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ultrasound, regional anesthesia procedures can be performed safely and quickly while providing the patient a more complete level of analgesia. Therefore US-guided regional anesthesia is considered a core application within our US curriculum for our residents.

Study Objectives: After completion of this curriculum, learners will be able to 1) determine the appropriate patient and injury pattern that would benefit from regional anesthesia, 2) demonstrate proficiency in performing the procedure and selection/dosing of appropriate anesthetic and 3) predict, recognize, and treat any complications of said procedure.

Methods: This training application is developed for emergency medicine interns. During their orientation month the learner will receive 2 hours of computer slide-based lectures which describe the pertinent anatomy and procedure. The didactic portion is split between two presentations, upper and lower extremity regional anesthesia. This will be immediately followed by 3 hours of practicals. This will include identifying the specific nerves on live models with ultrasound. The learner will then practice the procedures on “phantom” models. All of this will be under direct supervision of ultrasound faculty. During the second half of the year the learner will revisit this learning application on two separate occasions- splitting it between upper and lower extremity. They will be directed to review one of the previous video-recorded lectures in preparation for a 2-hour hand on session that will take place during their weekly didactic. During this practical the learner will be shown an injury. On a live model they will then have to name and identify the relevant nerve under US. Then they will describe the technique for blocking it and then finally, they will then have to demonstrate this on a “phantom.”

Evaluation: After their orientation month the residents will have the opportunity to perform these procedures on patients in the department. Until they have performed 25 US-guided regional anesthesia procedures, they will need to be under direct supervision of their attending physician. This will allow real-time evaluation and feedback. They will also receive feedback through overreading of their images. When the resident performs the procedure, they will submit the pertinent images and clips to be reviewed on Q-path. They will then fill out an accompanying worksheet describing the indication, any complications, and the overall success of the procedure. These images and worksheet will then be reviewed by ultrasound faculty who will then provide feedback through a QA worksheet rating the overall quality and accuracy. They will also be evaluated directly during the second practical session.

Conclusion: By incorporating US-guided regional anesthesia into an emergency medicine ultrasound curriculum, learners will be prepared to manage painful conditions with an alternative technique that is both safe and convenient. This lecture series combined with hands on training provides the learners with the tools they need to gain proficiency in performing this procedure.

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367 **Bilevel Positive Airway Pressure Basics for the Emergency Medicine Resident**



Brader T/Thomas Jefferson Hospital, Philadelphia, PA

Study Objectives: By the end of this activity, residents will 1) Understand indications for appropriate bilevel positive airway pressure (BiPAP) use and will be able to identify when contraindications exist. 2) Demonstrate understanding of appropriate BiPAP settings and realize when adjustments are necessary. 3) Set up BiPAP machine for use without assistance which includes equipment set up, understanding function of machine interface and physical application to patient. 4) Demonstrate ability to adjust BiPAP settings to specific respiratory pathologies through successful completion of table simulation scenarios.

Methods: This curriculum was designed during the COVID-19 pandemic and therefore administered virtually through use of the Zoom video conference platform. Due to the virtual nature, this presentation was created using PowerPoint that was then shared for all learners to view in real-time. This presentation requires approximately 1 hour to deliver the entirety of the material. This lecture was originally administered on April 29, 2020 during Thomas Jefferson Hospital’s Emergency Medicine residency weekly conference. The lecture relies on audience participation for the majority of the slides and involves case presentations with tabletop simulations. The evaluation strategy was structured to measure Kirkpatrick level 2a outcomes by assessing the learners’ modification of attitude and perception regarding personal BiPAP skill level. Learners received a 3-question, Likert-style survey prior to the start of this course and then immediately following the course’s completion.

Results: There were 35 emergency medicine residents who experienced the implementation of this lecture. Of this number, 33 residents completed the pre-survey

and 28 residents completed the post-survey. The surveys were conducted anonymously with an open-ended portion in the post-survey to allow for specific feedback.

