



Illinois College of Emergency Physicians

SELECTED ORAL PRESENTATIONS

Increased Use of Generative Artificial Intelligence-Associated Language in Residency Personal Statements Darrow Traylor, MD, Advocate Christ Medical Center

An Institutional Evaluation of the Cincinnati Prehospital Stroke Scale (CPSS) in EMS Stroke Notification: Sensitivity, Specificity, and Large Vessel Occlusion Detection Iram Nasreen, PharmD, Rush University Medical Center

Integrating SAFE (Sexual Assault Forensic Examiner) Training into the Medical Education Curriculum

Elizabeth Hsu, Hannah Becker, Kristen E Gebhardt, Rush University Medical Center

Can ED-initiated Acupuncture Promote Lasting Pain Relief and Improvement in Function Veda Ravishankar, MD, Cook County Health

SELECTED RESEARCH ABSTRACT POSTER PRESENTATIONS

Emergency Care Logs and Incidents Pertaining to the Solar Eclipse of 2024 Ahmad M. Abdulla, MD, Advocate Christ Medical Center

Clinical Insights and Case Analysis of Disorders Attributed to Cicadas in the Emergency Department

Jonah A. Freuh, MD, Advocate Christ Medical Center

The Characteristics and Cost of Admission to US Hospitals for Alcohol Withdrawal Syndrome Veronica Gonzalez MD, Cook County Health

Prevalence of Pulmonary Embolism in Patients with COPD Admitted to an Urban Safety-Net Hospital Michael J. Hohl MD, Cook County Health

Feasibility of a Performance Benchmark System Using Emergency Medicine Resident End-of-Shift Assessment

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Novel Approach to Sexual Assault Nurse Examiner Training Utilizing Simulation Sumona Munshi, DO, MS, Rush University Medical Center

Outcome of Sedative Assisted Intubation for Ketamine vs Etomidate by EMS: a State Survey Martin E. Pelletier, BS, EMT-P, Rosalind Franklin University

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Ventriculoperitoneal Shunt Fracture: An Uncommon Reason for Shunt Failure Claudine Feliciano, DO, Loyola University Medical Center

A Rare and Rapid Case of Creutzfeldt Kelsey Bacidore, MD, Loyola University Medical Center

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THE GINNY

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Scrotal Tuberculosis Disguised as UTI and Malignancy Leslie M Cachola, MD, Cook County Health

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Mario Rako, MD, Resurrection Medical Center





Increased Use of Generative Artificial Intelligence-Associated Language in Residency Personal Statements

Darrow Traylor, MD, Ryan McKillip, MD, Andrea Carlson, MD, Ravi Chacko, MD

Background: The transition of the United States Medical Licensing Exam (USMLE Step 1) and Comprehensive Osteopathic Medical Licensing Exam(COMLEX 1) to pass/fail scoring in 2022 aimed to reduce reliance on standardized test scores and promote student well-being. Consequently, residency programs now place greater emphasis on non-numerical aspects of applications, such as personal statements. Simultaneously, the rise of generative artificial intelligence (AI) tools like ChatGPT has raised concerns that AI-assisted writing may homogenize applicant narratives, making differentiation more challenging. However, the extent of AI use in residency applications remains unknown.

Objective: This study aimed to investigate the prevalence of AI-assisted writing in personal statements submitted to a competitive Chicago-based Emergency Medicine (EM) residency program in 2024.

Design/Methods: This retrospective, descriptive study analyzed personal statements from EM residency applicants between 2017 and 2024. Statements were screened for 30 words previously identified in the literature as associated with large language models (LLMs), alongside 12 control words. Inclusion criteria were all personal statements submitted for EM residency; exclusion criteria included incomplete applications. Chi-square tests were used to compare word prevalence between pre-2024 (2017–2023) and 2024 cohorts, and aggregate usage trends were examined.

Results: A total of 8,651 personal statements were analyzed (7,829 pre-2024; 822 in 2024). The proportion containing LLM-associated words increased significantly from 29.4% pre-2024 to 43.1% in 2024 (P < 0.001). LLM-associated adjectives increased from 24.4% to 36.5% (P < 0.001), verbs from 1.9% to 5.8% (P < 0.001), and adverbs from 5.4% to 7.8% (P = 0.007). Control word prevalence remained unchanged (83.8% vs. 83.0%, P = 0.590). The most significant increases were seen in "underscore" (0.41% to 3.53%), "pivotal" (2.1% to 8.4%), and "comprehensive" (3.2% to 7.3%).

Conclusion: These findings suggest widespread use of generative AI tools in residency applications. While AI-assisted writing may enhance applicant narratives, it also raises concerns about reduced individuality in personal statements, potentially complicating residency selection. Further research is needed to explore the broader implications of AI-generated content on applicant evaluation and the residency admissions process.

Impact: This study illustrates the nature of healthcare visits pertaining to the solar eclipse and may inform public health preparation for future similar events.





An Institutional Evaluation of the Cincinnati Prehospital Stroke Scale (CPSS) in EMS Stroke Notification

Iram Nasreen, PharmD, Laurel J. Cherian, MD, MS, Nicholas Cozzi, MD, MBA, FACEP, FAEMS, Kristen Fisher, DNP, APRN, Giles Slocum, PharmD, BCCCP, BCEMP, Sonia Winandy, RN, MBA

Background: Prehospital stroke notification has greatly advanced the timeliness of acute stroke treatment; however, its integration into established clinical systems presents challenges, particularly regarding optimal use of prehospital stroke scoring tools. The Cincinnati Prehospital Stroke Scale (CPSS) has a wide performance variability in practice with overall sensitivity ranging 44-95% and specificity ranging 24-79%. The aim of our study was to evaluate trends in the prehospital notification system at our institution, with a focus on the effectiveness of the CPSS in facilitating the early and accurate identification of acute stroke patients by emergency medical services (EMS).

Objective: The objective of this study was to evaluate the sensitivity and specificity of CPSS by XX Emergency Medical Services (EMS) System at XX and identify areas for continued process improvement.

Methods: We conducted a retrospective, single-center cohort study of patients who arrived at the hospital via the XX with subsequent code stroke activation between December 2023 and May 2024.

