

RESEARCH ORAL POSTER PRESENTATION AWARD WINNERS

RS1: Effectiveness of Life Touched Intervention on Family Members' and/or Friends' Satisfaction With the Dying Process

Surinder Patel, Ildiko Vitez, Dina Jison, Elizabeth Schoettger, Cheryl Westlake; Saddleback Memorial Medical Center, Laguna Hills, CA

Purpose: To test the effectiveness of an investigator-created family bereavement intervention, Life Touched, on family members' and/or friends' (FM/Fs') perception of their loved one's dying. The Life Touched intervention is a credit card-sized, laminated-paper copy of the patient's thumbprints in a heart shape given to FM/Fs to provide for a better patient-dying process and to improve the bereavement experience.

Background/Significance: Bereavement interventions may provide emotional or spiritual support for FM/Fs of patients dying in the intensive care unit (ICU). However, we found only 2 bereavement intervention studies for FM/Fs whose adult loved ones were dying in the ICU; thus, more research was needed. We hypothesized that the Life Touched bereavement intervention would improve the FM/Fs' perception of the dying and bereavement process. **Method:** After receiving ethical approval, a mixed-methods design with convenience sampling was conducted in a 22-bed ICU. A total of 67 adult (>18 years old) FM/Fs of an adult patient dying in the ICU who had a do-not-resuscitate order, limited status, or comfort care consented to participate. Participants received the Life Touched intervention and participated in a telephone follow-up interview 3 weeks after the patient's death. In the interview, FM/Fs were asked about the helpfulness or unhelpfulness of the intervention and were asked to recommend improvements for the Life Touched intervention. Post hoc power was adequate (0.89). Patient variables (ie, age, provided care) and information on FM/F ethnicity, race, religious affiliation, and relationship to the patient were collected using an investigator-developed tool. **Result:** Patients were a mean (SD) of 70 (18.1) years old and 55.6% received comfort care. Most of the 67 FM/Fs self-identified as non-Hispanic (80.6%) and White (59.7%). Family members (94% of the total FM/F cohort) with a Protestant (31.3%, n = 21), Catholic (35.9%, n = 24), or other (19.4%, n = 13) religious affiliation found the Life Touched intervention very helpful (70.4%). The FM/Fs found the intervention most helpful as a tangible reminder and sharable memento (81%) and were unable to identify what was unhelpful

(90%). Improvements recommended by FM/Fs included offering more of the colorful thumbprints (eg, 5-10 thumbprints). Almost all participants (90%) liked and wanted the program to continue, 18% recommended additional modifications such as offering Life Touched to everyone earlier in the dying process, and 16% had no further recommendations. **Conclusion:** Life Touched is an intervention that can be used to positively affect FM/Fs' bereavement process. Our study indicates that the intervention had a positive influence on FM/Fs' satisfaction with the dying process by providing comfort to grieving families and offering a tangible remembrance of their loved ones. Future research includes study of the effectiveness of the intervention in settings other than the ICU.

RS2: Explainable Artificial Intelligence for Early Pressure Injury Risk Prediction

Jenny Alderden, Katie Brooks, Andy Wilson, Daniela Mattos, Susan Kennerly, Yunchuan Zhao, Jace Johnny, Tracey Yap; University of Utah, Salt Lake City, UT

Purpose: To develop an artificial intelligence (AI)-based, hospital-acquired pressure injury (HAPI) risk assessment model and improve the model's transparency with an explainable dashboard. **Background/Significance:** Pressure injuries, areas of skin damage caused by sustained pressure, occur in 4% to 8% of critical care patients. Traditional HAPI risk assessment tools have low specificity for these patients, which reduces nurses' ability to differentiate among patients on the basis of risk levels (high vs low). Artificial intelligence models can improve risk assessment accuracy while reducing nurses' documentation burden; however, AI models' "black-box" nature necessitates transparency before clinical adoption. **Method:** The study used the Medical Information Mart for Critical Care IV data set, which comprises electronic health records of patients in the intensive care unit (ICU), from 2008 to 2019. Data for predictor variables were obtained from the first 48 hours of the ICU stay, and HAPIs were defined as pressure injuries identified more than 48 hours after ICU admission. The H2O machine-learning platform was used to train and test various models, including a superLearner ensemble model. Model performance was evaluated using the area under the receiver operating characteristic curve (AUC). An interactive explainer dashboard was developed for global and local (patient-level) model interpretations. **Result:** Of 28 395 patients, a HAPI developed in 1395 (4.9%) at least 48 hours after ICU admission. Using data from the initial 48 hours of a patient's ICU stay, the superlearner ensemble model demonstrated good performance with an AUC of 0.79. The most influential variables were the partial

pressure of oxygen, age, serum albumin level, number of medications, and the number of previous hospital visits. The dashboard provided insights into global and patient-specific model predictions. **Conclusion:** The superlearner model effectively uses data from the initial 48 hours of ICU admission to predict subsequent HAPI risk. The addition of an interactive dashboard provides clear interpretability, allowing nurses to understand both global model performance and specific patient predictions. Integration of model and dashboard is intended to augment, not replace, the clinical expertise of nurses.

Disclosure: Tracey Yap is on the speaker's bureau for Smith & Nephew.

