Hypothesis/Research:
Approximately 3,700 infant deaths classified as sudden unexpected infant death occur annually in the United States (Centers for Disease Control and Prevention, 2018). While nurses have an overall understanding of the importance of a safe infant sleep environment, neonatal and pediatric nurses may not align their behaviors with best practices as identified by the American Academy of Pediatrics (AAP; 2016). These nurses thus miss an opportunity to serve as critical role models for the safe sleep environment. The purpose of this project was to identify gaps in knowledge pertaining to infant safe sleep policy and guideline, and to utilize simulation incorporated into annual competency days to promote awareness and integration of infant safe sleep practices while also addressing key points of communication.

Methods:
After completion of a pilot study involving senior nursing students in a traditional baccalaureate nursing program with simulation scenarios pertaining to infant safe sleep (Rholdon, Lemoine, & Templet, 2018), the scenario was delivered via annual competency training to 90 nurses in a 51-bed level III neonatal intensive care unit. The scenario entailed the utilization of a low-fidelity simulator and embedded actor as caregiver. Scenario included the infant in an unsafe sleep position with caregiver reticent to change, as well as discussing various modifiable risk factors from the home environment. A voluntary survey was obtained from 92.2% of the nurses (n = 83) prior to the start of the simulations. This survey contained questions regarding perceived barriers to providing a safe infant sleep environment, familiarity with current hospital policy, adherence to the safe infant sleep policy, and how often policy adherence is maintained. Participant demographics were also collected.

Results Conclusion:
Factors affecting avoidance of hospital policy were reported to include lack of space for supplies, time constraints, avoidance of confrontation, lack of awareness of hospital policy, lack
of awareness of the 2016 AAP recommendations, and personal beliefs. Survey reported that
the activity was met with positive feedback with results demonstrating 23% of nurses were
unaware of AAP practice guidelines and 12% were unaware of hospital policy. However,
contradictory results reported 80.7% reported as always adhering to hospital policy, 18%
sometimes adhering to hospital policy, and <1% as never adhering to policy. Nurses were also
apt to disregard strategies for safe infant sleep positioning due to time constraints or
availability of space for supplies.
Date: August 4, 2020  
Time: 2 PM – 3 PM EST

Presentation ID: 56694

Presentation Title: “This is Not a Simulation!” Designing and Testing a Simulation Center’s Response to Actual Medical Emergencies through Simulation-Based Training

Presenters:  
Amy Follmer, CHSOS, Zamierowski Institute for Experiential Learning (ZIEL)  
Akiko Kubo, BSN, RN, CCRN, Zamierowski Institute for Experiential Learning  
Stephen Tarver, University of Kansas School of Medicine  
Bridget Van Gotten, BSN, RN, CCRN-CMC, ZIEL

Hypothesis/Research:  
Simulation centers are not prepared for real medical emergencies in sim spaces. Contributing factors are: (1) Limited exposure to real emergencies and testing of policies, and (2) Use of identical equipment and supplies in simulation and clinical practice creates risk of sim supplies being used in real emergencies.

Zamierowski Institute for Experiential Learning (ZIEL) is on a campus with a health system and university with locations in two buildings. Over sixty percent of ZIEL staff is non-clinical. Prior to a formal ZIEL Emergency Response Team (ZIEL-ERT) activation process, medical incidents were handled case-by-case with confusion, uncertainty, and individual preference. A ZIEL Emergency Safety Policy was created to address concerns and define processes.

The development and routine testing of a sim center medical emergency procedure through internal team-based immersive simulation promotes safety and effective team communication, coordination, and preparation for real emergencies.

Methods:  
We created a ZIEL Medical Emergency Checklist and ZIEL Emergency Response Team (ZIEL-ERT) activation process for staff to use during an emergency that includes a Safety Lead. Staff were trained on the checklist and AEDs through tabletop exercises and hands-on demonstrations. At a later date, we conducted an immersive simulation with an SP complaining of chest pain, in order to systems test the checklist and identify opportunities to streamline activation communication and team coordination. The participants were 25 ZIEL staff members and 2 rapid response team RNs. After the sim session we debriefed as a team and revised the checklist and communication strategies.

Several months later, we provided task training on the revised checklist and practiced with the AEDs. The immersive simulation was repeated. We debriefed with each participating group, and the group as a whole after the event.
A survey was provided after each sim event. Overall, thirty six responses were collected.