Data collected included patient demographics, EMS time intervals (dispatch to scene, on-scene, transport, prenotification to destination, and door-to-scanner time), CPSS outcomes, 3-item stroke scale scores (3-ISS), EMS impressions, event type, and interventions. Descriptive statistics were performed for all outcomes.

Results:

A total of 140 patients were included in the analysis, with 70 diagnosed with stroke or transient ischemic attack (TIA). The proportion of positive CPSS, 3-ISS, and EMS impressions was higher in stroke and TIA patients, though statistical significance was not assessed. CPSS identified 88% of acute stroke and TIA cases, but its specificity was low at 36%. Notably, all patients with large vessel occlusion (LVO) tested positive on CPSS, demonstrating 100% sensitivity and specificity for LVO detection. Forty-five percent of acute ischemic stroke patients received thrombolytic therapy and/or endovascular intervention.

Conclusion: At our institution, the CPSS demonstrates trends consistent with prior studies, showing high sensitivity for identifying acute stroke and TIA. Notably, it exhibits 100% sensitivity and specificity for LVO cases, surpassing previous studies. However, its low specificity (36%), consistent with earlier findings, indicates a need for refinement.

Impact: While CPSS is valuable for early stroke detection in the prehospital setting, future research at our institution should focus on optimizing cutoff scores, improving specificity, and assessing impact of CPSS on patient outcomes. This will help reduce false positives, improve treatment precision, and better allocate resources for stroke patients.



Integrating SAFE (Sexual Assault Forensic Examiner) Training into the Medical Education Curriculum

Elizabeth Hsu, MD, Hannah Becker, Kristen Gebhardt, Norma Techarukpong, Isabel Hartner BSN, Anna Condoleza RN, SANE-A, Monika Pitzele MD, PhD

Background: Sexual violence affects over half of women and a third of men in the U.S, with a higher burden among racial and gender minorities (CDC, 2022). Despite its prevalence, medical education lacks training on providing trauma-informed and sexual assault care, leading to inadequate support for survivors. Additionally, the 2018 Illinois amendment to the Sexual Assault Survivors Emergency Treatment Act (SASETA) mandates that survivors receive care from a trained medical professional within 90 minutes of arrival, straining the already limited hospital resources.

Objective: Integrate Sexual Assault Forensic Examiner (SAFE) training into medical school curriculum to equip future physicians with essential trauma-informed care and forensic exam skills.

Design/Methods: The Sexual Assault Forensic Exam Training and Education (SAFETE) course is a two-week elective designed for fourth-year medical students. It begins with a 40-hour online training module covering forensic exam skills and evidence collection, followed by a week of inperson training sessions. In these sessions, students apply online learning through hands-on sessions with a mannequin, gain insights into trauma-informed care from a clinical psychologist, and enhance their forensic knowledge with a crime lab tour. The elective is evaluated using pre- and post-course assessments to measure knowledge and confidence in providing care to sexual assault survivors.

Results: Eight fourth-year students who completed the pilot course between 9/1/2024 and 2/1/2025 took both pre- and post-course surveys assessing knowledge and comfort in caring for survivors. The mean pre-elective knowledge assessment score was $70\% \pm 5.51\%$, while the post-elective mean score improved to $81\% \pm 4.47\%$ (t =6.46, p < 0.05, 95% CI [7%, 16%]). Student's comfort in performing a sexual assault forensic exam improved with a mean difference between pre- and post-assessment score of 2.875 (t =12.69, p < 0.05, 95% CI [2.34, 3.41]). All other measures of comfort showed statistically significant improvement (p<0.05).

Conclusion: The SAFETE elective successfully integrates trauma-informed care principles, forensic examination training, and survivor- centered communication strategies into medical education. Preliminary data suggest improvements in student knowledge and confidence in caring for survivors of sexual violence.

Impact: This course ensures future physicians are equipped to deliver compassionate and comprehensive care to this vulnerable patient population, underscoring the need to incorporate similar programs into medical curricula nationwide.





Can ED-initiated acupuncture promote lasting pain relief and improvement in function? Veda Ravishankar, MD, Lisa Seaman, DAc, Frank Yurasek, LAc, PhD, MS, Benjamin Nguyen, LCPC, NCC, Daniel Watson, PhD, Mark B. Mycyk, MD*

Background: Pain is one of the most common reasons for seeking treatment in the emergency department (ED) with some studies reporting that pain is responsible for up to 78% of ED visits. Acupuncture has been used successfully as a non-pharmacologic treatment for pain outside of ED settings. Prior research has demonstrated that acupuncture is feasible in the ED setting.

Objective: We sought to determine if ED-initiated acupuncture at the bedside or referral to clinic can improve pain and function.

Methods: This is a retrospective cohort analysis in an urban academic ED (annual census 130,000) of adult patients with intractable acute or chronic pain offered acupuncture treatment by board-certified acupuncturists at the discretion of the treating ED clinician. Demographic, clinical data, and Short Form Health Survey scores (SF-12) were recorded during intake and follow-up; patients with complete data 90 days after 1st treatment were eligible for analysis. Descriptive and paired student T test were used where appropriate.

Results: Between 7/1/2021 and 6/30/2024, 438 ED patients received acupuncture treatment, and 142 (32%) completed a 90-day follow-up interview. Mean age was 52 years (SD 14.2) and 62.6% of patients were female. Race/ethnicity was 49.9% African American/Black, 36.7% Hispanic, Latino, or Chicano, 5.4% Asian, 6.7% Caucasian, and 37.1% Other. Sixty five percent received their initial acupuncture treatment in the ED, and the median number of acupuncture treatment sessions was 4 (range 1-9). At 90-day follow- up, the mean Physical Component Score of SF-12 improved from 28.4 to 36.5 (P<0.001), the mean Mental Component Score improved from 44.7 to 46.2 (p=ns). At 90 days, 18% reported feeling they accomplish more and 27% felt less limited in the work they do (p<0.001). At 90 days an average of 6 fewer days of work or school were missed because of pain, and the number of ED visits for pain was reduced by 40% (p<0.001).