RS3: Results of a Family Engagement Intervention to Improve Communication in the Intensive Care Unit

Jason Stokes, Alec Tobey, Katie Bergamesca, Timothy Espersen, Joanna Do, Lauren Zulueta, Rebecca Fleetwood, Molly McSween, Jenna Knors, Bradi Granger, Heather Pena, Taylor Tison, Mavis Awuku; Duke Health, Durham, NC

Purpose: Patient and family satisfaction is a key quality metric for health care organizations. In a previous baseline study, we identified low family satisfaction with intensive care unit (ICU) care team communication regarding the plan of care. The purpose of the project was to implement and evaluate an intervention to engage family members in clinical rounds, improve communication, and address gaps in information needs regarding the plan of care. **Background/Significance:** The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey is routinely used to obtain feedback on the patient experience during the hospital stay, yet it does not provide ICU-specific data. Using the validated, ICU-based European Quality Questionnaire (euroQ2), we measured patients' experience in the ICU and found gaps in communication regarding the plan of care, according to euroQ2 subscale 2 (Information Needs). Interventions to address information needs for families of patients in the ICU are needed. **Method:** A prospective, single-cohort study was conducted to engage family members in clinical rounds, improve gaps in communication, and address identified information needs. In a 32-bed cardiothoracic ICU in an academic medical center in the southeastern United States, we enrolled a sequential cohort of family members to participate in rounds and complete the euroQ2 subscale 2 (Information Needs) after participation. Nurses implemented a protocol and standardized script to engage families and review the plan of care for each patient. Nurses contacted family members to attend rounds in person or via telephone. **Result:** Among family participants (n=47), the mean age was 58.5 (SD 13.1) years, 66% (n=31)

were women, and roles included spouse (n=27), child (n=5), sibling (n=4), parent (n=4), and others (n=7). Family members reported satisfaction as high on the euroQ2's 5-point scale for each of the following items in subscale 2 (Information Needs): ease of getting information (mean 4.78); understanding of information (mean 4.74); honesty of information (mean 4.76); completeness of information (ie, what was happening, mean 4.83; why things were being done, mean 4.72); consistency of information (mean 4.69); and overall quality of communication (physicians, mean 4.57; registered nurses, mean 4.85). Participation uniformly improved (from 47% to 80%). **Conclusion:** The results of this study suggest that family members' satisfaction with communication and information needs regarding their loved one's plan of care in the ICU can be improved by using a structured process for family member inclusion during interprofessional rounds. Nursing communication was noted to be even more favorable than that of physicians in relaying consistent, high-quality information. Future work will integrate patient and family input to design interventions to improve communication further.

RS4: Saving Time to Save Brain: Rapid Response Teams Shorten Time to Imaging for Inpatient Strokes

Kathrina Siaron, Leah Cohen, Julie Earnest, Mark Johnson, Cara Pulliam, Melinda Alford, Norma Sonier, Lillian Otieno, Theresa Heineman, DaiWai Olson, Emerson Nairon; UT Southwestern Medical Center, Dallas, TX

Purpose: In this study, we investigated if stroke treatment time metrics are improved when the inpatient Code Stroke (CS) activation is driven by the rapid response team (RRT). **Background/Significance:** In-hospital strokes are detrimental to a patient's recovery and incur higher rates of long-term morbidity and mortality. An important factor in stroke management is the timing of treatment. Early treatment raises the odds of a good outcome, with each minute saved resulting in bigger proportional benefits. The timely treatment of in-hospital strokes is complicated by workflow barriers, stroke mimics confounding initial symptom recognition, and concomitant treatment modalities or procedures. **Method:** In this single-center, retrospective, nonrandomized, observational study, in-patient CS data were extracted from an existing stroke database at an academic institution in an urban setting. This database is maintained by stroke nurse coordinators and contains time stamps for all in-house CS activations. Data from January 2017 to March 2023 were collected, cleaned, and analyzed. Patients with no documented CS activation time or imaging start time were excluded. Analysis of variance and multivariate models were used to explore differences between patient cohorts.

Result: Of 1059 CS activations, 44 led to interventions and 64 were not RRT driven. A total of 900 in-hospital CS activations were included in the final analysis. RRT-driven CS activations were significantly faster (15.7 [SD 13.7] minutes) than non-RRT-driven activations (23.2 [SD 27.0] minutes; $P < .03$). RRT-driven CS activations also received faster preliminary results (16.7 [SD 23.4] minutes) from the radiologist compared with non-RRT-driven CS activations (24.5 [SD 26.2] minutes; $P < .05$). **Conclusion:** Although the effectiveness of RRTs remains controversial, RRTs aim to improve inpatient safety by identifying those at risk for deterioration, expediting clinical pathways, and delivering critical care outside of the intensive care unit. These results highlight the utility of a specialized, RRT-driven, inpatient stroke process in shortening the time to acquire initial imaging that helps inform the decision to intervene with intravenous thrombolytic and/or endovascular revascularization therapies.

Disclosures: DaiWai Olson is an editor with the American Association of Neuroscience Nurses. Unrestricted educational funding was received from Neuroptics to support 2 clinical research coordinators, and unrestricted educational funding was received from Chiesi Inc to support a clinical research coordinator and long-term data storage.

RESEARCH POSTERS

RS5: Cardiogenic Shock: Is Our Survival Better Than the National Average?

