Research Abstract: 26-01

Type of Research: Research

Title: Combating the Chaos of ED Handoffs: Implementing I-PASS to Improve Transitions of Care

Presenting Author: Lora Bailey, DO, PGY2, University of South Alabama

Additional Author(s): Caroline Molins, M.D., MSMEd, Walker Plash, M.D., Grace Lagasse, M.D., MPH (all are USA Health EM faculty Dr. Plash is Associate professor, Dr. Molins and Dr. Lagasse are assistant professors

Introduction/Background: Transitions of care (ToC) in the Emergency Department (ED) are a high-risk period for communication failures and patient harm. Up to 80% of serious medical errors are associated with breakdowns in communication during ToCs. Although the ACGME and Joint Commission require standardized ToC, they are still variable. The I-PASS framework is a validated, best-practice handoff tool shown to reduce medical errors. This quality improvement(QI) project aimed to enhance the safety and consistency of transition of care within the ED through the implementation of the evidence-based I-PASS handoff framework.

Methods: Using Plan–Do–Study–Act methodology, a brief asynchronous educational session was developed as a QI intervention and implemented in an academic Level 1 trauma center ED. Educational objectives included identifying common handoff errors, recognizing risks of poor communication, and introducing the I-PASS framework. Participants completed pre- and post-tests to assess knowledge acquisition and a pre-implementation survey. Following a 2-week educational period, I-PASS was implemented for all ToC over 12 weeks. Post-implementation evaluation included a structured feedback session and a post-survey. Outcome measures included learner knowledge, perceived ToC standardization, and sustained use of the I-PASS during handoffs.

Results: The educational session was provided to all EM residents and attendings. Before implementation, >50% of participants felt that ToC were not standardized and inconsistent. Pre-test results showed that 77% of residents scored > 75%. Post-test results showed an increase to 100%. Paired pre- and post-test scores demonstrated a statistically significant improvement in knowledge ($t = 2.86$, $p = 0.0085$). Post-implementation surveys demonstrated increased perceived standardization of ToC and consistent use of the I-PASS framework. The impact of the educational intervention was evaluated using the Kirkpatrick model, assessing Level 1 (learner reaction via post-session surveys), Level 2 (knowledge acquisition via pre- and post-tests), and Level 3 (self-reported behavior change).

Discussion and Conclusion: This QI initiative successfully improved knowledge, standardization, and adoption of the I-PASS handoff tool among our EM physicians. Although conducted at a single institution, this scalable model is adaptable and generalizable throughout various ED settings.

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Research Abstract: 26-02

Type of Research: Research

Title: Impact of a new Free-Standing Emergency Department in a geographically isolated service area on the local EMS system

Presenting Author: Kaitlin Ferrell, MD, TriStar Skyline Emergency Medicine Residency

Additional Author(s): Michael Hasty, MD (TriStar Skyline Emergency Medicine GME), Joshua Justice, MD (TriStar Skyline Emergency Medicine GME)

Description: Comparison of EMS traffic in the period before and after opening a FSED.

Introduction/Background: A freestanding emergency department (FSED) is a healthcare facility that provides emergency care but is not physically connected to an acute care hospital. FSEDs were designed to help with the increasing demand of acute care without the cost of building new full-scale hospitals. Lawner et al. conducted a study in Maryland looking at the relation between EMS and FSEDs which showed a modest improvement in EMS turnaround times and out-of-service interval improvement with the implementation of a FSED in that community. Metropolitan Nashville-Davidson County has a population of 729,505 over 526 square miles. Nashville Fire Department (NFD) has 33 paramedic units that respond to over 100,000 calls per year. Bellevue FSED opened in December 2024 with goals to help with overcrowding in downtown Nashville emergency departments as well as provide timely local care for the population in that geographic area. Medic 37 is in the same ZIP code as Bellevue FSED and serves as the primary unit for that area. Prior to Bellevue FSED opening, Medic 37 would have to leave its primary zone for transports consistently.

Methods: Data of each medic run was obtained from the months January 2024-June 2024 and January 2025-June 2025. Bellevue FSED is within the zip code of 37221. Each medic number was given a zip code based on the station with relation to the post office in the area. Medic number 37 is within the same zip code as Bellevue FSED which will be the main focus of this study. Data was obtained from Nashville Fire Department to show how many runs were being made within 37221. Percentage of runs within 37221 were calculated and compared to the rest of the runs within other zip codes that medic 37 made within the time frame. The percentage of runs were compared from 2024 to 2025 which compares runs made before the opening of the FSED to after the opening.

Results: Medic 37 made 1305 (80.16%) runs within 37221 in 2024 out of a total of 1628 runs in total for Medic 37. In 2025, Medic 37 completed 1366 (83.39%) runs in 37221 out of a total of 1638 runs for that ambulance. From January 2025-June 2025, 190 patients were transported to Bellevue FSED by Nashville Fire Department. Medic 37 transported 145 (76.31%) of those 190 patients. Medic 37 also took 56.59% of the total runs within 37221. Out of the runs in 2025 within 37221, Medic 37 took 145 (10.61%) runs to Bellevue FSED

Discussion and Conclusion: Medic 37 was responsible for the most runs within ZIP 37221 in 2024 and 2025 (Graphs 1 and 2). Bellevue FSED allowed Medic 37 to stay within their primary geographic zone more often as shown by the increase in run percentage within ZIP 37221 year over year (Graph 3 and 4). Medic 37 was the primary NFD EMS unit to bring patients to the Bellevue FSED in January 2025-June 2025 (Graph 5). This represents approximately 10% of Medic 37 run volume during that time frame. In

future research, total time of transport and out-of-service intervals should be assessed as well as longer time frames for data collection to evaluate for seasonal and multi-year trends. Percentage of runs should also be revisited once the Bellevue FSED is more established and Nashville Fire Department is more aware of the FSED. Medic 37 completes the majority of runs within ZIP 37221 where Bellevue FSED is located. Bellevue FSED receives the majority of patients arriving by ambulance from Medic 37. With the implementation of the Bellevue FSED, Medic 37 was able to complete more runs within the preferred geographic zone instead of travelling longer distances to an acute care hospital. FSEDs can positively impact the local EMS system by providing a local option for patient transports and allow units to remain available to serve local communities.

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Research Abstract: 26-03

Type of Research: Research

Title: A SLOE Shift: A Resident-Led Rethink of Faculty Evaluation

Presenting Author: Jarred Millard, MD, PGY3, University of Alabama at Birmingham

Additional Author(s): Logan L. Beach MD, Jarad D. Anderson MD, Madison C. Williams Chen MD, Jaron D. Raper MD, Charles A. Khoury MD, University of Alabama at Birmingham Emergency Medicine

Introduction/Background: Traditional survey-based faculty evaluations often yield limited or vague feedback, failing to reflect residents' true experiences with clinical teaching and supervision.

Description: To promote more candid, actionable insights, we implemented a resident-led interview model in which senior residents conduct confidential, structured interviews with their peers across eight evaluation domains. This approach emphasizes resident ownership, faculty development, and program transparency.

Introduction/Background: Traditional survey-based faculty evaluations often yield limited or vague feedback, failing to reflect residents' true experiences with clinical teaching and supervision.

Methods: The Program Director appointed 3–4 senior residents as "evaluation leads" trained in confidentiality, neutrality, and structured interviewing. Each lead conducted 5–6 interviews across PGY levels, focusing on eight domains: clinical teaching, professionalism, supervision, feedback, efficiency and flow, engagement and effort, free-text reflections, and a global "match-style" ranking. Qualitative responses were synthesized into anonymized faculty summaries using an AI-based thematic analysis model. The Program Director reviewed and contextualized results for faculty feedback and annual performance discussions.

Results: Resident-led interviews produced highly specific and candid feedback that identified both exemplary teaching behaviors and areas for improvement, such as variable presence in clinical areas or inconsistent supervision styles. The new Engagement & Effort domain surfaced faculty behaviors often overlooked by traditional metrics. The match-style ranking provided an intuitive, comparative snapshot of faculty performance. Faculty described the AI-synthesized reports as more credible and actionable than standard evaluations, and residents valued the psychological safety of a peer-led process.

Discussion and Conclusion: A resident-led, AI-supported interview model across eight structured domains—including engagement/effort and a global ranking—creates a richer, more authentic source of faculty feedback. This model promotes resident empowerment, fosters mutual accountability, and generates actionable data for faculty coaching and development. Future work will assess reproducibility, interrater consistency, and longitudinal faculty performance trends.

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Research Abstract: 26-04

Type of Research: Original Research

Title: Investigating the Disaster-Readiness of Clinical Staff at an Academic Hospital System: An initial needs assessment

Presenting Author: Scott Johnson, PGY2, USA Health Emergency Medicine Residency, University of South Alabama

Additional Author(s): Anthony Jackson, DO, PGY-2 (co-presenting author) USA Health Emergency Medicine Residency University of South Alabama Nicole Anthony, MS-2 Fredrick P. Whiddon College of Medicine University of South Alabama Alexander Williams, MS-3 Fredrick P. Whiddon College of Medicine University of South Alabama Travis Goodloe, MD Department of Emergency Medicine University of South Alabama Sara Wattenbarger, DO Department of Emergency Medicine University of South Alabama Maryann Mbaka, MDDepartment of Surgery University of South Alabama Karthik Swamy, MD Department of Anesthesia University of South Alabama Leanna Guinn, RN USA Health Lisa Moreno-Walton, MD Department of Emergency Medicine University of South Alabama

Introduction/Background: Introduction: Disasters are increasing in frequency and severity across the globe, driven largely
by climate change and rapid urbanization. Both natural and human-made emergencies often result in mass casualty incidents and hospital surges. Healthcare professionals play a critical role in the management of these disaster events. However, existing literature indicates that many healthcare workers around the world feel unprepared to respond effectively. This study serves as an initial needs assessment of disaster preparedness among clinical staff within the University of South Alabama (USA) Health System.
Methods: A pilot survey was developed using existing disaster preparedness tools and refined through team discussions. It was beta-tested among a sample of clinical staff to identify initial trends and inform future assessments. The survey included demographic questions and assessed disaster knowledge, experience, and confidence using 6-point Likert-scale responses. A total of 51 respondents completed the pilot, representing a range of clinical roles and experience within the emergency medicine, surgery, and anesthesiology departments of USA Health.
Results: The majority of respondents consider themselves prepared to manage disaster events (80%), understanding their role (76%) and their limits (88%). However, 86% indicated a need for additional disaster training. While confidence in technical skills was high in using PPE (78%) and performing isolation techniques (73%), only 49% felt confident in executing decontamination procedures. Participation in real-world disaster events (39%), emergency planning (29%), and disaster drills (25%) was limited. While 88% were willing to report to work during a disaster event, 73% cited concerns for family safety. Staff confidence was highest in departmental readiness (78%), lower in their hospital (67%), and lowest in their community (43%).
Discussion and Conclusion: Conclusion: Findings reveal moderate overall confidence among a motivated clinical staff, with clear opportunities for improvement. Increasing disaster response training, addressing personal preparedness concerns, and strengthening system-wide communication may increase

readiness. This beta test provides a foundation for broader assessment within USA Health and for future efforts that ultimately aim to improve disaster preparedness across global health systems.