Conclusion: ED-initiated acupuncture treatment significantly improved SF-12 scores, increased function, decreased the need to miss work or school, and reduced ED visits for pain. Our findings demonstrate that adding acupuncture therapy to a busy ED with linkage to clinic for follow-up treatment is feasible. Additional research is necessary to determine which painful conditions would benefit most from ED-initiated acupuncture treatment.

Impact: ED-initiated acupuncture was shown to have a positive effect on multiple quality of life measures. This non-pharmacologic treatment for pain could be a useful strategy in other EDs.



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Emergency Care Logs and Incidents Pertaining to the Solar Eclipse of 2024 Ahmad M. Abdulla, MD, Jonah A Frueh, MD, Alexandras Biskis, MS, Elise Lovell, MD, Ryan McKillip, MD*

Background: Solar eclipses have been associated with healthcare utilization secondary to eye injuries, traffic accidents, and psychiatric effects. The path of totality of the 2024 eclipse was significantly larger than previous eclipses over the US, covering more than 31 million people, with an additional 150 million people residing within 200 miles. The extent of its impact on public health is unknown.

Objective: The purpose of this study was to inform public health preparation for future similar events by examining the frequencies and characteristics of urgent care (UC) and emergency department (ED) visits related to the 2024 eclipse.

Design/Methods: This was a retrospective review of all UC and ED visits in a large Midwestern health system from April 8 through April 10, 2024, corresponding to the day of and two days following the solar eclipse. In Illinois and Wisconsin, 80-100% totality was experienced from the eclipse. Using the electronic health record, patient charts were searched for any use of the word "eclipse" along with expected spelling variations from typing or dictation errors. Two emergency physicians manually reviewed qualifying charts and performed descriptive analysis. Conflicting results were resolved via consensus. Visits unrelated to the eclipse were excluded. Patient data extracted included diagnosis, demographics, arrival mode, length of stay, disposition, diagnostics and therapeutics.

Results: There were 5,904 visits to 27 different EDs and UCs in this health system during the study period. Of those, 226 mentioned the word eclipse or a spelling variant. Ten encounters were deemed related to the solar eclipse: insect bites due to time outdoors (3), psychosis (2), complications from travel to watch the event (2), intoxication (2), and blurry vision (1). Three patients were admitted to the hospital due to psychosis, travel complications, and intoxication. Resource utilization varied according to encounter, with some patients receiving laboratory studies, imaging, and/or medications. Five visits occurred on the day of the event and five occurred the two days following.

Conclusion: The total number of relevant emergency visits to a large health care system in the path of the 2024 solar eclipse was small and diverse in nature. Of the encounters reviewed, most ED and UC visits resulting from the eclipse included psychosis, travel complications, insect encounters, and intoxication.

Impact: This study illustrates the nature of healthcare visits pertaining to the solar eclipse and may inform public health preparation for future similar events.



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Clinical Insights and Case Analysis of Disorders Attributed to Cicadas in the Emergency Department (CICADA)

Jonah A. Freuh, MD, Ahmad Abdulla, MD, Alexandras Biskis, MS, Elise Lovell, MD, Ryan McKillip, MD*

Background: In 2024, the United States experienced the simultaneous emergence of two periodic cicada broods, Broods XIII and XIX, in addition to the emergence of annual cicadas, resulting in an unprecedented burden of cicadas on daily life. Previous research has shown that cicadas can pose a health risk, including allergic reactions and unintentional trauma. The extent of the impact of the 2024 cicada emergence on public health is unknown.

Objective: The aim of this study was to inform public health preparedness for similar future events by examining the frequencies and characteristics of urgent care (UC) and emergency department (ED) visits related to the 2024 cicada emergence.

Methods: This was a retrospective review of all UC and ED visits in a large, Midwestern health system from April 1 through July 31, 2024, the four months of highest cicada emergence concentration. AAH is the largest health care system in Illinois and Wisconsin, states impacted by the two cicada broods. Using the electronic health record, patient charts were searched for the word "cicada" along with expected spelling variations from typing or dictation errors.

Qualifying charts were reviewed and qualitatively coded by two emergency physicians. Patient data extracted included diagnosis, demographics, arrival mode, length of stay, disposition, diagnostics and therapeutics. Visits determined to be unrelated to cicadas were excluded.

Conflicting results were resolved via consensus.

Results: There were 331,170 visits to 28 different EDs and UCs in the system during the study period. Of those, 48 mentioned the word "cicada" or a spelling variant. Thirty-two visits were identified as related to cicadas. Patient ages ranged from 7 weeks to 84 years. Trauma was the most common category of visit (27), and was due to falls (17), blunt trauma (4), vehicle or bicycle accident (3), muscle strain (2), or penetrating injury (1). Other categories included allergic reactions (2), environmental exposure (2), and neurologic complication (1). Most patients self-presented; fewer than half utilized EMS transport. Imaging was frequently utilized as 21 (65.6%) of patients received an x-ray and 14 (43.7%) a CT. Seven patients suffered fractures and five patients were admitted.

Conclusion and Impact: The public health impact of the 2024 cicada emergence on a large, geographically relevant health care system was modest but individuals did experience morbidity, largely related to traumatic events. Emergency departments in the geographic distribution of periodic cicada emergences should be prepared for an increased number of traumatic complaints when cicadas are present.

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The Characteristics and Cost of Admission to US Hospitals for Alcohol Withdrawal Syndrome Veronica Gonzalez, MD, Isadora Small , Neil Manadan, Shilpa Arora MD, Mark B. Mycyk, MD*

Background: The need for hospital admission for treatment of alcohol withdrawal syndrome has been impacted by changing patterns in U.S. substance use disorders since the start of the COVID-19 pandemic. Our study sought to identify clinical factors and outcomes in patients hospitalized with alcohol withdrawal syndrome.

Methods: This retrospective cohort study analyzed data from the 2017-2021 National Inpatient Sample (NIS), the largest publicly available all-payor inpatient care database in the US. Diagnoses and co-morbidities for each hospitalization were recorded utilizing the International Classification of Diseases, Clinical Modification (ICD-10). Included were all adult patients with a diagnosis of alcohol withdrawal. Baseline characteristics were summarized using descriptive statistics. Univariable logistic regression was used to calculate unadjusted odds ratios (ORs) for in-hospital mortality. Variables with a p-value ≤ 0.2 were included in a multivariable logistic regression model, adjusting for comorbidities using the Charlson Comorbidity Index (CCI) with p ≤ 0.05 considered statistically significant. All analyses were conducted using STATA version 16.1 (StataCorp, Texas, USA).

