection prevention nurse as well as the advanced nurse clinician of the unit carried out real-time audits and gave feedback to the bedside practitioners regarding the use of Curos caps and compliance with bundle use. According to NDNQI data, in the second quarter of 2017, after these interventions were instituted, the CLABSI rate for this ICU was below the national mean.

**EB55: Revving the Engines: A Team Approach to Timely Extubation**

Alexander Rudolph, Debra Farrell, Myra Ellis, Heather Pena, Emily Robinson, Allen Cadavero, Mollie Kettle, Tonda Thomas, Kelly Kester, Carrie Parker, Bradi Granger; Duke University Hospital, Durham, NC

**Purpose:** Early extubation is associated with fewer adverse outcomes, shorter hospital and intensive care unit length of stay, and lower costs. The Society of Thoracic Surgeons defines early extubation as less than 6 hours. There was an opportunity in the cardiothoracic intensive care unit to improve intubation times. A multidisciplinary team developed a fast-track extubation (FTE) protocol to facilitate extubation. The nursing research team identified behaviors that needed to change to ensure success with the FTE protocol. **Summary:** Evidence suggests that people will change behavior if they believe it is important and they are able to do what is needed. Historically, practice change has been difficult to sustain and dissemination of new information has been primarily written communication. The nursing research team selected a model of change described by Patterson et al in the book *Influencer: The Power to Change Anything.* The model conceptualizes behavior as motivated by 6 sources of influence. Using this evidence, personal, social, and structural aspects of influence were incorporated in the model to guide the interventions for FTE implementation. These included an online module for the multidisciplinary staff to learn how the FTE protocol would improve patient outcomes. A kickoff party with the racecar theme was held, with unit decorations and snacks to increase interest in the FTE protocol. A racetrack was updated weekly to include the names of the “pit crew” who successfully extubated patients within the recommended time. The racetrack generated healthy competition between peers and made best practice socially acceptable. Environmental reminders such as door signs and copies of the protocol drew staff attention and demanded personal practice change. **Evaluation/Outcome:** Before implementing the FTE protocol, 49 of 1010 patients (49%) were extubated in less than 6 hours. In the first month after implementing the protocol, 72% of patients (n = 60 of 83) were extubated in less than 6 hours. The strategies used to implement the FTE protocol have significantly influenced unit behaviors. One year after FTE protocol initiation, 75% of FTE-eligible patients (n = 582 of 779) were extubated within the 6-hour window. There was a decrease, 7 to 8 months into use, in the percentage of patients extubated in less than 6 hours, which was corrected by raising awareness. Changing embedded practice behavior is a long-term process requiring ongoing feedback and education for success.

**EB56: Just Pull It Out: A Tertiary Neuroscience Intensive Care Unit Improvement Project to Eliminate Catheter-Associated Urinary Tract Infections**

Brenda Watt; University of Mississippi Medical Center, Jackson, MS

**Purpose:** The University of Mississippi Medical Center experienced a catheter-associated urinary tract infection (CAUTI) rate higher than the national average in 2012: 5 per 1000 catheter-days, with the neurosurgery intensive care unit (NSICU) identified as the biggest offender. On the basis of assessment data, a project was implemented to eliminate the occurrence of CAUTIs in the NSICU by decreased use of indwelling catheters, specific criteria for urinary culture specimen collection, hospital-wide protocols for catheter care, and the use of a nurse-driven catheter removal protocol. **Summary:** The changes in the regulations for reimbursement for hospital-acquired infections identified an area for improvement. Each inpatient area was given monthly reports and with this information, leadership in the NSICU determined the NSICU CAUTI rates were high in comparison with national benchmarks. A review of the literature was done to identify evidence-based solutions. The initial practice change was to create a process...
around daily review of catheter necessity based on national criteria. Catheter necessity was determined by the team. Once determined, either a standardized maintenance protocol was used or alternatives were implemented. Rates of CAUTI after implementation of the practice changes were decreased to 2.7 per 1000 catheter-days. A nurse-driven catheter removal protocol was adopted by the hospital. This resulted in additional reduction in CAUTI rates to 2.3 per 1000 catheter-days. However, the problem of an effective alternative for female patients remained an issue. A quality initiative role was developed in the NSICU to champion this cause. Consequently, the hospital trialed and brought in a new alternative device for women that expedited the removal of catheters and helped decrease rates significantly. Evaluation/Outcome: The hospital’s “Zero Harm” initiative has helped place elimination of infections at the forefront of all employee efforts. Success was measured at each change in practice by examining the CAUTI rate and the catheter use rates. The quality initiative nurse evaluated compliance with practice and assisted in providing alternatives to indwelling catheter placement; there was only 1 CAUTI in 2018. A significant hurdle was crossed in placement and length of catheter time, thus reducing the CAUTI rate and sustaining the low rates by having viable alternatives to the indwelling catheter for male and female patients.

**EB57: Does Electroencephalogram Electrode and Gauze Application Matter? Best Practice for Preventing Skin Injury**

Debra Knight, Nakeitha James, Lynn Kuehn, Micha Elliott; Scott and White Memorial Hospital Temple, TX

**Purpose:** Since May 2017, staff of the Baylor Scott and White Medical Center medical intensive care unit (MICU) noted cranial skin injury in patients receiving continuous electroencephalographic monitoring. A rapid-cycle quality improvement process was initiated to eliminate device-related injury and decrease hospital cost. **Summary:** A review of the literature was conducted that revealed no standard application process, assessment, or monitoring frequency for electroencephalographic lead placement. Zulkowski reported medical adhesive–related skin injury could result if improper placement and removal of electrocardiographic electrodes occur. Pressure injuries cause great financial burden on the health care system, according to LeBlanc and Baranoski. In addition, MICU staff noted communication, as well as documentation, was lacking between the electroencephalograph technician and nurses. A standardized process was developed using paper tape with a looser gauze wrap and performing skin checks every 48 hours and as needed. A shared patient list was created in the electronic medical record with a standard location for documentation. For improved communication between electroencephalograph technicians and nursing, a template with electroencephalograph technicians’ contact numbers and a tip sheet was developed on the electroencephalography application process and assessment of dressing for tension. The new electroencephalography application and monitoring process began October 16, 2017. **Evaluation/Outcome:** Data were collected in the MICU from September 2017 to January 2018. The number of patients without cranial skin injury improved after implementation of the new electroencephalography application and monitoring process from 3 of 31 patients (10.3%) to none of 102 (0%). The estimated cost of a hospital-acquired pressure injury is $20 000 to $70 000 per wound, according to the Agency for Healthcare Quality and Research. The potential financial impact could be an estimated yearly savings of $720 000 to $2 520 000. Future implications are to extend the newly developed practices to the other adult intensive care units and outside of the intensive care unit setting.

**EB58: Standardizing and Sustaining a Unit-Based Nursing Handoff Sheet**

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**Purpose:** The goal of implementing and using a standardized nursing handoff sheet in conjunction with bedside report is to improve registered nurse (RN) satisfaction, patient safety, report consistency, and decrease incidental overtime. Inconsistent RN-to-RN handoff and various forms of handoff sheets are a problem causing information gaps and longer report times. Previously, the sustainment of a standardized handoff sheet was fleeting; therefore, there was no consistency throughout the unit. This problem required a solution. **Summary:** A standardized nursing handoff sheet was created for use during an RN’s shift and for giving information to the oncoming-shift RN. The first step in its development was merging the majority of sheets already being used
by RNs on the unit into 1 sheet. This sheet was then revised several times until most RNs were satisfied with the result. The final standardized handoff sheet was implemented in March 2017 and RNs were encouraged to use the sheet during shift-change report. Use of the standardized handoff sheet then became a process change, and all new RN residents were required to use it. Many experienced RNs also adapted to the change because leadership urged the use of standardized report to improve outcomes on the unit. According to research, the risk of significant, potentially harmful errors is decreased by implementing a standardized handoff sheet. Improvement of patient and RN satisfaction was also reported in literature to be much higher with the use of a standardized handoff sheet. According to research finding, report time could be decreased if a new process is implemented and the benefits of the new process are reinforced, leading to higher satisfaction among RNs despite change. Evaluation/Outcome: The following outcomes related to the use of standardized nursing handoff sheets were observed from 2017 to 2018: Nursing satisfaction scores increased, as evidenced by a staff-completed Likert-scale survey. Colleague engagement scores increased from 4.34 to 4.6, measured using the Press Ganey Colleague Engagement and Safety Culture Survey. Preventable falls were decreased by 29% and RN incidental overtime was reduced by 2.3 hours per month, or approximately 15%. These positive outcomes illustrate the effectiveness of a standardized tool and how it has been sustained and integrated into the medical intensive care unit culture.

**EB59: Implementing a Multidisciplinary Mock Code Program in a Medical Intensive Care Unit**

Sharon O’Donoghue, Ashley O’Donoghue, Bridgid Joseph, Ann Anderson; Beth Israel Deaconess Medical Center, Boston, MA

**Purpose:** The purpose of this quality improvement project was to provide training and education to the residents, interns, and nurses of a 12-bed medical intensive care unit (MICU) to improve in-hospital cardiac arrest (IHCA) metrics. A goal was to improve response times to red alarms, defibrillation, cardiopulmonary resuscitation, and administration of epinephrine. Team performance depends on the identification of appropriate team roles, effective teamwork, and closed-loop communication. **Summary:** Mock codes improve team dynamics and survival of patients who experience IHCA. Before implementation of the project, a survey showed that nurses preferred in-unit mock codes to improve their skills and confidence. Two instructors certified in advanced cardiovascular life support (ACLS) and who are nurses in this MICU, 2 clinical nurse specialists, and an attending physician developed this formalized, in-situ, mock code program in which each event has a 5-minute code and 5-minute debriefing. A needs assessment showed the MICU staff would support the project. Scenarios were built on the basis of ACLS algorithms to offer MICU clinicians the opportunity to learn to function as a team, improve communication, and debrief in a safe environment. A template was built to evaluate each mock code, and data were collected and analyzed after each session to identify areas for improvement. The staff running the codes were educated regarding standardized debriefing. The first mock code was used as a pilot to assess the program and identify areas of improvement. Changes to the evaluation form and scenarios were made to improve the design. These unannounced, multidisciplinary mock codes were scheduled monthly, held in an empty room, did not exceed 10 minutes, and provided a structured feedback system to inform how the participants fared. Evaluation/Outcome: A total of 14 mock codes were run over 18 months and 50 nurses and 27 physicians and/or respiratory therapists attended. From 2017 to 2018, response times to all metrics improved: Red alarms improved from 30 to 26 seconds, time to cardiopulmonary resuscitation improved from 39 to 37 seconds, time to epinephrine administration improved from 175 to 155 seconds, and time to defibrillation improved from 139 to 112 seconds. The hallmarks of effective code teams are identification of appropriate team roles, effective teamwork, and closed-loop communication. These mock codes improved the MICU’s metrics and have instilled confidence in the staff to provide a higher level of care to critically ill patients.