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Research Abstract: 26-05

Type of Research: Original Research

Title: Strengthening SANE Workforce Capacity: Training Adequacy, Emotional Burden, and the Impact of Simulation-Based Education

Presenting Author: Halle Mitchell, MPH - VCOM-Auburn OMS-II

Additional Author(s): Kayla Jackson, OMS-II, VCOM-Auburn, Allison Kennedy, RN - East Alabama Medical Center,Nathan Douthit, MD - VCOM-Auburn, East Alabama Medical Center

Introduction/Background: Sexual Assault Nurse Examiners (SANEs) play an essential role in providing trauma-informed medical care and forensic evidence collection for patients reporting sexual assault. The role requires advanced clinical skills, emotional resilience, and frequent interaction with the legal system. Nationally, SANE programs face challenges with recruitment and retention due to emotional burden, on-call demands, inconsistent training experiences, and limited institutional support. This institution recently invested in pelvic simulation models and expanded training resources, creating an opportunity to evaluate preparedness, confidence, and workforce challenges among SANE nurses. A comprehensive assessment is needed to better understand training adequacy, emotional burden, and factors influencing workforce sustainability.

Methods: A cross-sectional and pre/post survey design will assess SANE workforce experiences. Participants include current SANEs, former SANEs, nurses in orientation, and prospective SANEs. All participants will complete a baseline survey evaluating training adequacy, procedural confidence, pediatric readiness, emotional burden, job satisfaction, institutional support, interactions with law enforcement, compensation, and barriers to call participation. Nurses participating in pelvic simulation training will complete additional pre- and post-training surveys assessing changes in confidence and preparedness. Surveys will be administered electronically and linked using anonymous self-generated ID codes (SGIDs). Data analysis will include descriptive statistics, subgroup comparisons, paired pre/post analyses, and modeling of predictors of intent to remain.

Results: The study will identify variability in perceived training adequacy, confidence in technical and trauma-informed skills, and emotional burden among SANE nurses. Simulation-based training is expected to improve post-training confidence. Key barriers to retention—including emotional fatigue, legal stress, compensation concerns, and call burden—are expected to emerge. Differences across current, former, and prospective SANEs may identify risk factors for attrition and opportunities to improve recruitment and retention. Institutional support and access to debriefing resources are expected to correlate with job satisfaction and intent to remain.

Discussion and Conclusion: This study will provide a comprehensive assessment of SANE workforce preparedness, emotional burden, and training needs. Findings will inform improvements in orientation, simulation-based education, and professional support. Results will guide decisions related to staffing, scheduling, compensation, and resource allocation to strengthen workforce capacity and ensure continued access to trauma-informed forensic care.

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Research Abstract: 26-06

Type of Research: Research

Title: Housing Matters: ED Length of Stay and Acuity

Presenting Author: Olivia Martin, MS-4, University of Kentucky College of Medicine

Additional Author(s): Sameer Desai, MD University of Kentucky Emergency Department

Introduction/Background: Patients experiencing homelessness face significant barriers to healthcare and rely disproportionately on emergency departments for acute care. While prior studies have demonstrated increased ED utilization among unhoused individuals, less is known about how housing status affects emergency department length of stay (ED LOS), particularly across patient acuity levels. We sought to evaluate whether housing status is associated with differences in ED LOS among adult patients presenting to an academic emergency department.

Methods: We conducted a retrospective cohort study of adult emergency department encounters at a single academic emergency department. Encounters were categorized by documented housing status as housed or experiencing homelessness. The primary outcome was emergency department length of stay (ED LOS). LOS distributions were compared between groups using Mann-Whitney U testing.

Results: A total of 665 ED encounters were included, comprising 344 patients experiencing homelessness and 321 housed patients. Median ED LOS was 3.59 hours (IQR 5.31) among patients experiencing homelessness compared with 4.52 hours (IQR 14.07) among housed patients ($p < 0.001$).

Discussion and Conclusion: Patients experiencing homelessness had significantly shorter emergency department length of stay than housed patients in this cohort. This finding may reflect differences in patient acuity, diagnostic evaluation, disposition patterns, rates of patient-directed departure, or structural inequities in care delivery. Further investigation is needed to determine whether shorter LOS represents more efficient throughput, patient preference, or disparities in evaluation and treatment. Limitations include the retrospective, single-center design and inability to control for potential confounders such as chief complaint, disposition, and comorbid conditions.

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Research Abstract: 26-07

Type of Research: Research

Title: Barriers to ED-Based HIV PrEP Prescribing Among Emergency Clinicians in Alabama: a novel survey

Presenting Author: Michael Murphy, MS3, Univeristy of Alabama at Birmingham Heersink School of Medicine

Additional Author(s): Lauren A. Walter, MD, MSPH, FACEP, UAB Department of Emergency Medicine, Todd Peterson, MD, FACEP UAB Department of Emergency Medicine

Introduction/Background: Pre-exposure prophylaxis (PrEP) is safe and highly effective for HIV prevention, yet prescribing remains low in the United States, particularly in the Southeast, which bears a disproportionate burden of new HIV diagnoses and has one of the lowest PrEP-to-need ratios nationally. Emergency departments (EDs) may provide an important opportunity to identify patients who could benefit from PrEP and facilitate initiation or referral. We sought to assess PrEP knowledge, attitudes, and prescribing practices among emergency clinicians in Alabama to identify barriers to ED-based implementation.

Methods: We conducted a cross-sectional online survey of emergency medicine clinicians in Alabama over a 4-week period in fall 2025. The survey was distributed via professional email listservs to approximately 250 ED clinicians. Items assessed respondent demographics, prior PrEP training, prescribing experience, perceived access to PrEP-related resources, and attitudes toward ED-based PrEP. Responses included Likert-scale and binary items. Descriptive statistics were performed.

Results: Fifty clinicians responded, including 36 physicians, of whom 7 were residents, and 14 advanced practice providers. Most respondents practiced in urban (76%) and academic (74%) settings. Most (86%) reported no formal PrEP training, and 82% reported discomfort with prescribing PrEP. Although 32% had prescribed PrEP previously, prior prescribing was more common among attending physicians than among advanced practice providers or residents. Two-thirds of respondents (66%) agreed that ED-based PrEP initiation is appropriate. Only half (50%) reported adequate protocols or resources to support prescribing, with greater reported availability in academic than community settings (61% vs 23%). Most respondents (78%) indicated that additional training and resources would increase their likelihood of prescribing. Commonly reported barriers included limited ED HIV testing, time constraints, and inadequate implementation support.

Discussion and Conclusion: Among surveyed emergency clinicians in Alabama, PrEP training, prescribing comfort, and implementation support were limited despite broad agreement that ED-based PrEP initiation is appropriate. These findings suggest that clinician education, standardized workflows, and improved access to prescribing resources may help expand ED-based PrEP delivery in high-need settings.

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Case Study Abstract: 26-08

Type of Research: Case Report

Title: Under Pressure: A Rare Emergency Department Case of Abdominal Compartment Syndrome

Presenting Author: Jarad Anderson, MD, PGY3, University of Alabama at Birmingham Department of Emergency Medicine

Additional Author(s): Brendan Anzalone, DO - Clinical Assistant Professor, UAB; Charles Khoury, MD, MSHA, FACEP, Professor, UAB.

Introduction/Background: Abdominal compartment syndrome (ACS) is a rare yet life-threatening condition characterized by sustained intra-abdominal pressure greater than 20 mm Hg with associated new organ dysfunction. Although most commonly described in postoperative and critically ill patients, ACS is infrequently recognized in the emergency department (ED), where its diagnosis may be delayed due to nonspecific clinical findings. Progressive intra-abdominal hypertension can lead to impaired venous return, decreased cardiac output, reduced pulmonary compliance, and renal failure. Early recognition is critical, as prompt decompression is associated with improved outcomes. This case highlights a rare presentation of ACS identified in the ED and underscores the importance of maintaining a high index of suspicion in patients with abdominal distension and unexplained hemodynamic or respiratory compromise.

Discussion and Conclusion: This case demonstrates the rapid progression and diagnostic complexity of ACS in the emergency setting. The patient's large bowel obstruction led to severe intra-abdominal hypertension, resulting in profound respiratory failure, impaired ventilation after intubation, and subsequent cardiac arrest. The inability to ventilate effectively following airway placement should prompt consideration of mechanical causes, including elevated intra-abdominal pressure.

Emergent surgical decompression resulted in immediate and dramatic improvement in both hemodynamic status and pulmonary compliance, highlighting the reversible nature of ACS when promptly identified and treated. This case reinforces the importance of recognizing key clinical indicators—including abdominal distension, refractory shock, and ventilatory difficulty—and considering ACS early in the differential diagnosis.

Although bladder pressure measurement is the gold standard for diagnosis, this case emphasizes that clinical suspicion alone in a rapidly deteriorating patient may necessitate expedited intervention. Emergency physicians should remain vigilant for ACS, as early recognition and timely surgical management can be lifesaving and significantly improve patient outcome.