Results: A total of 2,472,644 adult patients met inclusion criteria. The majority of patients were male (74.3%), White (70.9%), with most patients age 40-60 years (50.8%). Medicaid was the most common insurance (39.6%). The median LOS was 4 days (IQR: 2–7), and the median total charges were \$27,945 (IQR: \$14,774–\$586,750). Common comorbidities included mood disorders (38.8%), liver disease (27.3%), and infections (23.5%). In hospital mortality was only 1.7%. In multivariable analysis of in-hospital mortality in patients admitted with alcohol withdrawal, increasing age was associated with a higher odds of death (OR 1.04; 95% CI 1.035- 1.040). Other factors strongly associated with increased mortality were infection (OR 5.46; 95% CI 5.180-5.748) and liver disease (OR 1.98; 95% CI 1.889-2.077). Patients in the highest income quartile (Q4) had reduced odds of mortality (OR 0.91; 95% CI 0.844-0.978).

Conclusion: In patients hospitalized for alcohol withdrawal in US hospitals, socioeconomic disparities were evident, as Medicaid was the most common insurance type and those with highest income had greater survival. Co-morbid liver disease and infection were associated with increased mortality. These findings highlight the critical need for specific targeted interventions to reduce admissions and mortality associated with alcohol withdrawal.





Prevalence of Pulmonary Embolism in Patients with COPD Admitted to an Urban Safety-Net Hospital

Michael J. Hohl MD, Lum Rizvanolli, Lucas Ferreira MD, Mark B. Mycyk MD*

Background: The prevalence of pulmonary embolism (PE) in patients with chronic obstructive pulmonary disease (COPD) has been demonstrated to be higher than in the general population. Recent international data estimates complications with venous thromboembolism (VTE) are associated with >25% of COPD hospitalizations.

Objective: We sought to describe the prevalence and clinical characteristics associated with pulmonary embolism (PE) in patients admitted with a COPD exacerbation to our hospital.

Design/Methods: We performed a retrospective analysis of consecutive adult patients admitted with a principal diagnosis of COPD to a large urban hospital (ED annual census 130,000 patients). The primary outcome was diagnosis of pulmonary embolism at any time during hospitalization. Demographics, clinical data, and co-morbid conditions were abstracted from the charts to an excel spreadsheet. Simple descriptive statistics were used where appropriate.

Results: A total of 515 adult patients hospitalized with COPD between 1/1/2021 and 12/31/2023 were eligible for inclusion. 42.91% were female, 72.43% were Black, 10.49% were Hispanic, and 9.13% were White. Over half (n=265, 51.45%) of all patients underwent diagnostic imaging for PE during hospitalization of which, only 17 patients (6.42%) were diagnosed with PE. Among this group, the most common abnormal vital sign was tachycardia (N=8, 47.06%) followed by hypoxia (N=5, 29.41%). Patients diagnosed with PE also had multiple thrombogenic risk factors: history of or active cancer (N=9, 52.95%), history of or active COVID-19 infection (N=7, 41.18%), obesity (N=7, 41.18%), diabetes (N=5, 29.41%). Five of the seven patients with COVID-19 also had a history of cancer. Of the two remaining patients, a history of COVID-19 was their only significant medical comorbidity for PE. The average length of stay in the PE positive cohort was 8.12 days (median = 7). Only 1 patient (5.89%) diagnosed with PE died during the hospitalization.

Conclusion: Despite the use of radiography in more than half of the 515 patients hospitalized for COPD, only 17 patients were diagnosed with PE. All patients with PE had other significant comorbidities or thromboembolic risks.

Impact: Our study suggests a more targeted approach that identifies PE in high risk patients requiring hospitalization for COPD is needed to improve resource utilization and reduce the high rate of radiographic imaging.





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Feasibility of a Performance Benchmark System Using Emergency Medicine **Resident End-of-Shift Assessments**

Ryan McKillip, MD*, Ryan Tabor, MD, PhD, Elise Lovell, MD

Background: Early identification of residents at risk of underperformance is essential for effective intervention. Periodic performance assessments may not detect subtle or sudden declines in progress. Entrustable professional activity (EPA) based end-of-shift assessments have recently been introduced within Emergency Medicine (EM) residencies, but it is not known whether data from these assessments can establish predictive benchmarks for resident progress to facilitate early detection of underperformance.

Objective: This study aims to determine the feasibility of creating benchmarks for EM resident performance using multi-year data from EM resident end-of-shift assessments.

Design/Methods: An end-of-shift assessment using 22 EM EPAs was implemented within a threeyear residency program. Faculty members assessed level of required supervision on a scale of 1 to 5, from "I had to do it" to "I did not need to be there at all." Assessments from February 2023 to September 2024 were sorted by the residents' month in training. The 25th percentile was calculated for each month, along with combined mean entrustment level (EL) and standard deviation (SD). Individual residents mean ELs were compared to these benchmarks in a retrospective analysis.

Results: A total of 5,441 assessments were completed for 70 residents during the period. The number of assessments per resident ranged from 4 to 161 (median 91). Mean EL increased from 2.7 (month 2) to 4.9 (month 36). The 25th percentile rose during training: 2 (months 1-3), 3 (months 4-25), 4 (months 26-34), and 5 (months 35-36). In a retrospective analysis of using the 25th percentile as a benchmark, nineteen residents would have had at least one month with mean EL below the 25th percentile, 4 would have had 2 consecutive months, and 1 would have had 4 consecutive months.

Conclusion: It is feasible to use the data generated by EPA-based end-of-shift assessments to establish benchmarks that identify residents at risk of underperformance. Further study is needed to evaluate if these benchmarks aid program interventions.

Impact: Using historical resident end-of-shift assessment data to establish monthly performance benchmarks may be an effective method for the early identification of residents at risk of underperformance.