Natalie Kitago, Lindsey Burrell; Providence Little Company of Mary Medical Center, Torrance, CA

Purpose: To assess the need for routinely implementing a cardiogenic shock algorithm for patients presenting to an urban health institution with an acute myocardial infarction (AMI) and/or cardiogenic shock (CS). Current research suggests that implementation of a multidisciplinary CS team, strict adherence to an algorithm, and rapid initiation of mechanical circulatory support, if indicated, results in a decrease in mortality. **Background/Significance:** The national mortality rate of CS has remained roughly 50% despite advances in medical technology. We hypothesized that, because of variability in care, the CS mortality rate in an urban health institution would mirror that of the national average despite having all essential CS algorithm components (ie, medical staff, nursing staff, medical equipment). **Method:** A retrospective review of 50 consecutive patients admitted with documented CS was completed. Patients meeting inclusion criteria were enrolled upon arrival in the cardiac catheterization laboratory and were followed up until an echocardiogram was completed between discharge and 120 days later. Data were manually extracted to a spreadsheet and verified

after discharge, and patients were followed up for at least an additional 120 days. Percentages for the risk and odds of survival of CS were calculated for this sample population. Finally, demographic characteristics were examined for potential relationships with survival via correlations. **Result:** The average age of included patients was 65 years; 84% were men and most (78%) presented with only 1 comorbid condition. The risk ratio for death in this group of patients was 46.7%, and the odds ratio for death was 87.5%. Of the 24 patients who survived admission, 7 (29.2%) were readmitted at least once within 90 days of discharge. This information proved that despite having all the components of an algorithm, because of the variability of care, the CS mortality rate in our urban health institution mirrors national averages of CS mortality. These data provided an eye-opening realization that we are severely underserving our patient population. **Conclusion:** Given that our present results mirror the national average, we can assume that a strict adherence to a CS algorithm, thus removing variability of care, would decrease the mortality rate of patients with CS. A barrier identified by key stakeholders was the comfort level of the physicians in deviating from their practiced standards of care to following a strict algorithm. We believe carrying out a prospective study that includes strict adherence to a CS algorithm will improve outcomes.

RS6: Comparing Preprocedural and Postprocedural Education on Outcomes in Patients Undergoing Cardiac Catheterization

Andrea Lacourciere, Darlene Cabrera; New York-Presbyterian Hospital, Bronxville, NY

Purpose: To evaluate the effect of timing of education on patient satisfaction and perceived comprehension of recovery instructions by patients undergoing cardiac catheterization. We hypothesized that educating patients before their procedure would improve both outcomes of interest. **Background/Significance:** In outpatient settings, time with patients is limited; therefore, it is imperative to maximize each interaction. Educating patients before their procedure is supported in the literature and shown to decrease patient anxiety, prevent postoperative complications, and increase patient satisfaction. To our knowledge, no prior studies have examined the impact of pre-procedure education on satisfaction of and perceived comprehension of recovery instructions by patients scheduled to undergo cardiac catheterization. **Method:** This was an institutional review board—approved, prospective, quasi-experimental, single-blinded study that was blinded to the participant. Using convenience sampling, 77 patients undergoing cardiac catheterization were randomly assigned and their data analyzed (intervention group, $n=40$; control group, $n=37$). The

control group received instructions after the procedure, and the intervention group received instructions before the procedure. Both groups completed a survey on their satisfaction and perceived comprehension of the recovery instructions by telephone 24 to 48 hours after the procedure. We used χ^2 analyses to determine associations between the 2 groups. Themes were identified from participants' comments. **Result:** Participants in the intervention group (97.5%, n=39) were more satisfied than those in the control group (83.8%, n=31). Satisfaction with instructions about managing arterial bleeding was higher in the intervention group (100%; n=40) than in the control group (83.8%; n=31). There was a statistically significant difference in perceived comprehension of managing arterial bleeding ($\chi^2=5.22$; $P=.02$) and managing difficulty urinating ($\chi^2=5.69$; $P=.02$), because the intervention group comprehended more than the control group did. Major themes emerging from participants' comments were ways to improve the verbiage and format of the written recovery instructions to improve understanding. **Conclusion:** Delivering instructions preprocedurally compared with the standard of care revealed higher patient satisfaction and perceived comprehension of recovery instructions in cardiac catheterization patients. This study demonstrates how clinical nurses can translate nursing research into patient-centered outcomes, bridging research and practice gaps. This study has limitations, such as a small sample size and being a single-center study.

RS7: Continuous Glucose Monitoring in Neurocritical Patients Improves Nursing Workload and Experience

Brianna Anderson, Mary Elkins, Wafa Latif, Samantha Hicks, Sydney White, Kimberly Sadler, Sandra Ragsdale, Areen AL-Dhoun; Wake Forest Baptist Medical Center, Winston-Salem, NC

Purpose: This qualitative study compared nurses' perceptions of workload and patient experience with continuous glucose monitoring (CGM; Free-Style Libre 2; Abbott Laboratories) vs the standard practice of point-of-care blood glucose testing (Stat-Strip; Nova Biomedical) in the neurocritical care population in a tertiary care academic medical center. **Background/Significance:** Continuous glucose monitoring may optimize nursing workload, efficiency, and patients' experience during glucose management in critical care. Patients in the neurointensive care unit (NeuroICU) may have stress- or steroid-induced hyperglycemia with predisposition to secondary brain injury from glucose fluctuations and occult hypoglycemia. Exploring the potential advantages of CGM in a high-nursing-burden environment such as a NeuroICU is direly needed. **Method:** After