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Case Study Abstract: 26-09

Type of Research: Case Report

Title: Paradoxical Agitation Following Etomidate Sedation for Electrical Cardioversion: A Case Report

Presenting Author: Callie O'Bryant, MD, PGY2, University of Alabama Birmingham

Additional Author(s): Madeline Palmer, MD; Emma L. Chee-How, PharmD; Callie O'Bryant, MD; Emily Grass, MD, University of Alabama Birmingham

Introduction/Background: Etomidate is a short-acting nonbarbiturate sedative-hypnotic frequently selected for procedural sedation in the emergency department (ED), particularly for brief interventions such as electrical cardioversion. Its minimal cardiovascular effects and predictable pharmacokinetics make it an attractive option in patients with arrhythmias (Miner & Burton, 2007; Vinson & Bradbury, 2002). Etomidate exerts its clinical effects as a positive allosteric modulator of ?-aminobutyric acid type A (GABA A) receptors, with preferential activity at those containing ?2 and ?3 subunits, resulting in enhanced inhibitory GABAergic neurotransmission (Forman, 2011; Valk and Struys, 2021). This results in hypnosis, sedation, and amnesia but no analgesic effects. Commonly reported adverse effects include pain at the injection site, myoclonus, nausea, vomiting, and transient adrenal suppression (Forman, 2011). Neuropsychiatric effects such as paradoxical agitation or emergence reactions associated with etomidate procedural sedation are rarely reported and sparsely described in the literature (Perrone, 2006; Hunt, Spencer, and Hayes, 2005; Spencer and Hayes, 2006). We describe a case of profound agitation following etomidate sedation in a previously healthy patient undergoing electrical cardioversion for new-onset atrial fibrillation. This case report was prepared in accordance with the CARE Guidelines (Gagnier et al, 2013).

Description: A 20-year-old male weighing 95.3 kg presented to the ED with a chief complaint of palpitations after awakening from sleep with a sensation of his heart "speeding up and slowing down." He denied chest pain, shortness of breath, dizziness, syncope, fever, or recent illness. He had no significant past medical history and no prior history of arrhythmia or heart failure. He reported no known medication allergies and took no daily medications. Surgical history included wisdom teeth extraction and rotator cuff repair with no prior issues with anesthesia. He endorsed occasional marijuana use and denied alcohol, tobacco, or other recreational drug use. He also denied significant caffeine intake. Initial vital signs demonstrated a temperature of 36.6°C, heart rate of 75 beats/min, respiratory rate of 16 breaths/min, oxygen saturation of 97% on room air, and blood pressure of 138/78 mmHg. Initial electrocardiogram (ECG) revealed atrial fibrillation. Physical examination revealed a well-appearing, calm, cooperative patient without signs of volume overload or intoxication. Laboratory evaluation demonstrated normal electrolytes, renal function, thyroid studies, and cardiac biomarkers. Chest radiography showed no acute cardiopulmonary abnormality. A repeat ECG revealed persistent atrial fibrillation. Given the patient's reliable history of symptom onset less than 24 hours prior to presentation, a CHA 2 DS 2 -VASc score of 0, and an otherwise unremarkable evaluation, the decision was made to proceed with synchronized electrical cardioversion in accordance with established practice guidelines (January et al., 2019; Joglar et al., 2024). Etomidate was selected for procedural sedation due to its rapid onset and short duration of action. The patient received one dose of etomidate 10 mg IV (~0.1 mg/kg). Shortly following administration, he entered a sedative-hypnotic state characterized by reduced responsiveness to external stimuli with preserved airway reflexes and stable hemodynamics.

Synchronized electrical cardioversion was subsequently performed at 100 joules, resulting in immediate conversion to sinus rhythm. Key clinical events and their timing relative to etomidate administration are summarized in Table I. Immediately following electrical cardioversion, the patient became profoundly agitated and combative. He was diaphoretic, incoherent, and physically violent, thrashing his lower extremities, forcibly removing monitoring equipment, and attempting to leave the bed. He was unable to be verbally redirected. Drooling and nystagmus were observed. His agitation did not appear to be pain-related and was most consistent with an acute emergence reaction. The patient was receiving a 1000 mL 0.9% sodium chloride IV bolus and supplemental oxygen prior to the onset of agitation. Midazolam 2 mg IV was ordered, however no additional sedative medications were administered due to rapid resolution of symptoms. Approximately 2 minutes after onset, the agitation began to abruptly resolve and the patient started to become calm and more cooperative. Approximately 4 minutes after onset, he had returned to his baseline mental status. The patient reported complete amnesia for the procedural sedation, electrical cardioversion, and subsequent agitation. His only complaint after the procedure was bilateral heel pain from striking his feet on the stretcher during the period of agitation. The patient followed up with cardiology the next month. He reported one subsequent episode of self-resolved palpitations with no other symptoms. A 30-day event monitor showed no arrhythmias.

Discussion and Conclusion: Paradoxical agitation following etomidate sedation is an uncommon but clinically significant adverse effect. Emergency clinicians should be aware that severe, transient agitation may occur even in young, healthy patients receiving low-dose etomidate for brief procedures such as electrical cardioversion.

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Case Study Abstract: 26-10

Type of Research: Case Report

Title: Myocardial Infarction with Non-Obstructive Coronary Arteries (MINOCA)

Presenting Author: Tosin Oladunjoye, MD, PGY2, University Of South Alabama

Additional Author(s): Michael L. Sternberg, M.D. Professor, Emergency Medicine, University Of South Alabama

Introduction/Background: Myocardial infarction with non-obstructive coronary arteries (MINOCA) accounts for approximately 5–15% of acute MI presentation. It is an underrecognized cause of chest pain and troponin elevation. It is defined by clinical evidence of myocardial infarction with <50% coronary stenosis on angiography. MINOCA is a heterogeneous working diagnosis rather than a single disease. Data demonstrate meaningful rates of MACE, heart failure, re-infarction, and mortality. Early recognition is essential to avoid missed pathology and can guide disposition.

Description: 37-year-old male presented to the ED with recurrent pressure-like chest pain that began early in the morning and awoke him from sleep. Associated symptoms included, diaphoresis, nausea, and one week of exertional dyspnea. On arrival, airway, breathing, and circulation were intact. The patient appeared uncomfortable and mildly distressed. Vital signs HR: 62 RR: 22 BP: 158/90 mmHg.

Differentials: CAD, ACS, AD, PE, pneumothorax, pneumonia, pericarditis, myocarditis, CHF, MSK pain. Initial ECG showed ST-segment elevation in leads II, III, and aVF. Repeat ECG demonstrated persistent similar findings. Cardiology was consulted and, STEMI activation with urgent transfer to the cardiac catheterization laboratory. Initial troponin returned elevated at 10,000. Aspirin, clopidogrel, and atorvastatin administered.

Heart Cath demonstrated angiographically normal coronary arteries. He was discharged home on aspirin, atorvastatin, amlodipine and Imdur w cardiology f/u. Given non-obstructive findings and evidence of myocardial injury, differential included MINOCA, myocarditis, Stress cardiomyopathy.

Discussion and Conclusion: MINOCA should be viewed as a syndrome requiring further investigation rather than a final diagnosis. Early CMR improves differentiation of ischemic vs non-ischemic myocardial injury. OCT and IVUS may identify plaque rupture, erosion, SCAD, or embolic disease not visualized on angiography. Management should be mechanism-specific rather than applying uniform ACS treatment to all patients.

Although MINOCA may not be definitively diagnosed during a patient's stay in the ED, ED physicians should remain aware of this syndrome and the diagnostic algorithms available to guide evaluation after admission or cardiology follow-up. Recognition is also important for patients who return to the ED with recurrent chest pain, persistent symptoms, or interval troponin elevation after a recent negative or non-obstructive coronary evaluation. Increased familiarity with pathways, risk stratification, and specialty-directed follow-up may reduce missed pathology, improve disposition decisions, and optimize long-term cardiovascular outcomes.

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Case Study Abstract: 26-11

Type of Research: Case Report

Title: Cardiac Injury and Rhabdomyolysis Following Melanotan II Injection

Presenting Author: Wesley Holland, MD, PGY2, UAB Emergency Medicine

Additional Author(s): Emma Chee-How, PharmD (Clinical Pharmacist, UAB); Christopher N. White, MD (Assistant Professor, UAB); Stacy Marshall, MD (Assistant Professor, UAB)

Introduction/Background: Melanotan II, an illicitly obtained synthetic analog of melanocyte-stimulating hormone, is marketed online for sunless tanning and erectile dysfunction. Reported adverse effects include priapism, rhabdomyolysis, posterior reversible encephalopathy syndrome, and mild troponin elevation. We present a case of significant multisystem toxicity with pronounced cardiac biomarker elevation following Melanotan II use.

Description: A 47-year-old male with no significant past medical history presented to the emergency department two hours after subcutaneous injection of approximately 8.3 mg of Melanotan II. He reported muscle spasms, yawning, and profuse diaphoresis. Initial vital signs were notable for heart rate 155 bpm, respiratory rate 25, blood pressure 170/102 mmHg, and oxygen saturation 93% on room air. Examination revealed diaphoresis, tachycardia, episodic hypertonicity with back arching, and priapism.

He was treated with midazolam for a sympathomimetic toxidrome. Priapism developed and required aspiration with intracavernosal phenylephrine, with recurrence one hour later necessitating repeat intervention. ECG demonstrated sinus tachycardia without ischemic changes. Laboratory evaluation revealed leukocytosis (17.6 K/µL), acute kidney injury (creatinine 1.6 mg/dL), mild transaminitis (AST 86 U/L, ALT 73 U/L), and severe rhabdomyolysis (CK 5,000 U/L rising to 17,227 U/L within 3 hours, peaking at 36,465 U/L). High-sensitivity troponin was markedly elevated (373 ng/L increasing to 1,393 ng/L).

The patient was admitted for monitoring and treated with aggressive intravenous fluids and benzodiazepines. Kidney function normalized, muscle spasms resolved within 24 hours, and troponin levels downtrended. He was discharged 36 hours after presentation.