Novel Approach to Sexual Assault Nurse Examiner Training Utilizing Simulation Sumona Munshi, DO, MS, Anna Candoleza Muglia, RN, SANE-A, Monika Pitzele* MD, PhD

Background: The sexual assault nurse examiner (SANE) plays a critical role in providing specialized care to survivors of sexual violence—offering comprehensive medical treatment, accurate documentation, forensic evidence collection, and connections to resources and counseling. There is an urgent need to both recruit and train SANEs. Simulation-based training (SIM) has been widely recognized as a means to bridge the gap between the theoretical and practical application of knowledge. Creating SIM training involving standardized patients would allow for SANEs to develop their skillset and knowledge of trauma-informed care.

Objective: The objective of this study is to demonstrate the improvement in confidence and knowledge of SANE trainees through the use of Gynecological Teaching Associates (GTAs) and Male Urogenital Teaching Associates (MUTAs).

Design/Methods: This is a survey study involving a total of 33 training participants. There have been a total of 4 training sessions from July 2024 through February 2025. Inclusion criteria required all trainees to be working toward their SANE certification. Each session involved a 1-hour introduction to review genital structures, pelvic exams in females and males, speculum exams, anal exam, practice with the camera, alternative light source, and TB dye. Before and after each session, trainees rated their comfortability in 6 categories – pelvic exam, male genital exam, genital identification in females and males, alternative techniques, and anal exam. Answers were scored from 1 to 5, and scores from before and after the training were compared using a one-tailed paired t-test.

Results: There was a statistically significant increase in self-reported confidence in all categories of the survey when utilizing GTAs and MUTAs for SANE trainees with a p-value < 0.05. The largest increase in confidence (over 2 points) was observed in the male genital exam, alternative techniques, and the anal exam.

Conclusion: The findings indicate that utilization of GTAs and MUTAs in training for SANEs greatly benefit trainees. SANE trainees reported feeling significantly better prepared and more confident about genital exams after completion of the training. Trainees expressed that working with GTAs and MUTAs was one of the most valuable aspects of the SANE training.

Impact: GTAs and MUTAs can prove to be essential in training SANEs and allow trainees to have hands-on experience in these sensitive exams. Both SANEs and survivors can benefit from simulation training in terms of competence, confidence, and outcomes. This data may guide emergency departments in designing the most efficient training programs for their SANEs.



Outcome of Sedative Assisted Intubation for Ketamine vs Etomidate by EMS: a State Survey Martin E. Pelletier, BS, EMT-P

Background: While sedative-assisted intubation (SAI) is an alternative method of drug-assisted airway- management, previous studies have demonstrated that endotracheal intubation (ETI) success using etomidate or benzodiazepines without concurrent neuromuscular blocking agents (NMBAs) has been relatively low. Further, we have been unable to identify any prehospital SAI studies focusing on ketamine.

Objective: The purpose of our retrospective cohort analysis was to compare ketamine and etomidate for SAI outcomes at the state level.

Design/Methods: Using data from the National Emergency Medical Services Information System (NEMSIS) and Illinois Department of Public Health, we sampled data from ground EMS agencies in 6 EMS systems with published protocols that allow for SAI but exclude NMBAs. With the primary exposure groups being either etomidate or ketamine, we included patients 18-100 years of age who received either of these medications for SAI. We excluded patients who received both exposure group agents for SAI or who experienced cardiac arrest prior to any ETI attempts. We compared continuous variables using the unpaired t test and categorical variables with the chi-square test. Primary outcome measures were first-pass and overall SAI success. Using multivariate logistic regression, we created models for SAI success.

Results: Of the 103 eligible patients, 53 underwent SAI using ketamine and 50 received etomidate. Patients who received etomidate were more likely to receive a benzodiazepine versus those who received ketamine (60% vs 26.42%, p<0.001). There was no significant difference in mean age, gender, race, or primary impression in the etomidate versus ketamine groups.

The overall intubation success rate using etomidate was significantly greater than that of ketamine (88% vs 66.26%, p=0.005), and first-pass success remained greater for etomidate versus ketamine (84% vs 54.72%, p=0.009). Multivariate logistic regression including benzodiazepine administration showed that ketamine was associated with lower overall SAI success (OR: 0.03, 95% CI 0.003-0.17) and first-pass success (OR: 0.06, 95% 0.008-0.24).

Conclusion: Compared to other induction agents, etomidate in SAI was associated with greater intubation success compared to ketamine. As some EMS systems may be capable of using NMBAs but selectively utilize SAI for patients with a more difficult predicted ETI, a strength of our study is that it avoids confounding by severity by only including SAI cases from EMS systems that do not carry NMBAs.

Impact: At least 35 EMS systems have protocols that incorporate SAI by ground EMS. This study is most generalizable to those EMS systems that perform SAI without the option for NMBAs.



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	Etomidate	Ketamine	Р
	n=50	n=53	
Overall Success	44 (88.00%)	31 (66.26%)	.005
First-pass Success	41 (84.00%)	27 (54.72%)	.009

Table 1.) First-pass and overall SAI success for etomidate and ketamine

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Ventriculoperitoneal Shunt Fracture: An Uncommon Reason for Shunt Failure

Claudine Feliciano, DO, Loyola University Medical Center

Introduction: Ventriculoperitoneal shunts are a common treatment for hydrocephalus. One of the less common etiologies of shunt malfunction is fracture of the shunt catheter. Unrecognized fracture could lead to continued rise in the intracranial pressure which would lead to further neurological deficits and pain for the patient.

This is a case of a patient who presented to the Emergency Department with a history of VP shunt placement and altered mental status, unsteady gait, and headaches who was found to have a fracture of the VP shunt catheter.

Case Narrative: A 28-year-old male with a history of hydrocephalus with placement of right occipital ventriculoperitoneal (VP) shunt status post four previous revisions presented to the emergency department with headaches, abdominal pain, unsteady gait and worsening mental status.

Symptoms started with headaches about a week prior which gradually worsened in intensity with associated photophobia, then over the course of the week developed abdominal pain. In the previous few days, patient noted unsteady gait and now today family noticed altered mental status with somnolence. The patient's family noted this constellation of symptoms had occurred in the past with previous shunt malfunctions. History was mainly given by his family as the patient was only able to give minimal history due to the degree of drowsiness.