**Results Conclusion:**
Staff had creative solutions for barriers discovered during the sim. One example proposed was having co-leads. A Team Lead focused on assigning roles and a Communication Lead maintaining active communication with responders. Staff decided to put available bed sheets over simulated medical equipment and supply carts to prevent accidental use.

From the first sim, 87% of responses to “Do you believe this training will contribute to improve quality or safety of care” were Definitely Yes. After the second, 86% were Definitely Yes.

Responses from the first sim to “How confident are you that you could apply what you practiced” were 47% Extremely Confident, 40% Very Confident, and 13% Somewhat Confident.

After the second sim, 19% Extremely Confident, 38% Very Confident, and 38% Somewhat Confident.

Common themes learned in the training were team communication, use of the checklist, and process improvement. Staff also appreciated the experience of a sim from the perspective of learner.
**Date:** August 4, 2020  
**Time:** 2 PM – 3 PM EST

**Presentation ID:** 56758

**Presentation Title:** Developing a low cost neck hematoma simulation model

**Presenters:**  
Eugene Tuyishime, OhioHealth  
Dr. William D. Watson, MD, FACS, MD, FACS, OhioHealth

**Hypothesis/Research:**  
An expanding neck hematoma following thyroidectomy is a rare complication requiring urgent airway management and potential bedside evacuation before definitive surgical management [1], [2]. Due to its rare occurrence, low cost simulation models for teaching neck hematoma are not available on the market [1], [2]. This project aims to develop a low cost neck hematoma simulation model to teach surgical residents.

**Methods:**  
Our model is made by the following essential parts: a 3-D printed larynx and trachea, hematoma packet (artificial blood, water, gelatine), silicone-made neck muscles, 3-D printed frame, and in house made skin.

**Results Conclusion:**  
Data on learners’ perceived competency (example: release both the skin incision and deeper muscle layers) and experience (example: simulator is realistic and similar to normal human anatomy) after the training will be collected.
Date: August 4, 2020
Time: 2 PM – 3 PM EST

Presentation ID: 56779

Presentation Title: A Checklist Approach to Simulation Problem Solving: Anticipate, Act, Amend

Presenters:
Amy Follmer, CHSOS, Zamierowski Institute for Experiential Learning (ZIEL)
Dr. Amanda Joy Carmack, MSN,MBA,RN,CCRN, MSN,MBA,RN,CCRN, Indiana University East
Sean Cavanaugh, CHSOS, NYU Winthrop Hospital
Melissa Lowther, BS, CHSOS, BS, CHSOS, CAE
Jamie Stiner, CHSOS, CHSOS, University of Texas Southwestern Medical Center

Hypothesis/Research:
Even the best preparation for a simulation event may not always thwart off problems with environment, technology, planning, or people. But, how does a simulation operations specialist learn to solve problems? Problem solving ability is often gained with experience over time. Critical thinking during problem solving is essential for success, but few tools exist for learning critical thinking in problem solving.

Regardless of a simulation environment and resources, there’s always some required steps for problem prevention, solving, and follow-up. Our innovation project is the creation of a simulation operations specialist problem solving checklist. The checklist provides steps to anticipate challenges, act to solve problems during an event, and amend problem causing issues in healthcare simulation.

Methods:
We reviewed existing problem solving strategies and algorithms. We created a three section checklist for simulation operations specialist problem solving. The Anticipating Challenges in Advance section supports planning for events and back-up plans. The Act to Solve Problems During an Event section assists with the decision process for when and how to act when problems occur. The Amend Problem Causing Issues section ensures system functionality and future planning after an issue.

We presented the checklist in a workshop session at IMSH 2020. Forty seven simulationists attended the course, and twenty nine course participants completed a post course survey. Thirty three course attendees provided contact information to be included in future surveys three and six months after the course related to the problem solving checklist’s relevance and utilization in simulation workplaces. We will revise the checklist based on feedback and present the workshop at SimOps 2020.
Results Conclusion:
Respondents to the immediate post course survey agreed that there is a need for a simulation operations problem solving checklist: 52% Strongly Agree and 35% Agree. The frequency participants reported problems occurring in simulation delivery is 34% Monthly, 31% Weekly, and 17% Daily. The majority of respondents said the problem solving checklist is applicable to their jobs: 48% Strongly Agree and 38% Agree while 10% are Neutral and 3% Strongly Disagree.

