

# Journal of EMERGENCY NURSING

OFFICIAL PUBLICATION OF THE EMERGENCY NURSES ASSOCIATION

- Caring for Adults With Autism Spectrum Disorder in the Emergency Department: Lessons Learned From Pediatric Emergency Colleagues
- A Quality Improvement Project on Agitation Management in the Emergency Department
- Factors Associated With Secondary Traumatic Stress Among Nurses in Regional Trauma Centers in South Korea: A Descriptive Correlational Study
- The Effects of a Novel Mindfulness-based Intervention on Nurses' State Mindfulness and Patient Satisfaction in the Emergency Department
- Strategies to Care for Patients Being Treated in the Emergency Department After Self-harm: Perspectives of Frontline Staff
- United States ED Visits by Adult Women for Nonfatal Intimate Partner Strangulation, 2006 to 2014: Prevalence and Associated Characteristics
- Perceived Care Quality Among Women Receiving Sexual Assault Nurse Examiner Care: Results From a 1-Week Postexamination Survey in a Large Multisite Prospective Study





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## SEARCH STRATEGY

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S1	Journal of Emergency Nursing: JEN	Ebook Central, Public Health Database, Publicly Available Content Database	3455°

° Duplicates are removed from your search and from your result count.

# Case Report Detailing an Inferior Myocardial Infarction, Third-Degree Heart Block, and Cardiogenic Shock: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

An infarction in the right coronary artery affects the inferior wall of the heart and can also cause impedance to the cardiac conduction system. The right coronary artery perfuses the sinoatrial and atrioventricular nodes, and a loss of blood flow contributes to a breakdown in the communication system within the heart, causing associated bradycardias, heart blocks, and arrhythmias. This case report details the prehospital and emergency care of a middle-aged man who experienced an inferior myocardial infarction, concomitant third-degree heart block, and subsequent cardiogenic shock, with successful revascularization. This case is informative for emergency clinicians to review symptoms of acute coronary syndrome, rapid lifesaving diagnostics and intervention, and the unique treatment and monitoring considerations associated with right ventricular involvement and third-degree heart block.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- What is already known: rapid identification of high-risk cardiovascular clinical conditions and subsequent targeted interventions can improve patient outcomes.
- The main finding: cardiac disease processes can evolve over time and complicate patient care.
- Recommendations for translating the findings of this paper into emergency clinical practice include: remaining up to date on American Heart Association recommendations improve the quality and safety of care for complex, critically ill patients.

### Introduction

This case report details the prehospital and emergency care of a middle-aged male patient who experienced an inferior myocardial infarction, concomitant third-degree heart block, and subsequent cardiogenic shock, with successful revascularization. Facility institutional review board policy was followed, and patient consent was obtained by electronic communication.

### Case Report

A 56-year-old man with a past medical history of hypercholesteremia, no documented family history of cardiac disease, and no home medications had a syncopal event while at an outdoor recreation facility. After completing a leisure-time driving activity (go-kart racing), the patient sat down and immediately became pale and unconscious. Owing to bystander concern for cardiac arrest, cardiopulmonary resuscitation (CPR) without defibrillation was initiated, and emergency medical services (EMS) was called. On EMS arrival, the patient was pale and diaphoretic but alert and oriented; in addition, the patient was experiencing chest pain, nausea, and vomiting. The initial vital signs were as follows: heart rate 38 beats per minute (bpm), blood pressure 65/37 mm Hg, and respiratory rate 20 breaths per minute; the patient's blood glucose level was 30 mg/dL. A 12-lead electrocardiogram (ECG) was

obtained. EMS identified a third-degree atrioventricular (AV) heart block as well as an inferior myocardial infarction (MI) with ST elevation in leads II, III, and aVF and reciprocal depression in leads I and aVL (Figure 1).

EMS administered a 500-mL normal saline (0.9%) intravenous (IV) bolus and a dose of EPINEPHrine 5 mcg through IV push. After the first dose of EPINEPHrine, the patient's heart rate did not increase, and he became hypertensive to 212/160 mm Hg owing to the vasopressor. Despite an attempt to perform transcutaneous pacing, capture was not achieved, and ultimately pacing was stopped owing to patient intolerance. During transport, repeat vital signs were obtained with a blood pressure reading of 96/68 mm Hg and a heart rate of 38 bpm. Per protocol, EMS administered a second dose of EPINEPHrine 3 mcg IV push for persistent bradycardia and hypotension. Additional medications given by EMS were ondansetron 4 mg IV push, aspirin 324 mg by mouth, fentaNYL 50 mcg IV push, and a dextrose 10% IV infusion for hypoglycemia.

On arrival to the emergency department, the patient complained of left-sided chest pain that radiated to his left arm. His blood pressure was 111/64 mm Hg, and his heart rate was 42 bpm. A second 12-lead ECG was acquired, and the interpretation was unchanged from the initial ECG (Figure 2). Blood laboratory specimens were obtained in the emergency department, and the results outside of normal limits were as follows: potassium 5.9 mmol/L (3.5-5.1 mmol/L), low-density lipoprotein 139 mg/dL (

Emergent cardiac catheterization demonstrated mild nonobstructive disease in the left anterior descending system and 100% occlusion of the proximal right coronary artery (RCA). The interventional cardiologist placed a temporary pacing wire and stented the culprit lesion in the RCA with a single drug-eluting stent. Subsequently, the patient's heart block and signs of cardiogenic shock resolved after successful vessel reperfusion of the RCA with restoration of a normal sinus rhythm (Figures 3 and 4).

### Diagnostic Assessment

A 12-lead ECG is one of the most important diagnostic tools for the workup of patients with a suspected MI; however, an ECG is insufficient on its own to diagnose acute myocardial ischemia or MI. Elevation of the ST segment in 2 contiguous leads is required to diagnose an ST-elevated MI (STEMI).<sup>1</sup> To diagnose an inferior MI, the trained clinician would look for an ST-segment elevation in leads II, III, and aVF; reciprocal changes may be seen in lead aVL.<sup>2</sup> See Figure 5 for diagnostic criteria suggestive of an inferior STEMI and third-degree AV block. When an inferior MI is identified, a right-sided 12-lead ECG should also be acquired to examine the right ventricle because studies have demonstrated that up to 40% of the inferior wall MIs have associated right ventricular (RV) involvement that predicts a worse outcome.<sup>3</sup>

Additional criteria to inform a diagnosis of an acute MI can be a rise in the cardiac troponin blood levels above the 99th percentile.<sup>1</sup> The high-sensitivity troponin blood test administered (Beckman Coulter hsTnl) has a 99th percentile cutoff of 19.8 ng/L for males.<sup>4</sup> The patient had a maximum troponin level of 14 492 ng/L 12 hours after symptom onset, which represents a significant rise above the 99th percentile.

### Pathophysiology

The blood supply to the heart is provided by the coronary circulatory system. The RCA originates at the anterior aortic sinus and supplies blood to the right atrium, right ventricle, sinoatrial (SA) node, AV node, and posterior aspects of the left ventricle.<sup>5</sup> A blockage in the RCA stops the flow of oxygenated blood to the inferior wall of the heart,<sup>2</sup> leading to myocardial ischemia and eventually MI. When MI occurs, it can also cause impedance to the cardiac conduction system. The RCA perfuses the SA and AV nodes, and a loss of blood flow contributes to a breakdown in the communication system within the heart, causing associated bradycardias, heart blocks, and arrhythmias.<sup>3</sup> With open communication systems and adequate perfusion, the SA node starts an impulse that travels to the AV node. This impulse travels through the bundle of His, down the bundle branches, and through the Purkinje



fibers causing the ventricles to contract.<sup>6</sup> In the setting of third-degree heart block, the SA node continues to send the impulse, but the AV node does not receive the message. This contributes to a clinical finding of bradycardia where the heart rate may only be 45 to 50 bpm.<sup>7</sup>

Further complicating the patient's clinical course was the cardiogenic shock that was identified in the prehospital setting on the basis of hypotension secondary to the acute MI and third-degree heart block. Cardiogenic shock is the result of a cardiac injury that leads to a decrease in cardiac contractility.<sup>8</sup> This progresses to a cycle of reduced cardiac output and low blood pressure, which further worsens cardiac ischemia.<sup>8</sup> Clinically observed as the inability to maintain a systolic blood pressure of 90 mm Hg or more for 30 minutes or longer, cardiogenic shock may also manifest as altered mental status; oliguria; and cold, clammy skin.<sup>8</sup>

### **Discussion REVASCULARIZATION**

Treatment of an inferior STEMI and third-degree heart block involves a reperfusion strategy, either mechanical or medicinal, to restore optimal blood flow and cardiac function. The preferred reperfusion strategy is a percutaneous coronary intervention (PCI). Compared with fibrinolytic therapy, PCI has been shown to improve outcomes, including higher rates of vessel patency and lower rates of intracranial hemorrhage and death.<sup>9</sup> In addition, the American College of Cardiologists and the American Heart Association (AHA) recommend a drug-eluting stent with primary PCI so long as the patient is willing to comply with a prolonged course of dual antiplatelet therapy. For a third-degree heart block, initial treatment includes application of transcutaneous or transvenous pacing, which allows for rhythm stabilization; definitive treatment is an implanted pacemaker or PCI if the heart block is caused by an MI.<sup>7</sup>

### **COMPLICATED BRADYCARDIA**

The AHA Advanced Cardiac Life Support 2020 guidelines for the treatment of adult bradycardia recommend atropine 1 mg through IV push every 3 to 5 minutes (maximum dose of 3 mg) as the initial treatment until the desired effect is achieved.<sup>10</sup> However, the guidelines caution clinicians on the use of atropine in bradycardia due to a third-degree heart block because it may not be responsive to the reversal of the cholinergic effects of atropine.<sup>11</sup> Atropine is not recommended as first-line treatment for bradycardia secondary to third-degree heart block because it acts on the AV node, not the SA node, and therefore is rarely effective in raising the heart rate.<sup>12</sup> If a third-degree heart block is identified on an ECG, the clinician should initiate transcutaneous pacing.

For this patient, pacing was not successful; per the EMS report, capture was not achieved, and the patient was unable to tolerate the intervention. In a clinical setting, if pacing is no longer an option for initial treatment, other options for symptomatic bradycardia are treatment of the underlying medical condition (eg, dialysis), IV medications (either DOPamine or EPINEPHrine), PCI, or pacemaker implantation.<sup>13</sup> Therefore, EMS proceeded to secondary interventions for treatment of third-degree heart block using EPINEPHrine. Because EPINEPHrine is a sympathomimetic catecholamine and acts on both alpha- and beta-adrenergic receptors, it acts on all pacemaker sites of the heart to cause vasoconstriction and can restore hemodynamic stability while awaiting definitive treatment. An additional clinical advantage of the use of EPINEPHrine in this patient's case was the improvement of diastolic blood pressure and coronary artery perfusion pressure

### **HYPOGLYCEMIA IN MI**

The patient had an initial fingerstick blood glucose level of 30 mg/dL per the EMS report. During transport, the EMS personnel administered a 10% dextrose infusion per their protocol. Owing to an increased risk of extravasation, the local EMS agency does not stock 50% dextrose in its ambulances. A possible cause of the patient's initial low blood glucose is "silent hypoglycemia," which is defined as a blood glucose level of less than 70 mg/dL without typical symptoms of hypoglycemia.<sup>14</sup> Hypoglycemia was found to be frequently occurring in patients without diabetes diagnosed with an acute MI.<sup>14</sup> On arrival to the emergency department, the patient's blood glucose level was 285

mg/dL. During hospitalization, the patient's hemoglobin A<sub>1c</sub> level was evaluated and found to be 5.8% (5.7%-6.5%), which is in the prediabetes range.<sup>15</sup> There was no follow-up on discharge for the patient's hemoglobin A<sub>1c</sub> level.

### **BYSTANDER CPR IN SUSPECTED CARDIAC ARREST**

It is highly probable that this patient did not lose pulses during his suspected cardiac arrest but instead had a syncopal event caused by low cardiac output and decreased peripheral resistance, resulting in hypotension and cerebral hypoperfusion.<sup>16</sup> The patient did receive bystander CPR. Retrospective cohort reviews have revealed the benefit of bystander CPR on 30-day survival rate and overall mortality rate for out-of-hospital cardiac arrests; it is well known that there is a positive correlation between early CPR and survival rates.<sup>10,17</sup> Furthermore, layperson-initiated CPR is endorsed by the AHA because the risk of harm to the patient is low if the patient is not in cardiac arrest.<sup>10</sup> Ultimately, the patient was taken to the cardiac catheterization laboratory for PCI with stent placement in 61 minutes from first medical contact (goal of 90 minutes).<sup>9</sup> Figure 6 outlines the event timeline.

### **Implications for Emergency Nursing**

For an emergency nurse, it is important to be aware of the symptoms of acute coronary syndrome: typical symptoms include chest pain associated with nausea, dyspnea, diaphoresis, or syncope, and atypical symptoms may include fatigue and upper abdominal pain. This patient group classified as high risk needs rapid assessment and intervention, including an ECG within 10 minutes of arrival.<sup>11</sup> The trained emergency nurse is knowledgeable on evidence-based care of patients experiencing an STEMI and associated progression of disease. When an inferior MI is identified on an ECG by an ED provider or cardiologist, the emergency nurse should perform a right-sided ECG by reversing the precordial leads to the right side of the chest (create a mirror image of the traditional precordial leads) to determine RV involvement.<sup>3</sup> If the right ventricle is involved, the patient's treatment pathway should differ in that vasodilators and nitrates should be avoided to maintain RV preload and adequate cardiac output while awaiting intervention.<sup>18</sup> For patients who arrive with symptoms of acute coronary syndrome without ST elevation on their ECG, the emergency nurse should follow their facility protocols for serial cardiac enzyme testing. The emergency nurse should be aware of the time intervals between repeat ECG tracings and serial troponin levels, as well as hospital processes and protocols for the care of cardiac patients.

When a third-degree heart block is identified, transcutaneous pacing is indicated for initial treatment until the cause of the heart block can be reversed or a permanent pacemaker can be inserted. Because temporary transvenous pacing may be done in the emergency department, the emergency nurse should remain up to date on the procedure steps as well as complications that may occur. In addition, the nurse should observe the patient for expected and adverse outcomes as a patient with bradycardia due to a heart block; the patient will likely experience decreased perfusion and decreased cardiac output. A sedative, if ordered, should be administered before the pacing attempt because the patient may experience discomfort. Vital signs, skin color, level of consciousness, and peripheral pulses should be monitored to evaluate the effectiveness of the paced heart rhythm.<sup>5</sup> Potential adverse events include failure to capture, patient discomfort, arrhythmias, and skin breakdown.<sup>5</sup> Documentation of the procedure should include the date and time of pacer initiation, pacemaker settings, and the patient's response. A 12-lead ECG should be obtained before and after pacing is initiated. Finally, the emergency nurse should be knowledgeable about other treatment modalities for third-degree heart block when pacing is not an option, such as pharmacologic management.

### **Case Conclusion**

The patient was admitted to the cardiac intensive care unit and discharged to home after 2 days. As follow-up, the patient had a virtual visit with the cardiology team in which the patient reported no recurrence of chest discomfort. In addition, the patient was able to return to work. This case demonstrates the importance of prehospital communication and notification protocols, especially in the setting of a complicated MI.

## Author Disclosures

Conflicts of interest: none to report.

## DETAILS

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# The Story of a Broken Heart: Takotsubo Cardiomyopathy: JEN

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## ABSTRACT (ENGLISH)

Licensed independent practitioners in emergency clinical practice are tasked with differentiating acute cardiac presentations. Despite its similarity in clinical presentation to acute coronary syndrome, Takotsubo cardiomyopathy is a unique cardiac disorder characterized by a stress-induced ballooning of the myocardium. Also known as the broken heart syndrome, Takotsubo cardiomyopathy most frequently occurs after an overwhelming emotional or physical stressor. The subsequent impaired contractility of the heart places the patient at risk of complications, including acute heart failure, cardiogenic shock, thromboembolism, arrhythmias, and left ventricular outflow obstruction. Takotsubo cardiomyopathy is similar in presentation to other cardiac disorders; therefore, clinicians in emergency settings must be efficient and effective in their diagnosis of this disorder on the basis of its distinct criteria. The current article uses most recent evidence to describe the etiology, pathophysiology, diagnosis, and recommended treatment for Takotsubo cardiomyopathy to support licensed independent practitioners in emergency departments in improving patient outcomes and reducing morbidity.

## FULL TEXT

### Introduction

Takotsubo cardiomyopathy (TTC) is a cardiac disorder characterized by an acute ballooning of the left ventricle during systole, resulting in impaired contraction.<sup>1</sup> Takotsubo, a Japanese term for an octopus trap, refers to the distinct shape of the left ventricle in patients with TTC, often seen on transthoracic-echocardiographic imaging.<sup>1</sup> Known as broken heart syndrome, TTC occurs as an acute state of heart failure in instances of extreme emotional or physical stress as a result of vascular, metabolic, and hormonal changes.<sup>1-3</sup> Triggers for TTC vary widely and are highly subjective, with precipitating experiences ranging from an argument or breakup to an aneurysm rupture or natural disaster.<sup>4</sup> Interestingly, positive emotional triggers may also precede TTC.<sup>4</sup> Although TTC clinical presentation is similar to that of acute coronary syndrome (ACS) or myocarditis,<sup>5</sup> TTC occurs in the absence of coronary artery occlusion or plaques.<sup>6</sup>

Licensed independent practitioners (LIPs), including nurse practitioners, physicians, and physician assistants, may face challenges in initially diagnosing TTC owing to its similarity to other cardiac presentations; therefore, an understanding of the distinct diagnostic criteria of TTC is essential in differentiating and appropriately managing the syndrome. A literature search of nursing-specific publications on TTC yielded very few results. Specifically, we

identified a recent review conducted by Abozenah et al<sup>7</sup> as well as a case report presented by Cantey<sup>8</sup> that contribute to the gradually growing body of knowledge on TTC. The limited number of nursing publications reflects a critical gap in knowledge dissemination, specifically knowledge that targets advanced nursing practice and LIPs in emergency departments. The goal of this article is to discuss the pathophysiology of TTC and provide evidence-based guidance for its diagnosis and management in emergency clinical practice. With adequate management of acute TTC, complications, including acute heart failure, cardiogenic shock, arrhythmias, left ventricular outflow tract obstruction (LVOTO), and thrombus formation, might be effectively avoided.<sup>9</sup>

### **Pathophysiology Etiology, Predisposing Factors, and Mechanism of Injury**

Several theories have been developed in an effort to understand the etiology of TTC, although a single comprehensive understanding of the syndrome remains unclear. Theories have identified cardiotoxic surges of catecholamines and sympathetic stimulation as risk factors for the syndrome's acute onset (Figure 1). Acute cardiac impairment owing to microvascular dysfunction or vascular spasm has also been postulated as a probable cause of TTC.<sup>1,4</sup> Recent evidence has established that the mechanism of injury and pathogenesis of TTC, specifically the acute ballooning and impaired contraction of the left ventricle (Figure 2), are attributed to extensive monocyte-mediated myocardial inflammation, with a systemic inflammatory state persisting long after the acute development of TTC.<sup>2</sup> Evidence from clinical practice guidelines emphasizes hormonal, genetic, neurologic, and psychiatric disorders as predisposing factors (Figure 1) for the development of TTC.<sup>4</sup> Patients with anxiety and/or depressive disorders are at an increased risk of developing TTC, as well as patients who have experienced stroke, subarachnoid hemorrhage, or seizure.<sup>4</sup> Owing to the influence of age-related hormonal estrogen changes, women who are postmenopausal experience the highest risk of developing TTC.<sup>6</sup> In fact, it is anticipated that more than 90% of the TTC cases are experienced by this cohort.<sup>10</sup>

### **Long-Term Prognosis**

TTC was once understood to resolve after the disorder's acute management;<sup>2</sup> however, recent evidence indicates that, contrarily, the long-term effects of TTC are clinically significant.<sup>11</sup> The systemic inflammatory response has been noted to persist for up to 5 months after the TTC onset,<sup>2</sup> resulting in cardiac congestion. In a recent systematic review measuring clinical outcomes in TTC, specifically in-hospital mortality, long-term mortality, and recurrence of TTC, Pelliccia et al determined that patients who had experienced TTC were at an increased risk of both in-hospital and long-term mortality and morbidity.<sup>11</sup> Increased risk of mortality was associated with older age, physical stressors, and atypical ballooning pattern. Although considered a relatively uncommon event, a recurrent episode of TTC occurred in approximately 1% of the evaluated patients,<sup>11</sup> indicating a need for effective follow-up care planning.