Initial vital signs showed a blood pressure of 124/80mmHg, a heart rate of 69 bpm, a respiratory rate of 18 breaths per minute, O2 saturation of 98% on room air, and an oral temperature of 98.2°F. His physical exam was notable for significant somnolence; he would rouse briefly for questions but fall asleep often before finishing answers. He was oriented to self and location but not to time. He was unable to participate fully in the neurologic exam, falling asleep frequently and inconsistently following commands. Extraocular muscle function was intact and symmetric. There was no nystagmus. He was able to move all four extremities with symmetric normal strength and did not have any facial weakness. He was able to demonstrate intact finger-nose- finger testing without dysmetria. His gait was not assessed on physician examination due to the degree of drowsiness; the patient's nurse noted that patient required significant assistance to transfer from the wheelchair to the bed which the family noted was not normal as he is generally able to ambulate independently.

VP Shunt Series X-Rays showed the VP shunt catheter to be disconnected from the intracranial portion of the catheter. The catheter was not visualized within the neck, chest, or abdomen; it was found to be coiled within the pelvis. (X-Ray Figures 1, 2, 3, 4, 5). A plain CT of the head (Figure 6) showed enlarged ventricles concerning for worsening hydrocephalus when compared to previous imaging.



Laboratory results were generally within normal limits, with a hemoglobin 16.0, white blood cell count 3.7, Platelet count 257, creatinine 0.98, INR 1.3 although the prothrombin time was mildly elevated at 14.3.

An abdominal CT scan was ordered to ensure no acute intraabdominal pathology related to the catheter disruption and migration. No acute abdominopelvic process was found other than the discontinuous VP shunt catheter being found coiled in the pelvis.

Following abdominal CT, the patient was immediately transported to the operating room where the distal catheter was found to be fractured a few millimeters distal to the valve tip. The shunt was then revised. Patient was discharged home on postoperative day 2 at his baseline mental status.

Discussion: Hydrocephalus occurs due to abnormal accumulation of excess cerebrospinal fluid (CSF) in the cerebral ventricles. It can be due to excess production of CSF, obstruction in the flow of CSF, or issues with absorption into the venous system.¹ Communicating hydrocephalus occurs when flow is blocked after leaving the ventricles, such as limited absorption into the venous system (such as with subarachnoid hemorrhage) or excess production of CSF, but the ventricles stay open. Non- communicating hydrocephalus refers to obstruction in flow of CSF throughout the central nervous system due to blockages within the ventricles.² Often present at birth, congenital or developmental hydrocephalus can be a result of intracranial hemorrhage, part of a genetic syndrome, or due to defects affecting spinal cord development and that of its surrounding structures such as spina bifida.¹

The prevalence of hydrocephalus in pediatric patients is 88 per 100,000. In adults it is 11 per 100,000 patients.¹ The prevalence in elderly patients is about 175 per 100,000, and for patients over 80 years old it is more than 400 per 100,000. 1 The significantly increased prevalence in the elderly is due to the high incidence of normal-pressure hydrocephalus (NPH, a type of communicating hydrocephalus) in the elderly.¹ Mortality rates are very broad, likely multifactorial taking into account the different causes of hydrocephalus and the broad range of severity of hydrocephalus as well as the wide age range of those affected by hydrocephalus. ³ One pediatric retrospective cohort study noted a published range mortality of 1-48%.³ Their cohort reported a mortality rate of 5.2%.3 As a whole, they noted that children were more likely to die with hydrocephalus rather than from hydrocephalus. Their retrospective study noted that surgical treatment was associated with a 50% reduced risk of death overall.³

Most types of hydrocephalus tend to cause an increase in intracranial pressure. The Monro-Kellie doctrine notes that the total volume in the brain, CSF, and any blood in the skull is constant, and thus an increase in one compartment must be balanced by a decrease in another or the intracranial pressure will increase as occurs in hydrocephalus. Increased ICP will eventually result in transependymal extravasation of CSF into the brain tissues causing damage to the brain parenchyma and pressure-induced atrophy.¹ Given this, some form of intervention is needed to avoid untoward effects including chronic headaches, learning disabilities, visual changes, gait instability, memory problems, seizures, and in advanced untreated cases severe developmental delays, permanent brain damage and death.

Treatments include transient nonsurgical interventions such as hyperosmolar treatment, hyperventilation, and acetazolamide. ⁴ Transient surgical interventions include treatments like intermittent lumbar puncture (as is often done for idiopathic intracranial hypertension). ⁴ Lastly,

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there are permanent surgical interventions such as endoscopic third ventriculostomy and placing a shunt to divert CSF from the ventricles to a distal location such as the cardiac atrium, peritoneum, or pleural cavity.4 Lumbar peritoneal shunts are also an option, diverting the CSF from the lumbar thecal sac to the peritoneal cavity.5 Shunts have become the "gold standard treatment" for hydrocephalus.²

Ventriculoperitoneal shunts are cerebral shunts used to treat hydrocephalus via drainage of excess cerebrospinal fluid from the ventricles into the peritoneum. In general, a shunt has 3 basic parts – the ventricular catheter which is placed in the lateral ventricle, a valve regulating the flow of CSF out of the brain, and a distal catheter that terminates in a cavity where the CSF will exit and be absorbed into the tissues.² Valves can be programmable for a particular rate of drainage.