**EB60: The Bed Flow Charge Nurse Role**

Timothy Parker; Duke University Health System, Durham, NC

**Purpose:** The project goal was to improve efficiency of patient flow. The cardiothoracic intensive care unit (CTICU) expanded by 12 beds, accompanied by increased operating room (OR) volume. A third cardiothoracic surgery stepdown unit was also added, for a total of 118
beds for the service line in 4 separate units. Communication among multiple units was challenging, impeded timely patient flow, and caused the OR to be on hold frequently, at an average cost of $62/minute. The solution was defined to improve communication, improve efficiency, and eliminate OR holds. Summary: To achieve the goal of improving efficiency of patient flow within the cardiothoracic surgery service line, 1 charge nurse was designated to oversee bed flow. This role was in addition to 2 other charge nurses in the CTICU. An existing full-time equivalent was used from our variable staffing plan; no additional positions were created. The bed-flow charge nurse role was defined to communicate efficiently with the 3 cardiothoracic stepdown units, the OR, and all other portals of entry for patient placement. A designated telephone number was used to ensure that nurse could be reached easily. The primary role of the bed-flow nurse was to facilitate patient admissions and transfers, working closely with staff from nursing, environmental services, bed control, the transfer center, and hospital administration. Communicating frequently with multiple parties was crucial. Scheduled conference calls were planned throughout the day. Included on these calls were cardiothoracic surgery charge nurses, an OR charge nurse, and a nurse manager. Communication with the OR charge nurse was crucial to decrease hold times. To improve patient care and safety, eliminating unnecessary time in the OR without ICU nursing care was a priority. Communicating regularly with the stepdown-unit charge nurses improved patient flow from the ICU. Evaluation/Outcome: The addition of the bed-flow charge nurse was very successful, based on data pulled from the electronic medical record. Rates of OR holds decreased from 20.85% to 6.1% within 8 months of implementation and to 2.3% within 18 months, despite having an increase in volume of surgical cases. Staff satisfaction increased in the CTICU, including 81% of staff reporting they had more resources available to them. Patients’ families had a decrease in wait time before being able to visit in the ICU (the OR hold time decreased to 95 min/month from 311 min/month). Overall, efficiency of patient placement has improved greatly, which allows the service line to use CTICU beds more effectively, with greater resources available to staff.

EB61: Try a Little Restraint With Restraints
Patricia Lewis, Mary Manzano, Tumininu Layinka; Houston Methodist Sugar Land, Sugar Land, TX

Purpose: The Centers for Medicare and Medicaid Services and other patient-safety groups recommend a reduction in restraint use. The purpose of this evidence-based practice (EBP) project was to reduce restraint application to critical care patients using the “Restraint Wheel” and to sustain the improvement. Summary: In the critical care unit of a 20-bed community hospital, use of restraints averaged 166 episodes per month (range, 107 to 212) during 2015. A second intensive care unit (ICU) opened in February 2016, creating a 20-bed medical ICU and a 20-bed surgical ICU. In 2016, the surgical ICU restraint rates dropped, while restraint use in the medical ICU increased. In December 2016, ICU nursing staff presented the Restraint Wheel at the monthly EBP journal club. After critically appraising the article and staff discussions, the group unanimously recommended this process should be implemented in the ICU. Key ICU nursing staff discussed using the Restraint Wheel to guide restraint practices at daily huddles. The clinical practice council developed an implementation plan by posting the Restraint Wheel in key areas. The tool was discussed during daily care coordination rounds, evaluating where the patient was stationed on the wheel and if any other factors were preventing removal of the restraints. The team quickly observed that the Restraint Wheel worked. Documenting use of the tool in the electronic medical record provided a rapid visual aid of which patients required restraints. Staff discussed the need for continued restraint use during handoff. Evaluation/Outcome: There has been sustained reduction in use of restraints from 2017 to the present. Surgical ICU restraint use decreased from 92 to fewer than 31 episodes per month, despite an increase in ventilator days during the same time (96 to 135 ventilator days/month). Medical ICU restraint use decreased from 147 to 46 episodes per month despite an increase in ventilator days (132 to 188 ventilator days/month). Furthermore, there have been fewer than 6 self-extubations in both ICUs since implementation of this project. The ICU staff implemented a different way of thinking about restraints, focusing on keeping patients safe and trying a little restraint with restraints. Our voice . . . our strength.

EB62: Decreasing Compassion Fatigue by Education, Meaningful Recognition, and Stress Relief Interventions
Taylor Gates, Shawn Kennedy; Boca Raton Community Hospital, Boca Raton, FL
**Purpose:** Compassion fatigue, which includes high levels of burnout and low compassion satisfaction, directly correlates with job dissatisfaction and elevated turnover rates, according to research findings. The consequences for nurses are emotional, physical, and spiritual. Patient consequences include nursing errors, poor judgment, and decreased discernment and quality of care. The research does not include the 3 areas that seem to be most important to support compassion satisfaction. **Summary:** For full- and part-time nurses on the cardiac telemetry/intensive care unit stepdown/percutaneous coronary intervention unit, do education, meaningful recognition, and stress relief interventions decrease compassion fatigue relative to the current unit culture? The objectives were to increase staff awareness, teach staff how to incorporate the American Association of Critical-Care Nurses (AACN) healthy work environment (HWE) standards, and implement interventions that would help decrease compassion fatigue. All 62 full- and part-time nurses were asked to complete a survey and pretest, which asked questions about the staff’s perception of compassion fatigue and current unit culture, and also included the Professional Quality of Life (ProQOL) Scale and a relevant subset of questions from the AACN assessment tool—both validated and reliable tools. On the basis of the results and a literature review, a multifaceted intervention was created that included targeted education, meaningful staff recognition activities, and various stress-relief interventions, such as uninterrupted breaks, the use of a debriefing tool after stressful events, and team-bonding activities. This program was carried out over 6 months. **Evaluation/Outcome:** For the ProQOL Scale, the scores on the burnout scale decreased from 25 to 17, those relating to compassion satisfaction increased from 32 to 42, and those for the secondary traumatic stress scale decreased from 23 to 19. The AACN HWE tool question regarding formal reward and recognition indicated an increase in the “strongly agree” response from 6% before the intervention to 18% after the intervention and from 31% to 52%, respectively, for the “agree” response. Half the respondents said uninterrupted breaks were the most impactful intervention for them, followed by team bonding and debriefing. On the posttest, nurses rated the impact of education on their knowledge and fatigue, with 22% responding “strongly agree” and 49% responding “agree.” These results indicate that education, meaningful recognition, and stress-relief interventions, and the multifaceted approach had a substantial impact on the nurses.

**EB63: Propofol Versus Dexmedetomidine: Impact on Extubation Times of the Patient After Open Heart Surgery**

Sonya Williamson, Lauren Morata, Jennifer Montero, Allison Cahalan; Lakeland Regional Medical Center, Lakeland, FL

**Purpose:** A surgical intensive care unit at an 864-bed comprehensive tertiary referral center completed a project that reduced the time to extubation via a pain-first, sedation-second approach. During that project, propofol was noted to be the first-choice sedative, and the potential to further reduce the time to extubation with dexmedetomidine was found. Through collaboration with the multidisciplinary team, the choice of sedative was changed from propofol to dexmedetomidine on the basis of current evidence. **Summary:** An interdisciplinary team previously used Rosswurm and Larrabee’s model to implement the pain, agitation, and delirium guidelines and evaluate the impact on time to extubation in isolated patients who had undergone coronary artery bypass grafting (CABG). In collaboration with the cardiovascular surgeons, nurses synthesized and presented current evidence to a key anesthesiologist who championed the transition of propofol to dexmedetomidine. The manager and critical care pharmacy specialist educated nursing staff on the evidence and rationale behind the change in practice. Data were obtained from a quality database of isolated patients who had undergone coronary artery bypass grafting (CABG). The preintervention group included 52 patients from April 2017 to August 2017 and the postintervention group included 86 patients from April 2018 to August 2018. During the 8 months between each of the 2 time frames, 2 interventions were implemented: (1) continuation of an admission tracking sheet for patients undergoing open heart surgery and (2) evidence-based education on sedatives, related properties, and effect on extubation time. By treating patients undergoing cardiovascular surgery with dexmedetomidine for sedation rather than propofol, the team intended to reduce mechanical ventilation times among isolated patients undergoing CABG. **Evaluation/Outcome:** Time to extubation decreased from an average of 17.31 hours in the preintervention group to 12.09 hours in the postintervention group. The median
duration of mechanical ventilation in the propofol group was 5.25 hours, whereas median duration of mechanical ventilation in the dexmedetomidine group was 4.92 hours \((P = .09)\). In the propofol group, 65% of patients were extubated in under 6 hours, compared with 73% in the dexmedetomidine group \((P = .33)\), and 90% of patients were extubated in under 24 hours in the propofol group compared with 99% in the dexmedetomidine group \((P = .018)\). The results of this project provide insight for similar facilities seeking to implement evidence-based practices.

**EB64: Forming a Coalition to Battle *Clostridium difficile* Infections**

Susan Massatt, Marie Andersen; Advocate Christ Medical Center, Oak Lawn, IL

**Purpose:** The intensive care unit (ICU) outcomes committee sought to reduce the number of hospital-acquired *Clostridium difficile* infections in the medical intensive care unit (MICU). Infections had increased from a rate of 4.69 cases per 1000 patient-days in 2016 to 6.55 cases per 1000 patient-days in 2017. The committee decided to form an interdisciplinary team to investigate the issue and create a plan to decrease hospital-acquired *C. difficile* in the MICU. **Summary:** An ICU multidisciplinary team reviewed the literature and the data, and implemented a plan to reduce hospital-acquired *C. difficile* infections after relocation of the MICU and the institution of a new sepsis protocol. The team consisted of nursing leadership and clinical nurses, physicians, and pharmacy, infection control, and housekeeping staff. The team developed a 3-pronged approach comprising antibiotic control, cleaning of the MICU, and hand hygiene. Pharmacy staff reviewed antimicrobial regimens daily for appropriateness and discussed recommendations during multidisciplinary rounds. This process de-escalated initial therapy in correlation with culture results and reduced courses of broad-spectrum antibiotics after initial therapy. A review of the literature found support for sporidical disinfection and ultraviolet technology to reduce bacteria and pathogens. Housekeeping staff used sporicides for all terminal room cleans as well as daily cleaning on common area surfaces. Ultraviolet cleaning of all rooms in which patients with *C. difficile* infection stayed was instituted. Study findings in the literature also supported the importance of hand hygiene in cross-infection control. The hospital instituted a hand-hygiene initiative that involved education, observation, and metrics being shared with staff. **Evaluation/Outcome:** The team implemented the plan in January 2018. The MICU had 49 hospital-acquired *C. difficile* infections in 2017—a rate of 6.55 cases per 1000 patient-days. Pharmacy staff worked with physicians to control antibiotic use. Housekeeping retrained staff in the new MICU. Use of ultraviolet technology increased in terminal cleaning of rooms in which patients with *C. difficile* had stayed. Infection control staff encouraged and monitored hand washing. After plan implementation, the rate of *C. difficile* infections during the first 2 quarters of 2018 was 2.86 cases per 1000 patient-days, a decrease of 56.2%. The improved results were shared with the departments involved. All the stakeholders embraced the changes as supporting their common goal of keeping patients safer.