### **Diagnosis**

Accurate diagnosis of TTC in clinical settings relies on the LIP's use of multiple diagnostic tools, including electrocardiogram (ECG), cardiac biomarkers, and coronary angiography to rule out coronary artery occlusion,<sup>3,12</sup> as well as ventriculography, echocardiography, and magnetic resonance imaging to visualize cardiac pathology.<sup>6</sup> Ultimately, noninvasive diagnostic testing cannot alone adequately identify TTC; therefore, invasive means are clinically required.<sup>9</sup> Findings from the international Takotsubo (InterTAK) registry suggest that the presumptive diagnosis of TTC begins with using the InterTAK scoring system (Table 1) to determine its pretest probability. The InterTAK Diagnostic Criteria were developed to create consensus in the differentiation and diagnosis of TTC in clinical settings.<sup>4</sup> It consists of 7 variables, with 5 of the variables assessing the patient's medical history and 2 variables assessing the patient's ECG. The total score from the tool is then translated into a probability of TTC (InterTAK diagnostic score).<sup>13</sup>

The acute presentation of TTC may lead clinicians to anticipate myocardial infarction or myocarditis. To guide LIPs in diagnosing TTC, Table 2 provides differentiating features of TTC in the context of clinical presentation, ECG findings, echocardiography, and coronary angiography.<sup>12</sup>

For a diagnosis of TTC to be confirmed, there must be evidence of short-term hypokinesis, akinesis, or dyskinesis present within the apex, midventricular, basal, or focal walls.<sup>9</sup> Although relatively uncommon, right ventricular wall motion abnormalities may be present. Although not an obligatory criterion, an emotional and/or physical stressor is

anticipated as a precipitating factor. Evidence of newly developed ECG abnormalities, including ST elevation, ST depression, QTc prolongation, and/or T-wave inversion, as well as elevated troponin, creatine kinase–myocardial band, and B-type natriuretic peptide, may also be present. The absence of coronary artery disease or occlusive plaques differentiates TTC from myocardial infarction/ischemia, and this must be confirmed through angiogram before diagnosis. The cardiac biomarkers on admission in cases of TTC indicate an elevation of troponin equal to that of ACS and a slight increase in creatine kinase,<sup>1,13</sup> as well as a significant increase in B-type natriuretic peptide, indicating ventricular distension.<sup>1,10</sup> Finally, LIPs must rule out underlying myocarditis or pheochromocytoma leading to LV dysfunction.<sup>4</sup>

Visible through echocardiography, the left ventricle will demonstrate wall motion abnormalities, most commonly at the apex.<sup>9</sup> The abundance of  $\beta$ -adrenergic receptors in the apical myocardium potentially increases its susceptibility to excessive catecholamine stimulation.<sup>14</sup> Therefore, apical rounding or ballooning (<sup>Figure 2</sup>) and reduced LV ejection fraction (LVEF) are common findings with echocardiography.<sup>1</sup> In patients with apical ballooning, transthoracic echocardiography will detect the presence or absence of LVOTO,<sup>15</sup> a condition that describes the obstruction of forward flow through the left ventricle, resulting in left ventricle hypertrophy secondary to increased afterload and, ultimately, left ventricle failure if left untreated.<sup>16</sup>

LIPs should consider assessing risk of thrombus formation as a critical aspect of their initial plan of care in the context of severe LV dysfunction and apical ballooning<sup>17</sup> because thrombus formation remains an adverse complication of TTC that poses a significant risk to the patient who is hemodynamically unstable.<sup>6,9</sup> Patients who present with apical ballooning and troponin I exceeding 10 ng/mL are at significantly higher risk of thrombus formation owing to akinesia, endothelial damage, and a hypercoagulable state in TTC.<sup>18</sup> LIPs should consider wall motion abnormalities, LVEF, and white blood cell count as critical aspects of their assessment of thrombus risk.<sup>19</sup>

## Management

Because patients presenting with TTC will often experience chest pain, dyspnea, and ECG abnormalities that closely resemble ACS,<sup>5</sup> management of acute TTC will often involve ED protocols for ACS before the diagnostic confirmation of TTC.<sup>6</sup> Once a diagnosis of TTC is confirmed, interventions are recommended on the basis of the degree of the pathologic condition.<sup>17</sup> Standard care for the patient who is hemodynamically stable with TTC and who is understood to be at a relatively low risk of complications involves supportive care and telemetry monitoring for 48 hours.<sup>14</sup> For the patient who is hemodynamically unstable and who is considered at a higher risk of the aforementioned complications, more extensive measures are warranted with monitoring in specialized settings for >72 hours.<sup>12,20</sup> Treatment must be determined on a per-patient basis, with all pharmacologic interventions individualized on the basis of clinical presentation, hemodynamic status, and risk factors.<sup>18</sup>

## Hemodynamic Stability

As diagnostic results confirm TTC per the syndrome's distinct criteria with no evidence of complications, the LIP moves to supportive care<sup>6,14</sup> because a mild presentation of TTC is considered a self-limiting condition. The European Society of Cardiology recommends that a mild presentation of TTC, with no signs of heart failure (LVEF >45%) or complications, requires minimal or no treatment.<sup>20</sup>

## Hemodynamic Instability Heart Failure

For patients presenting with acute heart failure resulting from TTC, characterized by a reduced LVEF of 20 the anticipated course of treatment involves the administration of diuretics and angiotensin-converting enzyme (ACE) inhibitors/angiotensin receptor blockers (ARBs) in the absence of LVOTO, as well as standard oxygenation and respiratory support for heart failure.<sup>9</sup> In a recent meta-regression analysis study, Brunnetti et al determined lower rates of recurrence of TTC among patients who were prescribed ACE or ARB therapy, whereas there was no significant difference for patients prescribed beta blockers.<sup>21</sup> In fact, Templin et al determined a significantly higher 1-year survival rate among patients with TTC who received ACE/ARB therapy.<sup>22</sup> A goal of treatment in heart failure is to prevent cardiac and pulmonary congestion; therefore, diuretic therapy may be indicated. Recent consensus from the European Society of Cardiology supports the use of furosemide in the acute phase of heart failure to prevent congestion by reducing preload and afterload.<sup>23</sup>

## Arrhythmias

Patients presenting with TTC may experience an acute onset of arrhythmia, most commonly atrial fibrillation.<sup>20</sup> Patients with arrhythmias are considered at higher risk of mortality because a number of more life-threatening rhythms may develop, including atrial or ventricular tachyarrhythmias and ventricular fibrillation.<sup>20</sup> Once the diagnosis of TTC is confirmed and an arrhythmia is present during ECG monitoring, the recommended course of treatment is to initiate beta blockers. The LIP should consider adding low molecular weight heparin for patients with atrial fibrillation<sup>20</sup> owing to the rhythm's increased incidence of thrombus formation.<sup>24</sup>

## Cardiogenic Shock

Recent evidence suggests that younger age ( $63 \pm 14.9$  years), male sex, low LVEF, apical ballooning, atrial fibrillation, and physical triggers are independent factors contributing to a higher risk of developing cardiogenic shock in TTC.<sup>25</sup> The patient presenting with cardiogenic shock and poor cardiac output requires standard treatment for shock, including fluid resuscitation to restore euvolemia.<sup>9</sup> In the absence of LVOTO, inotropic agents, specifically dopamine or dobutamine, may be used temporarily to improve systolic function.<sup>7,14</sup> If shock persists, the LIP should anticipate the transition of the patient to mechanical cardiac support in consultation with the most responsible health practitioner. After statistical analyses in a recent study ( $N = 2078$ ), patients who underwent intra-aortic balloon pump, Impella ventricular support (Abiomed), and/or extracorporeal mechanical oxygenation ( $n = 39$ ) had a significantly lower risk of in-hospital mortality compared with those who did not receive mechanical cardiac support.<sup>25</sup>

## Thromboembolic Risk

On the basis of the LIP's assessment of the patient's risk of thrombus formation on the basis of the degree of akinesia as well as cardiac and inflammatory biomarkers, the administration of anticoagulation therapy may be indicated.<sup>6,17</sup> Patients experiencing TTC with higher degrees of akinesia through echocardiography as well as elevated troponin levels should be considered at an increased risk of developing a thromboembolism.<sup>18</sup> In a recent study from a multicenter international registry ( $n = 541$ ), Santoro et al identified enoxaparin 1 mg/kg subcutaneously every 12 hours as an effective treatment for thrombus prevention in patients classified as at risk, specifically those with apical ballooning and troponin I exceeding 10 ng/mL. Warfarin and enoxaparin can be given together before discharge until a therapeutic value of international normalized ratio of 2.0 to 3.0 is reached.<sup>18</sup> On discharge, oral warfarin therapy as a single agent is recommended for a duration of 3 months to ensure long-term survival, with associated frequent monitoring of the international normalized ratio.<sup>18</sup>

## LVOTO

As previously noted, a critical aspect of the LIP's care is determining the presence of LVOTO through transthoracic echocardiography.<sup>14</sup> Caution is advised in the administration of inotropic and/or vasodilating agents in patients experiencing LVOTO because these agents will likely worsen the obstruction by increasing hypercontractility and are widely contraindicated.<sup>7,14</sup> It is recommended to proceed with beta blockers in the cohort of patients with LVOTO,<sup>6</sup> specifically a short-acting beta blocker administered intravenously<sup>20</sup> because the medication may reduce the hypercontractile state and potentially clear the obstruction.<sup>14</sup> A recent case control study ( $n = 9$ ) evaluated the efficacy and safety of esmolol, a short-acting selective beta-1 blocker, as an acute treatment for LVOTO in TTC.<sup>26</sup> It was determined that a continuous infusion of esmolol at a rate of 0.15 to 0.3 mg/kg/min for 24 hours, followed by 1.5 mg of bisoprolol orally, significantly and safely reduced the intraventricular gradient.<sup>26</sup>

## Long-Term Management of Inflammation

Recent evidence has highlighted chronic persistence of inflammation and higher incidence of morbidity for many patients after the acute management of TTC<sup>11</sup> and has been attributed to persistent sympathetic dysfunction.<sup>27</sup> The LIP should consider the management of sustained sympathetic dysfunction and inflammation as an essential aspect of their care after an acute episode of TTC. In a recent double-blind randomized controlled trial ( $n = 48$ ), Marfella et al evaluated the efficacy of  $\alpha$ -lipoic acid (ALA) in improving adrenergic cardiac innervation as well as decreasing inflammation, oxidative stress, and myocardial damage among patients with TTC over a 12-month study period.<sup>27</sup> Of note, the treatment group receiving ALA achieved a statistically significant increase in LV uptake through myocardial scintigraphy compared with the placebo group. In addition, the treatment group experienced a significant reduction

in inflammatory markers, namely plasma C-reactive protein, tumor necrosis factor- $\alpha$ , and nitrotyrosine. Considering the persistence of systemic inflammation after the acute management of TTC,<sup>2</sup> the LIP may choose to proceed with the prescribing of ALA as a means of managing potential long-term morbidity associated with TTC.<sup>27</sup>

### Implications for Emergency Nurses

Emergency nurses are the first point of contact for patients seeking care through the emergency department; therefore, they have the responsibility of gathering clinical information that contributes to a broad clinical perspective and may lead to a differential diagnosis of TTC. A diagnosis of TTC should remain a possibility for patients presenting with chest pain who are postmenopausal, female, have a confirmed psychiatric diagnosis, and/or have experienced a major stressor. An awareness of TTC's distinct clinical findings is essential for a timely diagnosis, and it is necessary that emergency nurses have access to educational materials inclusive of TTC's clinical findings and anticipated management. Collaboration among emergency nurses, clinical educators, and nursing managers is essential for effective training and education. In addition, support and financial allocation at an administrative level are necessary for continued research and education related to TTC.

### Implications for Emergency Clinical Practice

Female sex and previous overwhelming stressor as well as psychiatric and/or neurologic disorders are predisposing factors that may lead clinicians to suspect a diagnosis of TTC in emergency settings when presenting with chest pain. TTC is similar to an acute myocardial infarction or myocarditis in its acute presentation; however, the LIP's prompt evaluation through ECG, echocardiography, and angiography will provide an accurate diagnosis. A timely differential diagnosis of TTC in the emergency department is imperative to ensure optimal patient outcomes. Patients presenting without complications require supportive care and telemetry monitoring for 48 hours. Patients presenting with, or those who develop, complications will require extensive measures and admission for >72 hours. Managing complications: (1) acute heart failure warrants treatment with ACE inhibitors/ARBs and furosemide; (2) patients with atrial fibrillation require prophylactic low molecular weight heparin; (3) standard treatment protocol for cardiogenic shock should be observed, including fluid resuscitation and inotropes in the absence of LVOTO; (4) enoxaparin is effective in the acute management and prevention of a thromboembolism, followed by oral warfarin; (5) esmolol is effective in reducing pressure gradient among patients with acute LVOTO; (6) ALA may be effective in reducing serum inflammatory markers that remain elevated after the acute management of TTC.

### Conclusion

TTC poses a unique challenge to clinicians owing to its ambiguous presentation and elusive etiology. The LIP must balance the necessity of prompt intervention in the context of an ACS presentation, with the required patience in awaiting diagnostic confirmation of TTC. Research continues to explore the intricacies and highly subjective nature of this syndrome, although impactful clinical guidance has supported practitioners with evidence-based comprehensive diagnostic criteria.<sup>13,14</sup> This article fills a very necessary gap in the literature and clinical awareness of TTC by targeting LIPs in emergency settings and offering evidence-based diagnostic criteria and treatment protocols. In the context of TTC, the LIP has the unique role of gathering the whole clinical picture, one in which emotional, physical, and mental well-being intersect to influence one's health status. With a comprehensive assessment of each individual patient's precipitating events and predisposing factors, as well as a thorough understanding of the diagnostic criteria, LIPs can feel supported in diagnosing and properly managing an acute episode of TTC. By applying evidence-based practice, the LIP can work efficiently and effectively, ultimately ensuring best patient outcomes.

### Author Disclosures

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Diagnostic criteria	Points
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Female sex	25
Emotional stressor	24
Physical stressor	13
No evidence of ST depression on ECG	12
Psychiatric disorder	11
Neurologic disorder	9
Prolonged QTc interval	6
Diagnosis based on points accrued	
≥50 points Diagnose Takotsubo cardiomyopathy	≤31 points Diagnose acute coronary syndrome

Clinical presentation	Signs and symptoms	Diagnostic findings
TTC	•Chest pain, dyspnea, arrhythmias •Potential sudden cardiac death •May be preceded by emotional/physical stressor	ECG:•ST elevation, ST depression, QTc prolongation, and/or T-wave inversion Echocardiogram:•Hypokinesia or akinesia at apical, midventricular, basal, or focal sites Coronary angiography:•No evidence of obstructive CAD or plaque rupture
Myocardial infarction	•Chest pain, dyspnea, arrhythmias •Potential sudden cardiac death	ECG:•ST elevation or depression; T-wave inversion Echocardiogram:•Regional wall motion abnormalities Coronary angiography:•Evidence of CAD with plaque rupture, thrombus, and coronary dissection
Myocarditis	•Chest pain, dyspnea, acute heart failure •Potential sudden cardiac death •May be preceded by upper respiratory tract infection or enteritis	ECG:•Nonspecific ST–T-wave changes Echocardiogram:•Global systolic abnormalities Coronary angiography:•No evidence of obstructive CAD or plaque rupture

## DETAILS

<b>Subject:</b>	Acute coronary syndromes; Morbidity; Clinical medicine; Medical diagnosis; Mortality; Heart failure; Electrocardiography; Blood clots; Cardiomyopathy; Peptides; Medical imaging; Acute; Myocarditis; Pathophysiology; Patients; Clinical outcomes; Medical prognosis; Heart attacks; Coronary vessels; Cardiovascular disease; Biomarkers; Obstruction; Nursing; Etiology; Cardiac arrhythmia; Coronary artery disease
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# Migrating Swollen Joint and Lyme Disease: A Case Report: JEN

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## ABSTRACT (ENGLISH)

This article discusses a case involving a pediatric patient who presented to a large urban children's hospital in the Northeastern United States with complaints of migratory monoarticular joint swelling. The patient had presented with a swollen and painful left knee but with no other associated symptoms. He was nontoxic appearing, afebrile, and had normal vital signs. On examination, he was noted to have a tender and swollen left knee that was not erythematous, bruised, or warm to the touch. There was a history of fevers over the summer after returning home from a camping trip in a park located in the northeastern United States. A plain film knee x-ray showed signs of joint effusion but no osseous abnormalities. A bedside ultrasonography of the knee showed a pocket of fluid in the joint space. With parental consent, the left knee joint was aspirated under direct ultrasound guidance, with collection of dark yellow synovial fluid. This was sent for analysis that included cultures, Gram stain, crystal analysis, and Lyme antigens. The patient was admitted, and his symptoms improved during his hospitalization. The results were positive for Lyme and he was discharged home on a 3-week course of Amoxicillin with complete resolution of his symptoms.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- The current literature on Lyme disease indicates that early treatment can help prevent progression to early and late disseminated disease, which often lead to conditions such as heart block, Bell palsy, and arthritis.
- This case report highlights the importance of prompt diagnosis of Lyme disease and the different diagnostic modalities that can assist providers in establishing a diagnosis.
- Key implications for emergency nursing practice found in this article are remembering to keep tick-borne illnesses high on the differential in patients presenting with a history of joint pain/swelling, rash, and influenza-like symptoms.

### Introduction

A 9-year-old boy was brought into the children's hospital emergency department for evaluation of left knee pain and swelling for the past 2 days. The patient was seen ambulating with the assistance of crutches to his room. His parents had been giving him ibuprofen and Tylenol with mild relief of symptoms. He was afebrile with normal vital signs. Of note, he had been dealing with intermittent pain and swelling of the right knee for nearly 2 weeks, which had spontaneously resolved the day before the onset of his left knee swelling. He denied any antecedent trauma or injury to either knee. He also denied having any other symptoms such as fever, chills, nausea, vomiting, cough, or a rash in the recent past. He was an otherwise healthy boy with up-to-date vaccinations and no known medical problems.

From the history provided by his mother, the patient spontaneously developed right knee pain and swelling nearly 2

weeks ago. He had been in his usual state of health and had no recent illnesses or infections. Other than his knee, no other joints were affected. He was not involved in any sports or any recent bicycle or motor vehicle accidents. One week prior, he was evaluated at an outpatient orthopedic clinic for the right knee pain and swelling. At that facility, the staff obtained knee x-rays that were reportedly unremarkable. He was sent home with a plan in place for him to return to the clinic for a magnetic resonance imaging scan of the right knee if his symptoms persisted. There was no family history of rheumatoid arthritis, juvenile idiopathic arthritis (JIA), or any other rheumatologic or autoimmune disease. No recent travel outside the country or visits to parks within the past few weeks were reported. It was noted that he did go camping with his father approximately 2 months before the onset of symptoms. They went on a 3- to 4-day trip to a local state park. Shortly after returning home, he developed intermittent fevers with no associated rash, cough, chest pain, vomiting, or diarrhea. He denied any tick or bug bites.

On physical examination, the patient's left knee was visibly swollen compared with his right. It was not erythematous or warm to the touch. There was no obvious bruising or deformity of the knee. He had mild pain on active and passive motion of the knee joint. He had no significant pain on valgus or varus stress of the knee and no laxity, clicks, or obvious knee dislocation. Overall, the patient was noted to have normal strength, tone, and reflexes. Lower extremity pulses were normal, and capillary refill was less than 2 seconds. The rest of his physical examination was unremarkable, with no murmurs auscultated, rashes appreciated, or erythema of the tympanic membranes or adenoids detected.

### **The Painful and Swollen Knee**

The etiology of a painful or swollen knee in any pediatric patient is largely broken down into 2 categories: traumatic or atraumatic. With traumatic knee injuries, the signs and symptoms can be obvious or subtle, depending on the clinical presentation and physical examination. Although a small compartment, the knee is associated with multiple bony, ligamentous, and muscular components.<sup>1</sup> Among many other things, the pain and swelling could be a result of a patellar fracture or dislocation; distal femur, proximal tibia, and/or fibula fracture or contusion; or a complete/incomplete medial, lateral, or anterior collateral ligament tear. Workup and management generally involve imaging, pain relief, provision of assistive devices, and possible orthopedic follow-up. A subgroup may need admission for operative repair. With atraumatic injuries, the history and associated symptoms play a large role in establishing a diagnosis. The differential can be vast and may include diseases such as septic arthritis, JIA, rheumatoid arthritis, and Lyme disease. There can be a family history component, particularly with many of the autoimmune diseases. It can also be a consequence of a medical condition such as lupus or rheumatic fever. These results, however, do not indicate whether this is an acute or past infection. At presentation, the patient was afebrile and did not exhibit symptoms of strep throat, such as sore throat, swelling, or exudates.

### **Lyme Disease**

Lyme disease is a tick-borne illness that is caused by the *Borrelia burgdorferi* bacterium. Multiple ticks carry and transmit the disease, but in the United States the most common Lyme-carrying tick is *Ixodes scapularis*.<sup>2</sup> The tick itself is normally carried by deer and mice and, as a result, can spread over long distances.<sup>2,3</sup> This disease-carrying tick is endemic to the Northeast, and there are more than 300 000 people affected yearly, although only a small percentage of the affected individuals go on to develop symptoms.<sup>3</sup> When symptomatic, the disease has a broad spectrum of clinical manifestations that can vary in severity and length.

For an individual to develop Lyme disease, the tick must be latched onto their body for approximately 36 to 48 hours. If the tick is present for less time, the likelihood of transmission is low.<sup>4</sup> Those at greatest risk are typically campers or hikers in the Northeastern portions of the United States who are not wearing protective long-sleeve clothing or approved repellents. Spring and summer tend to be the most common seasons when people are affected. Once

infected, most people tend to develop symptoms within 1 to 2 weeks.<sup>1,5</sup> The most common sign and presenting symptom of Lyme disease is a rash called erythema migrans, which is also known as a bull's-eye rash owing to its appearance on the skin. This is the presenting feature in approximately 70% to 80% of those affected by Lyme disease.<sup>4,6</sup> The rash itself does not tend to be pruritic or painful in nature and does not develop associated vesicles or bullae. It is found wherever the tick bite occurred, a bite that most of those affected do not remember getting or one that was attributed to being caused by another insect such as a mosquito. From here forward, the clinical manifestations of Lyme are broken into 3 categories: early localized, early disseminated, and late disseminated disease.<sup>4,7</sup>

Early localized disease is defined by a constellation of relatively nonspecific symptoms. Although the appearance of erythema migrans at the bite site is pathognomonic, it is not always present. The most common areas affected are the arms, legs, and skin folds. With the development of the rash come influenza-like symptoms such as fever, chills, fatigue, myalgias, and headaches.<sup>5</sup> A prospective study involving 79 patients with known Lyme disease found that fatigue was the most common complaint at 54%, followed by myalgias and headaches, at 42% and 44%, respectively.<sup>4</sup> The presence of upper respiratory or gastrointestinal symptoms is rare and could suggest a different etiology. Early disseminated disease tends to occur weeks to months after the initial infection. It is characterized by a multitude of neurologic manifestations. These include meningitis, peripheral neuropathy, and facial palsies. A small percentage of patients will present to the hospital with bilateral facial palsy. Early disseminated disease may also manifest with cardiac complications, the most well known being atrioventricular nodal heart block.<sup>8</sup> Late disseminated disease tends to occur months to years later. In this group of patients, identifying Lyme as a possible cause of their symptoms can be difficult because a subset of individuals lack the earlier manifestations of Lyme disease. Approximately 50% to 60% of those untreated for Lyme disease will go on to develop migratory arthritis, as in our patient.<sup>1,4</sup> On presentation to the emergency department, the patient had developed these symptoms nearly 2 months after the suspected time of infection. The more commonly affected joints include the hip, knee, and elbow. Other manifestations of late disseminated disease include peripheral neuropathy, encephalopathy, and cutaneous rashes.<sup>4</sup>

The diagnosis of Lyme disease requires analysis of body fluids for antigens specific for Lyme. The use of Western blot and enzyme-linked immunosorbent assay is the most common method in establishing the diagnosis of Lyme because these tests have both high sensitivity and specificity.<sup>2,9</sup> The accepted protocol at most institutions involves a two-step confirmation process. The first step is to start with the enzyme-linked immunosorbent assay and then move on to the Western blot if the initial test is positive or equivocal. The Centers for Disease Control and Prevention, which focuses on infectious disease control and prevention, emphasizes this 2-step process. Because it takes time for the body to make antibodies, it is suggested that Lyme testing should occur 3 to 4 weeks after the presumed exposure.<sup>4</sup>

In confirmed cases of Lyme disease, it is imperative to treat the patients with antibiotics to prevent the progression of the condition. The first-line antibiotic for the treatment of early Lyme disease is doxycycline. Doxycycline is not only useful for Lyme, but also for other diseases carried by these ticks. It is highly effective against the disease but should be avoided in children aged below 8 years and women who are pregnant or breastfeeding owing to the risk of permanent teeth discoloration. The alternatives include Amoxicillin, Augmentin, and Azithromycin.<sup>5,10</sup> In those with disseminated or late-stage Lyme disease, intravenous cefTRIAXone is first-line treatment, with doxycycline and cephalosporins such as Cefotaxime serving as second-line alternatives. On average, the length of treatment will be between 2 and 4 weeks. Those who present with severe disease such as meningitis or encephalitis will require admission and intravenous antibiotics.<sup>1</sup> The antibiotics of choice include cefTRIAXone and Cefotaxime. Adjunct

therapies include Tylenol and ibuprofen for joint pain and potentially a pacemaker in those who develop second-degree type 2 or complete heart block.<sup>8</sup> The use of corticosteroids should be avoided even in those who develop neurologic complications because they have not shown benefit in prior studies.<sup>3</sup>

### Other Considerations

Not all ticks cause Lyme disease, and it is important to be able to distinguish erythema migrans from other rashes when considering the diagnosis of Lyme disease. Cellulitis, viral rash, or bites from other organisms can lead providers down inaccurate diagnostic pathways. Cellulitis tends to be more confluent in nature and lacks the central clearing of erythema migrans. Bites from spiders, for example, tend to be more pruritic, painful, and likely have a necrotic center compared with what is seen in Lyme disease. In addition, it is imperative to rule out conditions such as septic arthritis and osteomyelitis. The following are a few of the many conditions one must consider when a patient with a similar story to this case seeks treatment in the emergency department. It is the physical examination, history, symptoms, laboratory tests, and location that will help providers make the proper diagnosis.