Complication rates for VP shunts ranges from 2-20%.4 Complications include infection (often Staphylococcus epidermidis), intracerebral or intraventricular hemorrhage, subdural hematomas, malpositioning, abdominal CSF collections, and shunt malfunction including disconnection, breakage, and obstruction.⁴ Need for revision is not uncommon. One retrospective study noted reports of 23-67% rate of shunt failure inclusive of all shunt types. In their retrospective study of complications of VP shunts specifically, they noted shunt failure in 18.7% of their 32 idiopathic intracranial hypertension patients, including elevated ICP due to shunt obstruction or discontinuation, infection, over-drainage, infection. None caused neurologic morbidity or death, although considerable medical care was needed.⁶

Fractures or discontinuities of VP shunts are an uncommon cause of VP shunt failure, accounting for about 8-15% of shunt failures.⁸ However, it is difficult to accurately describe frequency of VP shunt catheter fractures specifically as literature specifying fracture versus disconnection of the shunt as an etiology of shunt failure is inconsistent. In one pediatric study of 1357 VP shunt patients, 22.4% required revision surgery, and of that 22.4%, 8.1% were due to shunt discontinuity. The most frequent location of the fractures/discontinuities were in the cervical region and the distal valve junction.⁷

Symptoms of shunt fracture would be those of increased intracranial pressure including but not limited to headache, vomiting, drowsiness, psychomotor slowing, vision changes, balance changes.¹ Imaging for evaluation of VP shunt malfunction generally includes a plain CT of the head as well as a shunt series x-ray to include the skull, neck, chest, abdomen, and pelvis. Once the fracture or discontinuity is found on imaging, treatment would be surgical revision of the shunt, generally in an urgent/emergent manner depending on the severity of the patient's symptoms.⁹

Conclusion: Patients with VP shunts, which are the most common locations for CSF shunting in the treatment of hydrocephalus, are unfortunately prone to various malfunctions of the shunt. One of the less common etiologies is fracture of the shunt. Emergency physicians should be aware of this pathology and ensure continuity of the shunt via imaging including a CT head as well as a shunt series X-ray (or imaging of the lumbar spine in the case of a lumboperitoneal shunt) to follow the entire expected course of the distal shunt catheter as missing the shunt fracture would lead to increased morbidity and at worst increased risk of mortality. Symptoms and exam findings will suggest increasing intracranial pressure. Neurosurgical consultation is of the greatest importance as the patient will need operative management.

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Figure 3. Abdomen X-Ray. Left is the day of patient presentation; right image is a previous abdomen x-ray with the intact shunt in place (white arrows).



Figure 4. Pelvis X-Ray. Left is the day of patient presentation with the VP shunt distal catheter coiled in the pelvis (red arrow); right image is a previous pelvis x-ray with the intact shunt in place, coursing through the abdomen/pelvis with a small amount coiled in the pelvis (white arrows).

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Figure 5. Lateral Skull X-Ray. Left is the day of patient presentation; right image is a previous lateral skull x-ray with the intact shunt in place.



Figure 6. CT head. The patient is shown to have enlarged ventricles with the ventricular catheter portion of the VP shunt in place. A previous ventricular catheter (the one visualized with the tip more anterolateral) is present as well.



A Rare and Rapid Case of Creutzfeldt-Jakob Disease Presenting in the Emergency Department Kelsey Bacidore, MD, Jacqueline Dziedzic, DO

Introduction: Creutzfeldt-Jakob disease (CJD) is a rare, rapidly progressive, and fatal neurodegenerative disease caused by misfolded prion proteins. It belongs to a group of transmissible spongiform encephalopathies affecting people worldwide, with an incidence of 1 case per million per year. Approximately 350 cases are diagnosed annually in the United States.

Sporadic CJD is the most common form. The onset of symptoms is around age 60 and primarily affects the central nervous system (CNS). Mean survival of sporadic CJD is 4 to 8 months, with 90% of patients dying within a year. There is no cure. The diagnosis of CJD is very challenging; suspicion should be high if a patient presents with rapid dementia and ataxia. Other neurologic and psychotic symptoms include impaired concentration, memory or judgement, sleep disturbance, visual hallucinations, and myoclonus. Upon tissue examination there is spongiform change and prion protein deposition.

Case Narrative: A 68 year old female presented to the emergency department (ED) altered, incontinent, unable to ambulate or care for herself, and she no longer recognized her family members. Symptoms started 5 weeks prior with visual disturbances including hallucinations, diplopia and color abnormalities. Two weeks later she was confused and getting progressively worse. She had multiple visits to the ED, neurology, optometry and her primary care physician. An outpatient MRI showed patchy FLAIR hyperintensities concerning for chronic microvascular disease. On exam, she grabbed at the air, was easily startled, intermittently followed commands, was spontaneously laughing, and had severe rigidity. She was admitted to Neurology for rapidly progressive dementia with concern for CJD. A lumbar puncture was performed and cerebrospinal fluid (CSF) studies eventually confirmed the diagnosis of CJD. She continued to decline daily during admission and required intubation. Six weeks after symptom onset, the family decided to pursue hospice care, and she died the next day.

Implications to EM: Have a high index of suspicion for CJD in patients with rapid neurocognitive decline associated with myoclonus. MRI is the most helpful imaging study to rule out other diagnoses and to rule in CJD. CSF studies can be diagnostic in many cases. Keep in mind that any materials used for the lumbar puncture should be disposable, as autoclaving will not fully decontaminate supplies. Additionally, CSF samples must be sent to the National Prion Disease pathology center for specific testing and to prevent iatrogenic transmission.

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Intentional Overdose of Castor Beans Kevin Bosnoyan, MD*, Jeffrey, S. Bzdusek, DO

Introduction: Ricin is a poison found naturally in castor beans. It is usually extracted from the waste material left over when making castor oil. It can also be dissolved in water or weak acid. In some reports, ricin has possibly been used as a warfare agent in the 1980s in Iraq.

Case Presentation: A 30-year-old Female with a PMHx of depression presents to the Emergency Department complaining of generalized abdominal cramping pain, vomiting and diarrhea for the last three days. Patient had been increasingly suicidal recently and 3 days ago swallowed 50 castor bean pills that she had obtained online. Patient endorsed multiple episodes of hematochezia, but no episodes were seen in the ED. Associated symptoms included generalized weakness, fatigue, and dizziness.

On review, patient had no other medical problems, denied any recent surgeries and denied taking any other medication, alcohol, tobacco or illicit drugs.

Discussion: The vital signs were: Blood pressure 114/65, Heart rate 116, Respirations 16 and oxygen saturation 100% on room air.

The physical exam was unremarkable, dry mucus membranes and a delayed capillary refill. Tachycardic and normal lung exam.

Cook County Toxicology service was consulted for intentional overdose of Ricin. Supportive treatment includes intravenous rehydration, anti-emetics, and electrolyte repletion. Admitted for observation due to concern of worsening GI symptoms.