**EB65: Our Voice, Our Strength: Building Oncology Intensive Care Unit Resilience With Relationship-Based Care Initiatives**

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**Purpose:** The increased incidence of mortality in the oncology intensive care unit (ICU) has created a high-risk environment for moral distress, burnout, and compassion fatigue. As oncology-specific ICUs continue to expand, the opportunity to support the nurses and provide them tools, resources, and new skills for use in building resiliency became evident. The unit looked to implement evidence-based initiatives supported by our professional practice model to improve personal and organizational resilience. **Summary:** According to the current literature, promoting healthy work environments and providing resources to build resilience will improve staff retention and reduce turnover. The purpose of initiatives was to use our relationship-based care model to minimize caregiver burnout in an ICU with higher-than-average rates of patient mortality. Tea for the Soul is a program for the staff to take a break, find peace, and be replenished. Wellness Yoga is an initiative to enhance professional self-care: Staff meet after their shift for free yoga to breathe, stretch, relax, and leave the stress of work behind. The Stress, Trauma, and Resilience (STAR) program at our facility provides resources to support the overall well-being of staff. The program provides...
debriefing and support after critical incidents or difficult patient situations. The Brief Emotional Support Team (BEST) was created to help staff deal with daily stress and act as an on-unit support to provide emotional first aid. A mentorship program was developed to pair an experienced and new nurse together after the orientation period during the new nurse’s first year on the unit. In addition, the organization has a culture of wellness and compassion, offering all staff paid time off to attend workshops to build resiliency. Evaluation/Outcome: All the unit initiatives have strengthened teamwork to decrease burnout and increase resilience. Retention rates and staff satisfaction rates are higher than those of any other hospital units, and staff are lost only to relocation or graduation. Half of patient care assistants went on to become registered nurses on the unit. The postimplementation evaluation tool for Tea for the Soul supported the program’s substantial effectiveness in stress reduction. Staff report positive feedback from Wellness Yoga, and the instructor reports consistent attendance and repeated visits. The STAR, BEST, and mentorship programs were so successful in the ICUs that they have now been instituted throughout the hospital system.

EB66: Are You Informed on Consents?
Kathleen O’Doherty, Mary Caroline Weaver; University of Maryland Medical Center, Baltimore, MD

Purpose: The purpose of this project was to increase compliance with the informed consent process through interdisciplinary collaboration and education. Informed consent in the intensive care unit (ICU) is a critical element of patient safety and advocacy, because patients in the ICU are vulnerable and may be unable to self-consent for bedside procedures. In the medical ICU of a large, urban, academic medical center, a routine chart audit revealed extensive noncompliance in informed consent for bedside procedures. Summary: The project team selected the Plan-Do-Study-Act (PDSA) improvement science method to guide this nurse-led patient safety and quality initiative. The PDSA method has proven effective in improving informed consent for nursing-led initiatives in similar academic organizations and vulnerable patient populations. During the Planning phase, the team garnered stakeholder support and collected baseline informed-consent compliance data for bedside ICU procedures. Data were presented to unit provider and nursing leaders. The Do phase consisted of implementing real-time and marathon session education to increase staff awareness of informed-consent importance and emphasize that current noncompliance was unacceptable for patient safety in the organization’s patient- and family-centered care model. Properly completed consent examples were created and disseminated to provider and nursing staff for reference and review. In the Study phase, the team collected postintervention informed-consent compliance data. The Act phase is continuing. The project team and unit nursing leaders collaborate with interdisciplinary leaders and have implemented efforts in the surgical, cardiac, cardiothoracic, and neurologic ICUs. Evaluation/Outcome: Between March and October 2017, compliance with informed consent for bedside ICU procedures improved significantly. For individual elements of consent, there was a 214% increase in compliance for patient name, a 200% increase in compliance for date and time, and a 318% increase in provider identification compliance (n = 229 patients preintervention; n = 236 patients postintervention). Findings demonstrate nursing-led, evidence-based quality improvement methods improve outcomes. Nurses have a primary responsibility for patient safety and, by ensuring correct informed consent, advocate as the last line of defense for patients.

EB67: Preventing Pressure Injuries During Prone Positioning for Acute Respiratory Distress Syndrome
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Purpose: Pressure injuries (PIs) are the most common adverse event associated with prone positioning in the treatment of acute respiratory distress syndrome (ARDS). Pressure injuries lead to increased mortality, morbidity, and length of hospital stay. The cost of treating a PI is more than $43 000 (2007 estimate). Incidence of PIs during prone positioning for ARDS can reach 50%, with an odds ratio of 1.49. The goal was to develop a protocol to reduce the incidence of PIs during manual prone positioning. Summary: The medical intensive care unit (MICU) shared governance council, consisting of staff nurses and the clinical nurse specialist (CNS), discussed evidence-based preventive measures. A literature review showed the extent of the problem, but few effective interventions were described. Additional input from hospital wound ostomy and continence nurses, a perioperative CNS, and physical therapists was solicited. The change
In the fourth quarter of 2017, Hospital Communication scores were lower than expected for the 24-bed critical care unit in a 417-bed academic medical center. Staff registered nurse (RN) communication was identified as an area for improvement. The purpose of the “Commit to Connect” project was to enhance the existing “Commit to Sit” initiative by creating optimal structures and processes enabling meaningful staff RN, patient, and family communication. **Summary:** In 2014, the unit introduced the Commit to Sit initiative. Although initially successful, program drift occurred over time, along with reduced patient satisfaction scores. In January 2018, the unit manager, educator, clinical nurse specialist, and assistant manager worked with the unit practice council to identify areas for improvement. Working collaboratively, the existing Commit to Sit program was substantially enhanced: A 1-hour quiet time was implemented for each shift, during which nonunit staff would not enter the unit except for an emergency. The manager educated unit staff and the managers of other departments (eg, physician service lines, physical therapy staff, radiology staff). Commit to Connect was launched in March 2018. At the appointed hour, a clerk closes the unit doors, dims the lights, and sends a volunteer to monitor the door and explain the quiet-time policy to those attempting to enter. Staff RNs take this time to go to patient rooms, sit in the appropriate stool, and spend committed time with patients, or patients’ family members, to communicate, educate, and be responsive to any patient needs. Registered nurses then update the (newly installed) white board to capture communicated information for patients and families to refer to afterward. **Evaluation/Outcome:** Communication scores increased from 92% (66th percentile for large hospitals) in December 2017 to 99% (81st percentile) in September 2018. Implementation success was attributed to creating a structure (ie, quiet time) that afforded RNs and patients undisturbed time to focus on communication, and RNs felt fully supported to prioritize patient communication. Quiet time was sustained through manager commitment to accountability. The manager maintained awareness through daily huddles, one-on-one RN education and feedback, and being available to explain to those attempting to enter the unit during quiet time: The message was “we understand your job is important, but this is just as important.”

**EB69: Postoperative Delirium Prevention and Management From Door to Floor: A Quality Improvement Pilot Project**

Meredith Padilla, Floraliz Del Campo, Sandy Siewko; Hoag Memorial Hospital Presbyterian, Newport Beach, CA

**Purpose:** Approximately 5% to 60% of patients who undergo surgery experience postoperative delirium (POD). POD causes increased hospital length of stay and costs an additional $60 000 per case annually. In August 2016, a nurse-led multidisciplinary quality improvement (QI) pilot project was initiated to address POD in the step-down postsurgical units. The purpose of the QI project was to develop and implement a POD prevention protocol.
to increase nursing staff awareness and knowledge of delirium. **Summary:** The multidisciplinary core team, composed of nurse educators, directors, physicians (anesthesia and psychiatry), and pharmacists, focused on the implementation of a strategy to address POD prevention in all phases of care from door (preoperative admission, operating room, postoperative care) to floor (postoperative care at the stepdown surgical unit). The Plan-Do-Check-Act cycle was used to guide the team through the process. The following steps were taken: (1) planning for the QI pilot project and obtaining approval from leaders; (2) creation of a delirium protocol; (3) documentation enhancement of the Confusion Assessment Method (CAM) for ease of the scoring; (4) presentation of the plan at the unit practice council; (5) recruitment of unit champions to help support the project at the bedside; (6) education of physicians, nurses, nursing assistants, and pharmacy staff; (7) nursing staff education by educators during huddles and unit rounding, using posters and case vignettes; (7) help from nurse champions to reeducate and provide support to ensure adherence; (8) chart audits for compliance in documentation. **Evaluation/Outcome:** The results of this pilot project increased the nursing staff’s awareness and knowledge, as evidenced by the AWOL screening and CAM delirium documentation compliance (94%). Of the 115 patients screened for AWOL preoperatively, 42% were admitted to the stepdown surgical unit. Patients whose preoperative AWOL score was higher than 2 (73%) were at risk for delirium, compared with those whose preoperative AWOL score was less than 2 (27%). Results also showed that only 2% of patients had a positive CAM assessment. A 30% to 50% decrease in sitter use compared with previous months was also noted. The results of the pilot project were promising and led to hospital-wide implementation of the delirium protocol in all other noncritical care areas.

**EB70: Don’t Fret: Quality Resource Nurse to the Rescue**

Megan Hardy, University of Pennsylvania, Philadelphia, PA

**Purpose:** The 32-bed heart and vascular intensive care unit (H&V ICU) at the hospital of the University of Pennsylvania handles more than 1800 primary cardiac cases per year. Hospital-acquired conditions (HACs) had increased because of the acuity, the complexity of the surgeries, and the devices used to treat the cardiovascular patients. The H&V ICU launched a quality improvement project in fiscal year (FY) 2015 to assess nursing practice at the bedside related to HAC practices and provide “in the moment” education. **Summary:** In FY 2014-2015, a 3-month pilot study in the H&V ICU initially began as 2 quality-resource registered nurses (RNs) collecting data with a paper observation tool that was designed for evaluation of infection prevention practices. Later in FY 2015 through FY 2016, the role was moving forward and the quality-resource RNs collected data using Research Electronic Data Capture (REDCap) on an iPad. Quality improvement researchers validated the project and the efficacy of the role. Direct results were captured for January through March 2016. Over the last 3 years, there has been a 21% increase in patient volume. An increase in patient acuity, which was captured by a 46% increase of nurse-managed patients receiving extracorporeal membrane oxygenation. Despite an increase in acuity, as of FY 2018, the catheter-associated urinary tract infection rate decreased by 75%, catheter-associated bloodstream infection rate decreased by 57%, length of stay decreased by 36%, and death rate decreased by 27%. From FY 2016 to FY 2018, there has been an 8% reduction in unit-acquired pressure ulcers. **Evaluation/Outcome:** The pilot project was so successful that an additional full-time equivalent was awarded to continue the improvements that the role brought to the unit. The H&V ICU quality-resource role has been a great addition to the multidisciplinary team. Anecdotal reports from staff indicate feelings of increased support, education, and quality of care. Staff continues to appreciate the role and always look forward to the support. The H&V ICU now supports a quality-resource RN, Monday through Friday 11 AM to 11 PM. Approximately 15 RNs serve in this role. Since 2015, a process for recruiting and training quality-resource RNs has also been established to ensure consistent quality practices.

**EB71: Project Soundwave: Leveraging Ultrasound-Guided Intravenous Catheter Insertion and Gamification to Reduce Central Line–Associated Bloodstream Infection**

Brian Le, University of Maryland Medical Center, Baltimore, MD

**Purpose:** The purpose of this project was to reduce the incidence of central line–associated bloodstream
infection (CLABSI) in the medical intensive care unit (MICU) by improving MICU nurses’ proficiency in ultrasound-guided peripheral intravenous catheter (USGPIV) insertion to reduce central catheter device-days (CLDs) by expediting central catheter removal.

**Summary:** Root cause analyses of CLABSI identified that novice MICU nurses were apprehensive about removing a patient’s primary means of intravenous access. Novice nurses, therefore, were less aggressive about central catheter removal. Reports in the literature support USGPIV placement as the most accurate method of intravenous access placement, with no increased risk of extravasation. Although many MICU nurses were educated about USGPIV placement, few could use it proficiently. The project focused on experienced ultrasound users collaborating with novice users in one-on-one teaching. Experienced users were scheduled outside of patient care assignments to conduct daily audits for patients with central catheters that could be safely removed and to facilitate catheter removal. The experienced users offered assistance to novice nurses in obtaining intravenous access and simultaneously taught nurses about USGPIV placement. To complement one-on-one teaching, MICU nurses were challenged using simple gamification of intravenous insertion. Nurses were asked to voluntarily participate in a game during which they tracked the number of intravenous catheters they placed daily. For each intravenous catheter placed, nurses earned a rank that was publicly displayed at certain milestones. There were no other rewards or other compensation offered for participation.