obtaining approval and consent from the institutional review board, we surveyed 10 nurses involved in a NeuroICU quality improvement study using REDCap and queried about their experience related to CGM. Finger-stick glucose checks were performed every 4 hours simultaneously with CGM recordings. The 4-question survey administered during 1 week asked about the following on an ordinal scale graded from 1 to 10 (1 being the best rating and 10 being the worst): ease of using CGM; time required to obtain values; nurse-reported degree of pain or discomfort experienced by patients during CGM placement; and CGM removal. Post hoc, all nurses were asked if they would prefer replacing traditional finger-stick glucose checks with CGM. **Result:** Ten nurses completed the survey. Nine nurses unanimously rated CGM easier to use; there was 1 missing response for that question. Nine nurses reported a reduced procedure time, with all scoring 1 out of 10 for glucose retrieval compared with finger stick. One nurse scored time to acquire a test result as 4 (1 indicates very fast, 10 indicates very slow). All nurses reported that patients experienced reduced pain and discomfort during CGM placement and removal compared with finger sticks. The median length of stay while in the study was 6 days (range, 1-18 days; n=9). The median number of finger-stick glucose checks was 43 (range, 4-126; n=9). All nurses reported that, if given an opportunity, they would prefer using CGM rather than traditional point-of-care glucose checks. **Conclusion:** Continuous glucose monitoring has potential to save nurses time and effort in monitoring blood glucose levels of patients in the NeuroICU while reducing patients' discomfort. Our study is limited by a lack of a survey of nurses before introduction of CGM, absence of actual patient-reported outcomes, small sample size, and exclusion of patients receiving continuous insulin infusion. We recommend transition to CGM as the standard of care in neurocritical care.

RS8: Effectiveness of an Agitation Management Guideline for Patients With Acute Traumatic Brain Injury

Karen McQuillan, Robynne Braun, Megan Wright, Alexandra Hunt, Katelyn Delauter, Gary Schwartzbauer, Amy Madren, Karen Memphis, Mehrnaz Pajoumand, Alivia Stenzel, Linda Byrne, Paul Thurman; University of Maryland Medical Center, Baltimore, MD

Purpose: To determine if agitation and associated adverse events, including patient falls, tube or catheter removal, and abuse of staff, are reduced after development and implementation of a novel guideline to manage agitation in patients with acute traumatic brain injury (TBI). Guideline interventions were based on patients' score on the Agitated Behavior Scale.

Background/Significance: Patients recovering from acute moderate or severe TBI often become agitated; this occurs in 44% of patients in the neurotrauma critical care (NTCC) and intermediate care (NTIMC) units. Agitated patients are more likely to require more restraint and sitter use, to have more falls and more occurrences of tube or catheter removal, and to cause injury to staff. Lack of clear guidance on the best interventions to treat agitation makes care of patients recovering from TBI with agitation a challenge. **Method:** A guideline to manage agitation in patients with acute TBI was created and implemented on the NTCC and NTIMC units. Researchers audited patients with TBI 3 times per week to determine guideline compliance. After 1 year, medical record data were extracted for a convenience sample of English-speaking adults aged 18 to 100 years with a TBI diagnosis who had been admitted to the NTCC or NTIMC unit. Patients excluded were those with no trauma, who had been readmitted, who had a history of psychosis, or who had significant hearing or vision loss. Agitation prevalence in the guideline-use group was compared with that of a historical group with same inclusion and exclusion criteria for whom no guideline had been used. Incidence of falls, tube or catheter removal, and abuse of staff during the same 2 periods was compared. **Result:** Compliance with guideline use was 100% in 79% of patients and 75% to 99% in 16% of patients. Of the 786 patients analyzed, those in the guideline group were 39% (95% CI, 0.44-0.85; $P = .003$) less likely to be scored as agitated compared with those in the historical group, controlling for the matched propensity score. In the year of guideline use, there were 242 more incident reports compared with the historical control year. When considering adverse events in relation to the proportion of total incident reports submitted, the guideline group had a 1% increase in falls, no change in abuse-toward-staff submissions, and a 1% reduction in tube or catheter removal when compared with the historical control group. **Conclusion:** Use of this novel guideline to manage agitation significantly reduced agitation in patients with acute TBI who were admitted to the NTCC or NTIMC unit. The same benefit in reducing adverse events related to agitation was not appreciated. Guideline use when caring for patients with acute TBI at other health care sites and creation of similar algorithms tailored for agitated patients with nontraumatic causes of brain dysfunction should be considered.

RS9: Factors Influencing the Performance of Nurse-Led Early Mobility Behaviors in Critical Care

Amy Garrett, Susan Piras; Cookeville Regional Medical Center, Cookeville, TN

Purpose: Approximately 40% of critically ill patients develop intensive care unit (ICU)-acquired weakness. Research indicates that early mobility (EM) of patients in the ICU reduces the severity and incidence of this weakness, yet nurses do not consistently mobilize patients in the ICU early in their plan of care. The purpose of this study was to describe the associations between nurses' EM performance and their perceived EM beliefs, social norms, perceived control, leadership quality, and environmental climate. **Background/Significance:** The early mobilization of critically ill patients reduces the physical, cognitive, psychological, and functional effects of critical illness, patient ventilator-days, and ICU length of stay. Early mobility, however, is difficult to execute and continues to be an underused intervention. Guided by the theory of planned behavior, the aim of this study was to identify the EM performance barriers as perceived by ICU nurses and the associations with EM performance. **Method:** Researchers conducted a cross-sectional descriptive study in 5 ICUs at 2 acute care institutions in the southeastern United States. Each ICU designated EM as a nurse-driven behavior with established protocols. After recruiting a nonprobability convenience sample of 86 critical care staff nurses, researchers administered the Evidence-Based Practice (EBP) Opinion Survey (validated in a previous EM elicitation study) and the Implementation Climate and Implementation Leadership scales. Early mobility performance data were then extracted from the electronic medical record. Resulting data were analyzed by using descriptive and inferential statistics. **Result:** The sample population ($n = 86$) included young (median age, 28 years), predominately female (86%), bachelors-degree-educated (79%) ICU nurses working full time on the day shift (78%). Nurses' perceived attitudes, subjective norms, and environmental climate had a moderate influence, whereas control, intention, and leadership quality had a high influence on EM. These scores did not differ significantly between sites ($P = .35$). Self-reported EM performance was equal for both sites (80%), but documented objective EM performance differed (92% and 0%; $P < .001$). Overall, there was a significant correlation between nurses' intention ($r = 0.45$; $P < .001$), unit focus on EBP ($r = 0.22$; $P = .04$), and leader openness ($r = 0.24$; $P = .03$) and EM. **Conclusion:** Nurse's EM beliefs and institutional factors are vital to increased mobility performance. Nurse beliefs may influence EM behavior more than institutional climate or leadership. Site B's environment was more supportive of EM, but chart review reported lower objective EM performance, possibly suggesting a complex issue with the documentation process. In conclusion, further research with a larger sample and evaluation of patient-specific factors may provide more generalizable results.