Initial labs included Hemoglobin of 19.9g/dL, hematocrit 57.7%, and white blood cells 16,400 per microliter. Comprehensive metabolic panel significant for Potassium of 3.2 and Creatinine of 1.33. both were treated with IV fluids and KCl.

Patient was admitted for observation, she continued to have cramping abdominal pain for two days, four episodes of hematochezia were observed and then discharged in stable condition.

Discussion: Ricin is composed of two different chains. Ricin toxin A chain inactivates ribosomes by blocking 28 S ribosomal RNA which inhibits protein synthesis. This inhibits protein synthesis by blocking the binding of elongation factors. This inhibition of protein synthesis by the ricin toxin A chain is a mechanism of ricin toxicity. Symptom onset is within 4-6 hours and death usually occurs within three to four days. Major symptoms include cardiovascular shock, rhabdomyolysis and others. Treatment is mainly supportive.

Conclusion: Given how readily available castor beans can be purchased, it is something emergency medicine physicians should be familiar treating. It's main mechanism of action is inhibition of protein synthesis on a cellular level therefore its main symptoms are usually seen with cells that are highly active and multiply rapidly including gastrointestinal cells.





Scrotal Tuberculosis Disguised as UTI and Malignancy Leslie M Cachola, MD*, Rahma Tayyab, MD, Sean Dyer, MD

Introduction: Genitourinary tuberculosis (GUTB) is a rare form of extrapulmonary TB (EPTB), making up 20-40% of all cases— 3% of which involve the testicles. Its presentation may mimic that of common conditions including testicular tumors, torsion, and urinary tract infection, thus posing a diagnostic challenge and risk for delayed treatment.

Case Narrative: A 41-year-old male migrant from South America with well-controlled HIV and presumed latent TB on isoniazid (INH) presented to the ED with bilateral testicular pain, swelling, and hesitancy for over two years. He completed a course of TMP-SMX for a UTI just one week prior. Overall, he was well-appearing, afebrile, and hemodynamically stable with an exam notable for multiple palpable and mildly tender 1cm masses bilaterally without overlying skin changes or penile discharge. A CBC, CMP, and tumor markers hCG and AFP were normal and his CD4 count was >500. His urinalysis showed 28 WBCs and 250 leukocyte esterase while his urine culture grew E. coli. A bilateral scrotal ultrasound showed heterogeneous testicles with multiple small, rounded to ill-defined hypoechoic lesions and a large 3.4 x 1.7 x 2.4 cm hypoechoic lesion contiguous with an extratesticular mass (Figure 1). These results were concerning for an infectious etiology (e.g., TB or fungal), a primary testicular neoplasm with metastases, or metastatic disease from another primary.

Urology recommended admission for IV antibiotics and further workup; however, the patient was unable to stay given work constraints. He presented it to the urology clinic two weeks later and elected surveillance over surgical orchiectomy and testicular biopsy given his manageable symptoms. After another two weeks, he was readmitted from the infectious disease clinic due to an abnormal CT chest with evidence of active TB. His acid fast-bacilli urine culture, urine TB PCR, and induced sputum fungal culture were negative while subsequent AFB sputum and PCR samples returned positive for TB. He discontinued INH monotherapy due to resistance and initiated full TB therapy with rifabutin, pyrazinamide, ethambutol, and levofloxacin. The patient later elected radical right-sided orchiectomy, of which pathology results demonstrated necrotizing granulomatous epididymoorchitis with TB and no malignant cells.

Discussion: This case highlights a rare form of GUTB which can appear akin to a neoplasm or complicated UTI. Left untreated, GUTB can lead to complications of disseminated TB including infertility. EPTB workup should be considered in migrants from endemic areas and in those with HIV who are at increased risk of mortality.

Figure 1. Long axis ultrasound of right testicle. Obtained with patient consent.





Umbilical Appendiceal Incarceration with Acute Appendicitis Mario Rako, MD

Introduction: Appendicitis and hernia repair are two of the most common reasons for surgical consult from the emergency room. However, rarely are both entities combined to form one pathology. There have been reports of appendiceal herniation in the literature but usually these reports include inguinal, femoral, or obturator herniation. Rarer yet is the herniation of the appendix through the umbilicus. We will discuss a case of an incarcerated umbilical hernia containing an appendix which was complicated by appendicitis.

Case Narrative: 32-year-old female presented for burning, sharp periumbilical abdominal pain which started today and has been constant, associated with 1 episode of non-bilious, non-bloody emesis and chills. History of c-section, cholecystectomy, cecostomy tube via umbilicus s/p removal in 1997, imperforate anus, IBS. Tylenol and Pepto-Bismol didn't help. ROS otherwise negative including no GU symptoms. On exams, she is generally well appearing in no distress. Afebrile with normal vital signs. Has a soft, flat, non-distended abdomen with mild periumbilical tenderness with no guarding or rebound. No CVA tenderness, no hernia. CBC, CMP, lipase, lactic acid all normal. Covid negative. UA borderline with no infectious symptoms. She was given 4mg IV

Zofran, 1g IV Tylenol, and 1L LR bolus with minimal improvement. CT Abdomen and Pelvis with IV contrast ordered persistent symptoms. Final read: "Findings suspicious for acute appendicitis with incarceration of the mid to distal portion of the appendix within the patient's umbilicus." She was started on IV antibiotics and surgery was consulted. She was taken to the OR for laparoscopic appendectomy, lysis of adhesions, and primary umbilical hernia repair. She received peri-op antibiotics for 24 hours but was discharged the same day without a course of antibiotics.

Discussion: Though this entity is exceedingly rare, it should be on our differential when faced with peri-umbilical pain and tenderness. This patient had risk factors. Multiple abdominal surgeries in the past including her umbilicus.

Though a clear hernia was not felt in this case, it is important to spend adequate time searching for one on exam in such high risk patients and obtain definitive imaging in such high risk patients. If hernia is present on exam it is also of utmost importance to classify it is reducible, incarcerated, or strangulated. If there is severe tenderness or overlying skin changes at a prior surgical site this may be a clue that a hernia is present even if one is not clearly present on exam.