**Evaluation/Outcome:** The number of CLABSI decreased from 11 incidents in fiscal year (FY) 2017 to only 6 cases in FY 2018. Initial interventions led to an immediate 12.5% reduction in CLDs in July 2017 and an 18.6% reduction in February 2018, after the gamification intervention. There was an overall 7.1% reduction in CLDs from FY 2017 to FY 2018. Likewise, device-days (ie, CLDs per number of patient-days) decreased by 11.3% from FY 2017 to FY 2018 and improved from an increase in device-days the previous year. When novice nurses are supported to become proficient in USGPIV placement, there is a positive impact on patient outcomes. Gamification of intravenous catheter insertion also motivates nurses to change practice and increases USGPIV placement.

**EB72: Journey to Zero Hospital-Acquired Pressure Injuries**

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**Purpose:** Hospital-acquired pressure injuries (HAPIs) are a nurse-sensitive indicator and costly to health care organizations. HAPI prevention has been a focus of the St Cloud Hospital surgical care unit 2 for years, but despite implemented evidence-based strategies, HAPIs could not be eliminated. From October 2015 to April 2016, there were 4 stage II or higher inner nares HAPIs caused by nasogastric tubes, with 1 HAPI being unstageable. **Summary:** Despite 2-person skin assessments on admission and return from surgery; 2-person skin assessment upon transfer from unit to unit; daily skin assessments, including under devices; and access to the wound ostomy continence (WOC) team, nurses on the unit recognized gaps in practice that could have contributed to the increased incidence in nares HAPI. A stakeholder group including certified registered nurse anesthetists, WOC team members, patient safety team, and clinical nurses from surgical care unit 2, imaging, the intensive care unit, and the operating room identified practice changes to prevent nares HAPI. The practice changes, which were implemented from July 2016 to September of 2016, included use of tape to hold nasogastric tubes in place for less than 24 hours instead of a manufactured securement device; staff education on proper placement of the securement device to ensure ability for the nasogastric tube to move freely without nare pressure; twice-daily skin removal of securement device tabs and skin assessment; securement device replacement every 72 hours; increased skin-champion rounds; and enhanced documentation of nares assessment. **Evaluation/Outcome:** Since implementation of the practice changes, surgical care unit 2 has not had a stage II or higher nares HAPI from nasogastric tubes. As of September 16, 2018, it has been 876 days since the last nares HAPI. Not only have the practice changes improved the incidence of nares HAPI, they have increased clinical nurse awareness of detailed skin assessments for early recognition of device-related mucosal injuries. These practices have been implemented hospital wide and an overall decrease in incidence has been observed. Continuous review of evidence and practice ensues to sustain current performance.
EB73: Decreasing Nonintensive Care Unit Codes With Education and Mock Code Training Performed by a Medical Emergency Team

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**Purpose:** Using the medical emergency team (MET) decreased code events outside of the intensive care unit (ICU) by providing education and in situ mock code simulation with medical-surgical units. Although these events are rare, they pose a great risk to pediatric patient safety and delays in treatment. Increasing hands-on training frequency with emergency equipment and situational awareness for medical-surgical unit staff increases confidence and competence. **Summary:** Pediatric patients who experience a cardiac arrest in the hospital have an approximate survival rate of 35% to 40%. Nurses’ comfort level, their ability to recognize signs of deterioration, and knowledge of how to respond during these events affect the patient’s risk of mortality. Traditionally, nurses performed recertification of pediatric advanced life support (PALS) every other year. The relative infrequency of PALS training, paired with the infrequent occurrence of emergency events, decreases the nurses’ comfort level with these high-risk situations. A 2-part quality improvement initiative was developed that focused on education and high-fidelity simulation. The education included information about signs of deterioration, sepsis, early-warning tools, equipment, roles, crash cart, the MET versus Code Blue, and a PALS review. This training was mandatory for all medical-surgical unit nursing staff. The MET collaborated with simulation staff to develop appropriate scenarios for the medical-surgical unit patient population. In situ mock codes were conducted biannually to allow participants to demonstrate what was learned during their education sessions. **Evaluation/Outcome:** The outcome of the project was based on participants completing pre- and postintervention surveys focusing on their comfort levels in emergent situations and with emergency equipment. As a group, there was a significant increase in comfort levels after the intervention, according to survey scores, compared with presurvey scores. Also, the quality department tracked non-ICU codes. In 2016, there were 8 non-ICU codes; in 2017, there were 4. On a scale based on 10 000 patient-days, the rate was 2.23 in 2016, which decreased in 2017 to 1.74.

EB74: Implementing a Validated Score for Compassionate Extubation

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**Purpose:** According to study data, 22% of US deaths occur in or after admission to the intensive care unit (ICU). Transition to end of life can be considered one of the most difficult and important aspects of nursing practice in the ICU. Results of a unit-based electronic survey indicated to the medical ICU (MICU) pain and palliative committee gaps regarding compassionate extubation. The primary goals of this project were to improve patient comfort by implementation of an assessment tool and improve staff satisfaction with compassionate extubation. **Summary:** Compassionate extubation was chosen as a unit performance improvement (PI) project after the initial gap survey results assessed by the pain and palliative committee were shared at a unit interdisciplinary committee meeting. A pre- and postintervention PI project was implemented in a 24-bed MICU to improve and standardize compassionate extubation. The interventions included a new flow diagram for medication administration, an interdisciplinary huddle, evidence-based guidelines for ventilator weaning and extubation, and implementation of the Respiratory Distress Observation Scale (RDOS). Education was provided through live education sessions, one-on-one mentoring, posters, newsletters, and email. A paper documentation study tool was developed for RDOS documentation. Patient data were collected before and after the intervention via log and chart review and entered into Research Electronic Data Capture (REDCap) during the 4-month PI project. Survey data had been collected before the project and the same survey was used to collect health care team satisfaction data after the intervention. **Evaluation/Outcome:** Survey results showed improvement after the intervention in ventilator weaning before extubation (pre- vs postintervention, 36.2% vs 83.3%; \( P = .00 \)) and staff overall satisfaction (pre- vs postintervention, 70.2% vs 83.3%; \( P = .03 \)), along with improvement in reported patient distress (pre- vs postintervention, 7.4% vs 4.8%; not statistically significant). Results were based on data from 58 patients (preintervention, \( n = 26 \); postintervention, \( n = 32 \)). Demographic data were similar between both groups, including Acute Physiology and Chronic Health Evaluation IV scores, time from...
extubation to death, and hospital length of stay. The RDOS median scores were 3.5 before extubation, 2 at time of extubation, and 2 after extubation, with a goal RDOS score of less than 4. Survey results and RDOS data indicated project goals were achieved.

EB75: Foley Avoidance Trial for Everyone: Decreasing Catheter-Associated Urinary Tract Infections by Avoiding Indwelling Urinary Catheters

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Purpose: A 30-bed neurologic, surgical, trauma intensive care unit (ICU) had been struggling with catheter-associated urinary tract infections (CAUTIs) at a rate of almost 2 infections per month. Something had to change to curb the rates, and the ultimate long-term goal was to reduce CAUTI rates to zero. With the institution of the Foley Avoidance Trial for Everyone (FATE), there was a real chance to reduce the total number of catheter-days, eliminate CAUTIs, and truly change the fate of at-risk patients. Summary: According to the Centers for Disease and Control Prevention, approximately 12% to 16% of adult inpatients will have an indwelling urinary catheter at some point during their hospitalization. Each day the urinary catheter remains, a patient has a 3% to 7% increased risk of acquiring a CAUTI. In reviewing evidence-based practice, it was determined that urinary catheter use must be targeted for improvement. To change the culture, the ICU team partnered with the trauma surgeons, neurologists, neurosurgeons, and intensivists to assess the need for indwelling urinary catheters every shift, remove those that did not meet criteria, and trial appropriate external alternative devices. Exclusion criteria for FATE were determined and approved by the various service lines to ensure appropriate process use. The relentless partnership between the ICU nursing staff and the various service lines fostered a culture that empowered nurses to do what is best for the patients, reducing harm and improving outcomes every day. Evaluation/Outcome: Using the FATE process, the overall number of catheter-days was greatly reduced. For example, in May 2017 (go live), there were 490 catheter-days in 790 patient-days; by October 2017, there were only 388 catheter-days in 796 patient-days. The standardized utilization ratio for urinary catheters during the FATE period was 0.876 (95% CI, 0.854-0.898; \(P = .00\)). From May 2016 to April 2017, there were 23 CAUTIs; this number decreased to 11 CAUTIs in the comparatively longer period from May 2017 to July 2018. The standardized infection ratio for this ICU from May 2017 to July 2018 was 0.654 (95% CI, 0.344-1.137; \(P = .14\)), which is very exciting for the staff!

EB76: It Takes a Village: Hardwiring the ABCDEF Bundle Across 2 Hospitals and 4 Critical Care Units

Meredith Padilla, Samantha Zimmerman, Tina Thomas, Wan-Ting Wu, Mary Jane Morimoto; Hoag Memorial Hospital Presbyterian, Newport Beach, CA

Purpose: A quality improvement multidisciplinary team was formally created to plan, develop, and implement the ABCDEF care bundle (ie, assess, prevent, and manage pain; both spontaneous awakening trials [SATs] and spontaneous breathing trials [SBTs]; choice of analgesia and sedation; delirium: assess, prevent, and manage; early mobility and exercise; and family engagement and empowerment) and improve patient outcomes in all the critical care units across 2 hospitals. The ABCDEF multidisciplinary team is composed of the intensivists, directors, nursing unit champions, physical therapists, respiratory care practitioners, lift coach, critical care nursing educators, information technology staff, pharmacy staff, and a performance improvement program manager. Summary: Areas of implementation of the ABCDEF bundle were focused on (1) staff education (nursing and nurse assistants) to increase their awareness and knowledge; (2) bundle discussion during intensivists rounds; (3) increasing the compliance rate by 10% of performing the SAT (which addresses A and B) by 5:30 AM, the SBT and coordination (which addresses A, B, and C) by 6:30 AM, and initiating early and progressive mobility (EPM); (4) development of the Pain, Agitation, and Delirium (PAD) policy; (5) increasing the compliance rate of delirium assessment (Confusion Assessment Method for the ICU [CAM-ICU]); (6) incorporation of the lift coach with EPM; (7) decreasing the length of stay; (8) improving the risk-adjusted mortality index of critical care patients; (9) decreasing the average respiratory and critical care costs in the critical care units; and (10) developing a patient and family brochure. Different methods of education delivery were used, such as posters, flyers, brochures, skills day, in-service sessions at the bedside, huddles, intensivists rounds, videos, online modules, case vignettes, and CAM-ICU simulation. There was much support from
the multidisciplinary team and critical care bedside staff in implementing the ABCDEF bundle and ensuring sustainability. Evaluation/Outcome: Increase in staff knowledge was evidenced by the percentage compliance of SAT, SBT, and EPM surpassing the 10% target goal for improvement. The compliance rate for SATs increased from a mean of 65% to between 85% and 99%; the compliance rate of SBTs increased from a mean of 10% to between 80% and 99%; and the compliance rate of EPM increased from a mean of 20% to 30% in 2016 to between 80% and 90%. Improvement in CAM-ICU documentation compliance occurred. Patient outcomes also improved; patients were successfully extubated early and there was a decrease in the critical care length of stay. The Risk-Adjusted Mortality Index decreased from 0.91 to 0.76. There was a decrease in the critical care cost per case as well as the average respiratory therapy costs, with approximately $500,000 saved by the hospital after implementation of this project.