Participants said they will use the checklist in their workplaces: 31% Strongly Agree and 48% Agree. Respondents reported that they will recommend the use of the checklist to others: 35% Strongly Agree while 55% Agree.

Additional feedback on the checklist includes room to write notes in the middle section, a place to specify the type of simulator or equipment with the issue, and an online location to share problems and solutions so others don’t need to reinvent the wheel.
Hypothesis/Research:
The topic of civility in nursing education has a relatively small research footprint, with dozens, rather than hundreds, of studies (e.g. references 1-6). No studies explore civility (and/or related themes) specifically with nurse simulation educator teams, nor have any studies explored civility in the spatial/temporal context of simulation control rooms. Initial findings suggest an opportunity to advance knowledge exploring how nurse simulation educators’ understand civility in relation to their educator roles. To advance knowledge in this area, I am asking the research question: How do nurse simulation educator teams understand civility in relation to their roles? This Hot Topic presents initial literature review findings and concept analysis with attendees, and elicits input from attendees leading to ideas for frameworks that create and support accountable civil culture.

Methods:
A summary literature review of civility in nursing education informs a concept analysis of civility and associated themes. These efforts together are informing a civility concept map, which eventually will be used in a qualitative phenomenological critical discourse analysis using a graphic elicitation instrument to understand complex civility-related concepts and stories among pre-licensure nurse educators and simulation staff. The Hot Topic presentation affords a unique opportunity to showcase an early proof of the civility concept map with key stakeholders who can provide input and critique, informing the future research design.

Results Conclusion:
No research results will be reported. This project is in the formative, innovative design stage as part of first year doctoral research efforts.
Hypothesis/Research:
A big gap in healthcare simulation that is seen within simulation centers is few staff having to operate multiple operations within the simulation center. It becomes overwhelming for a simulation operations specialist to be able to maintain different tasks and operations. Some of those operations would be things such as running a simulation from start to finish, setting up supplies for skills labs, and yet another would be to supervise and delegate tasks for some staff and or student workers. At our facility, it is my responsibility to maintain several areas and operations and our team of staff have helped to greatly lower the amount of supply requests. We have done this by creating supply carts which gives faculty access to their own cart reducing greatly the demand for a sim or lab specialist to fulfill any to few supply requests. Updating our systems with this supply cart approach has also helped add to the realism of our simulations and all of the skills lab.

Methods:
The way in which the supply carts were stocked, revolved around a years’ worth of supply requests. This was done in order to supply a shelf full of supplies that would be given to a faculty member and her specific nursing course. It took a team of four people a few weeks in the summer to take a whole storage of supplies and put all of the supplies onto different carts. Each cart respectively has their own inventory list of supplies that would supply the year. We chose to stock the carts with a years’ worth of supplies so that there would be no need to continually manage and update supplies on the carts. After each cart had its specific list of supplies, we added all of the supplies and organized them on the cart neatly and we added a black and transparent cover to the cart that would keep things in tact on the cart with a lock on the zippers. These carts or shelves have wheels so they can easily roll and locks to keep anyone else from taking supplies.

Results Conclusion:
The results were beneficial to the simulation center staff and the faculty with their students. The way in which the simulation center staff benefited was by being able to take an enormous amount of time off focusing on supplies and allocating that time to simulation related tasks. We use a tool called Asana which is a task organization tool, and the tasks lists before we had this
supply cart system was long and had to be done daily. Now that this process has been implemented it has shortened tasks by more than half. The way in which faculty benefit from having their own supply carts geared specifically toward their courses is by them having ownership and leadership of what they can utilize in their teaching and training through the academic year.
Presentation Title: HOW DO YOU BUILD A MULTIFACTORIAL ENVIRONMENT THAT TESTS CRITICAL THINKING? A case study integrating multiple patients, directional sounds, and specialized equipment to reduce falls.

Presenters:
Adam Baber, Carilion Clinic
Mrs. Amanda M. Anderson, BSN, RN, PCCN, BSN, RN, PCCN, Carilion Clinic
Misty K Flinchum, BS, RRT, Carilion Clinic

Hypothesis/Research:
After a noticeable increase in patient falls from the year prior, leadership in our organization approached the sim lab requesting staff education to reduce the risk of falls and to more effectively treat patients in the immediate aftermath of a fall. In an effort to create a sim with more impact, the Center for Simulation brought together the expertise of simulation education facilitators and simulation technology specialist to ask the question: “How can we improve the realism of the simulated environment, and will increasing the fidelity of the environment lead to improved clinical outcomes?