RS10: Integrative Review of Chlorhexidine Oral Care for Patients Receiving Mechanical Ventilatory Support

Jennifer Simmons, Brian Peach, Annette Bourgault, Mary Lou Sole; University of Central Florida, Orlando, FL

Purpose: Findings about the effectiveness of routine chlorhexidine gluconate (CHG) oral care for patients in the intensive care unit (ICU) who are receiving mechanical ventilatory support are conflicting. This integrative review was performed to identify the best available evidence regarding effectiveness of CHG oral care with respect to ventilator-associated events (VAEs), in-hospital mortality, ICU length of stay (LOS), and mechanical ventilator days (MVDs) in different adult ICU populations. **Background/Significance:** In the United States, VAEs develop in more than 80 000 patients annually, representing between 5% and 10% of the adult population receiving mechanical ventilatory support. Daily CHG oral care to reduce VAEs has been a standard of care in the Institute for Healthcare Improvement's ventilator bundle since 2010. However, several national and international organizations recently removed CHG from their treatment guidelines because of evidence of increased risk for mortality in patients undergoing noncardiac surgery. **Method:** The CINAHL, Medline, and Health Source databases were searched using terms pertaining to CHG, mechanical ventilation, and VAE in the adult ICU population. We found 39 full-text, peer-reviewed articles in English (2012-2023) that we assessed for inclusion in this review. Critical appraisal was performed and levels of evidence were assigned using the Johns Hopkins Hierarchy of Evidence Guide. Of the 39 included articles, 17 met criteria for highest levels of evidence (I and II) and were the focus for synthesis of findings in this review. Those 17 articles included 8 systematic reviews and 9 randomized controlled trials. **Result:** In 8 systematic reviews, authors reported a decrease in VAE or ventilator-associated pneumonia related to CHG oral care, regardless of ICU population. Notably, CHG concentrations (range, 0.02%-2%) and frequency of use (1-4 times daily) varied across studies. There was no consensus on the most effective concentration or frequency of CHG oral care; however, 1 of the reviews noted a stepwise increase in relative risk (RR) for mortality associated with increased CHG concentrations (0.12% CHG: RR, 1.01; 0.2% CHG: RR, 1.13; 2% CHG: RR, 1.23) in noncardiac surgical populations. No differences in ICU LOS or MVDs were noted with CHG oral care. **Conclusion:** Evidence for use of CHG oral care for patients receiving mechanical ventilatory support varies. Several studies highlight 2 main concerns: (1) the most effective concentration and/or frequency of CHG oral care for preventing VAEs while reducing in-hospital mortality, ICU LOS, and

MVDs are unclear; and (2) at higher concentrations, CHG oral care could be harmful to patients undergoing noncardiac surgery. Bedside practitioners should weigh the pros and cons of using this intervention on patients before use.

RS11: Machine-Learning Models for Microaspiration Prediction as a Proxy for Enteral Feeding Intolerance

Annette Bourgault, Rui Xie, Ilana Logvinov, Janice Powers, Mary Lou Sole, Chang Liu; University of Central Florida, Orlando, FL

Purpose: The primary aim of this pilot study was to identify predictor variables for microaspiration (ie, being positive for the biomarker tracheal pepsin A) using machine-learning models. A secondary aim was to compare predictors for microaspiration with variables found to predict enteral feeding intolerance (EFI) by other machine-learning models. We hypothesized that predictors of tracheal pepsin A may be similar to predictor variables for EFI in adults receiving mechanical ventilatory support. **Background/Significance:** More than one-third of patients receiving mechanical ventilatory support experience EFI (a gastrointestinal dysfunction related to enteral feeding), which is associated with increased mortality. Microaspiration of gastric contents into the lungs occurred in 39% of patients in the intensive care unit receiving mechanical ventilatory support, as indicated by the level of pepsin A in the trachea. Regurgitation was indicated by the level of pepsin A in oral secretions. The timing of first detection of tracheal pepsin A within 24 hours of enteral feeding suggests that tracheal pepsin A may be a biological marker for EFI. **Method:** Machine-learning model approaches were tested on a subset of 283 records of adults who received mechanical ventilatory support to identify microaspiration predictor variables. Patients received mechanical ventilatory support for between 36 hours and 14 days, the patient's head was elevated 30°, oral care was provided every 4 hours, and tracheal and oral aspirates were collected every 12 hours. A proteolytic enzyme assay method was used to measure pepsin A concentration. Pepsin A values of 6.25 ng/mL or greater were considered positive for microaspiration. We constructed 3 models using random forest (RF), Xtreme Gradient Boosting (XGBoost), and support vector machines with recursive feature elimination and used 5-fold cross-validation for model tuning. **Result:** The best performance model was RF for tracheal pepsin A (area under the receiver operating curve [AUC]=0.776; 95% CI, 0.710-0.842; $P<.01$; accuracy, 87.55%). Oral pepsin A models were excluded because of the poorer performance of the RF model (AUC = 0.745; 95% CI, 0.697-0.793; $P<.01$; accuracy, 81.34%). The top important variables identified by RF in order of