Discussion and Conclusion: This case highlights severe toxicity from Melanotan II, including recurrent priapism, significant rhabdomyolysis, and marked troponin elevation exceeding prior reports. The degree of cardiac biomarker elevation suggests potential direct or indirect myocardial injury beyond previously described effects. Emergency physicians should be aware of this emerging toxidrome associated with unregulated peptide use and its potential for significant morbidity.

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Case Study Abstract: 26-12

Type of Research: Case Report

Title: Pulseless Electrical Activity Arrest in a 21-Year-Old Female: Undiagnosed Takayasu Arteritis with Diffuse Coronary Involvement

Presenting Author: Kayla Jackson, OMS II, VCOM-Auburn

Additional Author(s): Authors: Kayla Jackson, OMS-II[1]; Jim Walter, MD, FACEP[2]; David Stephen, DO[3]; Zachary M. Smith, DO?; Affiliations: [1] Edward Via College of Osteopathic Medicine–Auburn, Auburn, AL, USA; [2] Department of Emergency Medicine, Edward Via College of Osteopathic Medicine–Auburn, Auburn, AL, USA; [3] Department of Pathology and Histology, Edward Via College of Osteopathic Medicine–Auburn, Auburn, AL, USA; ? Department of Emergency Medicine, East Alabama Health, Alabama, USA

Introduction/Background: Takayasu arteritis is a rare, chronic large-vessel vasculitis that typically presents with constitutional symptoms and progressive vascular insufficiency. Coronary artery involvement is uncommon but may result in catastrophic outcomes, including myocardial ischemia and sudden cardiac death.

Description: A 21-year-old female with no known medical history collapsed after reporting acute dyspnea while walking on a university campus. Witnesses described seizure-like activity prior to loss of consciousness. Cardiopulmonary resuscitation was initiated by bystanders and continued by emergency medical services. Initial rhythm was pulseless electrical activity (PEA). Advanced cardiac life support was performed, including endotracheal intubation, intravenous access, and administration of epinephrine, naloxone, sodium bicarbonate, calcium chloride, magnesium sulfate, and thrombolytic therapy for suspected pulmonary embolism. Bedside ultrasound demonstrated minimal cardiac activity. Despite prolonged resuscitative efforts, the patient progressed to asystole and was pronounced deceased.

Laboratory evaluation demonstrated metabolic acidosis with elevated anion gap, hyperglycemia, and elevated D-dimer. Postmortem examination revealed near-total luminal obstruction of the coronary arteries with additional narrowing of the subclavian and iliac arteries. Histopathology demonstrated mononuclear inflammatory infiltrates and medial fibrosis consistent with large-vessel vasculitis.

Discussion and Conclusion: Discussion: Diffuse coronary involvement resulted in global myocardial ischemia and acute cardiogenic shock, culminating in PEA arrest. Pulmonary arteries were patent, excluding thromboembolic disease despite clinical suspicion. Conclusion: Large-vessel vasculitis should be considered in the differential diagnosis of unexplained PEA arrest in young patients, particularly when resuscitative efforts fail despite appropriate management.

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Case Study Abstract: 26-13

Type of Research: Case Report

Title: When “Pneumonia” Won’t Behave. A Case of Disseminated Blastomycosis in a Patient on Dupilumab

Presenting Author: Logan Beach, MD, PGY 3, UAB

Additional Author(s): Kat B. Griesmer MD MPH | Assistant Professor

Introduction/Background: Blastomycosis is a fungal infection endemic to the southeastern United States that typically presents as pulmonary disease but may disseminate. Disseminated disease is more commonly described in immunocompromised hosts. Emerging data suggest biologic therapies may alter host immune responses to fungal pathogens.

Description: A 23-year-old male from Dora Alabama with a history of severe eczema treated with Dupilumab presented with a 3-month history of pneumonia unresponsive to multiple courses of antibiotics. He denied significant outdoor or wildlife exposures.

Six weeks prior to presentation he developed diffuse nonpruritic and nonpainful cutaneous lesions involving the face, hands, and lower extremities. Lesions began as subcutaneous nodules that progressed to crusted nonhealing plaques with intermittent purulent drainage.

Skin biopsy demonstrated broad-based budding yeast consistent with Blastomycosis. He additionally reported progressive left ankle pain without overt swelling. Imaging revealed distal tibial marrow edema with cortical irregularity concerning for osteomyelitis and associated joint effusion.

Introduction/Background: Blastomycosis is a fungal infection endemic to the southeastern United States that typically presents as pulmonary disease but may disseminate. Disseminated disease is more commonly described in immunocompromised hosts. Emerging data suggest biologic therapies may alter host immune responses to fungal pathogens.

Methods: Case Report: Diagnostic evaluation included dermatologic biopsy with histopathologic analysis, inflammatory marker assessment, and multimodal imaging including MRI of the affected ankle. Infectious disease and orthopedic consultations were obtained. Treatment response was assessed through follow-up.

Results: Case Report treatment course: The patient was initially treated with amphotericin B but developed acute kidney injury prompting transition to itraconazole. He then underwent operative irrigation and debridement of the affected ankle.

On follow-up he demonstrated significant clinical improvement. Therapeutic itraconazole levels were achieved without hepatic or renal toxicity. Pulmonary symptoms resolved, and cutaneous lesions regressed. He returned to baseline functional status with plans for prolonged (12 months) of antifungal therapy given osseous involvement.

Discussion and Conclusion: Case Discussion: Blastomycosis is an endemic fungal infection in the southeastern United States that most commonly presents with pulmonary disease but may disseminate

to the skin and bone. Cutaneous involvement often manifests as verrucous or ulcerative lesions that can mimic malignancy or chronic bacterial infection. There are often significant delays in diagnosis.

This case highlights several clinically relevant points. Persistent pneumonia unresponsive to antibiotics in the South Eastern United States should prompt consideration of fungal etiologies. Dissemination to bone may present subtly, as isolated joint pain, and requires a high index of suspicion.

The patient was receiving Dupilumab for severe eczema. He lacked traditional immunocompromising conditions, making the development of disseminated disease notable. While dupilumab is not considered broadly immunosuppressive, this case raises the possibility that biologic immune modulation may influence susceptibility to invasive fungal infection.

Conclusion: Disseminated blastomycosis can occur in young patients without traditional immunocompromising conditions and may present with refractory pneumonia and cutaneous lesions. Emergency physicians should maintain suspicion for fungal infection in persistent pulmonary disease, particularly in the south east. Biologic therapies such as dupilumab may represent an emerging risk factor and merit further study. It is unclear what risk biologics actually pose.

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Case Study Abstract: 26-14

Type of Research: Case Report

Title: Toxic alcohol ingestion complicated by necrotizing pancreatitis and severe ARDS

Presenting Author: Suzanna Brozozog, MD, Merit Health Wesley

Additional Author(s): Suzanna Brozozog, M.D., Brandon Hervol, M.D., Neil Linder, M.D., Ali, Ronnie D.O. (Merit Health Wesley)

Introduction/Background: The patient is a 27-year-old male, with a past medical history of alcohol use disorder, who presented initially to the ED for shortness of breath for the past 6 hours. He also reports his last drink of vodka was 12 hours ago, with decreased PO intake for the past 48-72 hours. Workup in the ED revealed notable alcoholic ketoacidosis with a bicarb <10 and hyponatremia (Na+ 117), requiring ICU admission for further management.

Description: After admission, the patient acutely deteriorated and developed altered mental status with tachypnea and hemodynamic instability, concerning for delirium tremens. Due to worsening altered mental status, the patient was intubated with post-intubation ABG showing severe metabolic acidosis with a pH of 6.98 and a bicarbonate level less than 5. Repeat labs showed severe electrolyte derangements, including hypophosphatemia of 1.2, worsening acidosis with an anion gap of 21, and an osmolar gap of 25, concerning for toxic alcoholic ingestion. EtOH level was undetectable. Lactate of 2.5. UA obtained showed coarse granular casts likely due to acute tubular necrosis. Patient was empirically given fomepizole.

Based on these findings, the patient was immediately started on a bicarbonate infusion, and nephrology was consulted. The decision was made to proceed with emergent hemodialysis for management of severe metabolic acidosis presumed to be due to toxic ingestion of either ethylene glycol, methanol, or isopropyl alcohol. The patient was then found to be in acute renal failure in the upcoming days, requiring CRRT despite correction of acidosis. The patient developed shock requiring vasopressor support and was found to have necrotizing pancreatitis, with meropenem being initiated. He subsequently developed severe ARDS requiring ARDSNet protocol and was placed in the prone position for adequate ventilation.

Fortunately, after a prolonged ICU stay, the patient was successfully weaned off all vasopressors and extubated.

He was then stable for transfer to the floor after approximately 4 weeks in the ICU. The patient noted vision changes despite wearing his prior prescription glasses and complained that his eyes felt weird when watching television. He later developed status epilepticus while on the floor, requiring intubation with seizure protocol. Brain imaging obtained showed acute versus subacute infarction of the right anterior frontal lobe and right cerebellar hemisphere. The patient was eventually extubated and remained stable for transfer to the floor. He was then discharged home several weeks later with continued intermittent hemodialysis requirements.

Eventually, pending lab results confirmed the presence of acetone with a suspicion for possible isopropyl ingestion. However, given the severity of the patient's presentation with elevated osmol gap,

anion gap metabolic acidosis, and acute renal failure, there remains a concern about the potential methanol or ethylene glycol ingestion or coingestion.

Discussion and Conclusion: This case points to the importance of considering the possibility of toxic alcohol ingestion in the right clinical context, as it requires a high degree of suspicion.