JIA is a condition that generally affects younger children and is characterized by swelling and pain of multiple joints.<sup>11,12</sup> It tends to occur unexpectedly and is noticed by the parents when they see the child limping. Many of these patients have pain and swelling that are noted earlier in the day but later completely resolve on their own.<sup>11</sup> Although the joint may feel warm and be swollen as well as tender to touch, these patients rarely have the constitutional symptoms one would expect with Lyme disease.<sup>12</sup> No specific markers are available to test for JIA, although inflammatory markers such as erythrocyte sedimentation rate (ESR) may be useful. The diagnosis is more likely to be one of exclusion.<sup>11</sup> There are subsets of JIA, such as systemic JIA and polyarticular JIA, that can make it more difficult to form a diagnosis because these can have systemic symptoms associated.<sup>11</sup> This is where obtaining Lyme titers can help the provider not to miss the diagnosis.

Southern tick-associated rash illness (STARI) is a disease caused by another common tick, in this case the lone star tick. Like Lyme, STARI is characterized by the appearance of erythema migrans and influenza-like symptoms.<sup>13</sup> Its distribution is usually in the Southern and Midwestern states compared with the Eastern and Northeastern states where Lyme is endemic.<sup>13</sup> Unlike Lyme, there are no specific tests to confirm the diagnosis, and the presence of Lyme titers is very useful in ruling in Lyme as the etiology. Overall, the rash and symptoms that accompany STARI are less significant than those that accompany Lyme. There are rarely any long-term consequences such as arthritis and heart block. Of note, STARI can be treated with the same antibiotics as Lyme disease.

Babesiosis is a disease caused by protozoa, most commonly *Babesia microti*, that are carried by certain ticks in the US.<sup>14</sup> It is most endemic to the Midwestern US, although there are documented cases in the Northeast as well.<sup>14</sup> Generally, people who are affected are asymptomatic. Otherwise, the most common symptoms are fever and hemolytic anemia. The incubation period is generally 2 to 4 weeks before the onset of symptoms. The patients otherwise develop generalized influenza-like symptoms and recover within 1 to 2 weeks. A small percentage can go on to develop high fevers, severe anemia, and multiorgan failure, leading to death.<sup>15</sup> Unlike in the case of Lyme, a rash is rare, and the appearance of a rash should heighten suspicion of Lyme co-infection or another etiology. Diagnosis is obtained by identification on a blood smear and looking for the pathognomonic Maltese cross formation.<sup>14,15</sup> Certain laboratories may also perform serologic and polymerase chain reaction testing for babesiosis. Treatment is usually successful after 1 to 2 weeks of antibiotics. The treatment of choice is a combination of Azithromycin and Atovaquone.<sup>14,15</sup>

Rocky Mountain spotted fever (RMSF) is a disease caused by the *Rickettsia rickettsii* bacterium that is primarily found in the tick *Dermacentor variabilis*.<sup>16,17</sup> The incidence of RMSF is most common during the summer months, and although it is present throughout most of the United States, the highest incidence occurs in the Central,

Southeastern, and Northern United States.<sup>16</sup> Once the disease has been transmitted from the tick to the human host, the severity of illness is broad, ranging from a mild influenza-like illness to death. The average incubation period is between 5 and 14 days.<sup>18</sup> The current death rate for the disease is approximately 0.5%. As in the case of Lyme disease, the hallmark of RMSF is a rash. Unlike individuals affected with Lyme, those affected with RMSF do not develop erythema migrans. The rash is a blanching erythematous rash that usually begins on the wrist and ankles and then spreads to the trunk.<sup>17,18</sup> This helps in aiding providers to distinguish the 2 rashes, but it is important to remember that not all cases feature a rash. Laboratory tests may aid in the diagnosis, with notable hyponatremia, thrombocytopenia, and elevated liver function enzymes.<sup>16,17</sup> Treatment is similar to that for other tick-borne illnesses, with doxycycline being the first-line antibiotic even for children and pregnant women.<sup>18</sup>

### **Return to the Case**

A plain film knee x-ray was obtained that showed a joint effusion but no osseous abnormalities. A bedside ultrasonography of the left knee was performed and demonstrated a moderate-sized knee effusion. After parental consent was obtained, knee arthrocentesis under direct ultrasound guidance was performed, and approximately 7 to 8 cc of dark yellow fluid was obtained and sent for laboratory analysis. <sup>Figures 2 through 4</sup> are images of the bedside ultrasonography showing a collection of fluid in the patient's left knee joint space.

Owing to concern regarding an infectious or autoimmune etiology, laboratory tests were obtained that included complete blood count, comprehensive metabolic panel, ESR, and C-reactive protein. The synovial fluid was sent for culture, cell count, Lyme, and crystal analysis. During this time the patient was given ibuprofen, which, combined with the removal of synovial fluid from the left knee, significantly improved the patient's pain. The patient was admitted while laboratory test results were still pending. At that time, the orthopedics service staff were consulted for their recommendations in this case. In addition to what had already been done, they recommended an infectious disease consult. The patient was found to have positive antistreptolysin and anti-DNase antibodies, which are indicative of a prior streptococcal infection such as streptococcal pharyngitis or rheumatic fever.<sup>1,5</sup>

While admitted, the patient's clinical course was unremarkable, and he remained stable. The laboratory test results indicated no significant leukocytosis or bandemia and a normal ESR but an elevated C-reactive protein level. Additional laboratory tests were performed, and these showed a negative rheumatoid factor, positive antinuclear antibodies with low titers, and positive antistreptolysin and anti-DNase antibodies. His synovial fluid analysis showed 37 000 white blood cells but no growth or organisms, and it was negative for crystals but positive for Lyme disease. In addition, he was noted to have high Lyme titers. He was sent home after 1 day in the hospital on a 3-week course of Amoxicillin 500 mg 3 times a day. The patient did well on the antibiotics with no complications or adverse effects. His symptoms resolved, and he did not develop any other clinical manifestations of Lyme disease.

### **Discussion**

Lyme disease is an infectious disease caused by the *Borrelia burgdorferi* bacterium. The *Ixodes scapularis* tick is the most common vector that carries this bacterium and helps its spread. These ticks are most commonly found in the Eastern and Northeastern United States and are normally found on animals such as deer. Those at the highest risk of infection include hikers and campers who do not wear or use protective gear. This includes using repellents and wearing long-sleeve clothing. For one to develop Lyme disease, the tick must be attached for a period of at least 36 hours after which the patient will begin to manifest symptoms within the next 1 to 2 weeks.

The early stages of Lyme disease are characterized by influenza-like symptoms and, at times, the distinctive bull's-eye rash known as erythema migrans. Not making a diagnosis soon enough or patients not presenting early enough for treatment puts patients at risk of developing early and late disseminated disease. This leads to the possible development of heart block, Bell palsy, and other conditions. The presence of migratory arthritis, rash, unexplained

fevers, and influenza-like symptoms should prompt exploration of possible Lyme disease infection, especially in areas where the incidence is high. When there is a suspicion of Lyme, it is essential to explore and extract the right history and risk factors during history taking. Other tick-borne illnesses and rashes must be excluded as much as possible through the history and physical examination. One must then rely on modalities of examination such as x-rays and laboratory tests. The use of ultrasound is useful in evaluating swollen joints and in obtaining fluid samples when performing joint aspiration, as was the case with our patient. The treatment of choice is doxycycline in all patients, except for children aged below 8 years and pregnant women. Many of the other tick-borne illnesses that can mimic Lyme disease or make the diagnosis difficult are conveniently treated with the same antibiotics.

### **Implications for Emergency Clinical Care**

Emergency nurses play a vital role in assisting providers with a differential diagnosis and executing the plan of care. They are usually the first ones to see the patient and overall spend more time than the providers with the patient and their family. Once triaged and brought into a room, it is important that any patient with complaints of rash or influenza-like symptoms be undressed and placed in a gown. Emergency nurses are astute at asking the right questions and identifying any abnormalities on physical examination. They may identify information or findings that were missed on the provider's physical examination. It is important that open lines of communication are maintained between emergency nurses and providers to assist in establishing an accurate diagnosis.

The differential in a case like this is broad. Patients and families may not remember a tick bite that occurred a few weeks before the onset of their symptoms. It is important to identify the small clues provided by patients and families. In cases of atraumatic joint pain and swelling, rheumatologic and infectious conditions should be at the top of the list of differential diagnoses. It is critical to promptly diagnose Lyme disease or other tick-borne illnesses to prevent severe or lifelong consequences.

### **Conclusion**

Overall, this patient's presentation was a classic example of the manifestation and disease progression of Lyme disease. The patient's presentation, combined with his symptoms, helped to broaden the differential and lead us to our diagnosis. The history of camping during the summertime along with what the family thought were innocuous fevers further gave rise to the suspicion that Lyme disease could potentially be the culprit. A thorough physical examination and use of ultrasonography allowed us to hone in on these suspicions and execute the appropriate plan of care. This plan included laboratory workup and a knee arthrocentesis. The results showed Lyme titers, and the patient was placed on appropriate antibiotics, which led to a resolution of symptoms and avoidance of further complications. Depending on the geographic location, the differential may change. A provider in Arizona will have Rocky Mountain Spotted Fever higher up in their differential than one who is seeing patients in New Hampshire. It is important to have some knowledge of the epidemiology of tick-borne illnesses and their overall distribution across the United States to provide the best possible care and prevent lifelong health consequences.

### **Author Disclosures**

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Ethical statement of consent: Parental consent was obtained for the publication of the case and images. There is no identifying information in the case report, nor is there any identifying information in the ultrasound images published. This case adheres to Elsevier's patient consent policy.

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# Adolescent With von Willebrand Disease Type 3 Spontaneous Abdominal Hemorrhage: JEN

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## ABSTRACT (ENGLISH)

An adolescent female classified as unstable with a spontaneous abdominal hemorrhage was transferred to a level 1 pediatric trauma tertiary emergency department. Pertinent medical history included von Willebrand disease type 3, menorrhagia, and obesity. Preparation before patient arrival included mobilization of multidisciplinary medical team experts in hematology, pharmacy, blood bank, radiology, and nursing who provided lifesaving interventions. The administration of factor products, blood products, interventional radiology, emergent hepatic angiography, and embolization coordination resulted in a successful outcome. After an 18-day intensive hospital course, the patient returned home close to her baseline health status.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- The current literature on nursing care of patients with von Willebrand disease type 3 recognizes that it is rare, and patients may present with severe bleeding from the skin, mucous membranes, gastrointestinal tract, or during menstruation.
- This article contributes a case example to improve the treatment of, and provide effective nursing care to, patients with this rare disorder. It highlights the importance of collaborating with hematology and pharmacy in providing critical and timely factor products to stop hemorrhage.
- Key implications for emergency clinical practice found in this article include the importance of a multidisciplinary approach in administering lifesaving interventions that control bleeding with factor products, obtaining diagnostic imaging, and preparing for interventional radiology and surgical interventions.

### Case Introduction

An adolescent female with abdominal pain and uncontrolled abdominal hemorrhage was transferred to a level 1 pediatric trauma tertiary hospital for a higher level of emergency services. The patient had a history of abdominal

pain for 1 day but denied history of trauma, fever, chills, vomiting or diarrhea. Pertinent medical history included von Willebrand disease type 3 (VWD3), obesity, and menorrhagia. Despite multiple blood products, antifibrinolytics, and vasopressor administration before arrival, internal abdominal hemorrhage continued. The outside hospital administered 3 L of intravenous (IV) 0.9% sodium chloride, IV piperacillin and tazobactam, 4 units of fresh frozen plasma (FFP) IV, 840 mg IV tranexamic acid, 2 units of packed red blood cells (PRBC) IV, desmopressin 25 mcg IV, and norepinephrine IV infusion at 15 mcg/min.

Although the outside hospital administered desmopressin, it is not typically successful in stopping hemorrhage for patients with VWD3.<sup>1</sup> Desmopressin action depends on the endogenous synthesis of von Willebrand factor (VWF) from endothelial cells, which is impaired in VWD3.<sup>1-4</sup> However, the outside hospital did not have VWF products, and a small subset of patients with VWD3 have been reported to respond to desmopressin.<sup>1-4</sup>

### **Prearrival Preparation**

The hospital team understood that prearrival preparation was crucial for the best possible patient outcome. Of note, all digital diagnostic images from the outside hospital had been electronically transferred before the patient's arrival. A computed tomography (CT) scan of the abdomen and pelvis at the outside hospital showed bleeding from intrahepatic hematoma and hemoperitoneum (Figure 1). Consultations occurred with pediatric hematology, pediatric surgery team, anesthesia, interventional radiology (IR), pharmacy, blood bank, and pediatric critical care nurses in anticipation of the patient's arrival. Pediatric hematology recommended administration of weight-based Humate-P (Antihemophilic Factor/VWF Complex [Human]; CSL Behring GmbH). The ED physician contacted the pharmacist who brought 6800 units of Humate-P to the emergency department. The patient care plan included the incorporation of personal protective equipment for staff safety because this transfer happened in May 2020 during the coronavirus disease (COVID-19) pandemic.

### **Arrival to the Emergency Department**

The patient's airway was patent, color pale, skin diaphoretic, and behavior anxious on arrival to the emergency department. Vital signs included hypotension, blood pressure 79/50 mm Hg, sinus tachycardia, heart rate 110 to 160 beats per minute, and altered mental status. The patient's Glasgow Coma Scale score fluctuated from 15 when blood was administered by pressure bags to 12; when the blood infusion stopped, the patient's level of consciousness decreased such that she could open her eyes to verbal command, her words became incomprehensible, and she obeyed all motor commands. The abdominal examination revealed distension and diffuse pain in all quadrants. Pulses were palpable at the femoral site but not at the radial, deep popliteal, or posterior tibial sites. The patient was able to move all extremities. Repeat blood hemoglobin test demonstrated a decrease in the level to 8.5 g/dL despite 2 units of PRBC blood transfusions given before her arrival (Table 1). Norepinephrine IV was titrated to 20 mcg/min, 3 L of 0.9% sodium chloride IV bolus was given by pressure bag, and 2 units of PRBC were given by pressure bags to improve hemodynamics. IV Humate-P 6800 units (80 units of VWF:ristocetin cofactor [RCo] units per kg per dose of Humate-P)<sup>1-3</sup> were given per pediatric hematology recommendation to control bleeding. The patient only required 1 dose of Humate-P. Blood pressure and level of consciousness improved after administering Humate-P, IV fluids, and PRBC boluses. Humate-P was the required treatment to control VWD3 hemorrhage.<sup>4</sup> Other antifibrinolytic agents do not stop VWD3 hemorrhage.<sup>4</sup> Once Humate-P and other medications were administered, the patient became stabilized to transfer to IR. On the way to IR, the family was given a brief visit with the patient and an update. The patient was brought to IR for angiography and embolization. Anesthesia intubated the patient in IR. The surgical team arranged for an operating room to be kept available in case surgical intervention was required. The success of the IR procedures eliminated the need for surgical intervention.

## Hospitalization Course of Events

As previously mentioned, the patient was transferred from the emergency department to IR for arteriography and embolization. Anesthesia performed intubation in IR. The right hepatic arterial vascular hemorrhage was successfully embolized in IR (Figures 2 and 3). Intermittent hypotension was noted, which required IV vasopressor medication during the 48 hours of intubation in the pediatric intensive care unit. After extubation, the hypotension resolved. Neurologically, the patient remained stable. A chest CT scan demonstrated fluid overload from pleural effusions, which resolved after treatment. Hypotension resolved after extubation owing to compression on the vena cava. The patient's hypotension resolved after extubation due to the discontinuation of sedation medication. A cardiac echocardiogram identified possible thrombosis in the inferior vena cava and superior vena cava from the hepatic adenomas. Prophylactic heparin IV was started on hospital day 4 for the thrombosis concern. IV heparin was converted to prophylactic enoxaparin subcutaneous after 11 days.

The hepatic adenomas noted in the diagnostic studies necessitated serial abdominal pressure measurements that monitored for compartment syndrome. Abdominal pressure measurements remained within normal limits throughout the hospitalization. IV morphine was effective for abdominal pain management when the patient was intubated. Acetaminophen and heat packs provided sufficient pain relief after the patient was extubated. Gastric output was monitored with a nasogastric tube until the output was resolved. IV pantoprazole helped resolve gastric output. After the nasogastric tube was removed, the patient resumed a regular diet without issues. Repeat CT angiography of the abdomen was performed to monitor hepatic adenomas, which showed no further active bleeding, but hepatic lesions of unclear etiology. The differential diagnosis included hepatocellular carcinoma, which was ruled out because the alpha-fetoprotein and beta-human chorionic gonadotropin were at normal limits. The consensus was that contraceptive use led to the hepatic adenomas. Previous case reports had reported hepatic adenomas in adolescent women treated with norethindrone acetate.<sup>5</sup> The plan for this patient was to follow up with gastroenterology as an outpatient and frequently perform radiologic monitoring of the lesions. A CT scan of the abdomen/pelvis showed a right common femoral arterial pseudoaneurysm, which was monitored during the hospital course but did not require intervention. Fevers, rising inflammatory markers, and changes in clinical status indicated the need to obtain multiple sepsis evaluations. All blood cultures taken on hospital days 2, 5, and 7 remained negative. Urine and stool cultures taken on hospital day 6 remained negative. Nasal swabs for respiratory viral panel and COVID-19 produced negative results. Appropriate antibiotic coverage included a 7-day course of cefEPIME. The patient's right lower extremity maintained adequate perfusion after the right femoral artery was cannulated during embolization. Although the COVID-19 nasal swab was negative, staff wore proper personal protective equipment during aerosolizing procedures per hospital policy. During the hospital stay, the patient received a total of 8 units of PRBC and 4 units of FFP. Two units of PRBC were given at the outside hospital, 2 units during transport, 2 units in the emergency department, and 2 units in IR.

Medical staff monitored diagnostic laboratory studies during hospitalization because massive blood transfusions were required during initial stabilization and because of the history of a bleeding disorder. The physician ordered blood transfusion of the patient to maintain hemoglobin level  $>8$  g/dL and fibrinogen level  $>150$  mg/dL. Mild hyponatremia required monitoring, which resolved with IV fluid adjustments. Antifactor Xa assay diagnostic studies monitored plasma heparin levels with the goal of maintaining 0.1 units/mL to 0.3 units/mL levels, which was successfully done throughout hospitalization. Hematology wanted the goal trough of H antigen expression per unit vWF activity to be at least 50% of normal FVII:C plasma levels. The general population has a H antigen expression per unit vWF normal range between 50 and 200 IU per dL. Results of the factor VIII level test performed during admission showed an increase in the level by more than 200%. Hematology coordinated with pharmacy to switch

the patient to IV Vonvendi (VWF recombinant; Baxalta US Inc) for VWF replacement on hospital day 8. At that time, the hospital pharmacy had enough Vonvendi as nonformulary stock for the patient.<sup>6</sup> The hospital pharmacy added Vonvendi as stock formulary in December 2020. Vonvendi is a recombinant, which means it does not have human blood or plasma, only VWF concentrate, and it does not contain factor VIII.<sup>6</sup> It is approved for the control of bleeding and perioperative management in adults aged 18 years or older.<sup>6</sup> This patient was aged below 18 years, but her weight was 85 kg, which was considered an adult weight, and the need to decrease the risk of thrombosis from high factor VIII levels outweighed the risk concerning her age. The administration of Vonvendi infusions occurred every other day during hospitalization with a positive effect.

The enoxaparin therapy caused the factor VIII level to start coming down. The patient was eventually discharged home on lower doses of Vonvendi as well as enoxaparin. A repeat echocardiogram before discharge remained unchanged. Duplex abdominal ultrasonography showed resolution of hepatic adenomas before discharge. Before this admission, the patient had been on a hormonal implant to control menorrhagia. Discontinuation of the norethindrone acetate and etonorgestrel subdermal implant took place owing to the concern that these hormones caused hepatic adenomas.<sup>7</sup> An intrauterine device containing levonorgestrel, which limits systemic hormone exposure, was initially placed by the gynecology team but was displaced 2 days later. A single dose of medroxy PROGESTER one acetate was chosen as a short-term measure to control menorrhagia until another intrauterine device could be placed.

The patient was discharged home close to her baseline after 18 days. Visiting Nurse Association services administered Vonvendi infusion through a peripherally inserted central catheter every other day. The patient was eventually tapered off Vonvendi. Hematology followed outpatient echocardiograms that started to normalize, and enoxaparin was discontinued. The patient maintained close follow-up contact with hematology, gastroenterology, cardiology, and gynecology after discharge.

### **Humate-P (Antihemophilic Factor/VWF Complex [Human])**

Humate-P<sup>2-4</sup> IV administration was approved for all types of VWD, the treatment of spontaneous or traumatic bleeding, and patients with VWD3 when desmopressin cannot be used. The Humate-P manufacturers included VWF:RCo and factor VIII when developing the medication.<sup>3,4</sup> Patients with VWD3 lack VWF, which made the treatment different from other types of VWD. Commercially available vials of Humate-P are manufactured with 3 different doses of VWF:RCo per vial: 600 units, 1200 units, and 2400 units; however, each lot was derived from human plasma, which contains varied amounts of VWF:RCo and factor VIII.<sup>2-4</sup>

Humate-P administration guidelines advise to not refrigerate the medication after reconstitution and administer within 3 hours of reconstitution.<sup>2,3</sup> To reconstitute, use the Mix2Vial filter transfer set provided with Humate-P to mix the warm dried concentrate and room temperature diluent. Health care providers who prepare Humate-P should only use plastic disposable syringes because the protein solution adheres to the ground glass surface of glass syringes. Gently swirl after adding diluent or rotate vial. Remove filter spike before administration. Infuse the solution at a rate not exceeding 4 mL/min. Discard any unused portion. See Humate-P<sup>2,3</sup> manufacturer administration instructions for complete administration guidelines at <https://www.humate-p.com/hcp>.

### **VWD**

VWD was first described in 1926 by Dr Erik von Willebrand.<sup>2</sup> Hemophilia is a sex-linked recessive pattern disease, which is different from VWD.<sup>2</sup> An assay discovered in the 1950s demonstrated that patients with VWD had decreased levels of factor VIII in plasma that could be corrected with plasma transfusions of partially purified preparations of factor VIII. Now, these preparations also contain VWF. In the 1980s, advances in molecular genetics made it possible to distinguish VWF, which led to the classifications of different types of VWD.<sup>8-10</sup> The physiology of

VWF is extremely complex and beyond the intent of this article.<sup>4</sup> Briefly, VWF is required to maintain hematologic homeostasis by binding both platelets and vascular endothelial components at the sites where endothelial injury occur<sup>8-10</sup> (Figure 4).