importance from highest to lowest included heart rate, mean arterial pressure, body mass index (BMI), duration of endotracheal tube insertion, age, date, enteral formula rate, Richmond Agitation-Sedation Scale score, positive end-expiratory pressure, gastric residual volume, benzodiazepines, race, propofol, smoking, and sex. Similar predictor variables for EFI have been identified by other machine-learning models, including BMI, age, gastric residual volume, and sex. **Conclusion:** Some of the predictor variables for positive tracheal pepsin A (microaspiration) were also predictors for EFI in published studies. Pepsin A should be explored further as a possible biomarker for EFI. Findings from machine-learning models may help identify patients most at risk for EFI and enable individualized nutritional delivery methods to mitigate microaspiration and meet nutritional goals.

Disclosures: This study received financial support from the National Institutes of Health (grant R01NR014508 for the Nursing Oral Suction Intervention to Reduce Aspiration and Ventilator Events [NO-ASPIRATE] Study). Janice Powers is on the speaker's bureaus for Abbott Nutrition, Envizion Medical, Medtrition, and Avanos.

RS12: Moral Injury, Moral Resilience, and Healthy Work Environment Among Intensive Care Unit Nurses: A Survey Study

Sarah Sumner, Rosemarie Navarro; Providence Saint Joseph Medical Center, Burbank, CA

Purpose: Nurses are bound by the Code of Ethics to uphold moral obligations to protect the safety and dignity of patients and preserve their own personal integrity. Moral injury (MI) may emerge through actions or inactions that violate nurses' deeply held moral beliefs. The purpose of this cross-sectional survey study was to measure the prevalence of MI among intensive care unit (ICU) nurses and to describe the relationships between MI, moral resilience (MR), and the healthy work environment (HWE). **Background/Significance:** Moral injury is an important problem because it is associated with burnout, turnover, anxiety, depression, substance misuse, and suicidality. Moral resilience is the ability to maintain or restore personal integrity in the face of moral adversity. An HWE is one in which nurses are empowered to deliver ethical care, with the skills and support to deliver optimal outcomes for patients and families. We hypothesized that MR and HWE would have an inverse relationship with MI. **Method:** This quantitative, cross-sectional, electronic survey study collected data from ICU nurses working at 22 sites within a large, faith-based health system in the western United States using the following instruments: the Moral Injury Symptom Scale–Healthcare Professional, the Rushton Moral Resilience

Scale, and the Healthy Work Environment Assessment Tool, Demographics. Both ICU nurses and nurse leaders caring for adult patients with at least 1 year of experience were eligible to participate. Data were collected in REDCap and analyzed by using SPSS Statistics. Pearson correlation coefficients were calculated between the variables, and multiple linear regression was applied to develop a predictive model of MI by MR and HWE. **Result:** A total of 304 participants completed the study. Moderately strong inverse relationships were found between MI and MR ($r = -0.58$; $P \leq .001$), and MI and HWE ($r = -0.40$; $P \leq .001$). Regression analysis showed that MR and HWE accounted for 38% ($R^2 = 0.38$) of the variance in MI scores ($F_{2,292} = 91.75$; $P < .001$). Despite data being collected during June and July 2023 (more than 1 year after the last significant COVID-19 wave and 2 months after the end of the federal emergency declaration), the prevalence of clinically significant MI symptoms representing impairment in social, familial, or professional relationships was 55.6%. Moral injury prevalence was highest among younger, less experienced nurses. **Conclusion:** As a moral profession, nurses are highly susceptible to MI. Intensive care nurses may be particularly vulnerable given the complex moral and ethical nature of caring for patients at the boundary between life and death. Because ICU nursing turnover remains persistent, identification and mitigation of potentially morally injurious events are crucial to sustain the ICU nursing workforce. Research is needed to determine if interventions to cultivate MR and improve the HWE will prevent or reduce MI in ICU nurses.

RS13: Perceptions of New Graduate Nurses' Transition to Practice After the Pandemic

Allen Cadavero, Heather Pena, Kelly Kester, Bradi Granger; Duke University School of Nursing, Durham, NC

Purpose: The transition phase of employment is a key opportunity to overcome the factors that lead to turnover among first-year registered nurses (RNs). At a hospital in the southeastern United States, nursing teams faced several challenges regarding retention, particularly among new graduate nurses (NGNs). The shifting nursing workforce and dependence on travel nurses led to fewer experienced nurses, who typically orient NGNs, being available. The purpose of this study was to describe perceptions of NGNs' transitioning into practice in the postpandemic context. **Background/Significance:** Nationally, RN turnover is 22.5%, with 32.8% of NGNs leaving within their first year. Exacerbating this challenge, more than 75% of organizations have vacancy rates of 10% or greater, signifying a strain on nursing resources. Persistent turnover leads to staffing ratios with fewer skilled-experience nurses who can deliver high-quality