The team used simple, low-cost, replicable strategies to increase the realism of the simulated environment to include, scaling the simulated hospital room to match actual rooms on patient units, multiple manikins, and sounds. By using these elements learners had to navigate a dense sensory world while effectively triaging and prioritizing patient needs.

Methods:
The simulation education facilitator worked closely with nursing leadership to identify common scenarios where falls were prevalent. The room size in the actual nursing unit was measured and the dimensions were duplicated in the simulated patient room. A dual patient room was utilized and divided by PVC pipe and curtains mimic a semi-private patient room. Learners were called to patient A’s room to assist with toileting. While the patient A was being cared for, patient B exited their bed and had a fall which was replicated with audio. This was accomplished through the nurse-call system, bed exit alarm, loud crashing and patient yelling sounds which were prerecorded using sampler-based application on an iPad. A high-quality Bluetooth speaker was placed in patient B’s room to provide the learners with optimal sound quality. Learners were required to prioritize patient care to attend to both patients without increasing the risk of injury to the patient or staff.
Results Conclusion:
Pre and post education evaluations showed improved confidence in managing competing priorities, preventing falls and identifying environmental hazards. The nursing unit was able to decrease their number of falls significantly post-simulation training. Learners stated that the experience was realistic and provided them with an opportunity to train in an environment that made them feel as if they were providing care just as they would typically do.
Hypothesis/Research:
Surgical simulation users should not be limited to the standard and basic wet lab options, such as tissue and cadavers. We believed that including custom porcelain models and the usages of surgical simulators in our curriculum would be useful for our user’s. The objective of this analysis is to gauge our learner’s surgical skills in the areas of relevance, competency and comfort based on the KirkPatrick model.

Methods:
A unique feature of the Cleveland Clinic Simulation and Advanced Skills Center simulation lab is the accessibility of our surgical skills lab where multidisciplinary learners can practice surgical skills on fresh cadavers and tissue. We have implemented the usage of custom porcelain models plus the usage of surgical simulators as a part of our innovative curriculum as additional resources for learning.

We have tracked three surgical courses that we provide for our learners, one with standard tissue and cadavers and the other with tissue, cadavers, porcelain models and surgical simulators. We wanted to see if providing multiple innovative teaching tools would be useful for our learners. Before the learners began the course there are pre-survey questions sent out with addition to a pretest. Upon the completion of the course there is an evaluation.

Results Conclusion:
- Results on surgical relevance (chart)
- Results on surgical comfortability (chart)
- Results on surgical competency (chart)
- Results from KirkPatrick Model (chart)

The data on this study is ongoing. However the data suggest that multi-model surgical training has been useful for our learners. Once the study is complete the final results will be provided from the data of this study. The results for this data was also analyzed using the KirkPatrick
Model which we used to evaluate our training and educational curriculum. The Kirkpatrick Model evaluates the surgical learners on four levels: Reaction, Learning and Behavior.
**Hypothesis/Research:**
Interactive instructional feedback and performance assessment of learners during surgical simulation and training has proved to be effective in improving psycho-motor skills, encouraging active learning and in-turn increasing patient safety (1). However, training sessions require experienced physician instructors to conduct one-on-one training and assessment, additionally commercially available simulators are realistic but prohibitively expensive especially when the silicone inlets need replacement after several uses (2). Consequently, these sessions are long, subjective, difficult and expensive due to which they can’t be held regularly. The goal is to develop a fully autonomous training simulator that will be able to provide instructional coaching, and objective, accurate and real-time measure of learners’ skill. As a proof of concept, the simulator will be employed for teaching neonate thoracentesis and pericardiocentesis, which are rare but complex life-threatening procedures.

**Methods:**
Our simulator comprises of a custom, realistic, 3D printed manikin constructed utilizing a 3D anatomical model derived from MRI and CT scans of real patients. The flexible organs (pleura, collapsed lung, and heart) and rigid bony structures (ribs cage and spine), have been encased in flexible silicone to simulate the skin and underlying soft tissue. We developed an application that combines real and virtual 3D anatomy and surgical instruments in a mixed reality environment, additionally monitors the positions and orientations of trainee’s hands and instruments by processing information received through an NDI DriveBay electromagnetic system. A complex recurrent neural network is currently being developed to identify and determine the quality of the actions performed through the information received through the sensors.