Prior to this session, 33% of residents disagreed with the statement, “I am confident that I could independently set up a BiPAP machine for a patient who is in acute respiratory distress.” and following the session, this shifted to 100% of residents agreeing with the statement. Resident responses to the statement, “I am confident that I would know how to adjust the IPAP and/or EPAP setting if a patient did not improve after the initial settings” shifted from 52% disagreeing to 100% agreeing following completion of this course.

Conclusion: Overall, this curriculum promoted improved confidence with residents and how they perceive their abilities when it comes to managing BiPAP. Prior to this course, there was variation with whether residents agreed or disagreed regarding their confidence pertaining to BiPAP. However, the post-survey demonstrated a total shift to the “agree” statements.

This course originally was designed to occur in-person and included hands-on practice with actual BiPAP machines loaned from the emergency department. Due to the nature of the pandemic, this portion was removed; however, once quarantine restrictions are lifted, it would likely be beneficial to incorporate this back into the presentation. Other considerations to broaden this curriculum set would be to also include education with pediatric BiPAP as well as an overview of how to troubleshoot various alarms. Due to time restrictions, there was not time to include these components but would be an interesting addition for the future.

368 **Efficacy of Continuous Use Disposable N95 Masks in Clinical Practice in the Emergency Department**



Rivard L, Pester J, McMahon K, Balakrishnan V, Check R, Kelly B, Jeanmonod D, Jeanmonod R/St. Luke’s University Health Network, Bethlehem, PA

Study Objectives: During the 2020 COVID-19 pandemic, many emergency departments (EDs) in the United States initiated continuous use of N95 disposable respirators rather than disposing of respirators after each patient encounter in order to conserve personal protective equipment. This study investigates the efficacy of wearing disposable n95 respirators continuously throughout an ED shift using qualitative fit testing as a measure of appropriate mask seal and function.

Methods: This is a prospective cohort study at a single level I trauma center of ED staff required to wear respirators continuously throughout their shifts during the COVID-19 pandemic. Subjects were doctors, nurses, and technicians, and enrolled in the study on a voluntary basis over the course of the 6 week duration. Subjects were previously fitted for their assigned respirator by employee health per hospital policy, and personnel that failed this initial testing were excluded from the study. Investigators enrolling subjects were trained to perform qualitative fit testing using OSHA guidelines. Subjects were fit tested periodically throughout their shifts by investigators. At any time a mask failed, it was replaced. Investigators filled out a questionnaire for each subject enrolled noting the type of respirator and hours of continuous wear that shift, as well as subjective sense of seal security. As subjects were working clinically, no attempt was made to modify their on-shift behavior regarding taking breaks or donning/doffing for nourishment or hydration. Data were analyzed using descriptive statistics. The study was approved by the institutional review board.

Results: One hundred thirteen disposable N95 respirators were evaluated using qualitative fit testing while on shift in the ED, with 23 failures at first testing. These masks were not retested, and the subjects received new masks. Twenty-seven masks passed at the start of a shift (time zero) and did not have repeat testing during the course of the shift. These were excluded from further analysis. Seventeen masks passed testing after several hours of continuous wear, but only had a single fit test done partway or at the end of a shift. These were assumed to have passed if tested at shift start, and were assigned as “passes” for continuous use. Forty-six disposable N95 masks had an initial pass and were evaluated for continuous use, of which 6 subsequently failed fit testing later in the shift, giving a fail rate with continuous use of 9.5%. Of the 29 failed fit tests, the subjects documented that they believed their seal was adequate in 20 cases (69%).

Conclusion: Continuous use of disposable N95 masks throughout an ED shift is reasonable during a PPE shortage if wearers are assured of fit at the start of their shift, as most failures occur on initial testing. However, passing on initial fit testing is not a guarantee of ongoing fit maintenance. Mask wearers have little insight into adequacy of fit.