EB77: Micro Turn-and-Position System for Pressure Injury Prevention in the Cardiovascular Intensive Care Unit

Jennifer Popies, Mara Fox, Kathryn Koerten; Froedtert Hospital, Milwaukee, WI

Purpose: To evaluate the effectiveness of a turn-and-position system used for “microturns” (ie, < 30 degrees), compared with usual care, in prevention of hospital-acquired pressure injury (HAPI) to the coccyx and buttocks in hemodynamically compromised adult patients in the cardiovascular intensive care unit (CVICU). Secondary aims were to evaluate the effect of the system on average time between turns and patient hemodynamic tolerance of turns. Summary: The project setting was a 20-bed adult CVICU at a Magnet-recognized academic medical center. The Plan-Do-Study-Act model was used and evaluation of current evidence on efficacy of the product was conducted by the Quality Council members, with discovery of a paucity of literature regarding results in patient populations similar to those in the CVICU despite good outcomes in general ICU and acute care environments. Therefore, a trial design was developed with a prospective, randomized convenience sample of 20 patients placed on the new system versus 20 patients receiving usual care. Inclusion criteria were established on the basis of information in the literature, as well as on trends from evaluation of HAPI events over the previous year. Guidelines regarding blood pressure change acceptability were also established to provide registered nurses (RNs) with recommendations for determining if a patient was not tolerating a turn and should be returned to a supine position. All CVICU RNs received training on the use of the new product, recommendations, and trial process of identifying patients who meet criteria, and placing them on a trial tracking board with date and time of inclusion in whichever category had the next opening for enrollment. Evaluation/Outcome: Patients in both groups were similar in age and body mass index but not in presence of pressure injury on admission, number of qualifying inclusion criteria, and length of time to meeting inclusion criteria. Patients treated according to the new system met more inclusion criteria and for longer, and had more pressure injuries on admission. One patient in the new positioning system group acquired a coccyx/buttock HAPI while the system was in use, compared with 3 patients who acquired a coccyx/buttock HAPI while receiving usual care methods. There was no difference between the groups in median time between turns (2.5 hours vs 2.6 hours) or in the number of patients for whom at least 1 turn had to be aborted because of instability (22% vs 28%).

EB78: Evaluation of Pressure Mapping as a Strategy to Reduce Hospital-Acquired Pressure Injuries in High-Acuity Patients in the Intensive Care Unit

Jennifer Popies, Inderjit Pooni; Froedtert Hospital, Milwaukee, WI

Purpose: To evaluate the effect of pressure mapping on the development of posterior surface, nonmedical device–related hospital-acquired pressure injuries (HAPIs) in high-acuity patients in a 20-bed cardiovascular intensive care unit (ICU) and 21-bed surgical ICU at a Magnet-designated regional academic medical center. Summary: All adult patients admitted to each of the units from April through June 2018 were included in the evaluation. The Plan-Do-Study-Act model was used and the unit quality councils, mentored by their respective unit clinical nurse specialists, used literature findings to develop a protocol for evaluating the effect of a rental continuous bedside pressure mapping (CBPM) system on 10 beds in each unit on rate of HAPI development compared with usual care of patients in the additional 10 beds. Institutional review board exemption as a quality
improvement project was obtained. Registered nurses and assistive staff were educated on use of the system, and quality council members served as champions and resources during the project. Instruction included direction to attempt repositioning patients when orange or red levels of pressure were observed on the CBPM monitor, as well as on the process of daily data collection for presence of high-acuity criteria, pressure-relieving devices in use, and recording every 1 to 2 hours of the highest pressure level (indicated by color) seen, including if repositioning was effective in reducing the pressure level. Evaluation/Outcome: Despite good compliance with the CBPM use, no effect was seen in the cardiovascular ICU: A new or worsened HAPI developed in 5 patients in each group. Minimal reduction was seen in the surgical ICU, with a new or worsened HAPI developing in 10 patients in the usual-care group, compared with 6 in the CBPM group. No effect was seen in either unit on median time between turns. Instead, presence of multiple high-acuity criteria was strongly associated with HAPI development in all groups in both units, implying that internal skin-perfusion factors may play a larger role in HAPI development in severely critically ill patients in the ICU rather than nurse-controlled external pressure-reduction techniques.

EB79: Integrating Family Care Conferences for Goals of Care in a Neurotrauma Critical Care Unit
Richard Arbour, Andrew Bender; Lancaster General Hospital, Lancaster, PA

Purpose: To integrate family care conferences in care delivery to improve family satisfaction and decrease intensive care unit (ICU) length of stay. In the year preceding this initiative, significant delays (1-5 days) occurred between ICU admission, identifying clinical triggers for care conferences, and timing of family meetings. In 5 of 35 patient deaths, family meetings were absent. Clinicians and families initially perceived family involvement in decision-making and quality of communication less favorably. Summary: The evidence-based solution was first to review available literature to establish clinical triggers for care conferences or palliative care consultation. Second, clinical triggers specific to the unit population were adopted by the interdisciplinary team and included admission Glasgow Coma Scale score of 3 (absent confounding factors), cranial gunshot wound crossing the midline, massive anoxic or ischemic injury, and anticipated prolonged mechanical ventilatory support. Third, these clinical triggers were integrated into unit rounding tools to ensure daily appraisal and follow-up with the provider and interdisciplinary team to facilitate appropriate consultation and/or care conferences. Fourth, regular meetings were held between the clinical nurse specialist (CNS), providers, and nursing staff regarding visibility of the project to secure and maintain team support for the project. Fifth, the CNS was visible on all shifts, during rounds, and at team huddles, providing team education and support as well as performing and coordinating pre- and postintervention data collection. Sixth, periodic review of patient needs for care conference(s) was done with the rounding team. Last, the CNS mentored bedside staff in family dialogue and collection of pre- and postintervention data. Evaluation/Outcome: Delay between patients meeting clinical triggers for care conferences and their timing decreased to 0 to 1 day. Evaluating family care conference timing as a line item during rounds was standardized. Staff reported feeling more empowered to point out clinical triggers and advocate accordingly during rounds. In 3 instances, staff advocacy was decisive in facilitating family care conferences, where do-not-resuscitate status and care de-escalation was obtained less than 1 day before patient death. After implementation, participants’ favorable experience with clinician and family perceptions of decision-making, inclusion in the decision-making process, and team and family communication increased 10% to 20%.

EB80: Nutrition Rounds Improve Timely Initiation of Enteral Nutrition in the Adult Medical Intensive Care Unit
Valeriy Koryukov, Rachel Gilwit, Melissa Meehan; UC San Diego Medical Center, San Diego, CA

Purpose: National guidelines from American Society for Parenteral and Enteral Nutrition recommend enteral nutrition (EN) be initiated within 24 to 48 hours of critical illness and admission to an intensive care unit (ICU). Findings from a comprehensive review of charts, supported by claims from ICU nurses, indicated initiation of EN was being delayed. The goal of this interdisciplinary, evidence-based project was to improve timely EN delivery and evaluate the effects of implementing nutrition rounds. Summary: Delaying EN results in increased bacterial challenge, risk for systemic infection, and
greater likelihood of multiple organ dysfunction syndrome, according to studies of EN in critically ill patients. Furthermore, delaying EN beyond 48 hours has been linked to increased mortality, infectious morbidity, mechanical ventilation days, and length of stay in the ICU. Despite these findings, no practical tool for intervention had been in place to consistently begin EN in a timely manner. An interdisciplinary team of nurses, dietitians, and medical staff was formed to develop and implement a daily goals sheet with a dedicated nutrition section to be used in nutrition rounds throughout the day, particularly in the morning huddle, team rounds, and physicians’ afternoon handoff. Nurses and medical staff were also educated on the importance of EN, recommended time frame, and contraindications to EN. Pre- and postintervention rates of compliance with the recommended guidelines for EN initiation were collected and analyzed over 3 months for all ICU admissions meeting inclusion and exclusion criteria. **Evaluation/Outcome:** The baseline compliance rate for initiation of EN less than 48 hours from admission to the ICU was 76%, compared with the postintervention rate of 89%, a 17% improvement. The baseline compliance rate for initiating EN less 24 hours from ICU admission was 43%, which increased by 28% after the intervention to 55%. Average time from admission to EN initiation was reduced by 25%, from a baseline of 35.5 hours before the intervention to 26.6 hours after the intervention. All parties were engaged in the project. On average, the postintervention sample indicated dietitians consulted on patients 4 hours faster, physicians took 7.25 hours less to order EN, and nurses initiated EN 1.48 hours sooner, once the order was placed by the physician.

**EB81: Increasing Situational Awareness Using a Visual Management System in a Cardiothoracic Stepdown Unit**

Deborah Burns; NewYork-Presbyterian/Columbia University Medical Center, New York, NY

**Purpose:** To increase situational awareness during change-of-shift huddles, using a visibility wall. Visual management is a Lean tool that allows leaders to communicate unit or organizational goals. Frontline staff can see data in real time and at point of use to collaborate and make decisions. The information shared during change-of-shift huddles did not include patient safety concerns. Situational awareness is an element of Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) and refers to the state of knowing the conditions that affect one’s work. **Summary:** This was a 1-year quality improvement project for a 36-bed cardiothoracic stepdown unit. The visibility wall was already established and was the structure to implement situational awareness. All charge nurses were educated about the situational awareness information to be shared during huddles (eg, falls risk, new arrhythmia, noncommunicative patients with increased frequency of rounding, patients with do-not-resuscitate or do-not-intubate orders, watchers, any patient with increased potential for decompensation and return to the intensive care unit). Updating the visibility wall was the primary responsibility of the charge nurse, but all nursing staff had the autonomy to update the information on the wall. Situational awareness data were shared at every change-of-shift and midshift huddle. A 7-item survey was administered before the implementation of the situational awareness. Two postintervention surveys were administered to measure the effectiveness of the situational awareness section on the visibility wall and inclusion of situational awareness in all change-of-shift huddles. The survey was electronically administered to all 68 staff nurses in the cardiac surgery stepdown unit. **Evaluation/Outcome:** The survey response rate ranged from 58% to 74%. For the question “Do you have the necessary information re: the status of the unit during change of shift,” the baseline response for “Always” was 61%, which increased to 74% after the intervention. For the question “Do you receive notification of unstable patients at change of shift,” the baseline response for “Always” was 42%, which increased to 85% after the intervention. This process is now routine in all change-of-shift huddles and all team members refer to the board as a team strategy to communicate information about higher-risk patients to be aware of, even when not assigned to care for the patient.

**EB82: On the CUSP: Implementing a Comprehensive, Unit-Based Safety Program to Decrease Catheter-Associated Urinary Tract Infections in an Intensive Care Unit**

Michaela Uanino, Rachel Wagner; St Mary’s Medical Center, West Palm Beach, FL

**Purpose:** The Comprehensive, Unit-Based Safety Program (CUSP) model is an evidence-based culture
improvement strategy for use in the acute care setting and combines clinical best practices and the science of safety. The purpose of this study was to determine if using a CUSP would decrease the rate of catheter-associated urinary tract infections (CAUTIs) occurring in patients in the intensive care unit (ICU) over 6 months. 