care while training the next generation. Addressing the turbulent nursing workforce is imperative to achieving strong patient outcomes and financial stability. **Method:** A descriptive, qualitative design was used to explore the perceived support and barriers NGNs faced within the context of the pandemic. A convenience sample of NGNs with 18 months or less of practicing experience were recruited for a 45-minute focus group interview. All participants (n = 12) were enrolled in a nurse residency program and had an 8- or 12-week preceptor-guided orientation, based on their unit of hire. Semistructured interviews were recorded, transcribed, validated, and analyzed using qualitative content analysis strategies until thematic saturation was achieved. An audit trail of the analysis confirmed the derived categories were adequate and meaningful, fully representing the phenomenon. **Result:** All participants were women (n = 12), and most were White (n = 8), baccalaureate prepared (n = 8), and worked in an ICU (n = 9). Their age range was 22 to 49 years. Findings included 3 broad categories of perceived support and barriers that NGNs experienced during their first 18 months of practice. (1) Disruptive work culture identifies the turbulent work environment NGNs face due to nurse turnover: "the preceptors, 90% of them are gone." (2) Inexperienced workforce describes NGN-perceived barriers associated with inexperienced leadership: "Some [preceptors] still needed developing themselves." (3) Intentional support delineates the support that NGNs need, including didactic classes and leadership check-ins. **Conclusion:** The findings of this study define barriers that NGNs experienced upon joining the workforce during the pandemic. These findings align with previous studies emphasizing nurse-leader presence having a direct impact on NGNs' engagement and intent to stay. Unique to this study is the identification of the specific perceived support and barriers that NGNs face in their first 18 months of practice. This information equips nurse leaders with knowledge of factors that influence successful transition to practice.

RS15: Pilot Testing a Handoff Tool From Ambulatory Postanesthesia Care to an Ambulatory Surgical Center

Eunhea You; Quinnipiac University School of Nursing, Hamden, CT

Purpose: Lack of a tailored and consistent handoff tool can create a miscommunication between ambulatory postanesthesia care units (PACUs) and ambulatory surgical centers (ASCs). Despite a growing awareness of the need for tools to guide handoffs, gaps exist in health facilities. This study was conducted to try to improve communication and patients' health

outcomes when providing critical information between ambulatory PACUs and ASC nurses by developing, pilot testing, and evaluating a handoff tool. **Background/Significance:** There has been a shift from inpatient to outpatient surgery in the United States. Ambulatory surgery rates increased from 24.6% in 2012 to 30.2% in 2013. During the past 30 years, ambulatory surgery has tripled to nearly 54 million procedures annually. The transfer of patient information from 1 unit to another is a vital component of patient safety. According to the Joint Commission, handoff of patient information from 1 unit to another has been particularly problematic. **Method:** This pilot study was conducted in an outpatient surgery unit located at a Magnet university hospital in New Jersey. After a literature review of handoff tools used to communicate information from the PACU to the ASC was conducted, a handoff tool was developed. The essential concepts from the literature were to standardize the tool, including treatment information, allergies, current or potential problems, medications, and vital signs. Twenty registered nurses (RNs) working at an ASC evaluated the handoff tool developed for this study 4 or 5 times each, yielding 98 responses total. Descriptive statistics were used to analyze the data from the 20 ASC RNs using 3 Likert-scale questions, which were easy to use and helpful. Communication of relevant patient data guided the rating of this tool. **Result:** Results showed that the tool communicated relevant patient data, was helpful and easy to use, and was highly rated among participants. Most participants' responses (91%, n = 89) indicated that the tool was helpful. Only 1 response (1%) from 1 participant indicated that the standardized handoff was hard to use, whereas 97% of the responses indicated that participants either agreed (61.3%, n = 60) or strongly agreed (35.7%, n = 35) with the statement that the tool is easy to use. Other participants remained undecided on the handoff's ease of use (2%, n = 2). Three responses indicated that the participants were undecided on the handoff's relevance. The remaining responses indicated that participants either agreed (63.3%, n = 62) or strongly agreed (33.7%, n = 33) with the notion that the tool communicates relevant patient data. **Conclusion:** This handoff tool was developed to standardize the handoff from the ambulatory PACU to the ASC in a university hospital. Findings suggest that this tool provided the structure needed to facilitate handoff during the transfer of care. This handoff tool was implemented shortly after this pilot study on the basis of the positive results. Research is needed to support standardized handoff—synchronously and asynchronously—in all health care areas.

RS16: Securement of Tracheostomy Collar After Free-Flap Surgery for Patients With Head and Neck Cancer

Michele Cousins, Claiborne Miller-Davis, Pamela DeGuzman, Sookyung Park; University Hospital UVA Health System, Charlottesville, VA

Purpose: To conduct a pilot evaluation to determine 1 or more methods of tracheostomy collar securement that could maximize patient mobility and staff ease of use and minimize staff injury. **Background/Significance:** Patients with head and neck cancer who have undergone microvascular free-flap surgery often require high-flow, heated, humidified, and oxygenated air via a tracheostomy collar, which is essential for adequate oxygenation to the airway and tissue perfusion to the flap. Traditional securement methods (tracheostomy ties) risk compressing the flap and are contraindicated. Some staff use safety pins to secure the collar; however, these have been reported to cause staff injury. **Method:** The study was conducted with oversight from the institutional review board. A correlational design was used to evaluate 3 models of tracheostomy securement: model 1: collar secured to a tubular bandage using binder clips; model 2, collar secured to washcloths using binder clips; and model 3: collar secured to tubular bandages using tracheostomy ties. Providers evaluated feasibility and usability of each model using a 4-point Likert scale. Staff caring for patients with head and neck cancer (ie, nurses, respiratory therapists, licensed independent practitioners, and patient-care assistants) evaluated the models with 30 patients who were hospitalized after microvascular free-flap surgery for head and neck cancer. **Result:** The overall median score of all models was 3.5 out of 4. Providers ranked model 2 significantly higher than model 3 ($P = .04$). Feedback indicated that although all models were effective when the patient was not mobile, model 2 stayed in place best when ambulating patients. **Conclusion:** Our study suggests that for patients who have undergone free-flap surgery for head and neck cancer, there are feasible ways of securing a tracheostomy collar that may be considered as alternatives to safety pins. Further development and testing of designs based on these results have the potential to improve oxygenation and perfusion of the flap and airway during the postoperative period and, thus, improve the patient care and potentially reduce the possibility of flap failure.