VWD clinical symptoms can present at any age, and the disease affects people from all ethnic backgrounds.<sup>4,10</sup> Individuals with VWD can be asymptomatic or have many varied bleeding symptom presentations.<sup>4,8,9</sup> Asymptomatic persons with VWD may only be diagnosed after a family member is diagnosed.<sup>4</sup> Typical bleeding in VWD type 1 ranges from asymptomatic to serious bleeding, dependent on the degree of reduction in VWF levels. Most VWD type 1 cases involve mild to moderate mucocutaneous involvement.<sup>4</sup> Individuals with VWD type 2 and VWD3 commonly have severe bleeding.<sup>4,8,9</sup> Individuals with VWD3 have a combination of absent or very low VWF levels and reduced factor VIII levels, which results in significant bleeding when teeth erupt, minor childhood trauma when walking and crawling begin, or major life-threatening hemorrhage with menarche.<sup>4</sup>

Although acquired von Willebrand syndrome is rare, clinicians need to be aware that it occurs with some disease states and medications.<sup>4,10</sup> Conditions that commonly cause acquired von Willebrand syndrome in children are Wilms tumor, congenital heart disease, and autoimmunity.<sup>4</sup> Medications that have been linked to acquired von Willebrand syndrome include anticoagulants, antiplatelet agents, nonsteroidal anti-inflammatory drugs, glucocorticoids, antibiotics, alcohol, valproic acid, selective serotonin reuptake inhibitor medications, vitamin E, ciprofloxacin, hydroxyethyl starch, griseofulvin, and dextrans.<sup>4</sup>

### **Implications for Emergency Nurses**

A gap in nursing education exists in the field of bleeding disorders and clotting disorders.<sup>11</sup> It is recommended that emergency nurse educators and administrators provide evidence-based nursing education for all nurses to instill skills, knowledge, and confidence in treating bleeding disorders and clotting disorders.<sup>11</sup> Emergency nurses who have a gap in skills, knowledge, or confidence in the care of patients with bleeding disorders or clotting disorders should seek out evidence-based education themselves.

Emergency nurses who care for patients with VWD need to consider providing patient education before discharge. They must consider having an open dialogue with patients on their understanding of how to avoid known triggers for bleeding, treatment, and prevention measures. If any gaps in knowledge are identified, appropriate education should be provided. Medications to avoid that can affect blood clotting should be reviewed before discharge. Patients with VWD should avoid aspirin as well as medications that contain aspirin; blood-thinning medications that include warfarin and heparin; fish oil capsules with omega 3; and nonsteroidal anti-inflammatory medications (Centers for Disease Control and Prevention: Von Willebrand Disease Guidelines, <sup>Table 3</sup>). Encourage patients with VWD to consult their primary health provider to determine which vitamins are safe. The National Organization for Rare Disorders is an excellent resource for patients with VWD and their families (<sup>Table 3</sup>). Self-care educational recommendations to patients with VWD are to maintain adequate water intake, make healthy food choices, and keep an ideal body weight. Local and international resources provide information for health care providers and patients with VWD (<sup>Table 3</sup>).

Patients with VWD should be taught self-management strategies to promptly treat all bruises and bleeding. Standard first aid measures should be taught to patients and families with regard to any bleeding or bruising regarding applying pressure, elevation, or applying ice as indicated by their health care provider. The patient should be advised to sit upright, remain calm, and apply direct pressure on the bridge of the nose if a nosebleed occurs. Medical attention should be sought when patients with VWD have a nosebleed that is severe or one that does not stop after 20 to 30 minutes after applying pressure; blood in urine or stools; bleeding that lasts for hours or is excessive; broken bones; cuts that require stitches or will not stop bleeding; injury to the head; bleeding in joint or

muscle; or severe pain (A Guide for People Living with von Willebrand Disorder, <sup>Table 3</sup>).

### Conclusion

Every emergency health care organization should develop a multidisciplinary plan of care for patients who arrive with sudden atraumatic hemorrhage. Clinicians must consider undiagnosed, acquired, or inherited bleeding disorders and treat them accordingly. Health care providers who have access to appropriate intervention measures to control life-threatening hemorrhage would improve patient outcomes.<sup>9,12</sup> It should be standard practice for administrators of health care facilities to have Humate-P available in preparation for treatment for a life-threatening hemorrhagic event.<sup>12</sup>

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Laboratory test	Prearrival laboratory results	Normal laboratory results
White blood cell count, K/ $\mu$ L	14.1	4.0–11.0
Hemoglobin, g/dL	12.5	13.5–16.0
Hematocrit, %	37.5	37–47.0
Platelets, K/ $\mu$ L	596	150–400
Sodium, mEq/L	136	135–145
Potassium, mEq/L	3.5	3.6–5.1
Chloride, mEq/L	105	98–110
Carbon dioxide, mEq/L	21	20–30
Blood urea nitrogen, mg/dL	6	6–240
Serum creatinine, mg/dL	0.75	0.57–1.30
Glucose, mg/dL	167	70–139
Lactate, mmol/L	2.4	0.5–1



Timeline	Prearrival and ED care
5:24 am	Hospital received a call to transfer patient PICU attending accepted the transfer Pediatric ED physician notified patient to arrive by critical care transport helicopter
7:08 am	Pediatric ED physician discussed case with IR resident
7:16 am	Report from OSH to ED physician: Adolescent female with VWD3 received IV DDAVP 25 mcg, FFP 4 units, TXA 840 mg, and 2 units of PRBC. Plan was start norepinephrine infusion at 15 mcg/min for hypotension Transport team was on the scene, blood pressure 79/50, heart rate 110 beats per minute. Three peripheral IV access catheters in place Patient weight 85 kg
7:20 am	Pediatric surgery paged Hospital Massive Transfusion Protocol activated
7:32 am	Emergent consult was requested with pediatric surgery
7:34 am	Case discussed with on-call pediatric hematology attending Recommendation for 80 units of VWF:RCo units per kg per dose of Humate-P (CSL Behring GmbH) IV
7:37 am	Pharmacy was called to prepare Humate-P and bring to the emergency department
7:41 am	PICU attending called and given an update
7:43 am	Updated report: ETA 7 minutes per transport team. Patient awake, alert, oriented x 3, GCS score of 14, heart rate 116 beats per minute, oxygen saturation 98% on room air
7:46 am	Pharmacy arrived with 6800 units of Humate-P (80 units of VWF:RCo units per kg per dose of Humate-P)
7:52 am	IR resident in emergency department, IR attending aware of patient but not in hospital yet
7:59 am	Patient arrived at emergency department Pediatric ED attending and nursing staff at bedside Pediatric surgery attending and residents in emergency department at bedside IR resident in emergency department at bedside Pharmacy in emergency department at bedside IV Humate-P 6800 units given (80 units of VWF:RCo units per kg per dose of Humate-P) Anesthesia consult requested by surgery
8:09 am	Anesthesia at bedside

8:39 am	<p>Summation of prearrival and ED care</p> <p>PICU attending updated: adolescent female with medical history of VWD3 transferred to emergency department for evaluation of hemorrhagic shock, hemoperitoneum, bleeding from hepatic hemangioma. Received DDAVP, TXA, FFP, PRBC on norepinephrine infusion at 15 mcg. During the ED evaluation, IR and surgical consultation were at the bedside. The patient was given 80 units of VWF:RCo units per kg per dose of Humate-P. Blood pressure transiently dropped to systolic 90s during which norepinephrine infusion was increased to 20 mcg/min. Patient received 2 units of PRBC in emergency department.</p> <p>Family saw patient briefly on the way to IR</p> <p>Family updated on patient status and care plan</p> <p>Patient transferred to IR</p>
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Resource	Website address
Canadian Hemophilia Society	<a href="https://www.hemophilia.ca/von-willebrand-disease/">https://www.hemophilia.ca/von-willebrand-disease/</a>
Centers for Disease Control and Prevention: Von Willebrand Disease	<a href="https://www.cdc.gov/ncbddd/vwd/index.html">https://www.cdc.gov/ncbddd/vwd/index.html</a>
A Guide for People Living with von Willebrand Disorder	<a href="https://www.haemophilia.org.au/HFA/media/Documents/von%20Willebrand%20Disorder/A-guide-for-people-living-with-von-Willebrand-disorder.pdf">https://www.haemophilia.org.au/HFA/media/Documents/von%20Willebrand%20Disorder/A-guide-for-people-living-with-von-Willebrand-disorder.pdf</a>
Haemophilia Foundation Australia	<a href="http://www.haemophilia.org.au">http://www.haemophilia.org.au</a>
The Haemophilia Society (United Kingdom)	<a href="http://www.haemophilia.org.uk">http://www.haemophilia.org.uk</a>
Humate-P health care professional site	<a href="https://www.humate-p.com/hcp">https://www.humate-p.com/hcp</a>
The National Organization for Rare Disorders	<a href="https://rarediseases.org/rare-diseases/von-willebrand-disease/">https://rarediseases.org/rare-diseases/von-willebrand-disease/</a>
Vonvendi patient and health care provider resources	<a href="https://www.vonvendi.com/">https://www.vonvendi.com/</a>

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# Implanted Port Access in the Emergency Department: A Unit-Level Feasibility Study of a



# Nurse-Led Port Access Algorithm: JEN

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## ABSTRACT (ENGLISH)

### Introduction

The objective of this study was to determine the impact of an emergency nurse-led implanted port access algorithm for ED patients with implanted ports admitted to the hospital.

### Methods

A feasibility study evaluated the implementation of a central line-associated bloodstream infection algorithm in the emergency department over a 1-month study period. Emergency nurses received central line-associated bloodstream infection education and training for port access algorithm implementation. Pre- and postimplementation surveys measured the nurses' knowledge, attitudes, and behaviors regarding central line-associated bloodstream infections. The nurses' perceptions of the algorithm were assessed pre- and postimplementation. ED patient port access and central line-associated bloodstream infection rates were compared with preimplementation rates.

### Results

Emergency nurses (N = 32) received central line-associated bloodstream infection education and algorithm training. Pre- and postimplementation as well as knowledge, attitude, and behavior surveys were completed by 59% (n = 19) of the nursing staff. Knowledge regarding central line-associated bloodstream infections significantly improved,  $t(19) = -4.8$ ,  $P < .001$ . The nurses' pre- and postimplementation attitude and behavior scores did not differ significantly. They expressed no concerns regarding implementation of the algorithm; 89% (n = 17) reported that the algorithm "fit well" with the ED workflow, and 21% (n = 4) integrated the patient's decision regarding venous access into their shift report. The ED port access incidence during the study period was 17.6% (n = 3), compared with 83.3% (n = 15) in the month before the study.

### Discussion

The emergency nurse-led port access algorithm decreased ED port access rates. The nurses' pre- and postimplementation knowledge of central line-associated bloodstream infections increased. The emergency nurse-led port access algorithm empowered emergency nurses to educate their patients on implanted port access and decreased central line use.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- Current research has not addressed the emergency nurses' role in managing patients with implanted ports to reduce the risk for central line-associated bloodstream infection, such as determining the route for obtaining diagnostic venous sampling as well as administration of medications and intravenous fluids.
- This article contributes evidence-based practice recommendations to guide an emergency nurse's use of implanted ports for ED patients admitted to the hospital.
- Recommendations for translating the findings of this paper into clinical practice include the provision of an implanted port access algorithm used to guide the care of patients in the emergency department on the basis of condition and treatment plan.

### Introduction

A central line-associated bloodstream infection (CLABSI) is described by the Centers for Disease Control and Prevention as a preventable infection that results in thousands of deaths and billions of dollars in cost to the United

States health care system each year.<sup>1</sup> Despite the availability of CLABSI prevention bundles and commercially available products to prevent such infections,<sup>2,3</sup> an estimated 30 100 CLABSIs occur in intensive care units and acute care facilities each year.<sup>4</sup> Prior CLABSI prevention research has not addressed the frequency or rationale for the use of an implanted port as a mechanism to reduce the incidence of CLABSI. Current research on CLABSI prevention predominantly addresses central venous catheters broadly, not specifically by the type of central catheter included in the study.

Implanted ports pose a unique risk of CLABSI. Although implanted ports are convenient to access, their permanent status increases their interval CLABSI risk. Nurses often access implanted ports for routine health care. Examples of such care may include diagnostic venous sampling as well as administration of medications and intravenous (IV) fluids. Other central venous catheters require an indication for placement and use in the hospital setting.

Interestingly, nurses can access an implanted port at any time; yet, the implanted ports carry the same risk of CLABSI.

A CLABSI is diagnosed when a laboratory confirms a bloodstream infection in a patient with a central line in place within 48 hours preceding the onset of infectious symptoms. The diagnosis of CLABSI is confirmed when a licensed independent provider cannot attribute the BSI to a source other than the central line.<sup>4</sup> The National Health Safety Network (NHSN) definition of CLABSI states that implanted ports, once accessed during a hospital encounter, remain the attributable infection source throughout the remainder of that hospitalization.<sup>4</sup> This criterion varies in comparison with other central lines because of the permanent state of an implanted port's reservoir and cannula, which allows bacterial contamination to proliferate within the device even when it is no longer in use. Consequently, an implanted port that is accessed on the first day of a hospital encounter will remain the designated source of any BSI that develops throughout the remainder of the hospitalization.<sup>4</sup>

Implanted ports are marketed as a necessary device for vesicant chemotherapy. They also provide a convenient venous access route for routine infusions and blood draws.<sup>4</sup> The convenience of implanted ports for both nurse and patient can lead to a culture that minimizes the risks associated with this type of central venous access. Nurses use their clinical judgment when determining the type of venous access needed to care for their patients, and there are no published guidelines to direct the use of implanted ports in the acute care setting.

The current literature focuses on infection prevention (IP) specialists' view of CLABSI prevention initiatives in the context of a quality improvement process, specifically, learning from past mistakes.<sup>5</sup> The views of IP specialists contrast with those of bedside nurses interested in recurring education, procedure repetition, and the ease of integrating new strategies into their daily workflow.<sup>5,9</sup> Special attention is necessary to educate emergency nurses and providers regarding new or unfamiliar vascular access devices to reduce the risk of device misidentification and adverse events.<sup>10</sup>

Emergency nurses more readily adopt CLABSI reduction initiatives when the workflow steps are convenient, and nurses are accountable for reporting their use of the CLABSI reduction measures in the nurse-to-nurse report.<sup>8</sup> The recommended strategies for successful CLABSI prevention initiatives include providing nursing staff with a clear understanding of their role in practice change and outcome measurement.<sup>5,8</sup> Research also identified support from peer leaders, hospital administration, and prescribing providers as a pathway to success.<sup>5,6,8</sup>

Past research studies have discussed central venous catheters as a group. They have not distinguished an implanted port as a unique device. Still, the NHSN describes how an implanted port's permanent cannula prolongs the interval risk of CLABSI.<sup>4</sup> Two systematic review articles described the risk factors for CLABSI in people receiving chemotherapy.<sup>11,12</sup> These studies did not define the types of central lines in their sample. Instead, they concluded that all intravascular devices pose a risk of CLABSI and reported that neutropenia dramatically increases this risk.<sup>11</sup>

An expert committee developed the Michigan Appropriateness Guide for Intravenous Catheters to guide decisions regarding central venous catheters.<sup>13</sup> This guideline did not address the routine use of implanted ports after surgical placement, but it discouraged the placement of implanted ports for patients who require frequent phlebotomy. Only 1 published research study addressed the possibility of using central lines in the hospital only for a required indication.<sup>14</sup> This study demonstrated how 1 hospital's policy to obtain blood cultures by peripheral venipuncture, as opposed to the routine practice of sampling from central lines, had a statistically significant impact on blood culture contamination rates and reduced reportable CLABSIs.<sup>14</sup> The study is very relevant and supports the need to integrate this practice for all hospitalized patients, including those patients with implanted ports admitted to the hospital from the emergency department.

The purpose of this feasibility study was to determine the impact of an emergency nurse-led port access algorithm on the rate of implanted port access during the hospital encounter. This study built on current evidence-based practices and vascular access research to mitigate CLABSI<sup>5,7-9,11-16</sup> by applying the principles to those patients with implanted ports admitted to the hospital through the emergency department. The emergency nurse-led port access algorithm guides emergency nurses through the process of determining whether peripheral or central venous access is necessary for a given clinical situation. The aims of this feasibility study were to (1) evaluate the use of the emergency nurse-led port access clinical algorithm and (2) examine emergency nurses' perceived knowledge, attitudes, and behaviors (KAB) related to CLABSI. The Standards for QUality Improvement Reporting Excellence (SQUIRE), REporting of studies Conducted using Observational Routinely collected health Data (RECORD), and Template for Intervention Description and Replication (TIDieR) guidelines were used to guide the methodology and data reporting for this study.<sup>17-19</sup>

### **Methods Design**

A feasibility study of a unit-level education and implementation science intervention was carried out in the emergency department with no contemporaneous control or comparison group. Medical records were reviewed retrospectively.

### **Setting**

The study was conducted at a 156-bed, urban Midwestern, nontrauma-designated hospital with an 18-bed emergency department. The department's 32 emergency nurses had 0.5 to 30 years of nursing experience (mean = 10.97 [SD = 8.96]) (Table 1). The emergency department had an 87.5% 3-month mean implanted port access rate before this unit-level intervention, and the hospital's last CLABSI diagnosis was more than 2 years ago. This study was approved by the university institutional review board (The University of Nebraska Medical Center Institutional Review Board 236-20-EP) as minimal-risk research.

### **Intervention**

An emergency nurse-led port access algorithm was used to guide the appropriate use of implanted ports in the ED setting (Figure). A similar port access algorithm that focused on enhanced patient CLABSI education and guided clinical decision-making regarding the use of implanted ports was implemented on all hospital inpatient units several years before this feasibility study in the emergency department. Inpatients who were directly admitted to the hospital (not passing through the emergency department) were already receiving CLABSI education by nursing staff and a discussion regarding peripheral IV access, rather than implanted port access, when indicated per the inpatient algorithm. The emergency department had not been included in the hospital's original port access algorithm initiative, given concerns regarding the feasibility of implementing the algorithm in the ED setting. A 1-month study period was intentionally used to evaluate the outcomes associated with port access and, more importantly, to assess

the feasibility of integrating the port access algorithm into the ED workflow.

All emergency nurses received CLABSI education and port access algorithm training before the study implementation. Baseline staff perceptions of the port access algorithm were obtained to identify concerns and assess barriers to integrating the algorithm into the ED workflow (Table 2). The KAB survey was also administered before the study implementation. This tool was an adaptation of the knowledge, attitudes, and evidence-based practices questionnaire used in a 2013 European nursing study.<sup>9</sup> The original tool had 37 items, and the adapted version used in this study had 41 items. Four questions about central line care guidelines were added to the knowledge section to reflect current CLABSI guidelines in the US. The additional questions assessed the nurses' understanding of the scrub time necessary to disinfect an access lumen, the frequency of dressing changes, the frequency of implanted port needle changes, and the duration of time during which an implanted port can result in CLABSI after it is accessed during a hospitalization. All 6 questions to measure nurse attitudes and 22 questions to measure behaviors were retained in their original form.

Education and training related to the port access clinical algorithm and recommendations to guide nurses' discussion of port access with patients and families were conducted by the researchers at either a staff meeting or through one-on-one instruction. Lead emergency nurses championed bedside nurses throughout the study period. The department manager and hospital administration placed an expectation of thorough conversations with ED patients. Lead emergency nurses, IP specialists, and study investigators were available as needed to provide complete education, with a subsequent discussion that satisfied the patient's desire for inclusion and understanding of their treatment process.

A medical record review was performed within 24 hours of each patient's ED visit to capture data related to the port access clinical algorithm's fidelity. Data collection from the medical record included the need for the implanted port, patient mode of transportation to the emergency department, Emergency Severity Index (version 4) level,<sup>20</sup> platelet count, white blood cell count, the emergency nurse's clinical decision to access the port vs placement of a peripheral venous catheter, and the emergency nurse's documentation of verbal and written CLABSI education. White blood cell and platelet count data points were only collected if this laboratory testing was performed as part of routine medical care, and no laboratory testing was performed exclusively for the purposes of this study. A daily medical record review was performed on the ED patients admitted to the hospital until their discharge to assess the incidence of implanted port access and incidence of CLABSI diagnosis during hospitalization. A single research investigator conducted a retrospective medical record review to capture data to assess the port access algorithm's implementation fidelity. When there was a lack of medical record documentation, the research nurse contacted the emergency nurse providing care for the patient to ascertain the steps of the algorithm implemented by the emergency nurse.

After the study, the emergency nurses' perceptions of the port access algorithm were collected with an open-ended questionnaire (Table 2). This postperception tool requested information about the use of the algorithm, barriers to integration into the ED workflow, and recommendations to improve the algorithm's functionality. The KAB questionnaire was also readministered after the study, and the results were compared with the preimplementation scores.

### **Data Analysis**

Descriptive statistics were used to summarize the outcome variables, including the preimplementation and postimplementation port access rates, CLABSI rates, and the nurses' KAB scores. A paired-samples *t* test was conducted to compare the emergency nurses' pre- and postimplementation KAB scores.

### **Results Use of the Emergency Nurse –Led Port Access Algorithm**

All emergency nurses (N = 32) received preimplementation study CLABSI education and algorithm training. Implanted port access rates were collected for the 3 months preceding implementation of the nurse-led port access clinical algorithm in the emergency department (see <sup>Table 3</sup>). Twenty of the 22 ports were accessed in the first month (90.0%), 14 of 16 in the second month (87.5%), and 15 of 18 in the third month (83.3%). The total 3-month preimplementation port access rate was 87.5% (49 of the 56 adult patients). Seventeen adult patients with implanted ports presented to the emergency department during the 31-day algorithm implementation period, and all were included in the study (<sup>Table 4</sup>). This sample size (n = 17) was comparable to the number of patients with implanted ports who presented to the emergency department in the preceding 3 months.

During the study period (31 days), 3 of the 17 patients (17.6%) who presented to the emergency department with an implanted port had their port accessed during the ED encounter. The port access algorithm was used correctly in all patient situations, with appropriate nursing documentation to support deviations from the algorithm, such as a patient's decision to have their port accessed when a peripheral IV was indicated. The nurses providing care for the 3 patients who declined peripheral IV access reported that the patients chose to have their ports accessed owing to their perception that their oncologist wanted their port used for all venous access.

Peripheral IVs were placed on 82.3% (n = 14) of the patients who presented to the emergency department with an implanted port. Peripheral venous access was achieved in 1 attempt in 85.7% (n = 12) of the patients or after 2 attempts in 14.2% (n = 2) of the patients. One patient was treated and discharged from the emergency department. The remaining 16 patients (13 with peripheral IVs and 3 with accessed implanted ports) were admitted to the inpatient unit for ongoing treatment. These patients were followed through the remainder of their hospital encounter. Those with peripheral IVs did not require port access during their hospitalization, and those with accessed implanted ports did not develop a CLABSI, under NHSN criteria, during their hospitalization.

### **Nurses' Perceptions and Clabsi KAB**

Baseline and postimplementation KAB questionnaires were completed by 59% (n = 19) of the emergency nurses who received preimplementation study education. The knowledge portion of the KAB questionnaire had a maximum score of 15 points, and a comparison of the preimplementation (mean = 10.84 [SD = 1.72]) and postimplementation (mean = 11.68 [SD = 1.41]) scores demonstrated a significant improvement in the emergency nurses' knowledge regarding CLABSI,  $t(19) = -4.8$ ,  $P$

The baseline nursing staff (n = 19) perceptions of the port access algorithm were that it was easy to understand. Seventy-nine percent (n = 15) reported that the algorithm "fit" into their clinical workflow, and 21% (n = 4) were not sure. An electronic version of the algorithm, integrated into the electronic medical record (EMR), was recommended by 26% (n = 5) of the staff nurses at baseline.

Postimplementation, 17 of the nursing staff (89%) reported that the port access algorithm "fit very well" into their workflow and gave them increased confidence when making decisions about whether to access an implanted port. Two nurses who noted that they did not think that the algorithm "fit" into their workflow also indicated that they had never accessed an implanted port. A preference for integration of the algorithm into the hospital's EMR was expressed by 63% (n = 12) of the staff nurses during the postimplementation assessment. Twenty-one percent (n = 4) of the staff nurses described how they integrated the patient's decision for venous access into their nurse-to-nurse shift report.