**Summary:** Implementation of the CUSP model included educating staff about CUSP, assembling a core team, engaging senior executives, understanding the problem through surveying frontline staff, identifying barriers and defects, implementing teamwork and communication, and applying the CUSP. Protocols were developed on the basis of best practices, a daily auditing tool was implemented, and root cause analyses were performed on all CAUTIs that occurred in the ICU involving CUSP team members, physicians, and frontline staff. 

**Evaluation/Outcome:** In 6 months, the CAUTI rate decreased from an average of 3.57 to an average of 1.08 infections per 1000 catheter-days, and device-days decreased from an average of 413.3/month to an average of 358.3/month. The ICU celebrated 90 days of no occurrence of CAUTIs during the study period (October 26, 2017, to January 26, 2017). Implementing the CUSP model has led to dramatic improvements in patient care and an increased awareness of and monitoring for CAUTIs. The CUSP team was a true collaborative effort among nurses, physicians, and executives at the unit and hospital levels.

**EB83: Implementing the CARE Program to Improve Staff and Patient Satisfaction in a Stepdown Unit**

Michaela Uanino; St Mary’s Medical Center, West Palm Beach, FL

**Purpose:** Communication, Accountability, Responsibility to Create Excellence (CARE) is a cultural transformation program developed by Dartmouth-Hitchcock Medical Center and the Institute for Healthcare Improvement. The program is based on effective communication and involves learning concrete ways to assess and improve clinical Microsystems. The purpose of this study was to evaluate how implementing the CARE program would affect staff and patient satisfaction on a 36-bed stepdown unit. 

**Summary:** Implementation of the CARE program involved 5 steps: organizing the lead team, assessment of the unit, diagnosing the unit, treatment, and follow-up. The lead team comprised stepdown unit leaders and frontline staff. An anonymous survey was distributed to 43 nurses to assess the unit and understand staff perceptions and satisfaction. To diagnose the unit, a survey was completed by frontline staff to evaluate processes and determine where to focus improvements. Treatment included weekly CARE meetings to maintain focus and oversee improvement work. Individual projects were implemented to improve processes that were identified as “broken” on the survey. The final step included a follow-up staff satisfaction survey to evaluate the effectiveness of the program 6 months after implementation. 

**EB84: Using Evidence-Based Practice to Lower the Incidence of Hospital-Acquired Pressure Injuries in the Intensive Care Unit**

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**Purpose:** There was a sustained increased in incidence of hospital-acquired pressure injuries (HAPIs) in 2017 in the intensive care unit (ICU). Of 52 occurrences hospital wide, 37 had occurred in the ICU. The aim of this project was to identify opportunities to improve practice, make the use of evidence-based preventive interventions routine, and to decrease HAPIs by 30% in the first 6 months of 2018, as compared with the first 6 months of 2017. 

**Summary:** An interdisciplinary team, composed of the ICU nurse manager; the wound, ostomy, and continence nurse manager (WOCN); and the respiratory therapy manager, led the reduction of the incidence of HAPIs in the ICU. A merged model of evidence-based practice and performance improvement was used to apply the best evidence-based interventions into the ICU practice setting. The Plan-Do-Study-Act
EB85: Implementation of Daily Goal Sheets in an Intensive Care Unit to Improve Provision of Enteral Nutrition

Melissa Meehan, Valeriy Koryukov, Daniel Sweeney, Rachel Gilwit; UC San Diego Medical Center, San Diego, CA

Purpose: The administration of adequate nutrition to critically ill patients correlates with fewer deaths, mechanical ventilation (MV) days, and cases of malnutrition; lower infection rates; and preserved skin integrity. Checklists and a daily goal sheet (DGS) used during multidisciplinary rounds improve quality care measures. For this project, the objective was to evaluate use of a DGS to improve the number of critically ill patients on MV support receiving the recommended volume (>80%) of prescribed enteral nutrition (EN).

Summary: A retrospective chart review was performed to assess the adequacy of EN provided per the registered dietitian recommendations (RDRs) to patients receiving MV support in an ICU between October 1, 2017, and December 31, 2017. Inclusion criteria were ICU admission, MV support for longer than 48 hours, and exclusive EN dependence. Patients receiving comfort care were excluded. A total of 17 patients before the intervention and 11 patients after the intervention met study criteria and were analyzed. Before the intervention, 3 patients (17.6%) met the goal of greater than 80% of RDR EN; no patients achieved 75% to 79% of RDR EN, and 1 patient (5.8%) was diagnosed with malnutrition. An interdisciplinary team of nurses, dietitians, and medical staff was formed to develop and implement a DGS with a dedicated nutrition section. The nutrition section of the DGS included diet (ie, oral, EN, parenteral, or nothing by mouth [NPO]), NPO reason, need for follow-up by or consultation with a registered dietitian, and if EN was infusing at a rate to achieve the prescribed goal. DGS use was implemented on May 1, 2018, and the DGS was used during the morning huddle and afternoon multidisciplinary rounds. Practitioner DGS compliance and the impact of the DGS on prescribed EN volume was analyzed from May 1, 2018, through July 31, 2018. Evaluation/Outcome: The DGSs were completed on 45 of 92 days (49.5%); the goal of greater than 80% of RDR EN was met for 3 patients, 2 patients (18.2%) achieved 75% to 79% of RDR EN, and none was diagnosed with malnutrition. After the intervention, EN adequacy of greater than 80% of RDR administered to patients receiving MV support increased from 17.6% to 27.2%; the number of patients receiving 75% to 79% of goal EN improved 18%; and the number of patients diagnosed with malnutrition declined 100%. Despite only 50% practitioner compliance, implementation of a DGS improved the delivery of adequate EN delivery to this patient population and reduced the number of cases of malnutrition. Efforts to improve practitioner use of this DGS is likely to yield even greater outcomes.

EB86: Enhancing Self-Compassion: Using Skilled Self-Talk in Critical Care Orientation

Marie Cockerham; University of Washington, Seattle, WA

Purpose: Nurses who are new to the intensive care unit (ICU), including new graduates and non-ICU registered nurses (RNs), often experience self-doubt and self-judgment during their ICU transition. To offset these challenges, an effort was made to enhance nurses’ self-compassion: being kind and understanding to oneself, especially in hard times. For this evidence-based project, orientation was modified by adding skilled self-talk as a part of healthy work environment skilled communication. The purpose of the project was to use skilled self-talk to enhance self-compassion during the transition to the ICU.

Summary: Neff’s conceptualization of self-compassion reflects a combination of 3 opposing poles: self-kindness/self-judgement, mindfulness/overidentification, and...
common humanity/isolation. Enhancing self-compassion is important; evidence suggests self-compassion is associated with resilience and life satisfaction, which, in turn, may decrease burnout and increase nurse retention. To enhance self-compassion, exercises using skilled self-talk were integrated into the 16-week orientation. The curriculum includes 15-minute activities and discussion during the first 6 in-person education days and weekly homework. The exercises were obtained from Neff’s self-compassion website. Activities included noticing self-talk, writing a self-compassion letter, using the letter to create new self-talk, practicing new self-talk to be motivating, creating a unique self-compassion break, and reflection and brainstorming about further developing and integrating positive self-talk and self-compassion. The activities were facilitated by a critical care nurse educator and supported by the preceptors. The evaluation includes Neff’s 26-item Compassion Inventory and open-ended questions to allow the nurses to reflect on their learning related to self-compassion. 

**Evaluation/Outcome:** Evaluations were completed at the start of orientation (baseline) and at 4 weeks, after a particularly challenging didactic portion of ECCO. Overall scores were neutral on all scales, with highest scores in common humanity and lowest scores in self-judgment. There was a significant improvement in common humanity at week 4, with 85% of the nurses having a higher score, reflected by comments such as “It helps to have an opportunity to discuss this with the other nurses.” The evaluation provides insight into the nurses’ self-talk and supports the need for ongoing evaluation, coaching, and targeted activities to enhance ICU nurses’ self-compassion in support of their successful transition to the ICU.

**EB87: Keep It Simple: Medication Education Made Easy**

Wesley Jordan, Dayle Flammia; Duke University Hospital, Durham, NC

**Purpose:** According to the Centers for Medicare and Medicaid Services, communication about medications is a critical aspect of the hospital experience for patients. On the cardiothoracic stepdown unit, quality scores for patient-perceived communication about medications declined steadily from November 2016 to March 2017. A team used evidence to create a medication board, with the goal of improving quality and safety by establishing a nurse-patient partnership for medication communication. 

**Summary:** The unit-based patient-experience committee identified approximately 50 commonly prescribed medications used by the unit’s patient population. In collaboration with advanced practice providers and pharmacists, we narrowed the list to 21. With input from patient feedback, small cards were created containing basic information about medications, such as the indication and the 3 most common adverse effects. Health literacy–appropriate text was used (ie, third-grade level), and cards were duplicated and placed in pockets organized by drug class and indication on a medication board. The large, brightly colored board was displayed in a prominent location easy for patients to access. Staff was educated via emails, staff meetings, and the unit newsletter on how to use the medication board to improve communication and strengthen the patient partnership. On the project implementation date in May 2017, patients were encouraged to visit the board while ambulating and take a card for each medication they were receiving. The hole-punched cards could then be placed on a binder ring and taken back to the patient’s room where they could review the information, engage caregivers, and be reminded of any medication-related questions for the care team on rounds. 

**Evaluation/Outcome:** Quality measures for communication were evaluated using Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), direct patient and caregiver feedback, and documentation of medication reconciliation in the electronic health record after-visit summary. One month after implementation of the medication board, HCAHPS scores improved (before vs after intervention: 62.5% vs 93.8%) in the percentage of patients answering yes to “How often did hospital staff tell you what a new medicine was for?” Real-time patient-reported feedback has been incorporated in the design and expansion of cards, and accuracy on medication reconciliation at discharge has improved. Sustainability of results is reflected in quality scores that remain well above the reported national average of 66%.

**EB88: Caring, Not Hurting: A Comprehensive Workplace Violence Prevention and Recovery Program**

Patricia McCabe; MedStar Washington Hospital Center, Washington, DC

**Purpose:** Increasing workplace violence (WPV) events in the hospital and lack of accurate reported
WPV data necessitated the development of an evidence-based WPV program. Workplace violence is becoming a global epidemic. In 2016, the US Bureau of Labor Statistics reported an 11% increase in the rate of health care WPV. Seventy-five percent of all WPV assaults happen in health care. Verbal or physical abuse from a patient was reported by 76% of nurses. **Summary:** A comprehensive, evidence-based WPV program was developed and implemented in a large, acute care, level I trauma center. The multiprofessional WPV program team identified prevention, mitigation, response, reporting, recovery, a leadership toolkit, and a response team as essential program components. Strategies to prevent WPV include risk and vulnerabilities assessments (eg, unit walkthrough assessments); annual WPV prevention training (eg, warning signs, de-escalation, nonharmful holding skills, communication, and WPV algorithms); a behavioral response team (Code BERT) deployed 24/7 to high-stress situations; electronic medical record (EMR) behavior assessment screening and interventions; safety alert signage; screening patient belongings; room assessments; panic alarms on computers; visitor control (eg, limited access points); and EMR alerts for previous known disruptive and aggressive patients. Event mitigation includes detailed investigation summaries, initiation of safety contracts, debriefing, and reassessments. The leadership toolkit contains debriefing tools; employee support checklist, pamphlets, and referrals; documentation forms; and a reporting checklist. **Evaluation/Outcome:** Only 30% to 40% of nonphysical violence incidents and less than 60% of physical violence incidents are reported. Accurate data can identify trends, barriers, and effective interventions. The culture needed to change from “it is just part of the job” to “report all WPV events.” With a robust awareness campaign, reporting of events increased by 479 calls (fiscal year [FY] 2017, n = 559; FY 2018, n = 1038). In the United States, $42.3 million is spent on lost wages related to WPV. The number of WPV-related lost-work days continued to climb at the center; 66 in FY 2016, 115 in FY 2017, and 161 in FY 2018. Recent Code Silver debriefing data resulted in monthly, discussion-based active-shooter exercises and drills with local law enforcement agencies.