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Case Study Abstract: 26-15

Type of Research: Case Report

Title: Beyond Beck's Triad: POCUS-Guided Diagnosis of Impending Cardiac Tamponade in SLE

Presenting Author: Seth Richard, DO, University of South Alabama Emergency Medicine Residency Program (PGY-2)

Additional Author(s): Erin Ward, MD (PGY-2); Timothy Beau Stokes, MD (Director of EM Ultrasound & Associate Professor); Kaitlyn Hall, MD (Associate Professor) - all with USA EMRP

Introduction/Background: Beck's triad was first described in 1935 and has been classically taught as clinical identifiers of cardiac tamponade. However, jugular venous distension, hypotension, and muffled heart sounds represent late findings that are neither sensitive nor specific.1 Point-of-care ultrasound (POCUS), by contrast, offers a rapid, highly accurate means of detecting pericardial effusions of any size.

Description: A 40-year-old female with untreated systemic lupus erythematosus (SLE) presented to the emergency department (ED) with two weeks of worsening dyspnea. She was febrile, tachycardic, normotensive, and mildly hypoxic on room air with decreased bibasilar breath sounds. She had recently completed outpatient treatment for pyelonephritis after a visit to another ED two weeks prior. Chest X-ray revealed new cardiomegaly. Cardiac POCUS was performed, which revealed a large pericardial effusion with right ventricular (RV) diastolic and right atrial (RA) systolic collapse. Despite the patient's hemodynamic stability, POCUS findings were concerning for impending cardiac tamponade. Given the findings seen on POCUS, a cardiology-based echocardiogram was performed which confirmed impending tamponade. Cardiothoracic surgery was consulted and the patient received operative intervention with a pericardial window.

Discussion and Conclusion: Pericardial effusion is a well-documented complication of SLE, however progression to cardiac tamponade is far less common.2 Cardiac POCUS in the ED has been shown to be highly sensitive (96-100%) and specific (98-100%) for identifying pericardial effusion.3 The presence of an effusion with RV diastolic collapse (most specific), RA systolic collapse (earliest sign), or a plethoric IVC (most sensitive) support the diagnosis of tamponade physiology.1 POCUS has been shown to significantly decrease time to intervention, and failure to diagnose pericardial effusion by ED physicians is associated with increased 28-day mortality.4

Conclusion:

ED performed POCUS led to an expedited diagnosis and the mobilization of resources during a period when they are not readily available (overnight and on a weekend). This case demonstrates the importance of keeping pericardial effusion in the differential even in hemodynamically stable patients with known risk factors such as SLE, and highlights the utility of POCUS in assisting with making diagnoses in a timely fashion.

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Case Study Abstract: 26-16

Type of Research: Case Report

Title: Pit Crew CPR Model Effectiveness in Fire Based EMS Agency: A Quality Review

Presenting Author: Kyle Cohen, MD, PGY 2, University of Alabama at Birmingham

Additional Author(s): William Ferguson, MD, Associate Professor, University of Alabama at Birmingham

Introduction/Background: Efforts to Survival of out of hospital cardiac arrest (OHCA) has undergone significant change over the last several years. One of these initiatives is the development of the pit-crew cardiopulmonary resuscitation (CPR) model.1 The idea behind the pit-crew CPR model is that responders have predefined roles and perform these roles in parallel in an effort to achieve high-quality and efficient resuscitation.1 In 2025, there were 140,427 OHCA cases reported to the Cardiac Arrest Registry to Enhance Survival (CARES) program. Of these cardiac arrest events, 31985 (22.8%) obtained return of spontaneous circulation (ROSC) defined by 20 minutes of continuous ROSC either before or at time of transfer of the patient to the hospital. Additionally, only 11608 (8.3%) were discharged from the hospital with good or moderate cerebral performance.2

Description: Crews were dispatched to variety store for suspected cardiac arrest. On arrival, they found a 48-year-old female that was witnessed by staff to go unresponsive. Bystander CPR was initiated and an AED was applied but did not deliver a shock. Initial crew consisted of three paramedics and one advanced EMT (AEMT). Manual compressions initiated by the AEMT. Paramedic one managed the airway, initially with nasopharyngeal airway, passive oxygenation at 25 liters and ventilations with a bag valve mask. Paramedic two connected the cardiac monitorwith initial rhythm interpreted as ventricular fibrillation (VF) and a defibrillation was delivered. Paramedic three established intraosseous access (IO) in the tibia. All four providers performed these tasks simultaneously. At second rhythm check, rhythm was interpreted as ventricular tachycardia with torsades de pointe. Second defibrillation was delivered, followed by administration of IO magnesium and epinephrine. Chest compressions were transitioned to mechanical device compressions as a force multiplier. At third rhythm check, patient had an organized rhythm but no palpable pulse. Definitive airway was obtained via endotracheal intubation by paramedic one. On fourth rhythm check, it was still an organized rhythm and pulse was palpable. ROSC was achieved approximately ten minutes after initiation of EMS provided CPR and maintained throughout transport and on transfer of the patient at the receiving facility.

Crews were dispatched to a residence for cardiac arrest. On arrival, they found a 47-year-old male lying on the floor of the residence with CPR ongoing by family. Initial crew consisted of one EMT, one advanced EMT, and three paramedics. The EMT took over manual compressions while the mechanical compression device was applied. Paramedic one managed the airway with a nasopharyngeal airway, supplemental oxygen and a bag valve mask. Paramedic two established IO access while paramedic three connected the cardiac monitor. Initial rhythm interpreted as VF and defibrillation performed. Endotracheal intubation was attempted, but unsuccessful. Supraglottic airway device was successfully placed and chest compressions changed to continuous. Patient was given IO epinephrine, and second rhythm check revealed VF. He was again defibrillated. He was subsequently given amiodarone, calcium, magnesium, and more epinephrine. He was defibrillated a total of nine times due to persistent VF. Patient was prepared for transport and became hypotensive requiring two doses of push-dose

epinephrine. During transport, patient pushed the supraglottic device out of his mouth but continued to require assisted ventilation. He maintained organized rhythm with pulse throughout transport and on transfer at the receiving facility. ROSC was obtained approximately twenty-three minutes after initiation of EMS provided CPR.

Crews were dispatched to a construction site for chest pain. During the response, they were informed that CPR was in progress. They arrived on scene to find 61-year-old male lying on the ground with bystander CPR in progress. Initial crew consisted of four paramedics. Patient was lying partially in a ditch and was quickly moved to flat ground for resuscitation. Paramedic one initiated manual compressions. Paramedic two managed the airway using a nasopharyngeal airway, passive oxygenation with nasal cannula and ventilations assisted with bag valve mask. Paramedic three applied the cardiac monitor and initial rhythm interpreted as VF. Defibrillation performed and chest compressions resumed by paramedic one. Paramedic four obtained IO access and gave epinephrine. Manual compressions were changed to mechanical device. Second rhythm check revealed VF and defibrillation performed. Definitive airway was attempted via endotracheal intubation but was abandoned due patient attempting to breath. Assisted ventilation was continued via bag mask ventilation. Third rhythm check revealed organized rhythm with palpable pu

Discussion and Conclusion: The concept of the pit-crew CPR model was first described in 2016 after the Salt Lake City Fire Department implemented changes based on the 2010 American Heart Association recommendations.5 After intervention, the department saw significant increase in neurologically intact survival rates from 8% to 16%. While the implementation of the pit-crew model was only a portion of their implemented changes, it is believed that the focus on coordinated basic life support measures had the greatest impact. This agency, after complete implementation of the pit crew CPR model, increased their ROSC rate from 16% to 35.7%, which is consistent with the data seen when Salt Lake City implemented their changes.

On review of the three cases above, it appears that the coordinated efforts of the responding crew contributed to favorable outcomes. Other factors are believed to have contributed as well. All three of these patients received early bystander CPR. The presence of early bystander CPR is associated with a two-fold increase in survival, twenty percent increase in the patient having a shockable rhythm upon placement of defibrillator and double the odds of discharge from the hospital.6 It is also associated with an eighty seven percent increase in odds of good neurologic outcome.7 Additionally, all three of these patients had an initial rhythm of ventricular fibrillation, which is associated with a three-fold increase in survival to discharge when compared to presenting rhythms of asystole or pulseless electrical activity.8

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Case Study Abstract: 26-17

Type of Research: Case report

Title: A Strange Cause of Chest Pain

Presenting Author: Lilianna Kaplan, University of Alabama at Birmingham Heersink School of Medicine

Additional Author(s): Joseph Kaplan, MD, FACEP

Introduction/Background: Epstein-Barr virus (EBV) is the most common cause of infectious mononucleosis (IM) and classically presents in adolescents and young adults with the triad of fever, tonsillar pharyngitis, and cervical lymphadenopathy. IM in older adults is uncommon which, compounded by atypical presentations and absence of classic findings, can lead to a delayed diagnosis. In this case, a 68yr old male presented to the emergency department with acute chest pain, received a thorough workup, and was ultimately diagnosed with IM.

Description: A 68-year-old man with a history of hypertension, hyperlipidemia gastroesophageal reflux disease and significant smoking history presented to the emergency department (ED) with sudden-onset, constant left-sided chest pain radiating to the back and shoulder, preceded by a 24-hour prodrome of recurrent diaphoresis, chills, fatigue, dyspnea and presyncope. Initial cardiopulmonary workup—serial troponins, ECG, chest radiography, non-contrast CT of the chest, and CT angiography of the chest, abdomen and pelvis—was unremarkable apart from postoperative changes from a prior left hepatic lobectomy and fluid in the gallbladder and duodenum. Additional abdominal evaluation ultrasound revealed biliary sludge and a right renal cyst for which patient was asymptomatic. Notable laboratory findings included leukocytosis (WBC 18.0 × 10?/L), elevated D-dimer (0.94 ug/mL), elevated CRP (15.9 mg/L) and elevated BNP (119 pg/mL). A positive heterophile (Monospot) antibody test, supported by a positive EBV total IgG/IgM panel, confirmed acute EBV infection.