During the month preceding this implementation study, no ED nursing documentation was identified to indicate that emergency nurses were providing CLABSI education to ED patients as part of their workflow. The nurse-led port access algorithm includes steps to cue the nurse to provide patient-focused CLABSI education. When the emergency nurses were educated regarding the algorithm, they were provided with written educational resources



and scripting examples to facilitate their conversations about port access in the emergency department. During the algorithm implementation period, CLABSI education was documented on 94% (n = 16) of the patients with an implanted port.

## **Discussion**

The implementation of an emergency nurse-led port access algorithm was a unique endeavor undertaken on the basis of prior research that supports using central venous catheters for medications and treatments that require central venous access.<sup>13,14</sup> No prior research has focused exclusively on implanted ports or discussed their use in contrast with nonpermanent central venous catheters. This study implemented a port access clinical algorithm in the emergency department to increase CLABSI patient education and initiate a conversation about the necessity of accessing an implanted port for routine medical care.

Before the implementation of this feasibility study, the hospital already had a well-established CLABSI prevention plan in place for inpatients with implanted ports that included addressing the need for port access. All nurses, including emergency nurses, are required to complete a hands-on and written competency assessment of their central line access and maintenance skills, per Infusion Nursing Society guidelines,<sup>3</sup> every 6 months. The current practice for inpatients with implanted ports includes providing the option of peripheral IV placement, rather than implanted port access, when clinically appropriate. The laboratory also obtains all blood draws peripherally to reduce the risk of central line contamination, unless directed otherwise by the nursing staff or the patient.

We recognize that implanted ports are different from the temporary central venous catheters commonly seen in an acute care setting such as the emergency department. In response, the hospital's nurse-led port access algorithm was adapted to be used in the ED setting. The recommendations for implementing CLABSI prevention initiatives in the acute care setting served as a guide for the emergency nurse education and training processes.<sup>5-9</sup>

As central line and CLABSI research continues to evolve, it will be important to further study the use of implanted ports separately from other nonpermanent central venous catheters in the setting of the NHSN definition of CLABSI. The rationale for each patient's implanted port placement is a critical covariate that may affect the study's outcome. Resources for establishing peripheral IV access, such as the portable ultrasound and vein-finding devices available in this hospital's emergency department, may have eased the concerns of patients who received a recommendation for peripheral IV access. This feasibility study focused on the perceptions of the emergency nurses. Collecting patient perceptions is a logical next step that would address concerns about potential harms associated with the port access algorithm.

During the study implementation process, the ED charge nurse and ED director were prepared to assist emergency nurses with patient conversations regarding a recommendation for peripheral IV access. This additional support was not requested by any emergency nurse during the study period, and the patient's emergency nurse managed all conversations. After completing the 1-month algorithm implementation period, the emergency nurses expressed a desire to continue using the port access algorithm. The algorithm was continued with support from the ED director and hospital administration.

Neutropenia associated with cancer and cancer therapy is a documented risk factor for CLABSI.<sup>11,12</sup> All patients in our sample (n = 17) had a cancer diagnosis, and their implanted ports were placed for the purpose of administering anticancer therapy. The nurses providing care for the 3 patients who declined peripheral IV access reported that the patients' oncologist wanted their port used for all venous access. Messaging from the oncology community regarding the role of implanted ports may be a barrier to a patient's acceptance of a peripheral IV in situations where central venous access is not clinically required.

Consistent messaging from the emergency nurse and physician reportedly facilitated positive patient education

interactions and the patient's acceptance of peripheral IV access. Several nurses began including their use of the port access algorithm in their nurse-to-nurse shift report to reinforce its importance and maintain consistent messaging for the patient. A paper version of the port access algorithm was available at all computer stations in the emergency department. The nurses reported that the ease of access to the algorithm aided integration of the algorithm into their daily workflow and expressed that the algorithm would have been more useful if it had been available in the EMR. Future studies may wish to explore the possibility of embedding tools such as the algorithm from this feasibility study into the EMR.

### **Limitations**

Several limitations to the generalizability of the algorithm's implementation were identified. Although there was an improvement in the nurses' knowledge scores on the KAB questionnaire, the emergency nurses' sample was not powered, limiting the generalizability of the study findings. On the basis of a significance level of 0.5, power of .95, and effect size of 0.3, a total of 134 emergency nurse surveys would have been necessary to identify a statistically significant change between the pre- and postintervention KAB questionnaire scores. The convenience sampling in a single ED setting was not adequately powered to determine a significant effect of the nurse-led intervention on KAB questionnaire scores. The fidelity of the port access algorithm was measured by retrospective medical record review and was not directly observed.

This study was implemented in an emergency department of a large, urban tertiary hospital that previously had a well-implemented port access algorithm in place for hospital inpatient units. As a result, emergency nurses in our sample may have been aware of the concept of assessing for central line access indications before accessing a port, thus increasing their acceptance of the algorithm in the ED setting. Another potential limitation of this study is related to the acuity of the patient population. No patients classified as emergent (Emergency Severity Index–1) with an implanted port presented to the emergency department during the algorithm implementation period. A barrier as perceived by the emergency nurses was the time needed to provide CLABSI education and engage the patient in a discussion regarding peripheral IV access.

### **Implications for Emergency Clinical Care**

CLABSI prevention is vital to patient outcomes, and emergency nurses are essential to the prevention of CLABSI in the hospital setting. The emergency nurse-led port access algorithm demonstrated the capacity of 1 hospital's emergency nurses to positively influence the culture of central line use by accessing implanted ports only when clinically necessary. Educating patients to focus on IP was also central to the study. Engaging emergency nurses, patients, and families in the ED setting is an innovative approach to improve patient safety and decrease the routine use of an implanted port in the acute care setting.

### **Conclusions**

The implementation of an emergency nurse-led port access clinical algorithm led to a reduction in the emergency department's implanted port access rate from 87.5% before implementation of the algorithm to 17.6% during the study period. Patients admitted to the hospital from the emergency department did not require port access during their hospitalization. Patients admitted to the hospital with an accessed implanted port had blood cultures drawn on the day of admission, which were negative, and none required repeat blood cultures during their hospitalization. The results of this study suggest that a nurse-driven protocol to guide decisions regarding implanted port access in the emergency department can be effective and may reduce the likelihood of port access during hospitalization, thus decreasing the patient's risk of CLABSI. Future studies are needed to determine whether the algorithm, nursing education, and patient-centered approach used in this study can be replicated and implemented across other organizations.

## Author Disclosures

Conflicts of interest: none to report.

Demographics	n	Percentage
Profession		
Full-time	26	81.2
Part-time	6	18.8
Nursing experience, y		
0-5	7	36.9
6-10	4	21
11-15	2	10.5
>16	6	31.6

Survey	Questions
Preimplementation survey of nurses' perceptions of the port access algorithm	<ul style="list-style-type: none"> <li>•Is the nurse-led port access algorithm easy to understand?</li> <li>•Do you believe that the nurse-led port access algorithm will fit into your clinical workflow?</li> <li>•What recommendations do you have to prevent disruptions in your workflow while adhering to the nurse-led port access algorithm?</li> </ul>
Postimplementation survey of nurses' perceptions of the port access algorithm	<ul style="list-style-type: none"> <li>•Did you care for a patient with an implanted port since introduction of the nurse-led port access algorithm?</li> <li>○If yes, did you use the algorithm when caring for your patient?</li> <li>•Do you believe that the nurse-led port access algorithm fits into your clinical workflow?</li> <li>•Have you encountered any difficulties with the nurse-led port access algorithm?</li> </ul>

Month	Implanted port present	Implanted ports accessed	Proportion of implanted ports accessed
Pre-implementation			
May 2020	22	20	90.90%
June 2020	16	14	87.50%
July 2020	18	15	83.30%
Total	56	49	87.50%
Postimplementation			
August 2020	17	3	17.60%

Characteristic	n	% of sample
Gender		
Male	8	47
Female	9	53
Age, y		
45-54	3	17.7
55-64	5	29.4
65-74	4	23.5
75-84	5	29.4
Reason for implanted port		
Anticancer therapy	17	100
Reason for ED visit		
Fatigue	5	29.4

Pain	4	23.5
Weakness/fall	3	17.6
Electrolyte imbalance	2	11.8
Fever	2	11.8
Accidental injury	1	5.9
ESI		
ESI-2	3	17.6
ESI-3	11	64.8
ESI-4	3	17.6
Mode of transport to ED		
Private vehicle	16	94.1
Emergency medical transport	1	5.9

## DETAILS

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### FULL TEXT

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# Incorporating End-of-Life Care into the Management of Dead on Arrival Patients in the Emergency Department: Invited Commentary: JEN

## ABSTRACT (ENGLISH)

[...]both the Emergency Nurses Association<sup>8</sup> and American Heart Association<sup>9</sup> support policies and practices for family presence and family-witnessed resuscitation, as many families find reassurance in the knowledge that all possible steps were taken to revive their loved ones.<sup>10</sup> Although incorporating end-of-life care into the management of DOA patients will undoubtedly improve patient care and family experience, addressing the needs of DOA patients and families is ultimately an ethical issue. Beyond the obvious potential physical harms of resuscitative efforts, from pneumothoraces to survival with devastating neurologic injury, being a bystander to resuscitation has been identified as a potentially traumatic event for those involved.<sup>11</sup> Moreover, when the provision of cardiopulmonary resuscitation appears to be medically inappropriate (some would use the word “futile”) by emergency medical personnel, such providers are at risk for moral injury.<sup>12</sup> To this end, advance care planning (ACP) provides an opportunity for the medical and nursing communities not only to align the end-of-life care desired by patients with that delivered but also potentially to prevent distress experienced by families and providers alike. In the United States, for instance, the Centers for Medicare & Medicaid Services instituted regulations in 2016 designed to encourage ACP documentation by specifically reimbursing providers for time spent on such activities.<sup>15</sup> More recently, the emergency department setting has been identified as an underutilized venue for ACP activities, and further efforts are underway to bolster emergency department-based ACP.

## FULL TEXT

In this issue of the *Journal of Emergency Nursing*, Bove et al<sup>1</sup> seek to describe the epidemiological characteristics of patients who were dead on arrival (DOA) in the emergency department. Traditionally, DOA patients have been studied by the medical and nursing communities using the term outside-of-hospital cardiac arrest (OHCA). The use of DOA, rather than OHCA, has important implications for how we think about these patients. The focus shifts to patients who arrive in the emergency department and the subsequent impact on care, particularly for emergency nurses who have a critical role in resuscitation and in supporting the families of DOA patients. From this perspective, the authors consider the extent to which emergency departments are meeting the end-of-life care needs of DOA patients. The discussion by Bove et al<sup>1</sup> represents a significant departure from the OHCA literature, which focuses on the interventions (eg, bystander cardiopulmonary resuscitation, airway management, optimal epinephrine dosing) that are meant to improve survival for a population of patients with notoriously poor outcomes.<sup>2,3</sup> With end-of-life care in mind, Bove et al<sup>1</sup> describe the epidemiology of DOA patients.

In a single, high-volume emergency department in Denmark, Bove et al<sup>1</sup> found that DOA was a common event, occurring daily. The cohort was largely composed of older adults (mean age 71 years) who were found at home by their family members. The authors question whether these deaths were truly unexpected and, more integrally, whether the resuscitation attempts were consistent with the patients' goals and values. Previous research has demonstrated that patients often receive end-of-life care that is discordant with their preferences, resulting in increased suffering and disruptions in closure and grieving for their families.<sup>4,5</sup> Addressing these gaps in care will require creative solutions and a coordinated approach from nurses, physicians, and advanced practice providers.<sup>6,7</sup> To start, all resuscitations of DOA patients should prioritize rapid evaluation of prior goals of care conversations when possible. Further, both the Emergency Nurses Association<sup>8</sup> and American Heart Association<sup>9</sup> support policies and practices for family presence and family-witnessed resuscitation, as many families find reassurance in the knowledge that all possible steps were taken to revive their loved ones.<sup>10</sup> Although incorporating end-of-life care into the management of DOA patients will undoubtedly improve patient care and family experience, addressing the needs of DOA patients and families is ultimately an ethical issue.

Certainly, the ethical principle of autonomy should spur the medical and nursing communities toward providing end-of-life care concordant with patients' wishes and values. However, the ideals of clinical practice should inspire us to



more than care concordance. The principles of beneficence and nonmaleficence guide us to move past simply delivering care designated by an individual and instead to consider how we might both provide benefit and prevent harm to patients and families at the end of life. Beyond the obvious potential physical harms of resuscitative efforts, from pneumothoraces to survival with devastating neurologic injury, being a bystander to resuscitation has been identified as a potentially traumatic event for those involved.<sup>11</sup> Moreover, when the provision of cardiopulmonary resuscitation appears to be medically inappropriate (some would use the word “futile”) by emergency medical personnel, such providers are at risk for moral injury.<sup>12</sup>

To this end, advance care planning (ACP) provides an opportunity for the medical and nursing communities not only to align the end-of-life care desired by patients with that delivered but also potentially to prevent distress experienced by families and providers alike. Rates of ACP documentation completion in the general population are exceptionally low, and access to ACP documents by hospital providers is even worse.<sup>13,14</sup> Fortunately, a number of tactics are being employed to increase overall ACP rates. In the United States, for instance, the Centers for Medicare & Medicaid Services instituted regulations in 2016 designed to encourage ACP documentation by specifically reimbursing providers for time spent on such activities.<sup>15</sup> More recently, the emergency department setting has been identified as an underutilized venue for ACP activities, and further efforts are underway to bolster emergency department-based ACP. For example, previous studies have demonstrated the efficacy of video decision aids in augmenting patients’ understanding of end-of-life care in a variety of settings,<sup>16,17</sup> and now such interventions are being explored in the emergency department setting.<sup>18</sup>

But even with robust ACP documentation, significant barriers remain with regards to emergency provider access to such documentation –or at the very least to family understanding of patients’ goals of care. For the medical and nursing communities to ensure that potential DOA patients receive care in alignment with their values and goals—as well as to reduce family and provider trauma—we must continue to push for clear and accessible ACP documentation. Beyond this, and possibly more importantly in the time-sensitive circumstances of emergency care, we must continue to work with patients to make their wishes known to loved ones. Empowering families to advocate for the documented/expressed desires of patients will not only prevent end-of-life care that is discordant with patient values but also free families and providers from the morally laborious acts of calling for or calling off resuscitative efforts when patient wishes are unknown.

#### Author Disclosures

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## CE Earn Up to 12.0 Contact Hours: JEN

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### FULL TEXT

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# Pain Medication Administered and Prescribed to Patients With an Ankle Sprain Treated in an Emergency Department: A Record-Based Cohort

# Study: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

### Introduction

Recent data indicate that patients treated in the emergency department for an ankle sprain receive multiple medications. However, research has not been able to accurately identify all the medications because of study limitations. The primary purpose of this study was to document the type of medication, number of doses, and number of encounters given a prescription at discharge or instructions to take over-the-counter medication. The secondary purpose was to determine if the proportion of encounters given each type of medication varied on the basis of age, sex, race, and year.

### Methods

A retrospective record-based cohort study design was used to review the electronic medical records (N = 1740) of encounters reporting to a southeast academic level 1 trauma center and diagnosed with an ankle sprain between 2013 and 2017. All relevant data were extracted for nonsteroidal anti-inflammatory drugs, muscle relaxants, opioids, and nonopioid analgesics.

### Results

Fifty-eight percent of the encounters had at least 1 dose of medication administered in the emergency department. Twenty-eight percent received a prescription at discharge, and 54.5% were instructed to take over-the-counter medication. Cumulatively, opioids accounted for most of the medications, but the yearly rates declined from 2013 to 2017. A greater proportion of patients aged  $\leq 15$  years received nonsteroidal anti-inflammatory drugs or nonopioid analgesics. Most of the patients aged  $>15$  years received opioid medication.

### Discussion

Patients are primarily given an opioid or nonsteroidal anti-inflammatory drug in the emergency department. Fewer patients receive a prescription at discharge but are regularly instructed to take over-the-counter medication.

## FULL TEXT

## DETAILS

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## Looking to the 12 Points of the Scout Law as Inspiration: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

The 12 points of the Scout Law were recited weekly at my Scout meetings as a youth and now as an adult leader. Helpful: Do we take that extra step to help the person in the hospital who looks lost? Do we pick up that piece of trash along the sidewalk when we are out running errands or pick up and recycle the bottle we see on the hiking trail?

## FULL TEXT

Here we are halfway through 2021 and my year as president of the Emergency Nurses Association. I got the inspiration for this President's Message topic as I was helping my son complete his Eagle Scout project. This message is written from the lens of my youth, my experience in scouting and some key components that factored into who I am today. I would like to acknowledge that the Scouts organization does have a past history of inequities and want to acknowledge the movement of the organization to be more inclusive. Like many organizations, communities, and individuals, we are all growing to be better around diversity and inclusion. The lessons I learned as a child in the Scouts are still relevant today and hopefully will resonate with you as well. The focus of this message is on the 12 points of the Scout Law.

The 12 points of the Scout Law were recited weekly at my Scout meetings as a youth and now as an adult leader. They are a good reminder and can serve as a compass for life. The 12 points are simple and can be examined more closely. The 12 points are recited, "A Scout is Trustworthy, Loyal, Helpful, Friendly, Courteous, Kind, Obedient, Cheerful, Thrifty, Brave, Clean and Reverent."

- Trustworthy*: This one resonates with us as nurses because our profession has been running for 19 years as the most trusted profession.<sup>1</sup> What are we doing to maintain this? Are we always offering our recommendations based on fact? Let us all do our part to keep our profession trustworthy.
- Loyal*: Do we always have each other's back? Do we return the favor for those who were there for us, and are we there for them when needed?
- Helpful*: Do we take that extra step to help the person in the hospital who looks lost? Do we pick up that piece of trash along the sidewalk when we are out running errands or pick up and recycle the bottle we see on the hiking trail?
- Friendly*: How are we at welcoming new members at our meetings? At taking a new nurse under our wing to ensure that they have a good transition into our department?
- Courteous*: A great way to show respect for others. Do we smile and greet people who do not look like us? Do we acknowledge the stranger sitting outside the convenience store? How do we treat staff outside of our department at the hospital?
- Kind*: What are we doing to seek to understand what others may be going through at the moment our paths cross? Kindness goes a long way. Personally, I recall the phrase associated with Maya Angelou, "You may not remember what a person said to you, you may not remember what a person did to you, but you will never forget how a person made you feel!" We see enough unkind things in the world around us. Be the good.
- Obedient*: Are we doing our best to live within the constructs of the law? If we disagree with some laws or norms, how are we respectfully challenging them?
- Cheerful*: Are we doing our best to live with PMA—positive mental attitude? We all face times when it may be difficult to be positive. Strive to build resilience in ourselves to maintain a positive mindset in the face of adversity. It

will make a difference for you and others. Cheerfulness and happiness are contagious. Be infectious.

- Thrifty*: Are we mindful of the resources we use during our shift at work? How are we treating our environment? How are we keeping thrifty with our time and talents? Take an inventory of what we do in a day or a week. Are we being thoughtful and not wasting time? Time check—we cannot get wasted time back.
- Brave*: To be brave, we have to experience fear. This fear can have many forms. Are we being brave to challenge inequities we see? What are we doing to be brave in standing up for what we know is right to make our world a better place?
- Clean*: This is more than a shower. This is clean on the inside and out. Are we doing right? Can we lay our head on the pillow and be okay with our day? Maybe not always—we are human, but we can always strive to be better.
- Reverent*: This can be a belief in a higher being or power. This also relates to showing profound respect. How are we reverent to our patients, our colleagues, strangers, and ourselves?

These 12 points can help us *Elevate* each day as I have challenged all of us this year of 2021. Stay positive, stay focused, and be the good!

ELEVATE

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# Mitigating the Effects of Climate Change on Health and Health Care: The Role of the Emergency Nurse: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

Description Earth's climate is changing more rapidly than at any other point in the history of modern civilization, and it is largely a result of human activity.<sup>1-7</sup> The impact of climate change is being experienced globally and is projected to intensify in the future.<sup>4,6,8</sup> Climate change affects communities in many ways: the economy, social systems, quality of water, ecosystems, agriculture and food, infrastructures, oceans and coasts, tourism, human health, and quality of life.<sup>4,6,7</sup> A major contributor to the warming of the climate system is the health care sector, accounting for 8% of greenhouse gas emissions in the United States and 4.5% globally.<sup>8-10</sup> The main greenhouse gases responsible for climate change are carbon dioxide, methane, nitrous oxide, and fluorinated gases.<sup>11</sup> In conjunction with black carbon, these gases impair the earth's reflective capacity while simultaneously absorbing

solar radiation that is re-emitted to Earth's atmosphere, ultimately leading to surface warming.<sup>11</sup> Rising global temperatures are associated with more frequent and severe storms, intense heat, drought, worsening air quality, and changes in the distribution of pathogens.<sup>8,11-16</sup> Water scarcity, land degradation, and desertification also have accelerated in the past century owing to natural disasters, environmental pollution, and destruction of green space.<sup>12,17-21</sup> More frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to damage infrastructure, ecosystems, and social systems that provide essential benefits to communities. The physical environment where people live, learn, work, and play, which is affected by rising global temperatures, is a social determinant of health.<sup>22,23</sup> Future climate change is expected to further disrupt many aspects of life, posing challenges to those most vulnerable populations including children, older adults, pregnant women, some communities of color, immigrants, lower-income and under-resourced communities, and those with comorbidities (eg, immunocompromised, allergies, respiratory disease) who have a lower capacity to prepare for and cope with extreme weather and climate-related events.<sup>1,2,4,6-8,24-26</sup> Ambient air pollution contributes to 4.2 million premature deaths worldwide and is associated with increased morbidity from numerous illnesses.<sup>27,28</sup> More than 90% of children are subjected to fine particulate matter that exceeds health standards, whereas maternal exposure is associated with an increase in preterm births, low birth weight, and stillbirths.<sup>29</sup> Poor air quality also leads to emergency visits for asthma, chronic obstructive pulmonary disease, cardiovascular events, and mental health complaints.<sup>7,12,26-28,30</sup> In 2018, a record number of older adults (220 million) were exposed to at least 1 heatwave,<sup>8</sup> with exposure to the stress of extreme heat causing nephropathy, electrolyte disturbances, cerebrovascular events, congestive heart failure, and preterm births.<sup>8,12,31,32</sup> Psychological stress owing to displacement, socioeconomic consequences, and exposure to trauma is anticipated to rise with the increased prevalence of climate-related natural disasters.<sup>12</sup> Providing education to patients and their families on climate change and disaster readiness may help them prepare and mitigate these consequences. According to the World Health Organization,<sup>28</sup> climate change can be mitigated by transitioning to sustainable and efficient energy practices, conserving and protecting resources, designing climate-resilient infrastructure, and adopting methods of sustainable waste disposal and management practices. [...]emergency care settings can upgrade to energy-efficient equipment, replace incandescent light bulbs with LED bulbs, and install lighting control systems such as occupancy sensors.<sup>16,20,24,59-61</sup> The use of renewable and alternative energy sources (eg, solar-powered photovoltaic, water pumps, wind) are additional means of reducing fossil fuel use.<sup>9,16,59-62</sup> Combined heat and power technology is another alternative; this technology captures excess heat from electricity generation and uses it for thermal energy.<sup>9</sup> Energy production is not the only source of carbon emission: more than half of the nitrogen oxides emitted globally are from fuels used for transportation.<sup>8</sup> Using locally sourced food and on-site food production (eg, rooftop gardens) in hospital cafeterias and catering are methods of reducing emissions from transporting supplies while modeling sustainable food practices.<sup>8,16,24</sup> Emergency care settings can further reduce transport emissions by supporting staff use of environmentally conscious forms of transport (eg, cycling) and advocating for vehicles (eg, ambulances) that use alternative fuel, are electric, or have zero emissions.<sup>12,63</sup> Emergency nurse leaders can incorporate climate resilient solutions into facility renovation and future design.<sup>8,12,59</sup> For example,