**EB89: Voice for the Voiceless: Evidence-Based Communication for the Voiceless Patient in Critical Care**

Rita Whitney; Medical City Plano, Plano, TX

**Purpose:** Critical care patients are often unable to communicate because of intubation, tracheostomy, or other conditions that render them speechless. Patients unable to communicate with health care staff experience significant frustration. In an acute care hospital, limited communication devices or aids were available, and their use varied among the critical care units. The purpose of this quality improvement project was to reduce patient frustration with communication, improve care, and standardize communication practices. **Summary:** A PICOT (patient or problem, intervention, comparison intervention, outcome, time) question was developed and a literature search conducted to find the best evidence to address the practice problem. The baseline nursing practice had been to attempt to read the lips of speechless patients, which research shows is ineffective. Study results showed that an evidence-based protocol should be used and multiple communication devices and aids be made available, with selection based on an assessment of the patient’s communication needs and preferences. A systematic review provided an evidence-based algorithm, which was used to standardize the communication devices and aids and practices across 4 adult critical care and 3 stepdown units. Additional communication devices and aids were secured for use. A standardized communication box was assembled for each critical care unit and contained a variety of devices and aids, such as communication boards, writing tablets, and an electronic tablet with a communication board application. Nursing staff were educated on the use of the communication devices and aids, how to select an aid on the basis of an assessment of the patient’s needs, and how to implement use according to the evidence-based protocol. Data were collected from a pre- and postintervention survey of patients over 8 weeks. **Evaluation/Outcome:** Patients (n = 13) were surveyed about their level of frustration with communication before and after implementation of an evidence-based communication protocol. Responses were measured on a Likert scale of 1 (not frustrating) to 5 (extremely frustrating) to collect data. By the Wilcoxon sign rank test, there was a significant median difference (score 2.0; z = -3.219, \( P < .001 \)) between patients’ preintervention frustration level (score 5.0) and postintervention frustration level (score 3.0). An evidence-based protocol and improving access to communication devices and aids led to a
Purpose: Quick sequential organ failure assessment (qSOFA) criteria (ie, altered mental status, systolic blood pressure ≤ 100 mm Hg, respiratory rate ≥ 22/min) is recommended to identify non–intensive care unit (ICU) patients at risk for sepsis. It was hypothesized that sepsis education targeting use of qSOFA and organ dysfunction criteria, and empowering nurses to trigger a rapid response team (RRT) call based on qSOFA would reduce time-to-sepsis recognition and shorten time-to-sepsis intervention for non-ICU patients at high risk. Summary: A Sepsis Education Initiative (SEI) was developed for UPMC Hamot, a tertiary referral center and level II trauma center. We educated more than 1000 nurses, physicians, advanced practice providers, and RRT members about sepsis recognition, use of qSOFA, and guideline-driven sepsis interventions. Formal presentations, updates at staff meetings, and small-group nurse huddles led by the sepsis educators were conducted; and each participant was provided a card summarizing qSOFA and organ dysfunction criteria. Nurses were empowered to initiate RRT calls for patients with positive qSOFA (ie, ≥2 criteria). Charts of 60 patients with sepsis transferred to the ICU after RRT activation were reviewed: 30 before and 30 after the SEI. Time to sepsis recognition by qSOFA and Centers for Medicare and Medicaid Services (CMS) sepsis criteria was measured as time from meeting criteria to time of RRT call. Time to sepsis intervention was determined from the time of the RRT call, time meeting CMS criteria, and time meeting qSOFA criteria when interventions were performed (ie, fluid bolus administered, lactate level measured, antibiotic given). Institutional review board approval was obtained. Mortality of and recognition and treatment times for patients with poor and good outcomes were evaluated. Evaluation/Outcome: Sepsis recognition: The median time from qSOFA to RRT call improved from 11.8 (interquartile range [IQR], 3.4-34.3) hours before SEI to 1.7 (IQR, 0.0-11.7) hours after SEI (P = .005). Sepsis intervention: The median time from qSOFA to antibiotic administration improved from 1.4 (IQR, 2.4-6.2) hours before SEI to -4.7 (IQR, -25.4 to 1.8) hours after SEI (P < .01). Seven patients in the pre-SEI group and 10 patients in the post-SEI group died (a statistically nonsignificant difference). Patients with good outcomes had shorter time from qSOFA to RRT call (2.7 [IQR, 0.2-15.5] hours) than did patients with poor outcomes (17.0 [IQR, 4.9-90.7]; P = .006). A nurse-driven intervention emphasizing qSOFA criteria for triggering an RRT call resulted in earlier sepsis recognition and improved time to antibiotic administration.

EB91: Leading Teams Through Collaboration: An Innovative Approach to Transitions in Care

Shaun Frame; Medical University of South Carolina, Charleston, SC

Purpose: A nurse leader of a Beacon-designated unit improved transitions in care between a pediatric cardiac critical care unit and a pediatric cardiac intermediate-care unit. Transitions in care between units often put patients at higher risk for errors. The leader facilitated communication and collaboration between the shared governance councils that increased knowledge management and staff engagement. The teams implemented patient-focused interventions that increased effective care transitions. Summary: The nurse leader recognized that transitions in care from the pediatric cardiac critical care unit (unit 1) to the pediatric cardiac intermediate-care unit (unit 2) put patients at risk for errors and readmission to unit 1. In 2016, the nurse leader engaged clinical leaders and the shared governance teams to evaluate recent and historical transitions-of-care errors. The teams implemented several patient-focused safety interventions, including bedside handoff before transition, collaborative patient assessment, peripheral intravenous catheter (PIC) evaluation, family introductions, and unit tours. Staff accountability to the new process was promoted by the teams and the nurse leader. The interventions occurred before each transition in care, with a nurse from unit 2 going to unit 1 to receive a bedside handoff of care. Both nurses then performed a collaborative patient assessment, noting any patient-specific concerns. For purposes of patient safety, evaluation of the PIC was completed by the unit 2 nurse before transition and the PIC would be replaced by the unit 1 nurse if necessary. To ease anxiety and build trust, a tour of unit 2 was offered to families 1 to 2 days before...
transition. **Evaluation/Outcome:** A standardized culture-of-safety tool was used to evaluate the interventions, with questions focused on collaboration, communication, and transitions in care. The units were successful with their interventions and saw an increase in scores between years. Different work units work well together (unit 1 scores: 3.98 in 2017, 4.30 in 2018; unit 2 scores: 3.6 in 2017, 3.86 in 2018). Communication between work units is effective (unit 1 scores: 3.9 in 2017, 4.27 in 2018; unit 2 scores: 3.77 in 2017, 3.77 in 2018). Things do not fall between the cracks when transferring a patient from 1 unit to another (unit 1 scores: 4.08 in 2017, 4.18 in 2018; unit 2 scores: 3.16 in 2017, 3.45 in 2018). Through collaboration, the units created a patient-focused transition of care.

**EB92: Intensive Care Unit Code Brown: *Clostridium difficile* Isolation and Prevention**  
Jisebelle Tizon; Exempla Saint Joseph Hospital, Denver, CO

**Purpose:** The goal of this project was to improve infection-prevention practices related to isolation precautions. Hospital-acquired infection with *Clostridium difficile* became a core measure in 2017 and reduction of this type of infection became a measurable outcome for this initiative. **Summary:** Nurses and respiratory therapists completed a survey that revealed the need for education for these staff members and restructuring of patients’ rooms to improve infection-prevention workflow. A review of literature indicated much that already was being done at the hospital; however, minimization or prevention of *C difficile* transmission was an area staff thought could be worked on that could have a positive impact on reducing cases of hospital-acquired infection. A team of nursing champions and the clinical nurse specialist met and discussed the feasibility of restructuring patient rooms and workflow to improve the infection-prevention process, and implemented the following steps: (1) Separation was created between a clean area and dirty/contaminated area. The clean area was defined as the area before the curtain; the dirty area was defined as the area after the curtain. Signs were created for visual cues such as “Clean area. . . wipe q 12 hours” and “Clean hands only” and placed on the front of the drawers to prevent being accessed with dirty hands. (2) With the help of the chief nursing officer and quality director, 1 hour of paid education—simulation of the new process related to *C difficile* prevention—was provided to nurses.  
**Evaluation/Outcome:** Outcomes of infection with *C difficile* were evaluated using the VigILanz clinical surveillance platform before and after implementing the intervention. From August 1, 2016, to July 31, 2017, the intensive care unit had 15 cases of *C difficile*. After staff education was conducted in May through July 2017, the total number of ICU-acquired *C difficile* infections from August 1, 2017, to August 1, 2018, was 10. Of note, there was an upward trend in the number of *C difficile* infections during the first 4 months of 2018. After nurses were reminded of prevention strategies, there were no ICU-acquired *C difficile* infections during the succeeding 4 months. Constant feedback to our nurses about monthly *C difficile* data and about every incidence of *C difficile* infection is important for ongoing evaluation of the process and outcomes.

**EB93: Blood Conservation Project**  
Aaron Reid; Cleveland Clinic, Beachwood, OH

**Purpose:** The critically and chronically ill patient populations are at increased risk for development of hospital-acquired anemia. The goal of this project was to lessen the volume of blood phlebotomized from our patients during laboratory testing for the purpose of preventing or slowing developing anemias. The intent of this goal is to lessen declines in patient condition, improve outcomes, and potentially lead to less need for blood transfusions, while maintaining efficacy in laboratory test results. **Summary:** As blood is collected from patients, they are put at risk for declining health outcomes, and this risk is elevated in critically ill patients who are unable to compensate for rapidly developing anemias. The volume of blood collected strongly predicts decreases in hemoglobin and hematocrit values. The solution was to identify a way to preserve a patient’s blood volume during the phlebotomy process while maintaining efficacy in laboratory testing results. After some research and coordination with the hospital laboratory, it was determined that some phlebotomy tubes could be replaced with tubes of lesser volume. The type of phlebotomy tubes used most often were identified through analysis of physician orders and deemed to represent the largest blood-preservation volume. The renal panel, complete blood cell count, and coagulation tubes were replaced, because most patients, according to analysis of orders, undergo blood collection for these tests.
Each tube represents a volume of blood collected, and by reducing this volume, a determined percentage of each patient’s blood could be preserved. This practice provides an easily adaptable, measurable, and sustainable process that contributes to a best practice for overall improved outcomes. **Evaluation/Outcome:** Collected blood volumes were deceased as measured percentages for each tube during a 3-month trial in our medical intensive care unit (ICU). The renal function panel studies represented a 22% decrease in collected blood volume, the complete blood cell count studies represented a 50% decrease, and the coagulation studies represented a 33% decrease. The total blood volume conserved was 5258 mL, which otherwise would have been wasted. There was no loss in efficacy and the process was fluid without any major complications. The project has been made permanent in the medical ICU and expanded into the surgical ICU and emergency department. Transfusions are being tracked, and although clinical outcomes are difficult to correlate, work is continuing to expand blood-conserving practices.