Discussion and Conclusion: Infectious mononucleosis caused by primary EBV infection is most often diagnosed in adolescents and young adults, in whom the classical triad of fever, exudative tonsillar pharyngitis and tender cervical lymphadenopathy, supported by atypical lymphocytosis and a positive heterophile antibody test, is sufficient to establish the diagnosis (Dunmire et al., 2015). Because more than 90% of adults harbor serological evidence of prior EBV exposure, primary EBV infection in patients beyond the third decade of life is uncommon and frequently overlooked. When IM does occur in older adults, the clinical picture is often atypical. Mohseni et al. (2026) recently reported an 86-year-old man whose presentation of severe fatigue, thrombocytopenia and transaminitis was ultimately attributed to acute EBV infection only after extensive workup for alternative diagnoses; the authors emphasized the importance of avoiding diagnostic closure in older patients with non-specific constitutional symptoms. Pharyngitis and cervical lymphadenopathy may be muted or absent, while fever, hepatic dysfunction, fatigue and prolonged convalescence predominate, all of which can mimic occult malignancy, sepsis or autoimmune disease. Chest pain is an unusual but recognized presenting feature of EBV-induced IM, most often described in the context of splenic infarction, splenic rupture or, less commonly, pericardial or myocardial involvement. Raman et al. (2014) reported a 29-year-old man with EBV-induced splenic rupture whose presenting symptom was sudden left-sided pleuritic chest pain attributed to referred pain from diaphragmatic irritation; that patient required urgent splenectomy. In contrast, our patient demonstrated no splenic, pericardial or myocardial pathology on cross-sectional imaging or

electrocardiography. The chest pain was accompanied by elevated systemic inflammatory markers, suggesting a chest-wall myalgia component as part of the EBV viral syndrome rather than a structural complication.

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Case Study Abstract: 26-18

Type of Research: Case Report

Title: This Case is Hard to Swallow

Presenting Author: Jeremy Kuder, MD, University of Alabama Birmingham

Additional Author(s): Jeremy M. Kuder MD & Katherine B. Griesmer MD, MPH

Introduction/Background: Esophageal food bolus impaction is a common gastrointestinal emergency that frequently presents to the emergency department. Presenting symptoms can range from dysphagia to acute airway compromise in severe cases. Most cases are associated with underlying esophageal pathology, and have high recurrence rates requiring further diagnostics to identify underlying etiologies. Immediate management options include practical, pharmacologic, and procedural approaches. This case details a presentation that was not identified on the patient's initial visit, had a persistently reassuring physical exam, and was found to have significant pathology on further workup.

Description: 78-year-old female presented for her second ER visit in 2 days with chief complaint of dysphagia and regurgitation of both liquids and solids. No recognized inciting event. The physical exam was benign and reassuring against stroke. Further evaluation with CT imaging demonstrated marked esophageal distention with ingested contents and secretions extending from hyoid to the GE junction and exerting mass effect on the trachea. GI was consulted and the patient was transferred to tertiary center for definitive management.

Discussion and Conclusion: This case provides an example of a patient with a benign physical exam found to have significant pathology with a large food bolus impaction. This demonstrates that a high index of clinical suspicion should be maintained by ED providers with a low threshold to order advanced imaging studies to avoid further complications.

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Case Study Abstract: 26-19

Type of Research: Case Study

Title: Pediatric Diabetic Ketoacidosis with Severe Hypernatremia: A Rare and Life-Threatening Presentation in a 12-Month-Old

Presenting Author: Bryan Dixon, MS3, East Tennessee State University Quillen College of Medicine

Additional Author(s): Emma Self, ETSU Quillen College of Medicine, MS3

Megan Barnes, ETSU Quillen College of Medicine, MS3

Brock Blankenship MD, ETSU Quillen College of Medicine

Introduction/Background: Pediatric diabetic ketoacidosis (DKA) is a medical emergency, but its presentation in infants is rare and often diagnostically delayed due to nonspecific symptoms. We present a case of a one-year-old male with an extreme hyperglycemic crisis complicated by severe hypernatremia and difficult vascular access, requiring aggressive critical care management.

Description: A previously healthy 12-month-old boy initially presented to his primary care provider with vomiting and lethargy. No point-of-care glucose test was performed. The following day, worsening symptoms led to emergency department evaluation, where his blood glucose was 625 mg/dL. Venous pH 7.11, CO2 9, pO2 88, HCO3 2.7.

Vitals were notable for HR 186, weak peripheral pulses, capillary refill >3 seconds, and mottled skin. Due to insufficient blood return and concerns for coagulopathy, vascular access was obtained via intraosseous (IO) and scalp IV placement.

Upon transfer to a tertiary pediatric facility, labs revealed glucose 1166, VBG pH 7.01, pCO2 11, pO2 86, HCO3 6.9, O2 sat 94, Na 169, K 4.8, Cl 128, Ca 10.5, BUN 63.7, Cr 1.7. Corrected Na 186,195 via MDCalc and osmolality 411 mOsm/kg. He exhibited Kussmaul respirations and signs of hypoperfusion. He was diagnosed with DKA complicated by severe hypernatremia and acute kidney injury.

The patient was managed using a two-bag insulin drip protocol. Care was complicated by the need to lower blood glucose while avoiding further increases in sodium or rapid shifts in osmolality. With careful electrolyte monitoring and fluid management, his condition gradually stabilized.

Discussion and Conclusion: This case highlights several critical learning points: the importance of routine glucose screening in infants with vague symptoms, the need for alternative access strategies in pediatric shock, and the complexity of managing DKA in the setting of profound hypernatremia. Notably, this patient had an exceptionally high glucose level (>1,000 mg/dL), more typical of hyperosmolar hyperglycemic state (HHS), yet he met full criteria for DKA without prior diabetes diagnosis. This unique presentation invites further discussion about overlapping metabolic emergencies in pediatric patients and the importance of early recognition and escalation of care.

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Case Study Abstract: 26-20

Type of Research: Case Study

Title: Sine Wave Rhythm to Ventricular Tachycardia after Defibrillation

Presenting Author: Rogan Sullivan, MS-3, South Alabama Whiddon College of Medicine

Additional Author(s): Roger Smith III MS3- South Alabama College of Medicine

Dr. Christopher Musselwhite, MD- South Alabama College of Medicine, Emergency Medicine

Introduction/Background: The sine wave ECG pattern is classically associated with severe hyperkalemia (K^+ >10 mEq/L) and represents a life-threatening emergency.

[1] However, in patients with multiple myeloma (MM), hyperproteinemia, hyperviscosity, and cast nephropathy create complex electrophysiologic environments that can produce similar ECG morphologies through non-potassium-mediated mechanisms.

Description: A female patient with relapsed MM and known chronic kidney disease presented to the emergency department following a ground-level fall. Initial ECG demonstrated a profound sine wave rhythm, prompting preparation for emergent hyperkalemia management. During resuscitation, the patient transitioned into ventricular tachycardia (VT). Despite the classic ECG morphology suggesting severe hyperkalemia, point-of-care and formal laboratory testing revealed a normokalemic state (K^+ 3.6 mEq/L) with acute-on-chronic renal failure (creatinine 1.96 mg/dL, GFR 29 mL/min/1.73 m^2).

Laboratory evaluation demonstrated a striking albumin-globulin gap with total protein of 8.6 g/dL and globulin of 5.3 g/dL. Notably, the patient's serum calcium was low at 7.9 mg/dL. The malignant rhythm proved refractory to standard defibrillation, requiring a multifaceted approach addressing both metabolic derangements and the underlying oncologic crisis.

Discussion and Conclusion: Discussion:

This case illustrates a critical diagnostic dilemma: a sine wave ECG pattern in the absence of hyperkalemia. While sine waves typically occur at potassium levels exceeding 10 mEq/L, multiple mechanisms in MM can produce similar ECG findings independent of serum potassium.

[1]

Clinical Pearls for EM:

ECG Morphology vs. Laboratory Correlation: The sine wave pattern, while highly specific for severe hyperkalemia, does not exclude other etiologies in hematologic malignancies. Emergency physicians must correlate ECG findings with clinical context and laboratory values, particularly in MM patients.

[1]

The Albumin-Globulin Gap: Globulin >4 g/dL is a red flag for plasma cell dyscrasias. This patient's globulin of 5.3 g/dL suggests significant monoclonal protein burden, raising concern for hyperviscosity syndrome and cardiovascular sequelae.

[2-3]

Calcium Administration Rationale: Despite normokalemia (K^+ 3.6 mEq/L), calcium administration was appropriate given hypocalcemia (7.9 mg/dL) and malignant arrhythmia. Calcium stabilizes cardiac membranes for both hyperkalemia-associated ECG changes and hypocalcemia-related arrhythmias.

Syncope and Falls in MM: The presenting fall likely resulted from hyperviscosity-induced syncope, arrhythmia, or both. Hyperviscosity causes neurological symptoms including altered mental status and syncope due to impaired cerebral perfusion.

[2][4]

Conclusion:

A sine wave ECG in MM patients requires differential diagnosis beyond hyperkalemia. The failure of standard defibrillation to convert VT in this normokalemic patient suggests the underlying oncologic crisis—including hyperviscosity, uremic toxins from myeloma kidney, and potential cardiac amyloidosis—drove cardiac instability. This underscores the importance of integrating ECG findings with clinical context, laboratory data, and disease-specific pathophysiology when managing critically ill patients with hematologic malignancies.

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Case Study Abstract: 26-21

Type of Research: Case Study

Title: From Skin to Skeleton: A Case of Peau d'Orange Breast Carcinoma Presenting with Pathologic Fracture

Presenting Author: Carlysle Salter, MS-3, University of South Alabama College of Medicine

Additional Author(s): Carlysle Salter MS-3 University of South Alabama College of Medicine, Katharine Lightfoot MS-3 University of South Alabama College of Medicine, Dr. Ann Walker M.D. PGY-3 Emergency Medicine USA Health, Dr. Timothy Stokes M.D. Assistant Professor Emergency Medicine USA Health

Introduction/Background: As cancer screening continues to evolve, patients are identified at earlier stages of disease and fewer patients present with advanced malignancy. However, patients who do not receive routine screening may present with multisystem advanced metastatic disease that affects their activities of daily living.