## FULL TEXT

### Description

Earth's climate is changing more rapidly than at any other point in the history of modern civilization, and it is largely a result of human activity.<sup>1-7</sup> The impact of climate change is being experienced globally and is projected to intensify in the future.<sup>4,6,8</sup> Climate change affects communities in many ways: the economy, social systems, quality of water, ecosystems, agriculture and food, infrastructures, oceans and coasts, tourism, human health, and quality of life.<sup>4,6,7</sup> A major contributor to the warming of the climate system is the health care sector, accounting for 8% of greenhouse gas emissions in the United States and 4.5% globally.<sup>8-10</sup> The main greenhouse gases responsible for climate change are carbon dioxide, methane, nitrous oxide, and fluorinated gases.<sup>11</sup> In conjunction with black carbon, these gases impair the earth's reflective capacity while simultaneously absorbing solar radiation that is re-emitted to Earth's atmosphere, ultimately leading to surface warming.<sup>11</sup> Rising global temperatures are associated with more frequent and severe storms, intense heat, drought, worsening air quality, and changes in the distribution of

pathogens.<sup>8,11-16</sup> Water scarcity, land degradation, and desertification also have accelerated in the past century owing to natural disasters, environmental pollution, and destruction of green space.<sup>12,17-21</sup> More frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to damage infrastructure, ecosystems, and social systems that provide essential benefits to communities. The physical environment where people live, learn, work, and play, which is affected by rising global temperatures, is a social determinant of health.<sup>22,23</sup> Future climate change is expected to further disrupt many aspects of life, posing challenges to those most vulnerable populations including children, older adults, pregnant women, some communities of color, immigrants, lower-income and under-resourced communities, and those with comorbidities (eg, immunocompromised, allergies, respiratory disease) who have a lower capacity to prepare for and cope with extreme weather and climate-related events.<sup>1,2,4,6-8,24-26</sup>

Ambient air pollution contributes to 4.2 million premature deaths worldwide and is associated with increased morbidity from numerous illnesses.<sup>27,28</sup> More than 90% of children are subjected to fine particulate matter that exceeds health standards, whereas maternal exposure is associated with an increase in preterm births, low birth weight, and stillbirths.<sup>29</sup> Poor air quality also leads to emergency visits for asthma, chronic obstructive pulmonary disease, cardiovascular events, and mental health complaints.<sup>7,12,26-28,30</sup> In 2018, a record number of older adults (220 million) were exposed to at least 1 heatwave,<sup>8</sup> with exposure to the stress of extreme heat causing nephropathy, electrolyte disturbances, cerebrovascular events, congestive heart failure, and preterm births.<sup>8,12,31,32</sup> Psychological stress owing to displacement, socioeconomic consequences, and exposure to trauma is anticipated to rise with the increased prevalence of climate-related natural disasters.<sup>12</sup> Providing education to patients and their families on climate change and disaster readiness may help them prepare and mitigate these consequences. The severity of the impact of future climate change will depend fundamentally on action taken to reduce greenhouse gas emissions and adapt to anticipated changes.<sup>1,2,4,6</sup> Without proactive action and substantial changes, climate-related risks will continue to grow. According to the World Health Organization,<sup>28</sup> climate change can be mitigated by transitioning to sustainable and efficient energy practices, conserving and protecting resources, designing climate-resilient infrastructure, and adopting methods of sustainable waste disposal and management practices. The emergency nurse can serve as a voice to mitigate climate change through advocacy, research, patient education, and community educational programs. In addition, the emergency nurse has various opportunities to engage others to assist in adaptation and mitigation strategies, increase awareness regarding the impact of climate change and health, support climate-friendly practices and initiatives in health care, and join others in the call for immediate action on climate change and policies that support climate adaptation and mitigation.

### **Emergency Nurses Association Position**

It is the position of the Emergency Nurses Association (ENA) that:

1. Climate change is a global public health problem.
2. Global action to significantly reduce greenhouse gas emissions can substantially reduce climate-related risks.
3. Emergency nurses advocate to promote nursing educational opportunities and research regarding the effects of climate change on the environment and human health.
4. Emergency nurses provide evidence-based discharge education to patients and their families on relevant climate change related disaster readiness to increase their awareness of the threats and prevention strategies and reduce chronic disease exacerbations.
5. Emergency nurses and administrators lead initiatives to explore and implement strategies to design and redesign health care facilities to reduce carbon emissions and the environmental impact.
6. Emergency nurses, administrators, and health care facilities seek ways to increase energy efficiency, reduce waste, incorporate renewable energy, and help build collaborative opportunities within the community to address

climate change.

## Background

The Intergovernmental Panel on Climate Change defines climate change as a transformation in the state of the climate that continues for an extended period and can be recognized by the variability of its properties.<sup>6,33</sup> It also can be considered to be any change in climate over time, whether a result of natural changes or a consequence of human activity. Climate change is a global health problem that requires collaboration across various sectors to promote community climate resilience and sustainable, long-term transformation.<sup>34</sup> The heat-trapping nature of carbon dioxide and other greenhouse gases has been recognized since the 1800s as being a large contributor to climate change.<sup>6</sup> Human activities such as the burning of fossil fuels and land use changes such as deforestation have caused a rapid acceleration in the atmospheric concentration of greenhouse gases.<sup>6,35-42</sup> Scientists continue to observe climbing temperatures over the past century, which are attributed to changes in greenhouse gas concentrations. These effects of a changing climate are linked to fundamental health issues and pose existential risks to everyone.

Heat waves have become more frequent and prolonged, and the number of extreme cold waves has increased. Extreme heat has been associated with an increased risk of morbidity and mortality.<sup>43,44</sup> Kang et al.<sup>44</sup> found that heat waves were significantly associated with increased risk of out-of-hospital cardiac arrest events during the afternoon when temperatures were at their highest. Other researchers have shown that thermoregulatory mechanisms are impaired in the elderly, as well as those with chronic illnesses such as diabetes, hypertension, and congestive heart failure.<sup>44-46</sup> Globally, there has been a shrinkage of glaciers, decreasing the mass of the Greenland and Antarctic ice sheets. The sea level has risen because of these melting glaciers and the thermal expansion of warmer water.<sup>47</sup> As the Earth's climate continues to change, helping to adjust the daily health behaviors including mediating effects of risk perception of patients will be an important public health intervention for emergency nurses.

Climate change has led to various temperature anomalies.<sup>48</sup> Warmer air holds more moisture and contributes to an increase in heavy precipitation in some areas. Conversely, drier regions, such as the US Southwest have experienced drought. Whereas extreme heat and droughts are not uncommon for certain areas such as East Africa, droughts in this region have become drier and much hotter than usual affecting farming, health, humanitarian efforts, and resettlement.<sup>49</sup> These outcomes remain consistent with projections that wet regions will become wetter and drier regions will become drier.

With the anticipation of more flooding, emergency nurses can expect to see increased drownings, heart attacks, hypothermia, blunt trauma caused by wind-borne objects, vehicle-related crashes, snakebites, electrocutions, wound infections, and water-borne diseases.<sup>50-53</sup> Intensity of hurricanes and frequency of wildfires are both additional examples of the changing climate.<sup>54</sup> Although the annual number of wildfires varies, the overall number of burned acres is increasing,<sup>55</sup> which leads to increased air particulates and smoke exposure causing increased respiratory illnesses and ED visits.<sup>56-58</sup> In addition, particulate air pollutants released by burning fossil fuels are shortening human life in many regions of the world. Psychological stress, political instability, forced migration, and conflict are other unsettling consequences. Those most vulnerable such as the chronically ill and under-resourced communities will be most affected by the devastating consequences.<sup>10</sup>

Emergency nurses can help to increase awareness of and mitigate the effects of climate change through research, education, and community outreach. Energy optimization is 1 strategy for reducing carbon emissions. For example, emergency care settings can upgrade to energy-efficient equipment, replace incandescent light bulbs with LED bulbs, and install lighting control systems such as occupancy sensors.<sup>16,20,24,59-61</sup> The use of renewable and

alternative energy sources (eg, solar-powered photovoltaic, water pumps, wind) are additional means of reducing fossil fuel use.<sup>9,16,59-62</sup> Combined heat and power technology is another alternative; this technology captures excess heat from electricity generation and uses it for thermal energy.<sup>9</sup> Energy production is not the only source of carbon emission: more than half of the nitrogen oxides emitted globally are from fuels used for transportation.<sup>8</sup> Using locally sourced food and on-site food production (eg, rooftop gardens) in hospital cafeterias and catering are methods of reducing emissions from transporting supplies while modeling sustainable food practices.<sup>8,16,24</sup>

Emergency care settings can further reduce transport emissions by supporting staff use of environmentally conscious forms of transport (eg, cycling) and advocating for vehicles (eg, ambulances) that use alternative fuel, are electric, or have zero emissions.<sup>12,63</sup> Emergency nurse leaders can incorporate climate resilient solutions into facility renovation and future design.<sup>8,12,59</sup> For example, the consideration of landscape features that reduce thermal stresses, use passive cooling and lighting techniques,<sup>8,19,64</sup> and install green roofs or reflective rods to reduce the heat-island effect.<sup>15,16,20,59,65-67</sup> Facilities can protect and conserve water by transitioning to water-efficient equipment (eg, low-flow faucets and toilets), adopting water-recycling procedures (eg, rainwater harvesting for landscape irrigation), and mitigating potential contamination of water sources.<sup>15-17,19,59,68</sup> Bioswales, aquifer storage and recovery, and desalination are examples of sustainable stormwater management practices.<sup>17,21,69</sup> Chemicals used interiorly (eg, cleaning supplies) and exteriorly (eg, pesticides and herbicides) also can negatively affect water and soil quality. Adopting integrated groundskeeping practices aimed at reducing the use of environmentally harmful chemicals is 1 approach to mitigating soil and water contamination.<sup>16,68,70</sup>

Sustainable waste management is necessary to preserve resources and reduce greenhouse gas emissions.<sup>8</sup> Examples of sustainable approaches include reusing and recycling of industrial materials, composting, using alternative waste management technology (eg, anaerobic digestion of organic waste), and disposing of electronics in environmentally conscientious ways (eg, reusing, refurbishing, or recycling materials).<sup>8,16,20,69-73</sup> Emergency departments also have the opportunity to reduce general (nonhazardous) and regulated waste. Regulated waste may be infectious, pathologic (human tissues), sharps, chemical (eg, disinfectants, batteries, solvents), pharmaceutical (eg, expired, unused, or contaminated drugs), and cytotoxic (waste with genotoxic properties).<sup>70</sup> Pharmaceutical management and disposal is a significant area of opportunity for reducing waste and preventing environmental contamination.<sup>1</sup> Pharmaceutical take-back programs are 1 way in which organizations are already combating this issue that could be further expanded.<sup>74,75</sup> In addition, emergency care settings can adopt processes that promote efficient pharmaceutical use such as reducing storage redundancy and modifying purchasing habits (eg, use of therapeutic alternatives, selecting 2-part polyolefin intravenous devices that weigh up to one-third less).<sup>59,</sup>

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Integrating environmental health into nursing and educating emergency nurses on climate change are important components of the reduction of health care's carbon footprint.<sup>12,20,22,24,26</sup> Emergency nurses can positively influence practice by supporting policies related to climate change, modeling healthy behaviors that promote sustainability, and taking measures to minimize waste.<sup>10,12,15,16,22,26,28,71</sup> Emergency nurses are also in the unique position of being able to educate patients and families on environmentally safe ways to dispose of regulated waste (eg, unused medication, medical supplies).

Unfortunately, climate change is not universally accepted as a public health hazard by health care professionals in the United States despite being one of the greatest global health threats of this century.<sup>7,76</sup> It is important for emergency nurses to increase their understanding of the health threats associated with climate to assist in recognizing and anticipating climate-associated effects and become more engaged in the development and effective implementation of prevention, mitigation, and adaptation strategies.

## Resources

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# Lesbian, Gay, Bisexual, Transgender, Queer Cultural Competency Training to Improve the Quality of Care: An Evidence-based Practice Project: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/mitigating-effects-climate-change-on-health-care/docview/2552049795/se-2?accountid=211160)

## ABSTRACT (ENGLISH)

### Background

One evidence-based practice strategy to improve the provision of care for the lesbian, gay, bisexual, transgender, queer population is providing cultural competency training. The aim of this evidence-based practice project was to improve Knowledge and Skills, Openness and Support, and Oppression Awareness for emergency nurses when providing care to the lesbian, gay, bisexual, transgender, queer population in the military health system.

### Methods

The single-unit, educational intervention posttest compared with unit personnel historical controls project took place in an emergency department within the military health system. The participants included registered nurses or licensed practical nurses working in the emergency department. The Ally Identity Measure tool was administered to an unmatched convenience sample of emergency nurses in a military health system pre- and postintervention to assess the intervention's effectiveness. Descriptive statistics and group difference testing (*t* test) were used.

### Results

The mean Knowledge and Skills subscale score was improved between the pre- and postintervention groups ( $t(70) = -3.33, P = .001$ ). The mean Openness and Support subscale score was improved between the pre- and postintervention groups ( $t(70) = -2.06, P = .04$ ). The mean Oppression Awareness subscale demonstrated no

significant difference between the pre- and postintervention groups ( $t(70) = -0.93, P = .36$ ).

### **Conclusion**

This project illustrated the feasibility of an educational intervention to promote culturally competent care in the ED environment for the lesbian, gay, bisexual, transgender, queer population. The results illustrated that emergency nurses in this military health system were aware of the oppression that this vulnerable population faces.

## **FULL TEXT**

### **Introduction Problem Description**

Culturally competent or culturally congruent care includes providing care that is sensitive, knowledgeable, and meaningful for the population presenting for health care services.<sup>1</sup> One of the vulnerable populations that exists today is the lesbian, gay, bisexual, transgender, queer (LGBTQ) population. Shrader et al<sup>2</sup> note that standardized LGBTQ cultural competency training does not exist within the military health system (MHS) since the repeal of the Department of Defense directive “Don’t Ask, Don’t Tell” in 2011. The purpose of this project was to improve the Knowledge and Skills, Openness and Support, and Awareness of Oppression when caring for the LGBTQ population in 1 emergency department within the MHS.

One challenge for health care providers when caring for this population is the lack of cultural competency training. Many organizations and experts have listed yearly LGBTQ cultural competency trainings as a strategy to improve care for the LGBTQ population.<sup>3-5</sup> Margolies et al<sup>5</sup> identify 3 common goals of LGBTQ cultural competency training: to increase knowledge, to increase LGBTQ-affirming attitude, and to increase LGBTQ-affirming behavior. Here, we describe the implementation of an evidence-based project in our unit to improve LGBTQ cultural competency among emergency nurses.

### **Available Knowledge**

The evaluated evidence indicated that both cultural competency training and promoting gender-inclusive environments are the beginning steps to improving the provision of care for the LGBTQ population.<sup>3-5</sup> Chisolm-Straker et al<sup>6</sup> identified that 85.2% of the emergency providers reported no formal training on the provision of care for the LGBTQ population, with 88% in the same study reporting caring for this population and 79.2% agreeing that sexual orientation/gender identity questions should be part of the electronic health record (EHR).

There are several barriers that emergency nurses face to provide culturally competent care. For example, the EHR data, wristband, or other retrievable health care data may conflict with the patient’s currently preferred gender or name.<sup>7</sup> Lack of health care provider cultural competency was identified as a problem when accessing health care.<sup>3,8,9</sup> Furthermore, the estimated time for teaching LGBTQ health in a bachelor of science in nursing program was 2.12 hours,<sup>10</sup> recognizing that even recently educated staff may lack adequate depth in this crucial preparation. Although not every study in the literature we reviewed illustrated an improvement in skills and attitudes,<sup>11,12</sup> all of the interventional studies demonstrated an increase in knowledge.<sup>2,11-14</sup> Furthermore, patients reported wanting to be asked sexual orientation/gender identity questions by health care staff,<sup>7,15</sup> and health care providers reported wanting increased training regarding providing culturally competent care for the LGBTQ population.<sup>15</sup>

### **Purpose**

This was an evidence-based practice (EBP) project. The clinical question for this EBP project was the following: “Will the implementation of an independent, evidence-based, ED-specific, LGBTQ cultural competency education improve the knowledge, skills, and attitudes toward LGBTQ health care among emergency nurses?” The purpose of this project was to improve the Knowledge and Skills, Openness and Support, and Awareness of Oppression when caring for the LGBTQ population in 1 emergency department within the MHS.

### **Methods Design**

This was a single-unit, EBP project using a pre- and posteducational intervention approach. Unmatched pre- and postintervention assessments of individual nurses were used for data collection.

### **Context**

This project took place in an emergency department within the MHS where there is access to emergency care for



adult and pediatric patients who are active military service members, military family members, and civilians presenting for emergency care. The MHS is a level III trauma center, with an annual volume of 66 000 patients. The number of nurse full-time equivalents was 66.

### **Participants**

A purposive convenience sampling was used to recruit participants for this EBP project. The sample included participants who held a Registered Nurse (RN) or Licensed Practice Nurse (LPN) position within the EBP project setting and consented to participate in the study. Physicians, military health care specialists, and medical secretaries were excluded from the analysis.

### **Project Team**

The project leader was one of the educators for the emergency department and informed the staff of the educational opportunity during the daily shift huddles in the months before implementation. The project leader is a certified emergency nurse and certified pediatric emergency nurse. The project team included the project leader's doctorate of nursing practice chair and the chief nurse of emergency operations.

### **Intervention**

The intervention for this project was an evidence-based, culturally appropriate educational intervention. The resources that were used for the training included the National LGBTQIA+ Health Education Center<sup>16</sup> video "LGBT Voices: Perspectives on Healthcare;" the interactive presentation "Providing Quality Care to Lesbian, Gay, Bisexual, and Transgender Patients: An Introduction for Staff Training;" and the interactive presentation "Affirming LGBT People Through Effective Communication."

The interactive videos and education sessions provided information and practice scenarios on the avoidance of assumptions and effective communication techniques, as well as statistical data on the barriers and challenges that the LGBTQ population faces when accessing health care services. Information regarding local and national resources for LGBTQ individuals and health care providers was provided during the education session. Open discussion and practice scenarios were incorporated in the training for the emergency nurses to voice their perceptions and to reinforce best practices.

The Emergency Nurses Association (ENA)<sup>3</sup> toolkit was used to provide handouts on terminology, effective communication techniques, and types of gender-affirming surgeries during the sessions. An interactive presentation developed from the ENA<sup>3</sup> toolkit was delivered during the second training session with an open group discussion. The National LGBTQIA+ Health Education Center<sup>16</sup> is free to access, and the ENA<sup>3</sup> toolkit is free for members. Permission to use the National LGBTQIA+ Health Education Center's<sup>16</sup> presentations and ENA's<sup>3</sup> toolkit for training was obtained.

The cultural competency training was conducted in 2 30-minute, face-to-face, small group training sessions. The educational intervention took a total of approximately 50 to 75 minutes, accounting for open dialogue and discussion at each training session. The methodology was adjusted from the original plan of 5 short sessions with open dialogue to 2 lengthier sessions owing to the time needed for daily coronavirus disease (COVID-19) updates to staff in the morning shift huddles.

### **Measures**

Participant demographic information was collected to include age, gender, gender assigned at birth, ethnicity, and education level. Completion of the pre- and postintervention surveys included the paper-and-pencil method. The data were then entered and analyzed with Intellectus<sup>17</sup> statistical software (Intellectus Statistics).

A preeducation and posteducation validated, reliable tool, the Ally Identity Measure (AIM) tool,<sup>18</sup> was used to assess and score the participants' Knowledge and Skills, Openness and Support, and Oppression Awareness both pre- and postintervention. The validated AIM tool was used for data collection after permission approvals from the researchers Jones et al.<sup>18</sup> The AIM tool uses a 5-point Likert scale, with 1, strongly disagree to 5, strongly agree.<sup>18</sup> The AIM tool includes 19 items that measure the Knowledge and Skills, Oppression Awareness, and Openness and Support when caring for the LGBTQ population.<sup>18</sup> The Knowledge and Skills scale includes 8 items that were tallied for a total score. The Oppression Awareness scale includes 4 items that were tallied for a total score. The Openness

and Support scale includes 7 items that were tallied for a total score.<sup>18</sup> The approximate time taken to complete the tool was less than 15 minutes for both pre- and postintervention groups. The AIM tool has demonstrated good reliability (Cronbach  $\alpha$  0.76 to 0.88)<sup>18</sup> and good convergent and discriminant validity.<sup>18</sup> The AIM tool was used in the ED setting by Bristol et al<sup>13</sup> in a similar study that was used as a guide for this EBP project. The methods of the Bristol et al<sup>13</sup> study were not replicated exactly. The educational intervention was modified, and the ED participants were limited to RNs and LPNs in the current study.

### **Analysis**

The 3 identified outcomes—Knowledge and Skills, Oppression Awareness, and Openness and Support identified on the AIM tool—were assessed using a 5-point Likert scale. The items were divided by each of the 3 measures and added for a score. Descriptive statistics, mean and SD, and an independent 2-tailed *t* test were used to determine differences in pre- and postintervention scores using Intellectus<sup>17</sup> statistical software. The Mann-Whitney 2-sample rank-sum test was included to supplement independent *t* test results when 1 or more of the assumptions for the *t* test were violated. *P*-values  $\leq .05$  were considered significant.

### **Sample-Size Recommendation for Study Replication**

A post hoc power analysis for an independent-sample *t* test was conducted in G\*Power (Heinrich Heine University) to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, a large effect size ( $d = 0.8$ ), and 2 tails.<sup>19</sup> On the basis of the assumptions, the recommended sample size to replicate this project was 61 per group.

### **Ethical Considerations**

The study was approved by the Liberty University Institutional Review Board (IRB-FY19-20-100) and the institutional review board of the MHS (“Memo for Non-Research Determination” was provided). Consent was implied from the health care provider participants through the voluntary completion of the data collection tool. No patient data were collected for the EBP project.

### **Results Descriptive Statistics**

The education was conducted in 2 sessions. A total of 42 health care providers (63%) participated in the first education session. A total of 39 health care providers (59%) participated in the second session of the educational intervention. The total sample included 36 preintervention and 36 unmatched postintervention surveys when only surveys from RNs and LPNs were included in the sample analysis. The results of the data analysis are outlined and described herein. Frequencies and percentages for the demographic data collected are presented in <sup>Table 1</sup>, and the summary statistics of the outcome measurements are presented in <sup>Table 2</sup>.

### **Quantitative Results**

The mean of the Knowledge and Skills subscale was significantly increased after the intervention compared with the preintervention group ( $t_{(70)} = -3.33$ ,  $P = .001$ ). The result was consistent using the Mann-Whitney U test ( $U = 368.5$ ,  $z = -3.15$ ,  $P = .002$ ).

The second outcome measured was the Openness and Support subscale score. Descriptive statistics for the preintervention survey showed Openness and Support with a mean of 20.17 (SD = 6.95). The postintervention survey showed a mean of 23.69 (SD = 7.59), with a significant increase over the preintervention scores ( $t_{(70)} = -2.06$ ,  $P = .04$ ).