RS17: Skin Color at Pulse Oximeter Measurement Sites Varies Considerably Between and Within Individuals

Steven Groen, Jens Muehlsteff, Wim Verkruijsse, Michael Jaffe; Philips Healthcare, Cambridge, MA

Purpose: With the increased level of interest in the role skin color plays in pulse oximetry, it is critical to quantify variation of skin color at the sensor site where the pulse oximeter measures oxygen saturation (SpO_2) and estimate its potential impact on accuracy. Although self-reported race and ethnicity are key parts of monitoring health equity in physiological measurements, they are a poor proxy for skin color. This study examines the variability of skin color across the body, including skin colors at pulse oximeter sites. **Background/Significance:** To our knowledge, this is the first study to comprehensively report skin color measurements at pulse oximeter probe sites, including peripheral and central sites. Individuals organically have a broad range of colors represented throughout their integumentary system, and as such, classification of an entire individual into a single color group is difficult. **Method:** Skin color measurements were collected from 21 healthy individuals (10 men, 11 women) who self-reported race as White ($n = 12$), Black ($n = 7$), Asian ($n = 1$), or mixed race ($n = 1$). Assessments of skin color were made with subjective and objective methods, including the Konica Minolta CM-700d spectrophotometer. Measurement locations included the soft side and nailbed of each of the 5 fingers of both hands, earlobe (front and back), and the ala, as well as sites typically used for classification of skin color. Each site was measured bilaterally, if applicable, and in triplicate. Reflectance spectra were transformed into L^* and b^* color values, converted into individual typology angles, and mapped onto a 6-value scale (6VS). **Result:** The data from the CM-700d showed significant skin color variation (>2 grades on the 6VS) across the body for each individual with almost all individuals ($n = 19$ of 21) spanning 4 or more categories, depending on measurement site. Individuals self-identifying as White, or Black, or Asian ranged from 1 to 6, 1 to 6, and 2 to 5, respectively, on the 6VS, with the sites often used for classification spanning 2 to 5 grades. It was observed that (1) the ventral side of the arm and finger pads were significantly lighter than the dorsal side of the arm and the forehead, and (2) palmar fingers are typically 1 to 3 grades lighter than the forehead. **Conclusion:** Skin color varies substantially within individuals. Pending a thorough understanding of the root cause of racial bias in pulse oximetry, any research study using pulse oximetry should assess skin color at the measurement site as well as another site reflective of the general complexion. As researchers and clinicians seek greater equity, it is critical that objective tools be used to quantify skin color for research study enrollment and measurement accuracy testing. **Disclosures:** Steven Groen is a product manager at Philips Healthcare; Jens Muehlsteff is an employee

and researcher at Philips Healthcare in Hospital Patient Monitoring; and Wim Verkruyse and Michael Jaffe are consultants for Philips Healthcare.

RS18: Understanding Nursing Burnout During the COVID-19 Pandemic

Tara Sacco, Christine Boev, Lori Dambaugh; St John Fisher College, Rochester, NY

Purpose: To understand acute care nurses' experience of burnout in the context of the COVID-19 pandemic. A secondary aim was to understand any perceived differences in the experience of burnout in the period before the pandemic compared with during the pandemic. **Background/Significance:** Burnout results from chronic stress exposure that negatively influences coping. The 3 dimensions of burnout are emotional exhaustion, depersonalization, and reduced personal accomplishment. Most of what is known about burnout is based on data collected before the pandemic. Thus, there is a need to understand if the pandemic-related burnout was different than burnout experienced before the pandemic and if the definition of burnout and its associated dimensions remains applicable. **Method:** A qualitative descriptive study was conducted from November 2021 through April 2022. Participants (n = 14) were recruited through social media posts. Two interviews were conducted to understand participants' experiences during different waves of the pandemic. Before the second interview, transcripts were analyzed and a preliminary list of codes was

developed. During the second interview, member checking occurred, with participants reviewing the preliminary findings and providing feedback. At the conclusion of the study, thematic analysis was used to identify common experiences of burnout during the pandemic and to identify perceived differences in burnout before and during different pandemic waves. **Result:** Nurses in the sample had an average of 13 years of acute care experience. Ten participants indicated they experienced burnout before the pandemic and 13 had experienced burnout during the pandemic. All participants who participated in the second interview verified the preliminary findings. The thematic analysis resulted in 7 overall themes: coping, peer support, organizational and managerial support, practice conditions and the new routine, the outside world, personal response, and burnout symptoms: increased severity. Specific to burnout symptoms: increased severity, there were 5 subthemes and, of importance, indifference was noted to be a new dimension of burnout. **Conclusion:** The experience of burnout during the pandemic was different. These findings can be used to better understand the impact of the pandemic and to inform changes to the work environment and future event responses. Indifference toward nursing work as a dimension of burnout is a novel finding that requires more investigation. Last, the findings have been used to develop a conceptual model of pandemic burnout that requires further empiric testing.