Description: A 51-year-old female presented to the emergency department (ED) following an outpatient MRI revealing a pathological compression fracture of C5 with an adjacent mass. The patient had fallen 3 months prior and was completing an outpatient workup for persistent neck pain and upper extremity weakness. She stated that she noticed a small breast mass 1 year prior but never pursued medical evaluation despite growth in its size. On physical exam, the patient was found to have Peau d'Orange of the right breast as well as a fungating mass laterally extending into the axilla with purulent drainage. CT of the head, chest and abdomen were ordered, and the patient was admitted due to concern for new metastatic disease complicated by a pathological cervical spine fracture. Biopsy of the vertebral mass was performed, and she was found to have grade 3 invasive ductal carcinoma on pathology. After multidisciplinary tumor board discussion, neurosurgical intervention was performed for tumor debulking and C5 corpectomy with C4-C6 fusion and the patient was eventually discharged for further management outpatient. She was later readmitted for hardware failure from neurosurgical intervention and was discharged home with hospice.

Discussion and Conclusion: Breast cancer most commonly metastasizes to the bone, lung, liver, and brain.1 When this patient presented with high suspicion for a pathologic fracture in her fifties, determination of the primary malignancy was necessitated the presence and location of the primary tumor had to be determined. History and physical exams revealed breast tumors were the most likely primary diagnoses. Pathology confirmed this suspicion, and a multidisciplinary team was assembled to determine further workup and treatment. This case highlights the consequences of inability to obtain appropriate screenings and delayed evaluation of concerning symptoms in a disease process that is treatable in early stages.

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Case Study Abstract: 26-22

Type of Research: Case Study

Title: Pediatric Diabetic Ketoacidosis with Severe Hypernatremia: A Rare and Life-Threatening Presentation in a 12-Month-Old

Presenting Author: Megan Barnes, MS4, East Tennessee State University

Additional Author(s): Emma Self, MS4, East Tennessee State University Bryan Dixon, MS4, East Tennessee State University, Stephen Blankenship, MD, FAAEM, East Tennessee State University, Andrew Berry, East Tennessee State University

Introduction/Background: Pediatric diabetic ketoacidosis (DKA) is a medical emergency, but its presentation in infants is rare and often diagnostically delayed due to nonspecific symptoms. We present a case of a one-year-old male with an extreme hyperglycemic crisis complicated by severe hypernatremia and difficult vascular access, requiring aggressive critical care management.

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Cr 1.4, BUN 60, Na 146, K 4.9, Cl 112, Ca 8.6, albumin 4.5. Vitals were notable for HR 186, weak peripheral pulses, cap refill >3 seconds, and mottled skin. Due to insufficient blood return and concerns for coagulopathy, vascular access was obtained via intraosseous (IO) and scalp IV placement.

Upon transfer to a tertiary pediatric facility, labs revealed Glucose 1166, VBG pH 7.01, pco2 11, po2 86, HCO3 6.9, O2 sat 94, Na 169, K 4.8, Cl 128, Ca 10.5, BUN 63.7, Cr 1.7. Corrected Na 186,195 via MDCalc and osmolality 411 mOsm/kg. He exhibited Kussmaul respirations and signs of hypoperfusion. He was diagnosed with DKA complicated by severe hypernatremia and acute kidney injury.

The patient was managed using a two-bag insulin drip protocol. Care was complicated by the need to lower blood glucose while avoiding further increases in sodium or rapid shifts in osmolality. With careful electrolyte monitoring and fluid management, his condition gradually stabilized.

Discussion and Conclusion: This case highlights several critical learning points: the importance of routine glucose screening in infants with vague symptoms, the need for alternative access strategies in pediatric shock, and the complexity of managing DKA in the setting of profound hypernatremia. Notably, this patient had an exceptionally high glucose level (>1,000 mg/dL), more typical of hyperosmolar hyperglycemic state (HHS), yet he met full criteria for DKA without prior diabetes diagnosis. This unique presentation invites further discussion about overlapping metabolic emergencies in pediatric patients and the importance of early recognition and escalation of care.

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Pasquel FJ, Tsegka K, Wang H, et al. Clinical outcomes in patients with isolated or combined diabetic ketoacidosis and hyperosmolar hyperglycemic state: A retrospective, hospital-based cohort study. Diabetes Care. 2020;43(2):349-357.

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Case Study Abstract: 26-23

Type of Research: Case Study

Title: The Tetanus Twist: An Amish Child's Brush with a Forgotten Disease

Presenting Author: Austin Davis, PGY 2, Tristar Skyline Medical Center

Additional Author(s): Jessica Winchell, MD (Tristar Skyline Medical Center, PGY 2) Craig Sheedy, MD (Tristar Skyline Medical Center, APD)

Introduction/Background: Tetanus is a preventable but often fatal disease caused by a neurotoxin released by Clostridium tetani, a spore-forming bacterium that enters the body through contaminated wounds (1). The introduction of tetanus toxoid vaccination has dramatically reduced the incidence of tetanus in the United States and other developed countries (2). However, the disease still occurs in individuals who have not been vaccinated, especially in specific subpopulations such as those who decline immunization due to religious or cultural beliefs (3,4).

The Amish, a traditionalist Anabaptist group in North America, often express vaccine hesitancy due to concerns about side effects, beliefs in natural healing, or mistrust of modern medicine (5). Although vaccine acceptance varies among Amish communities, immunization rates are generally lower than the national average (5,6).

This case report presents a rare instance of tetanus in an unvaccinated Amish child, whose initial presentation mimicked seizure activity.

Description: A four-year-old male from an Amish community was brought to the emergency department by his parents, who reported multiple episodes of body stiffening, jaw clenching, and arching of his back. These events occurred intermittently over the past 24 hours and were interpreted by the parents as seizures. The patient had no history of trauma, fever, or prior seizures and was seen by a physician who lived within his community the day prior. His parents were told that he was having febrile seizures. There was no documented vaccination history, and the family confirmed that he had not received any childhood immunizations.

On examination, the child was alert but exhibited trismus, generalized hypertonia, and episodic opisthotonos. The episodes did not include a postictal phase or loss of consciousness. Vitals showed mild tachycardia and elevated respiratory rate, but the patient was afebrile.

A thorough physical exam revealed a small area of erythema and swelling on the plantar surface of the right foot. Careful probing exposed a retained wooden splinter embedded subcutaneously. The wound was cleansed, and the splinter was removed. No purulent discharge was noted.

Given the clinical presentation and the retained foreign body, a presumptive diagnosis of tetanus was made. The patient was administered 6000 IU of intramuscular tetanus immune globulin (TIG), started on intravenous metronidazole (500 mg every 8 hours x 10 days), and admitted to the pediatric intensive care unit (PICU) for airway management. He received benzodiazepines as needed for muscle spasms. While in the PICU, despite the interventions listed above the patient continued to deteriorate and ultimately required intubation.

Laboratory evaluation later confirmed low tetanus antitoxin levels, supporting the diagnosis. Over the next 3 weeks the patient failed multiple trials of extubation and remained intubated. Family was against tracheostomy placement and requested one additional trial of extubation. The patient was successfully extubated and he was ultimately discharged home without evidence of neurologic sequelae.

Discussion and Conclusion: Tetanus remains a clinical diagnosis, especially in resource-rich settings where laboratory confirmation is limited and time-consuming (1,7). In this case, the initial presentation mimicked seizure activity, leading to a brief diagnostic delay. However, the absence of typical seizure characteristics, such as postictal confusion and altered consciousness, along with sustained muscle rigidity, should prompt consideration of alternative diagnoses, particularly in unvaccinated patients (1,8).

The discovery of a splinter in the foot provided a crucial clue. Clostridium tetani spores are ubiquitous in soil and can enter the body through even minor injuries or puncture wounds (1). In unvaccinated individuals, this can lead to systemic neurotoxin dissemination resulting in the characteristic symptoms of tetanus.

This case also illustrates the public health implications of vaccine refusal. Despite the near elimination of tetanus in the United States, sporadic cases continue to occur, primarily in unvaccinated individuals (2). A 2018 case of tetanus in an unvaccinated Oregon child cost over $800,000 in hospitalization and treatment, highlighting the disease's preventable nature and significant healthcare burden (9).

Healthcare providers working with culturally distinct or vaccine-hesitant populations, such as the Amish, must balance cultural sensitivity with patient safety. Building trust, providing clear information, and engaging with community leaders may help improve vaccination uptake (5,6,10).

Tetanus should remain on the differential diagnosis list in any unvaccinated child presenting with neuromuscular symptoms such as rigidity, trismus, or opisthotonos. A detailed history and thorough physical exam—including identification of seemingly minor wounds—are essential for early diagnosis and intervention. This case serves as a reminder of the ongoing risk of vaccine-preventable diseases in unvaccinated populations and the importance of continued public health outreach to vulnerable communities.

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Case Study Abstract: 26-24

Type of Research: Case Study

Title: Unseen Threat: Fatal Post-Influenza MRSA Bacteremia in an Adolescent

Presenting Author: Jessica Winchell, PGY 2, Tristar Skyline Medical Center

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Introduction/Background: Post-influenza bacterial infections are a significant cause of morbidity and mortality in pediatric populations, particularly when complicated by methicillin-resistant Staphylococcus aureus (MRSA) bacteremia which occurs in only 0.5-1% of all post . MRSA, a virulent pathogen resistant to multiple antibiotics, can rapidly progress from localized infection to systemic involvement, triggering sepsis and multisystem organ failure. Children with recent influenza infection are at heightened risk due to virus-mediated immune dysregulation, which can impair mucosal defenses and predispose to invasive bacterial superinfections. Early recognition and aggressive management are critical, as these infections can escalate swiftly despite otherwise healthy baseline status.

In this case, a previously healthy 14-year-old adolescent developed MRSA bacteremia following a confirmed influenza infection. The clinical course was complicated by rapid progression to multisystem organ failure, including acute renal, hepatic, and respiratory compromise, highlighting the aggressive nature of post-viral MRSA infections. This case underscores the importance of heightened vigilance for secondary bacterial infections in post-influenza patients, early antimicrobial intervention, and multidisciplinary critical care management to mitigate severe outcomes.