The third outcome measured was the Oppression Awareness subscale. The preintervention mean was 13.28 (SD = 3.81). The postintervention survey showed a mean of 14.14 (SD = 4.06) with no significant difference observed from the preintervention score ( $t_{(70)} = -0.93$ ,  $P = .36$ ). This result was consistent when analyzed using the Mann-Whitney U test ( $U = 554$ ,  $z = -1.06$ ,  $P = .29$ ).

### **Discussion Summary**

The results of this EBP project indicate that a unit-specific culturally appropriate educational intervention was feasible to implement and can contribute to an aggregate increase in Knowledge and Skills and Openness and Support for emergency nurses providing care to the LGBTQ population in the MHS. Overall, the average Knowledge and Skills score increased by 6.44%. The average Openness and Support score increased by 3.52%. There was no significant difference noted in the Oppression Awareness scores.

The results of this EBP study illustrated an increase in knowledge similar to that in 5 previous studies after the implementation of a cultural competency training.<sup>2,11-14</sup> Shrader et al<sup>2</sup> delivered an educational intervention in a sample of 51 individuals to increase cultural awareness when caring for the LGBTQ population. Posttest scores demonstrated improvements from pretest scores, ranging from 10% in the category “LGBT terminology” to 45% in the category “preventative measures.” Additional educational categories included “cultural sensitivity,” “barriers to care,” and “pertinent health issues.”<sup>2</sup> Donaldson et al<sup>11</sup> delivered an online LGBTQ educational intervention to a sample of 26 providers across health care disciplines. The participants demonstrated an increase in LGB knowledge and transgender knowledge from pre- to postassessment.<sup>11</sup> The study demonstrated no significance between pre- and postassessment in skills and attitudes.<sup>11</sup>

Maruca et al<sup>12</sup> implemented a transgender simulation to 47 nursing students. The researchers reported an increase in the Gay Affirmative Practice Scale scores postsimulation.<sup>12</sup> The current study illustrated a significant increase in Openness and Support and did not demonstrate a significant increase in Oppression Awareness postintervention. In contrast, Bristol et al<sup>13</sup> demonstrated a significant increase in Oppression Awareness and did not demonstrate a significant increase in Openness and Support.

### **Interpretation**

The education was intended to increase the Knowledge and Skills, Openness and Support, and Awareness of Oppression when caring for the LGBTQ population in 1 emergency department within the MHS. The mean scores for Knowledge and Skills increased postintervention. During the open dialogue at each session, the emergency nurses voiced an appreciation for the knowledge provided in the education session. In addition, the emergency nurses voiced frustrations regarding the lack of sexual orientation/gender identity data collection in the current EHR owing to military regulations.

Openness and Support scores also increased postintervention. During the open dialogue at each session, the participants reported appreciation of, and an understanding of, the necessity for the training, especially because it was the first training for many participants. Individuals reported using the information the same day after the first part of the educational intervention. The participants reported feeling more comfortable with gender-affirming language and communication postintervention.

Oppression Awareness scores did not demonstrate a statistically significant difference between preintervention and postintervention. This result may be due to many of the individuals becoming aware of the challenges presented to the LGBTQ population through news and media reports. During the open dialogue at each education session, several participants reported having family members or close friends in the LGBTQ population and having noticed and witnessed the challenges that the LGBTQ population experiences in society and when accessing health care services. These shared experiences, coupled with the increase in Knowledge and Skills and Openness and Support, illustrate that a unit-specific cultural competency training may benefit other emergency departments and organizations to improve the provision of care for this vulnerable population.

### **Limitations**

The project had several limitations. The first barrier to implementation was the current COVID-19 pandemic. Owing to COVID-19 limitations, a convenience sample was used, and the sample did not include 100% of the nursing staff. Staffing shortages were present owing to individuals being in quarantine. A post hoc power analysis illustrated a desired sample size of 61 participants per group. The sample size for each group in the current study was 36. Open dialogue sessions were conducted in groups smaller than originally planned owing to COVID-19 social distancing restrictions. The survey used self-reporting that presents the potential for social desirability, meaning that participants may respond in a manner that is considered acceptable to others. Furthermore, the Oppression Awareness results demonstrated a less than 1% change from pre- to postintervention analysis. This may illustrate that it was more difficult to create a statistically significant change in knowledge in a population with a higher level of preexistent knowledge of the topic. The pre- and postintervention surveys were unmatched. Finally, most participants attended both sessions. However, owing to COVID-19 challenges and staffing issues, this was not 100%, which presents the potential for selection bias attributed to the measurements not being matched.

### Implications for Emergency Clinical Practice

The ENA<sup>3</sup> and the Joint Commission<sup>4</sup> provide toolkits for organizations to implement LGBTQ cultural competency training. The National LGBTQIA+ Health Education Center<sup>16</sup> provides education, interactive learning modules, and evidence-based resources for administrators and educators to use to facilitate cultural competency training for their units. The ENA,<sup>3</sup> the Joint Commission,<sup>4</sup> and the National LGBTQIA+ Health Education Center<sup>16</sup> provide tools and resources for managers and executives to use to implement additional strategies to improve culturally appropriate care for the LGBTQ population. These strategies include implementing EHR prompts to address the patient's preferred name and pronouns; creating a culturally appropriate and welcoming environment; and informing or revising policies, procedures, and practices, to name a few.

A continued barrier to change includes individuals' previously held beliefs and biases. The LGBTQ population faces many challenges when accessing care in the current health care system. Frequent and annual education on communication techniques, affirming behaviors, and the avoidance of assumptions may prove beneficial in improving care and sustaining cultural competency when providing care for this vulnerable population. Nurse educators remain a crucial component of both reviewing the latest practices for caring for this population and mentoring the staff on monitoring these changes. Similar to best practices to improve the physiological aspects of care, cultural competency remains a fundamental part of providing quality and patient-centered care.

### Conclusion

The shared experiences at the open dialogue sessions, coupled with the increase in Knowledge and Skills and Openness and Support, illustrate that a unit-specific cultural competency training may benefit other emergency departments and organizations to improve the provision of care for the LGBTQ population. The results for Knowledge and Skills demonstrated a significant improvement postintervention, Openness and Support illustrated significant improvements postintervention, but Oppression Awareness did not demonstrate a significant difference postintervention. The results illustrated that the individuals were aware of the oppression that the LGBTQ population faces. Therefore, nursing leaders may use this study as a guide to implement similar methodology to improve the Knowledge and Skills and Openness and Support of their health care staff to promote quality, patient-centered, and culturally competent care for this vulnerable population.

### Author Disclosures

Conflicts of interest: none to report.

The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of Womack Army Medical Center, the Defense Health Agency, Department of Defense, or the United States government.

Variable	Preintervention group (n = 36), n (%)	Postintervention group (n = 36), n (%)
Age		
18-30	2 (6)	3 (8)
31-40	12 (33)	12 (33)
41-50	7 (19)	10 (28)
≥51	12 (33)	10 (28)

Missing	3 (8)	1 (3)
Ethnicity		
Caucasian	22 (61)	25 (69)
African American	2 (6)	2 (6)
Asian/Pacific Islander	0 (0)	1 (3)
Multiple	1 (3)	1 (3)
Other not listed	6 (17)	5 (14)
Missing	5 (14)	2 (6)
Gender		
Male	8 (22)	7 (19)
Female	26 (72)	29 (81)
Missing	2 (6)	0 (0)
Education		
Associate degree	10 (28)	12 (33)
Bachelor's degree	14 (39)	18 (50)
Graduate degree	7 (19)	4 (11)
Chose not to answer	1 (3)	1 (3)
Missing	4 (11)	1 (3)
Gender assigned at birth		
Male	7 (19)	6 (17)
Female	27 (75)	28 (78)
Missing	2 (6)	2 (6)

Variable	M	SD	n	SEm
Knowledge and Skills				
Preintervention	21.78	8.91	36	1.48
Postintervention	28.22	7.47	36	1.24
Openness and support				
Preintervention	20.17	6.95	36	1.16
Postintervention	23.69	7.59	36	1.27
Opression awareness				
Preintervention	13.28	3.81	36	0.64
Postintervention	14.14	4.06	36	0.68

## DETAILS

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# Trajectory of Research and Dissemination Through Mentorship and Passion: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/lesbian-gay-bisexual-transgender-queer-cultural/docview/2552049784/se-2?accountid=211160)

## ABSTRACT (ENGLISH)

A report by the Institute of Medicine, "The Future of Nursing," called for a doubling of the 28 369 doctorally prepared nurses in 2008 by 2020.<sup>1</sup> Although this goal was achieved, it was done primarily through the expansion of Doctor of Nursing Practice programs in the United States. In 2019, the number of nurses graduating with a practice-focused doctorate (Doctor of Nursing Practice) was more than 9 times higher than the number of nurses graduating with a research-focused doctorate (Doctor of Philosophy): 12 250 graduates vs 1306 graduates, respectively.<sup>2</sup> Given the

number of nurses seeking a doctoral degree, it is important for emergency nurses to consider the meaningful aspects of the research doctorate. In this guest editorial, I relay my own career trajectory from being a stretcherside emergency nurse to my role today as an emergency nurse scientist and leader. It is my hope that emergency nurses will seek opportunities similar to the ones I was afforded through mentorship and dissemination to also become emergency nurse scientists and/or research-focused academic faculty members.

## FULL TEXT

Unlabelled image

A report by the Institute of Medicine, "The Future of Nursing," called for a doubling of the 28 369 doctorally prepared nurses in 2008 by 2020.<sup>1</sup> Although this goal was achieved, it was done primarily through the expansion of Doctor of Nursing Practice programs in the United States. In 2019, the number of nurses graduating with a practice-focused doctorate (Doctor of Nursing Practice) was more than 9 times higher than the number of nurses graduating with a research-focused doctorate (Doctor of Philosophy): 12 250 graduates vs 1306 graduates, respectively.<sup>2</sup> Given the number of nurses seeking a doctoral degree, it is important for emergency nurses to consider the meaningful aspects of the research doctorate. In this guest editorial, I relay my own career trajectory from being a stretcherside emergency nurse to my role today as an emergency nurse scientist and leader. It is my hope that emergency nurses will seek opportunities similar to the ones I was afforded through mentorship and dissemination to also become emergency nurse scientists and/or research-focused academic faculty members.

My career trajectory as a nurse scientist began in 2001 when I was selected by the *American Journal of Nursing* (AJN) to become a writing fellow. This program, which was cosponsored by industry, the AJN, and the Emergency Nurses Association (ENA), partnered me with a clinical nurse specialist and trauma coordinator to serve as my writing mentor. The most extensive writing I had done at this point was writing class papers. She helped me reflect on my clinical experience as an emergency nurse to identify a topic in which I had some level of expertise; I chose diabetic ketoacidosis. From there, she provided extensive mentorship on the writing process, editing, and using primary references. My manuscript was accepted for a special issue of the AJN.<sup>3</sup> The ENA, in collaboration with the industry sponsor, paid for my travel to ENA's annual conference in New Orleans in 2002. During this conference, the ENA hosted a reception where I met Mary Jagim, ENA's immediate past president. Jagim instructed me to keep writing about topics I knew to influence the specialty of emergency nursing; this conversation left a lasting impression on me. Since then, I have engaged with countless ENA members, Academy of Emergency Nursing Fellows, and ENA state and chapter leaders who have supported the career development and leadership aspirations of their fellow ENA members. Key takeaway points that I garnered from these experiences were the importance of obtaining a writing mentor and writing about what you know.

It would be 4 more years until I served as an author on another peer-reviewed manuscript. While matriculating in the Doctor of Philosophy program, several faculty members provided mentorship in both writing and the conduct of research. Although I recognized the importance of writing what I know about, I didn't yet recognize the importance of having *passion* for what you write about. During my initial semester in the doctoral program, I switched my research focus multiple times, initially addressing the problem of frequent use of the emergency department by homeless adults and then onto substance abuse, then police interventions, and so on. It wasn't until the week before spring break in 2006 that I met my next mentor and future dissertation chair. We had a short conversation about the problem of assaults against emergency department workers. Although I had been physically assaulted dozens and dozens of times, I never thought of this violence as a "problem." During spring break, I drafted a manuscript focused on workplace violence against emergency nurses. This manuscript written over 1 week received minimal edits from my course instructors, and the article became the second publication that I had as a first author.<sup>4</sup> Because I had passion for my topic, my writing was more effective, told a good "story," and required much less effort than writing about something I knew but on a topic about which I was less passionate.

In fall 2007, a program officer from the National Institute for Occupational Safety and Health attended a local conference where I presented my dissertation findings. She informed my dissertation chair and me that we should



write a grant application using the findings from our respective projects as pilot data for an upcoming funding opportunity announcement. My grant application was approved in 2008 as I started my new role as an assistant professor at a college of nursing. From there, I had a defined research focus to serve as the foundation for my trajectory. In addition, I now had a formal writing and research mentor as well as a research topic engulfed with my passion.

As my reputation as a workplace violence nurse scientist and academic faculty member grew, Dr Paula Grubb from the National Institute for Occupational Safety and Health contacted me about the problem of bullying against novice nurses. As a research psychologist, Grubb had become aware of this problem and was seeking a collaborator to begin developing educational interventions to prevent and mitigate the psychological consequences for novice nurses who experienced workplace bullying. Beginning in 2011, Grubb and I began our partnership to address workplace bullying against nurses. From 2011 through 2018, we developed a series of active learning interventions, including role-play simulations, case studies, and debriefing tools that were ultimately deployed at 8 universities and several hospital systems across the US.<sup>5-7</sup>

In 2012, I applied to the Robert Wood Johnson Foundation (RWJF) Nurse Faculty Scholars program. I was selected as 1 of 12 scholars that year and received research mentorship, leadership development training, and career coaching from several nurse leaders such as Dr Beverly Malone, chief executive officer of the National League for Nursing. Several peers in this program emphasized the importance of selecting the “right” journal to disseminate research findings in. Typically, the choice of the right journal is based on the journal's Clarivate impact factor score (Clarivate Analytics), a measure of how frequently a published article would be cited after publication.<sup>8</sup> Other factors for selecting a journal are the scientific rigor, editorial quality, peer-review process, reputation, and indexing status of the journal.<sup>9</sup> For me, I target my paper submissions on the basis of the journal's readership. For example, I purposefully submitted my papers to journals whose readers could use my research findings and implications to transform the emergency care environment to promote a violence-free work environment (eg, *Journal of Emergency Nursing*, *Journal of Hospital Administration*). Because I focused on the target audience of journals, I am now routinely contacted to provide consultations and lectures on building a safer work environment.

Although my research trajectory has been rewarding, my success was based on leveraging the support from, and talents of, multiple others, including past and present mentors across multiple professions (eg, psychology, victimology, public health, nursing). Through the coaching of this mentoring network, I learned to increase the breadth of my research skills. For example, in 2012, I served as the chair for the National Conference on Workplace Violence in Healthcare Settings. One of my mentors, Dr Bonnie Fisher, encouraged me to coordinate a special issue of a journal to report the best papers presented at the conference. In 2014, various conference proceedings were published in a special issue of *Work: A Journal of Prevention, Assessment & Rehabilitation*.<sup>10</sup> From this experience, I learned to manage a large team and coordinate a large project. Dr Corinne Peek-Asa coached me on conducting environmental assessments to determine risk for violence. Dr Rosa Maria Gonzalez-Guarda stressed the value of using community advisory boards,<sup>11</sup> which I now use and encourage my students to use as well.<sup>12</sup> Dr Treasa “Susie” Leming-Lee taught me quality improvement science and how to use it legitimately within my research focus area.<sup>13,14</sup> I received this mentoring over the course of years, with each experience expanding my skill set to allow me to conduct more rigorous research.

These mentoring relationships led to my roles as an ENA Board Director and Associate Dean for Research. During the RWJF Nurse Faculty Scholars program, Dr Malone served as 1 of my formal mentors. She encouraged me to use the leadership development training that the RWJF program was providing as a leader within the ENA. With her encouragement, I ran for the ENA Board of Directors 3 consecutive years and was elected as a director with a term starting in 2018, the same year that I was formally appointed as the Associate Dean for Research at the University of Cincinnati College of Nursing. As a director, I used my skills as an emergency nurse scientist while governing. For example, 1 of the duties of a board member is the “duty of care,” which requires decisions to be evidence-based and made after thoughtful debate.<sup>15</sup> While serving on the ENA Board of Directors, I participated with fellow board members in professional development on board governance, conflict-of-interest management, effective

communications, strategic planning, member accountability, media training, and how to lead during a crisis. I leveraged this professional development to be a more effective Associate Dean for Research where my responsibilities include fostering an inclusive work environment, setting the research strategic direction and benchmarks in collaboration with the faculty, communicating expectations for job performance, and participating in budget management.

During my career, I learned that a hallmark of a great research trajectory is not merely one's personal accomplishments, but also the accomplishments of those being mentored. I strive to model the best of the mentoring I received to my colleagues and students. Partly why I was able to be successful was because my mentors had me use an individual development plan<sup>16</sup>; therefore, I now leverage this tool to help my students and faculty members develop short- and long-term goals that will promote a rewarding research trajectory. A component of this tool includes specific goals for manuscript dissemination. Many of my mentees do ultimately publish their research, which has resulted in their collectively having more than 40 articles published in peer-reviewed journals. As I sought for additional ways to "pay it forward" in terms of the mentoring I received over the years, I partnered with Drs Maja Djukic and Cheryl Woods Giscombé to develop a writing mentorship award program with the *AJN*,<sup>17</sup> which has been awarded annually since 2016. This program provides acknowledgment and conference travel support to a new author selected for having published the best paper of the year in which the first author was mentored by another author on the publication.

### Key Takeaways

The purpose of this guest editorial was not to be self-flattering but to describe my research trajectory with examples that could be replicated by others. I have highlighted several successes that I have achieved during my career, but I have also experienced many failures and sidesteps. From both my successes and failures, I learned 5 key lessons that I believe can be used by others embarking on their research trajectory:

1. Seek writing and research mentors.
2. Write about what you know and have passion for.
3. Be purposeful regarding where you submit your research-based papers.
4. Develop a mentoring network to address multiple career aspects.
5. Pay it forward by mentoring others.

## DETAILS

<b>Subject:</b>	Strategic planning; Duty of care; Learning; Accountability; Lectures; Work environment; Dissemination; Leadership; Emergency services; Nursing; Governance; Debriefing; Career development; Nurses; Professional development; Medical research; Career development planning; Academic degrees
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# Alignment of Nurse Practitioner Educational Preparation and Scope of Practice in United States Emergency Departments: A Systematic Review of the Literature: JEN

## ABSTRACT (ENGLISH)

### Introduction

National debate persists surrounding the expanded use of nurse practitioners in the emergency department. Current understanding of the alignment of nurse practitioner educational preparation and practice parameters in United States emergency departments is inchoate. The objective of this review was to seek evidence to support that nurse practitioner education and training align with current practices in the emergency department.

### Methods

A Preferred Reporting Items for Systematic Reviews and Meta-Analyses guided systematic review of the existing literature was conducted of 4 relevant databases. Level of evidence and quality assignments were made for each article using Grading of Recommendations, Assessment, Development, and Evaluation or Confidence in Evidence from Reviews of Qualitative Research as appropriate.

### Results

Nurse practitioners are increasingly staffing emergency departments, providing care to both patients classified as high-acuity and low-acuity. Reports of nurse practitioner scope of practice vary widely. No studies evaluated alignment of educational preparation and training for actual clinical practice.

### Discussion

This review of the literature was inconclusive, and the review team was unable to find evidence that supports the alignment of nurse practitioner educational preparation and training with scope of clinical practice in United States emergency departments. Future research should seek to articulate the landscape of nurse practitioner academic preparation for specialty practice in the emergency department and to specifically examine the alignment of educational preparation with scope of practice and impact on clinical outcomes of patients seen in the emergency department.

## FULL TEXT

## DETAILS

<b>Subject:</b>	Workforce planning; Emergency medical care; Databases; Clinical training; Medical libraries; Nurse practitioners; Emergency services; Teams; Staffing; Clinical outcomes; Patient satisfaction; Qualitative research; Scope of practice; Systematic review; Workforce; Parameters; Nursing; Departments; Literature reviews; Education; Clinical medicine
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# Emergency Nursing Review Questions: July 2021: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/alignment-nurse-practitioner-educational/docview/2552049765/se-2?accountid=211160)

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## ABSTRACT (ENGLISH)

Correct answer: C Absence of urticaria, delay in the use of EPINEPHrine, severity of reaction, biphasic reaction, age above 65 years, cardiovascular or pulmonary disease, medication as a trigger, and uncontrolled asthma are all factors that increase the risk for severe, near-fatal, or fatal anaphylaxis. 1 2. Correct answer: B Biphasic anaphylactic reactions are characterized by an initial reaction, followed by an asymptomatic period of 1 hour or more and then a subsequent return of symptoms without further exposure to antigen. Correct answer: D The signs of pediatric cold shock include tachycardia; tachypnea without increased effort; delayed capillary refill time (>3 seconds); weak peripheral pulses; narrow pulse pressure; decreased urine output; irritability; decreased level of consciousness; and cold, pale, mottled, diaphoretic skin.

## FULL TEXT

These review questions are based on the Emergency Nursing Core Curriculum and other resources pertinent to emergency nursing practice. They offer emergency nurses an opportunity to test their knowledge about their practice.

### QUESTIONS

1. A patient presents to the emergency department with an anaphylactic reaction. Which factor puts them at an increased risk for severe, near-fatal, or fatal anaphylaxis?

- A.Age below 65 years
- B.Food as a trigger
- C.Absence of urticaria
- D.Diabetes

2. The most effective medication to treat anaphylaxis:

- A.EPINEPHrine
- B.H1 antihistamines
- C.Steroids
- D.H2 antihistamines

3. A patient returns to your emergency department after being treated for anaphylaxis 72 hours earlier. The initial reaction occurred 1 hour after taking an oral dose of Augmentin. They were adequately treated with steroids, EPINEPHrine, and antihistamines. Their symptoms resolved, and they were discharged home. They present to the emergency department today with complaints of a hoarse voice, urticaria, and tongue-swelling that began 15 minutes before their arrival. They have not taken any medications since discharge. This patient is most likely experiencing:

- A.Uniphasic anaphylaxis
- B.Biphasic anaphylaxis
- C.Protracted anaphylaxis
- D.Viral illness

4. A 2-year-old presents to the emergency department with complaint of a barking cough, stridor at rest, and use of accessory muscles. They are interactive and alert. What medications do you anticipate this patient receiving?