**Results Conclusion:**
The flexible 3D printed organs allow for realistic ultrasound-assisted needle insertion. A preliminary evaluation and content validation about anatomical details, realism of ultrasound guidance, and tactile feedback have been provided by Pediatrics surgeons, experts in performing and teaching these surgical procedures.
Hypothesis/Research:
There is a gap in knowledge of the use of simulation for assessment of clinical competence. Researchers and professional groups have commented on the need for translational research to move the field of simulation-based education (SBE) forward; specifically, for research showing the effect of such training on the competence of practicing clinicians.

Nutrition Focused Physical Exam (NFPE) is a new skill required of all Registered Dietitian Nutritionists (RDNs) since 2017 and is a key tool for malnutrition diagnosis. Despite this, many RDNs report not feeling comfortable including NFPE in their own practice and do not routinely perform this skill.

This study included the creation and testing of a competency checklist to assess skill in NFPE based on standardized patient encounters in a simulated outpatient setting.

Research Questions: What is the current competence for the NFPE skill among practicing RDNs? Does SBE increase practicing clinician’s competence in specific skills?

Methods:
This study included two components: First, a competency assessment tool was developed using evidence-based literature and educational theory. A competency checklist with detailed criteria statements was created to assess each component of the NFPE using a 9-point scale, where 1-3 indicated below-competence level, 4-6 competence, and 7-9 above-expected level of performance of the clinical skill.

Next, a pre- and post-test design was utilized to collect video of registered dietitians performing NFPE on standardized patients (SP) in a simulation laboratory setting, both before and after an hour-long NFPE training was provided. Video recordings of the SP encounters were utilized for assessment by experts in the field. In addition to analysis of change in NFPE competency from before to after the training session, the competency tool itself was analyzed for content validity, inter-rater reliability, and test-retest reliability using statistical analyses conducted in SPSS v. 22.

Results Conclusion:
A total of 40 practicing RDNs employed by a large, Midwest healthcare group participated in the simulation-based competency assessments. Overall, the initial competence scores of these dietitians averaged 2.8, or below the threshold of competence, while the post-training scores averaged 5.4, or within the range of scores that indicate competence at the skill. A t-test indicated significant improvement in mean scores on each of the 7 competency areas tested by the tool.

When internal consistency of the assessment tool was measured using Cronbach's alpha, the result was 0.80 on related items, indicating scale reliability. Inter-rater reliability testing resulted in a correlation coefficient of 0.85, indicating that scores on the same performance were scored equivalently by different faculty members. Finally, test-retest reliability resulted in a correlation coefficient of 0.90, indicating that the tool provided consistent results when used to score the same performance.
**Presentation Title:** Bridging the Gap: Using Simulation to Improve High-acuity/Low-frequency Skill Competency

**Presenters:**
Elissa Harmon, Thomas Jefferson University Hospital  
Mrs. Kathleen Boyle, RN, BSN, CCCTM, RN, BSN, CCCTM, Thomas Jefferson University Hospital

**Hypothesis/Research:**
High-acuity/low-frequency skills are an essential competency for the care of complex patients. The use of simulation provides a safe environment for front line nurses to hone critical skills. In situ simulation uses evidence based practice principles to engage learners and promote safe patient outcomes. Adapting educational opportunities to the learner enhances knowledge retention, confidence and competence. There are four generational cohorts in our workplace. Sixty-five percent of our staff are millennial learners. Millennial learners prefer to work in teams, utilize technology, and acquire new information through active hands on participation. Among multi-generational critical care nurses, what is the effect of in-situ scenario based simulation on skill confidence and competency compared with opportunistic learning during working shift?

**Methods:**
This was an evidence based practice project for a medical intensive care unit. Eighty-six post licensure staff nurses participated in an educational session. A pre-test/ post-test survey was utilized before and after the educational sessions. Fourteen sessions were presented over a six-month period. Each two-hour session was limited to ten nurses. A modified National League for Nursing (NLN) educational evaluation tool was used.

**Results Conclusion:**
A modified National League for Nursing (NLN) educational evaluation tool was used. The evaluations consisted of ten questions with a 5-point Likert scale of 1 (strongly disagree), to 5 (strongly agree). The analysis of the content focused on confidence, competence and future learning needs. Greater than 90% ‘strongly agree’ responses were noted on all questions.