Description: A previously healthy 14-year-old male was diagnosed with influenza A infection by his pediatrician and started on oseltamivir (Tamiflu). Approximately 14 hours later, he was found minimally responsive by his parents and taken emergently to an outside hospital. On arrival, his initial blood pressure was 75/30 mmHg. A sepsis order set was initiated, including blood cultures and lactic acid measurement. He was administered ceftriaxone (Rocephin), Vancomycin and started on low-dose norepinephrine (Levophed) for hypotension. Given the severity of his presentation, he was transferred via life flight to our facility for pediatric ICU admission.

By the time he arrived in the pediatric ICU, he was receiving four vasopressors for refractory hypotension. He was noted to have multisystem organ failure, including acute kidney injury (creatinine 7.9 mg/dL), hyperkalemia (potassium 7.0 mmol/L), and acute hepatic injury consistent with “shock liver.” Despite aggressive fluid resuscitation (60 cc/kg), hypotension persisted. He was intubated for worsening respiratory failure, and central venous, arterial, and hemodialysis access were established. The ECMO team was consulted due to escalating ventilator requirements and refractory hypoxemia. Continuous renal replacement therapy (CRRT) was being prepared, and temporizing measures for hyperkalemia were administered; however, potassium continued to rise. Just prior to initiation of CRRT, the patient experienced a ventricular fibrillation arrest. CPR was performed, CRRT was initiated, and ECMO preparations continued. After 1.5 hours of advanced resuscitative efforts, including CRRT and CPR, the patient was pronounced deceased at 7:45 a.m. 2 hours after time of death I received a call that two of two blood cultures were positive for methicillin resistant Staphylococcus aureus.

This case underscores the rapid and fulminant progression of post-influenza bacterial sepsis in an adolescent, complicated by MRSA bacteremia and refractory multisystem organ failure.

Discussion and Conclusion: This case highlights the rapid and catastrophic course that post-influenza bacterial superinfection can take in previously healthy pediatric patients. Influenza virus compromises the respiratory epithelium and impairs innate and adaptive immune responses, increasing susceptibility to secondary bacterial infections. MRSA, a highly virulent pathogen, can produce toxins and evade host defenses, leading to fulminant sepsis, refractory shock, and multisystem organ failure. In adolescents, such severe complications are rare but, when they occur, progression can be extraordinarily rapid, as demonstrated in this patient.

Several key clinical challenges are evident. The extremely short time course from influenza diagnosis to critical deterioration emphasizes that early antiviral therapy may not prevent secondary bacterial invasion in highly susceptible individuals. The patient's refractory shock, requiring four vasopressors upon arrival to the pediatric ICU, illustrates the severity of the systemic inflammatory response and profound cardiovascular collapse seen in fulminant MRSA bacteremia. Multisystem organ failure—including acute kidney injury, severe hyperkalemia, and hepatic injury—developed despite aggressive fluid resuscitation and supportive care, underscoring the difficulty of managing such rapidly progressing pediatric sepsis.

This case reinforces the importance of heightened vigilance for secondary bacterial infections following influenza, even in otherwise healthy adolescents. Early recognition, prompt empiric antimicrobial therapy, and timely escalation to advanced supportive measures, such as continuous renal replacement therapy and ECMO, are essential, though they may not be sufficient in fulminant cases. It serves as a sobering reminder of the aggressive nature of post-viral MRSA infections and highlights the ongoing need for research into early predictive markers, rapid diagnostic tools, and novel therapeutic strategies to improve outcomes in pediatric sepsis.

References: 1. Pediatric Sepsis Overview

Randolph AG, McCulloh RJ. Pediatric sepsis: Important considerations for diagnosing and managing severe infections in infants, children, and adolescents. Virulence. 2014.

- Provides foundational concepts in pediatric sepsis epidemiology, immune response differences in children, and organ dysfunction patterns seen in critical infections.

2. Pediatric Sepsis Clinical and Management Guidelines

AMBOSS Knowledge: Pediatric sepsis — diagnosis and management. (2026)

- Offers up-to-date clinical definitions, presenting signs (shock, organ dysfunction), and early sepsis management strategies including fluids, antibiotics, vasoactive support.

3. Influenza and Secondary Bacterial Infection Pathogenesis

Post-influenza bacterial infection review, PMC (2025).

- Explains how influenza virus disrupts epithelial defenses and innate immunity, increasing susceptibility to bacterial superinfection in the respiratory tract, contributing to worse outcomes.

4. Influenza-Bacterial Coinfection Epidemiology

Epidemiology of influenza–bacterial coinfection. Frontiers in Microbiology (2025).

- Reviews incidence of bacterial coinfection with influenza and highlights S. aureus (including MRSA) as a common bacterial pathogen in post-flu infections with increased mortality.

5. MRSA Bacteremia and Pediatric Outcomes

Frontiers in Pediatrics: Outcomes of pediatric sepsis related to Staphylococcus aureus and MRSA requiring extracorporeal life support. (2021).

- Summarizes pediatric mortality rates in sepsis, particularly with MRSA bloodstream infections, and the association with severe shock and multisystem failure.

6. Case Reports of Post-Influenza Fatal MRSA Infection

Case report: Influenza and fatal community-associated MRSA sepsis in a child. PMC (2020).

- Presents a clinical example of rapid deterioration after influenza with MRSA sepsis and highlights the potential severity of such coinfections.

7. Influenza-Associated Pediatric Mortality

CDC MMWR: Influenza-Associated Pediatric Deaths — United States, 2024–25.

- Provides recent surveillance data on pediatric influenza outcomes including associations with severe complications and deaths.

Case Study Abstract: 26-25

Type of Research: Case Study

Title: “My Rash Keeps Getting Worse”

Presenting Author: Alexander Williams, MS-3, University of South Alabama Frederick P. Whiddon College of Medicine

Additional Author(s): Lora (Jashen) Bailey, DO, PGY-2, USA Health Department of Emergency Medicine, Robert Schneider, MD, USA Health Department of Emergency Medicine

Introduction/Background: Varicella zoster virus (VZV) typically presents as a localized dermatomal rash; however, disseminated infection and central nervous system involvement can occur, particularly in immunocompromised patients. Disseminated VZV carries significant morbidity and mortality, with reported mortality rates approaching 25%. Early recognition in the emergency setting is critical, as atypical presentations may delay diagnosis and treatment. Polymerase chain reaction (PCR) testing remains the gold standard for confirming VZV, especially in cases with suspected systemic involvement.

Description: A 42-year-old African American female with no known past medical history presented with a one-week history of a painful, vesicular rash involving the left chest, back, arm, and face, accompanied by mild headache. Initial evaluation revealed fever (39.4°C) and tachycardia, with a vesicular rash crossing multiple dermatomes. She had been previously evaluated at an outside emergency department and discharged with symptomatic therapy. Due to concern for disseminated herpesviral infection, she was admitted and started on intravenous acyclovir. During hospitalization, she developed moderate encephalopathy, prompting initiation of empiric vancomycin and ceftriaxone for possible meningoencephalitis. Cerebrospinal fluid PCR returned positive for VZV, confirming VZV meningoencephalitis. Her clinical status improved with treatment. Further workup revealed a new diagnosis of HIV (CD4 count 470), and antiretroviral therapy was initiated. She was discharged after a 16-day hospitalization with oral antiviral therapy and appropriate follow-up.

Discussion and Conclusion: This case highlights the importance of recognizing disseminated VZV, particularly in patients with undiagnosed immunocompromising conditions such as HIV. Key clinical features suggesting dissemination include involvement of multiple dermatomes, systemic symptoms, and neurologic changes. Emergency physicians must maintain a high index of suspicion and initiate prompt antiviral therapy when dissemination is suspected. PCR testing from appropriate sites, including cerebrospinal fluid, is essential for diagnosis. Early treatment with intravenous acyclovir significantly improves outcomes. Additionally, this case underscores the importance of screening for underlying immunosuppression in atypical or severe presentations of VZV. Prompt identification and management of both the infection and underlying condition are crucial to reducing morbidity and mortality.

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Case Study Abstract: 26-26

Type of Research: Case Study

Title: A Hole New World – Eloesser Flap as Treatment for Chronic Empyema

Presenting Author: Sydney Grubb, PGY2, University of South Alabama

Additional Author(s): Beau Stokes, MD

Introduction/Background: The Eloesser Flap was first described in 1935 by Dr. Leo Eloesser as a treatment for tuberculous empyemas [1]. He argued that tubes inserted into the chest frequently became infected, leading to sepsis and death. He described a procedure to open the pleural cavity and resect a rib, to allow drainage from the empyema while allowing the lung to expand.

Description: A 67-year-old male with a history of stage IV lung adenocarcinoma complicated by recurrent empyema requiring an Eloesser Flap procedure presented to the ED for dyspnea. On exam, he had decreased breath sounds on the right and had a dressing over his right lateral chest wall. When the dressing was taken down, it revealed an exposed diaphragm, partially resected lung, and missing ribs. The patient was placed on 6L NC with improvement in oxygenation from 58% to 94%. CTA chest was ordered, which showed moderate-volume right-sided pneumothorax status post Eloesser Flap creation, as well as a left sided pneumonia. The patient was admitted to the ICU after a cardiovascular surgery consult.

Discussion and Conclusion: The Eloesser Flap was invented in the 1930's as a way to treat recurrent empyemas secondary to tuberculosis. It creates a one-way valve due to negative pressure in the thoracic cavity, allowing empyemas to spontaneously drain. It was successful, but fell out of favor with the advent of anti-tuberculosis medications. It is still used today for refractory empyemas. Other treatment for chronic empyemas include decortication, resection of necrotic tissue, or tissue/muscle flaps used to fill the space. The Eloesser Flap can be used for patients too ill to receive surgical management, or who have refractory empyema despite other surgical interventions.

The patient received IV antibiotics for pneumonia and the Eloesser Flap space was packed per consultant recommendations. He received 5 days of steroids and antibiotics, eventually transitioning to home hospice due to his advanced cancer. While rare, it is important for ED physicians to recognize the Eloesser Flap procedure and incorporate cardiovascular surgery into the patient's management.

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Diseases of the Chest, 1935; 1, 8-9

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Journal of Thoracic and Cardiovascular Surgery, 2017; 153, e129-e146