**EB94: Imagine a World of Interprofessional Collaboration for Mock-Code Success**

Bryna Rickett; Medical University of South Carolina, Charleston, SC

**Purpose:** There is limited opportunity for interprofessional training of code events, resulting in ineffective team performance and skill proficiency. The implementation of interprofessional simulated mock-code events provides an opportunity to promote team building and improve patient outcomes. The purpose of this project was to promote successful team-building skills as well as competency and confidence during emergency events through collaborative partnerships with in situ emergency simulation exercises. **Summary:** During a code debriefing, pediatric cardiology intermediate-care nurses identified deficiencies related to performance and comfort level during code events. Deficiencies noted were ineffective identification and integration of team roles, communication, and medication preparation. An interprofessional mock-code training team was developed. The team included a nursing professional development specialist, attending physician, physician assistant, and an advanced practice registered nurse. “Epi drills” were facilitated in which nurses practiced drawing up code-dose epinephrine to become comfortable with the technique and dose. In addition, the interprofessional code team executed medium fidelity, in situ mock codes every 2 weeks, alternating between day and night shift. During the mock codes, nurses, physicians, respiratory therapists, and pharmacists were included in simulated code events to promote skills training and team building. **Evaluation/Outcome:** A total of 21 simulations were performed from August 2015 through February 2017. Debriefing sessions held after mock codes revealed time to epinephrine administration decreased from an average of 4 minutes to an average of 2 minutes and 47 seconds. Staff verbalized satisfaction in the communication between the interdisciplinary team, better retention of knowledge and skills related to code situations, and increased comfort in real emergency situations. Through this collaborative training, in situ emergency simulation exercises promoted successful team-building skills as well as competency and confidence during emergency events.

**EB95: Falls Stop Here: An Educational Approach to Fall Prevention**

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**Purpose:** Each year, 700 000 to 1 000 000 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 a patient’s length of stay. A unit experienced a 100% increase in falls 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 this unit, the modified Bedside Mobility Assessment Tool (BMAT) is used 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, a root-cause analysis (RCA) was performed for each fall. 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 undergone lung transplant with prolonged lengths of stay. Because falls were more likely with newer staff, falls and safe mobility education, including the use of lift equipment, was added to orientation and the unit safety blitz. In addition, unit audits of nursing compliance with BMAT and falls bundle use were increased. When practice deficits were identified during audits, the auditor provided education and answered staff 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 shift announcements. **Evaluation/Outcome:** After using RCA, safety audits were increased and staff education was improved. These interventions have significantly decreased falls on the unit, and a fall by a patient has not occurred in more than 200 days. In addition, staff report feeling more comfortable operating proper lift equipment and safely mobilizing patients. Lift equipment use has increased by 48.3% in the past year. Overall, these interventions have increased patient safety and decreased patient falls on the unit.

**EB96: Pressure Ulcer Prevention Partners**
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**Purpose:** The purpose of this project was to have a 50% decrease in the number of pressure injuries (PIs) due to airway devices in the surgical intensive care unit (ICU) by at the end of the third quarter of 2018. To do this, there was a need for early discovery of PI and interventions by improving assessments that encompass both the respiratory care practitioner (RCP) and the registered nurse (RN). **Summary:** Of the 43 cases of PIs occurring from the neck and up that were reviewed in 2017, 95% were device related. The 3 causes of PI from airway devices with highest incidence were endotracheal tube (ETT), ETT securement device, and tracheostomy tube. Skin champions worked with the respiratory team to develop a strategy addressing these concerns. In April 2018, an assessment process was implemented for patients with a nasal cannula, mask, tracheostomy tube, or ETT. Dual assessment by the RCP and RN focused on checking under all devices, even cervical collars and nasogastric and orogastric tubes, and checking pressure points. The collaboration involved bedside conversation on measures for prevention and intervention using both specialties and what items were available to them. A documentation field in the patient chart was created by clinical informatics to allow the RCP and RN to collaboratively view and document their dual skin assessment. RCPs were responsible for charting the assessment by the RCP and RN assessment, using the following options: skin intact, redness, wound location. There was no wound staging by the RCP. If a wound or redness was present, the RN was responsible for charting wound details and interventions, obtaining photographs, notifying physicians, and consulting wound care, if appropriate. The RCP and RN skin assessment was to be completed during the night and the morning shifts. **Evaluation/Outcome:** The outcomes indicated the project was effective and increased collaboration in the work environment between nursing and the respiratory care team. By July, the RN and RCP compliance goal of greater than 80% was achieved. As a result, there was a 68% reduction in PIs above the neck between the first and second quarters of 2018. Also, both teams can attest to an increased awareness and improved assessment skills. Additional PI prevention interventions such as frequency of ETT repositioning also have been identified. Because of the success of this initiative and the difference made to patient care, this practice was adopted by all other ICU units in the hospital.

**EB97: Thinking Outside the Box: Creation of an Innovative Education Session to Decrease Pressure Injuries**
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**Purpose:** In the United States, pressure injuries (PIs) develop in approximately 1 million to 2.5 million patients annually. The progressive care unit (PCU) at an academic medical center was struggling to reduce the number of PIs. To address concerns about staff knowledge and confidence in treating PIs, a survey was sent to all staff to identify areas of opportunity for education. The goal of this project was to increase knowledge of and competency in the identification and treatment of PIs while decreasing their occurrence in the facility. **Summary:** A knowledge deficit existed regarding PI identification and treatment. An educational session incorporating simulation, unfolding case studies, and didactic lecture was created to increase staff knowledge of and competency in identifying, preventing, and treating PIs. Techniques were used in the session that were described in evidence-based practice projects. Four low-fidelity simulation stations were created, each with a unique scenario requiring staff to assess the patient, demonstrate actions to implement, and determine risk through use of the Braden Scale in the electronic health record. Once staff completed their station, all gathered in a common area to discuss findings in their simulation. The hypothesis was
EB98: Organ Donation: Best Practice Recommendations
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Purpose: The purpose of this project was to improve timely notification compliance with an organ procurement organization (OPO) when cardiovascular collapse or neurologic death is anticipated. The aim was to close the gap between the medical center’s number of eligible donors and the number of actual donors. The problem identified was a declining 2-year trend (6.9%) of delayed or absent OPO notification of patients who met the clinical trigger criteria for potential organ donation. Summary: The evidence-based solution embraced by the project group was guided by Richard Arbour’s best practice organ-procurement guidelines. Arbour’s algorithm directs nurses to notify OPO services when specific early end-point neurologic dysfunction is noted. This early notification allows time for the initial OPO inclusion/exclusion assessment to be completed and collaboration with the health care team to ensure sustained end organ perfusion is maintained. Project group members included the OPO clinical director, chief nursing officer, physicians, respiratory therapy director, bedside intensive care unit (ICU) nurses, ICU director, ICU manager, and ICU educator. Clinical-trigger education was provided quarterly and collaboratively with the ICU educator and OPO director. In a 2016 article, Citerio et al recommended specific vasopressive agents and ventilator strategies to optimize end organ perfusion. According to Citerio et al and Arbour, developing a collaborative relationship between the hospital and the OPO team is recommended to optimize benchmark success. Evaluation/Outcome: A 6.9% declining OPO notification compliance rate of 75% was noted during the 2015 and 2016 preintervention years and resulted in multiple potential missed organ donations that could have affected many lives. In November 2016, the OPO project group was formed and the evidence-based practice recommendations were implemented to improve early notification and optimize end organ perfusion. OPO education is now conducted quarterly. Success was measured by meeting the hospital’s benchmark expected organ donation rate. In 2017, the postintervention early OPO referral rate exceeded the benchmark by 9.6%, at 91.7%, and the 2018 benchmark rate is 98.7%.

EB99: Implementation of a Pain Order Set Contributes to Fast-Track Extubation Success
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Purpose: Early extubation reduces morbidity and mortality after cardiac surgery. The goal was to reduce intubation times in the cardiothoracic intensive care unit (ICU). Preintervention data were collected to evaluate intubation times and identify barriers to fast-track extubation (FTE). It was identified that pain management in the ICU, specifically orders from providers, were barriers to extubation. An FTE pain order set was developed to improve workflow issues. Having such protocols in the electronic medical record contributed to FTE. Summary: The Society of Thoracic Surgeons (STS) defines early extubation as occurring within 6 hours of cardiac surgery. It was identified in a unit meeting that ICU providers have different approaches to pain management and sedation, which caused variability in treatment of patients and contributed to variable extubation times. In addition, delays in order entry can impede medication delivery. The research committee worked as an interprofessional...
team to develop an FTE pain order set that facilitated quality pain management and efficient sedation weaning, resulting in decreased intubation times. The order set included options for propofol and/or dexmedetomidine to be titrated to the Richmond Agitation Sedation Scale. Pain medications included fentanyl and/or hydromorphone, which were to be administered on the basis of numeric pain scale and Critical Care Pain Observation Tool goals. By having the order set in place along with proven observation tools, workflow issues were reduced and the FTE protocol contributed to improved extubation times. Evaluation/Outcome: Preintervention data showed that 49% of patients (n = 49 of 101) were extubated within the 6-hour window recommended by STS. Nurses identified that time was inefficiently spent communicating with providers and waiting for orders to be verified by the pharmacy, which caused workflow interruptions. Data collected at 1 year after implementation of the pain order set showed that 75% of patients (n = 582 of 779) meeting criteria for FTE were extubated in 6 hours or less. The use of a designated order set to appropriately treat postoperative pain promoted better workflow and prevented disruptions in care. Ultimately, the FTE pain order set improved barriers to patient care and resulted in earlier extubation.

EB100: Effects of Naam Mindfulness Meditation on Stress Levels in Surgical Intensive Care Unit Nurses
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Purpose: Nurses in the surgical intensive care unit (SICU) are consistently exposed to unavoidable high levels of stress in the workplace. This study pilot tested the effectiveness of an on-unit Naam mindfulness meditation created by Dr Joseph Michael Levry, a spiritual master and founder of Naam yoga, to improve SICU nurses’ stress levels. Summary: Henrich et al showed that attending to complex critical illnesses, dealing with end-of-life issues, bearing witness to the pain and suffering of unsuccessful treatments, and the extending of life through synthetic support create an immense burden on the SICU nurse caring for the patient and the patient’s family. It was hypothesized that giving SICU nurses the time before they start their shift to destress and put themselves into a positive mindset with breathing and meditation would lead to improved stress levels. The participant group consisted of the nurses currently working in the SICU. All registered nurses working in the SICU were invited to participate. This study was approved by the institutional review board and used a pre- and posttest design. The primary investigator, who is currently an SICU nurse, is trained in Naam yoga and led the Naam mindfulness meditation. Written consent was obtained from those who agreed to participate. The meditation took place at the beginning of each work shift (day and night shifts) and lasted approximately 5 minutes during huddle. Evaluation/Outcome: The Perceived Stress Scale (PSS) developed by Cohen et al was used to measure stress levels before and after the intervention. The PSS is one of the most widely used psychological study instruments for measuring the perception of stress the participant is experiencing in the moment. Items were rated on a 5-point Likert scale, where 0 means never and 4 means very often. The study sample consisted of 21 participants and statistical analyses were completed using paired t tests. There was a statistically significant decrease in feelings of nervousness and stress (P = .004). This outcome is promising for the ability to create positive change in frontline staff.