- A.Racemic EPINEPHrine through intravenous (IV) infusion and steroids through nebulizer
- B.Racemic EPINEPHrine through nebulizer and steroids orally or through IV infusion/intramuscular (IM) injection
- C.Albuterol through nebulizer and acetaminophen orally
- D.Steroids orally or through IV infusion/IM injection and albuterol through nebulizer

5. Signs of cold shock in a pediatric patient include:

- A.Wide pulse pressure
- B.Increased urine output
- C.Flushed skin
- D.Weak peripheral pulses

## ANSWERS

### 1. Correct answer: C

Absence of urticaria, delay in the use of EPINEPHrine, severity of reaction, biphasic reaction, age above 65 years, cardiovascular or pulmonary disease, medication as a trigger, and uncontrolled asthma are all factors that increase the risk for severe, near-fatal, or fatal anaphylaxis.<sup>1</sup>

### 2. Correct answer: A

EPINEPHrine is the most effective treatment for anaphylaxis. It is a nonselective agonist of all adrenergic receptors, which are present in every body system affected by anaphylaxis. H1 antihistamines, H2 antihistamines, and steroids are all components used to adequately treat anaphylaxis; however, EPINEPHrine remains the most effective treatment.<sup>2</sup>

### 3. Correct answer: B

Biphasic anaphylactic reactions are characterized by an initial reaction, followed by an asymptomatic period of 1 hour or more and then a subsequent return of symptoms without further exposure to antigen. Uniphasic anaphylactic reactions typically peak within hours after symptom onset and then either resolve spontaneously or after treatment. Protracted anaphylactic reactions last hours to days without clearly resolving completely. This is not the typical presentation of a viral illness.<sup>3</sup>

### 4. Correct answer: B

Moderate croup is characterized by barking cough, stridor at rest, chest retractions, and use of accessory muscles. Patient remains alert and interactive. Management includes keeping patient calm and administering nebulized racemic EPINEPHrine and steroids orally or through IV infusion/IM injection. They should be observed after treatment for a minimum of 4 hours to monitor for any rebound respiratory distress. Croup is almost always viral in origin and does not require antibiotics unless there are additional signs or symptoms of a concurrent bacterial infection.<sup>4</sup>

### 5. Correct answer: D

The signs of pediatric cold shock include tachycardia; tachypnea without increased effort; delayed capillary refill time (>3 seconds); weak peripheral pulses; narrow pulse pressure; decreased urine output; irritability; decreased level of consciousness; and cold, pale, mottled, diaphoretic skin. These signs may often be subtle and require getting a detailed history. The signs of warm shock include warm and flushed skin, brisk capillary refill, and bounding pulses.<sup>4</sup>

## DETAILS

<b>Subject:</b>	Asthma; Emergency medical care; Urticaria; Delayed; Drugs; Anaphylaxis; Adrenaline; Consciousness; Histamine; Cardiovascular diseases; Emergency services; Skin; Core curriculum; Nursing; Pediatrics; Irritability; Answers
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# Commentary on “A CLIMATE: A Tool for Assessment of Climate-Change–Related Health Consequences in the Emergency Department”: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

[...]they can ensure that health care and public health systems are resilient in the face of climate change and weather extremes and, at the same time, are taking steps to become carbon-neutral and optimally sustainable. Owing to this focus on ultimate disposition, it may not be feasible to accomplish the full framework within the ED visit, especially for patients who are critically ill. [...]it is vital to expand this framework to health care providers working in the inpatient setting as well as outpatient settings. From fact sheets and videos to complete lesson plans, there are many valuable resources available to aid in education of both members of the public as well as health professionals to learn more about the health impacts of climate change.<sup>8</sup> Finally, providers can work to systematically reduce the carbon footprint of emergency departments and spur larger health system changes through interventions that improve energy resource management and operational expenditures.<sup>9</sup> Perhaps the most devastating aspect of climate change's impacts on health is that those who are already vulnerable owing to gender, race, ethnicity, geography, socioeconomic status, or health status are most likely to suffer the worst of the impacts.<sup>1</sup> Health outcomes for vulnerable individuals depend on a multitude of factors, many of which can be addressed through careful application of the A CLIMATE framework<sup>2</sup> during clinical encounters. Because emergency providers are already trained to recognize social determinants of health and vulnerability, this framework allows for that understanding to be combined with climate change and health awareness, ultimately acting as a positive force in protecting the most vulnerable from climate change impacts.

## FULL TEXT

The health manifestations of climate change are becoming increasingly common and present urgent and complex challenges for emergency clinicians.<sup>1</sup> As temperatures rise, air quality worsens, extreme weather events become more frequent, and those who need medical care turn to their local emergency department as their primary point of health system access. Although climate change may stress many aspects of the health system, emergency care—on the front lines of acute care nationwide and the nation's primary safety net provider—stands to bear the largest burden. In “A CLIMATE: A Tool for Assessment of Climate-Change–Related Health Consequences in the Emergency Department,” Nicholas et al<sup>2</sup> put forth a vital framework for the integration of climate and health knowledge in the clinical setting, laying the foundation for how we can begin to save lives now and in an inevitably hotter and more unpredictable future. Crucially, this framework has broad applicability not just to nursing providers, but also to all members of the emergency care team: physicians, advanced practice providers, occupational therapists, physical therapists, social workers, and care coordinators. To demonstrate applicability, the authors present a case example that demonstrates how a clinical climate lens improves the outcome of a patient in the emergency department who is critically ill and further increases her resilience toward future climate-related health impacts by identifying and addressing the root causes of her vulnerability.

Any new or evolving disease process or exposure requires education of medical professionals to adapt and intervene. Climate change is no exception. It affects the patients we see on a daily basis as well as the very health systems whose continuous operations we rely on for the provision of clinical care. Historically, there has been very

little education or training for clinicians in regard to how climate change affects human health,<sup>3</sup> and providers are generally unaware of how profoundly interlinked these 2 entities are. However, as Nicholas et al<sup>2</sup> point out, disaster preparedness, environmental emergency response, and health emergency management are core tenets of our practice that are already being affected in the face of climate change. As described by Lemery et al,<sup>4</sup> health care professionals have 3 primary roles in supporting broader societal efforts to address the climate crisis. First, they must protect both individual and community health from the increasingly severe health threats posed by climate change and weather extremes. Second, they can ensure that health care and public health systems are resilient in the face of climate change and weather extremes and, at the same time, are taking steps to become carbon-neutral and optimally sustainable. And third, they can bring their voices and scientific expertise to advocate for cross-sectoral solutions to the climate crisis. Clearly, to be effective in these 3 areas, health care workers and leaders must have sufficient training and access to evidence-based guidance. As stated by Nicholas et al,<sup>2</sup> health care professional involvement in the climate and health crisis is not only imperative to save the lives of patients, but is also deeply imbued in the ethos of our professions. Because nurses are the most trusted professionals in the United States, with physicians close behind,<sup>5</sup> there is a huge opportunity to use this trust to educate patients and the public and to prepare ourselves.

From a patient suffering from chronic obstructive pulmonary disease who requires intubation in the setting of poor air quality owing to the increasing frequency of wildfires to a patient with suicidal thoughts after being displaced by a hurricane, emergency providers see climate impacts on health firsthand.<sup>6</sup> Thus, as emergency clinicians, we have meaningful opportunities to improve patient outcomes and health care delivery.<sup>6</sup> The A CLIMATE framework<sup>2</sup> helps providers and patients understand the linkages between environmental conditions and health. When patients suffer from an acute exacerbation of a previously well-controlled disease or experience a traumatic injury from an extreme weather event, the team treating them can make a strong connection between climate change and their own personal health. By connecting the changing climate to their medical condition and framing climate change as a health emergency, we have the opportunity to make a lasting impression on patients and help them protect their own health.

Although A CLIMATE<sup>2</sup> is a much-needed framework, there are some limitations. These limitations include time restrictions common in many emergency departments, as well as the lack of provider knowledge regarding climate change and health. This framework would ideally be applied in every emergency department at all times; however, the reality of time constraints, patient volumes, and provider bandwidth are likely to impede that from happening. Success in executing this framework therefore requires an interdisciplinary approach. Members of the patient care team will likely execute different aspects of the framework. This practical reality underscores the importance of providing climate-and-health education to all members of the ED care team. Emergency departments are also oriented toward rapid movement of patients out of the department to the admission floor or discharge home after evaluation. Owing to this focus on ultimate disposition, it may not be feasible to accomplish the full framework within the ED visit, especially for patients who are critically ill. Therefore, it is vital to expand this framework to health care providers working in the inpatient setting as well as outpatient settings.

The individual components of the mnemonic A CLIMATE<sup>2</sup> provide a step-by-step process for implementing concepts of climate and health in the clinical setting. Some of the individual elements of this framework are possibly redundant (eg, Learn from a climate assessment, Implement a climate history), but there is value in having an easy way for providers to remember to keep climate in mind, even if they do not accomplish each component of the mnemonic for each patient. Importantly, knowledge of health impacts due to climate change can often initially elicit feelings of helplessness or hopelessness (for providers and patients); therefore, there must also be a focus on actionable steps for the patient and provider to take to address their health. Perhaps the last “E” could include “Empower” in addition to “Evaluate and Educate.” Further, the A CLIMATE<sup>2</sup> mnemonic should also include a way to empower nursing professionals (and other health care providers) to take climate action even beyond their clinical roles and advocate for climate change mitigation and adaptation, as well as health care sustainability.

Providers can take actions beyond their clinical duties in many different ways. They can lead interdisciplinary

research to both better understand the health and health care system effects of climate change and develop an evidence-based approach for adaptation and health protection. They can continue to strengthen partnerships with public health entities to further interventions such as health early warning systems and epidemiologic surveillance for infectious disease. They can also incorporate climate education into training programs as well as increase learning opportunities for professional education. The Global Consortium on Climate and Health Education, based out of the Mailman School of Public Health at Columbia University, has developed climate-and-health core competencies, which are recommended for all health professionals and serve as a guide for all specialties and clinical roles.<sup>7</sup> The National Institute of Environmental Health Sciences has also produced ample resources for climate and health education. From fact sheets and videos to complete lesson plans, there are many valuable resources available to aid in education of both members of the public as well as health professionals to learn more about the health impacts of climate change.<sup>8</sup> Finally, providers can work to systematically reduce the carbon footprint of emergency departments and spur larger health system changes through interventions that improve energy resource management and operational expenditures.<sup>9</sup>

Perhaps the most devastating aspect of climate change's impacts on health is that those who are already vulnerable owing to gender, race, ethnicity, geography, socioeconomics, or health status are most likely to suffer the worst of the impacts.<sup>1</sup> Health outcomes for vulnerable individuals depend on a multitude of factors, many of which can be addressed through careful application of the A CLIMATE framework<sup>2</sup> during clinical encounters. Because emergency providers are already trained to recognize social determinants of health and vulnerability, this framework allows for that understanding to be combined with climate change and health awareness, ultimately acting as a positive force in protecting the most vulnerable from climate change impacts. Well known as society's safety net and primary health care providers for many of the most underserved patients, the ED team can further protect the health of vulnerable populations by adopting and enacting this framework.

Climate change is a health emergency, and its impacts are worsening the health of patients and disrupting the ability to give care.<sup>1</sup> The A CLIMATE framework<sup>2</sup> provides a much-needed next step to empower providers to integrate the concepts of climate change and health into daily clinical practice.

## DETAILS

<b>Subject:</b>	Emergency medical care; Public health; Medical personnel; Interdisciplinary aspects; Weather; Race; Adaptation; Health status; Geography; Emergency services; Personal health; Outdoor air quality; Climate change; Patients; Ethnicity; Clinical outcomes; Health education; Emergency preparedness; Change agents; Health care; Vulnerability; Social factors; Empowerment; Resource management; Emergency communications systems; Extremes; Expenditures; Departments; Inpatient care
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# Patient Characteristics of Persons Dead on Arrival Received in a Danish Emergency Department: A Retrospective Review of Health Records: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

### Introduction

In addition to treating living patients, emergency nurses are also responsible for receiving and caring for persons who are dead on arrival and their relatives. There is limited knowledge about the dead on arrival patient and family population as well as care practice for the dead and their relatives. The first step in improving care for dead on arrival persons is to know the size and characteristics of the population. Therefore, the aim of this study was to describe the size and characteristics of the dead on arrival population in a Danish emergency department.

## Methods

A retrospective review of health records was undertaken for all consecutive dead on arrival persons received in 1 Danish emergency department between January 2018 and December 2019.

## Results

A total of 719 dead on arrival persons were included, 350 in 2018 and 369 in 2019. Males accounted for 64%. The mean age was 71 years with a range from 18 to 102 years. The place of death was 80% at home, and more than half (54%) were found either dead or dying by a spouse, cohabitant, or son/daughter. In most cases, the cause of death was described as unknown (92%), whereas suicide and accidents accounted for 8%.

## Discussion

The population of dead on arrival persons in a Danish emergency department were mainly men, found dying or dead by relatives and brought in from home. Additional research and development are warranted regarding care practices for dead on arrival and their families in the emergency department.

## FULL TEXT

## DETAILS

<b>Subject:</b>	Men; Patients; Emergency medical care; Population; Accidents; Trauma; Death & dying; Relatives; Place of death; Nursing care; Hospitals; Cardiopulmonary resuscitation--CPR; Nurses; Emergency services; Grief; Quality of care; Research & development--R & D; Health records; Pediatrics; Characteristics; Suicide; Suicides & suicide attempts
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## A Case for Case Reviews: JEN

[ProQuest document link](#)

### ABSTRACT (ENGLISH)

In the rural setting, we also worked many nights and weekends with physicians who were not board-certified in emergency medicine but were willing to cover the shift with exceptional backup support from anesthesia on call or advanced paramedics should emergent intubation or other acute stabilization skills be required. Time constraints such as those involved in completing a quality improvement–focused capstone project in 1 academic semester are especially dissonant in the ED setting where there is clear and profound seasonality in the types and volumes of presentations.<sup>5,6</sup> Furthermore, sustainability over time is a crucial component of implementation science and quality improvement in the clinical setting, and addressing sustainability tends to be well outside the feasible scope of the usual single DNP project time frame.<sup>7</sup> The emergency department in January, susceptible to patient-volume spikes from infectious epidemics such as annual influenza, is a vastly different context from the same emergency department in June wherein the team can often be found in the throes of the traumatic injuries peak of the 100 days of summer. [...]the time is ripe to revisit, reimagine, and reinvent educational pathways for advanced emergency practice, clinical residencies or fellowships, interdisciplinary preceptorship, and capstone project focus and requirements. At JEN, we strongly encourage the submission of case reviews that are relevant to care in the ED setting from authors across all levels of educational preparation and professional development using the CARE (for CAse REports) transparent reporting guidelines.<sup>8</sup> Astute observation of both clinical and laboratory anomalies has long been an essential starting point for far-reaching scientific discoveries and breakthroughs.<sup>9</sup> Case reviews have been dubbed as the “first line” of evidence-based practice in the evidence hierarchy.<sup>10</sup> Although we acknowledge

that there is an important hierarchy of evidence to inform the efficacy of practice interventions with a high value placed on the well-designed randomized controlled trial at the top of the pyramid, case reviews serve many important additional purposes in evidence-based nursing practice and clinical reasoning development. [...]an important resource about ongoing research and evidence-based education for patients and clinicians on rare diseases can be found at the Genetic and Rare Diseases Information Center of the National Institutes of Health.<sup>11</sup> Case reviews serve as an essential problem-based learning tool to develop and refine clinical reasoning processes in education and professional development.

## FULL TEXT

Unlabelled image

“When you hear hoofbeats, think horses and not zebras.” Our new locum tenens attending physician admonished my emergency nursing colleague by invoking a common metaphor. This use of the metaphor suggested that the patient’s problem was most likely a common diagnosis and not a rare or unusual disease. This is usually sound advice to maintain efficiency in a crowded and under-resourced emergency department. My colleague seemed to silently weigh the risks and benefits to the patient of each course of possible action, including what it would mean to repeat his request, and with what urgency. He chose to remain silent in the exchange, nodded professionally, and walked past us whispering a barely perceptible, “Just wait until the good doctor learns about the zonkeys.” We concealed our knowing smiles as his humor diffused the interpersonal tension. We knew he was referring to the local zoo’s zonkey, the crossbred offspring of a zebra and donkey. As a high-performing team, we trusted our colleague to speak up again if it was a matter of immediate patient safety and would have offered our mutual support. We could also trust our colleague to creatively advise and empower the patient to seek additional and specific testing on an outpatient basis. This nurse knew in depth which expert local providers would be empathetic to the patient’s concerns if the patient wished to pursue further diagnostic testing.

In hindsight, there was so little to laugh about when examining the outcomes of the exchange. My expert emergency nursing colleague was in graduate school to become a nurse practitioner. He was from a local, low-income background and understood the community, the resources, and the power dynamics, as well as the clinical care applications in the emergency department. Once he completed his nurse practitioner credentialing process, he moved into another specialty where his skills were valued and supported by the entire interdisciplinary clinical team. In turn, he then recruited another exceptional emergency nurse coworker to follow in his footsteps.

We had a stellar team of attending physicians who earned our great respect in the ED setting. In the rural setting, we also worked many nights and weekends with physicians who were not board-certified in emergency medicine but were willing to cover the shift with exceptional backup support from anesthesia on call or advanced paramedics should emergent intubation or other acute stabilization skills be required. We rapidly formed high-functioning clinical teams with numerous newly introduced locum tenens physicians. Although most of these clinical teamwork experiences were outstanding, they were not always so. The hospital organization required a provider with physician credentials to meet reimbursement and regulatory standards set by national decision makers. These national decision makers may have no inkling about the local problems, resources, or dynamics in this rural community.

There were instances where these regulatory and reimbursement requirements extracted a great financial expense from the community without an equivalent return on this monetary investment in high-quality, competent, and culturally appropriate clinical care. I have little doubt that the community would have been better served if the nurse practitioners, who were often lifelong members of the community themselves, had been welcomed, valued, invested in, trained, and supported to function to the full extent of their professional potential. This full extent of professional potential could include serving in the attending provider role when needed, after adequate training preparation with interdisciplinary preceptors who currently serve in this role. As a specialty, we can hemorrhage our best and brightest colleagues to positive career paths, trajectories, and progressions where medical teams and leadership authentically integrate and elevate the full value of advanced practice nurses’ contributions. As nursing practice evolves to meet the health care needs of the public, the integration and delineation of emergency medical, nursing,

and advanced practice roles and responsibilities simply cannot be viewed as zero-sum games or turf wars. Aligned with the experiences I relay in this personal narrative of my professional experience, the National Academies of Sciences, Engineering, and Medicine has just released an important report entitled “The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity.”<sup>1</sup> This report provides a roadmap to address the need to both transform nursing education and remove practice barriers for advanced practice registered nurses to meet the health needs of the public we serve.

In regard to nurse practitioner educational preparation, Veenema et al<sup>2</sup> conducted a systematic review of the literature that appears in this issue of *Journal of Emergency Nursing (JEN)*. The authors identified a dearth of published evidence on training specifically for practice in the emergency specialty. Of particular interest is the need for collaborative training with emergency medicine preceptors and programs. The authors synthesize evidence that most nurse practitioners have expressed a desire for an emergency medicine fellowship. However, it is unclear from this evidence that these nurse practitioners would be willing to geographically relocate as many physicians do to match with emergency clinical fellowship training opportunities. This important systematic review by Veenema et al<sup>2</sup> advances the scholarship related to the Emergency Nurses Association's Position Statement entitled “Advanced Practice Registered Nurses in the Emergency Care Setting,” which calls for updated scopes of practice, core competencies, and specialty education.<sup>3</sup>

McCauley et al<sup>4</sup> recently published a transparent and essential debate from the academic dean's perspective about programs to prepare advanced practice nurses to complete the doctor of nursing practice (DNP) degree. Here, the academic leadership amplifies the message found in Veenema et al<sup>2</sup> about the potential for increasing clinical preparation hours, including debating the placement of residency or fellowship before or after degree conferment to achieve readiness for practice. DNP students invest 500 hours each in a capstone project, which is often directed at a leadership initiative topic rather than at enhanced clinical readiness. Although this leadership focus may have been understandable in the earlier evolution of the degree when most DNP students already had substantial clinical practice and may have already been prepared as nurse practitioners at the master's degree level, the contemporary preparation needs to be revisited because more students work on continuous education to the doctoral level rather than inserting periods of nursing practice and expertise development at a clinical site between degree program enrollments. Clinical experience and expertise development in the ED setting are unique. Clinical practice in the emergency department requires more preparation to respond to one of the broadest ranges of acuity, age, differential diagnoses, and affected body system than almost any other specialty. Furthermore, as implementation science and quality improvement methods and standards evolve, devoting only 500 hours to a leadership project may prove to be too time-constrained to allow for adequately meaningful methodological designs and measures. Time constraints such as those involved in completing a quality improvement-focused capstone project in 1 academic semester are especially dissonant in the ED setting where there is clear and profound seasonality in the types and volumes of presentations.<sup>5,6</sup> Furthermore, sustainability over time is a crucial component of implementation science and quality improvement in the clinical setting, and addressing sustainability tends to be well outside the feasible scope of the usual single DNP project time frame.<sup>7</sup> The emergency department in January, susceptible to patient-volume spikes from infectious epidemics such as annual influenza, is a vastly different context from the same emergency department in June wherein the team can often be found in the throes of the traumatic injuries peak of the 100 days of summer. Thus, the time is ripe to revisit, reimagine, and reinvent educational pathways for advanced emergency practice, clinical residencies or fellowships, interdisciplinary preceptorship, and capstone project focus and requirements.

At *JEN*, we strongly encourage the submission of case reviews that are relevant to care in the ED setting from authors across all levels of educational preparation and professional development using the CARE (for CAse REports) transparent reporting guidelines.<sup>8</sup> Astute observation of both clinical and laboratory anomalies has long been an essential starting point for far-reaching scientific discoveries and breakthroughs.<sup>9</sup> Case reviews have been dubbed as the “first line” of evidence-based practice in the evidence hierarchy.<sup>10</sup> Although we acknowledge that there is an important hierarchy of evidence to inform the efficacy of practice interventions with a high value placed



on the well-designed randomized controlled trial at the top of the pyramid, case reviews serve many important additional purposes in evidence-based nursing practice and clinical reasoning development. As observational studies of a single patient's clinical course, case reviews may serve as the highest level of possible evidence for extremely rare diseases or unusual emergency presentations where a sample size with adequate statistical power would be impossible to achieve. Meanwhile, an important resource about ongoing research and evidence-based education for patients and clinicians on rare diseases can be found at the Genetic and Rare Diseases Information Center of the National Institutes of Health.<sup>11</sup>

Case reviews serve as an essential problem-based learning tool to develop and refine clinical reasoning processes in education and professional development. Case reviews are also indispensable for disseminating clinical information about novel diseases or presentations; rare diseases or presentations; treatment side effects (incidentally, beneficial as well as adverse), overdose, or poisoning; complex mechanisms of disease or unusual multimorbidity interactions; elucidating the clinical reasoning of an expert author; general education or audit; or unique, rare, or unusual presentations of common disease.<sup>12-15</sup> Given that clinical education continues to evolve with increasing integration of simulation as part of clinical practice preparation and educational program requirements of clinical time, published case reports may also serve as a crucial foundation for educational simulation scenarios<sup>4</sup> to prepare the next generation for "real world," practice-relevant cases. Last July, Metheny and Krieger<sup>16</sup> disseminated a publication innovation using a systematic review of case reports. Here, they furthered the systematic review methodology, allowing the clinical reader comprehensive insights into a rare toxicity. It would serve as a fruitful leadership dialogue and debate to consider if this type of in-depth systematic review of a case report could serve as a model for academic capstone projects, particularly to advance the clinical reasoning of those in graduate programs seeking qualifications as advanced emergency care practitioners. The development and depth of clinical reasoning required for an exemplary published case report may generate a greater impact for both the student and the published literature, replacing the currently more common option of a single-site, single academic semester quality improvement initiative with no contemporaneous control condition. We welcome the sharing of clinical mastery evident in a well-designed systematic review of case report manuscripts relevant to the emergency clinical setting from students, expert interdisciplinary colleagues, scholars, and clinicians across all levels of practice. Our case for case reviews is strengthened by the expert clinicians' need to anticipate, discern, and differentiate the metaphorical horse (common), zebra (rare), and zonkey (unusual and unanticipated combinations) of emergency care presentations and diagnoses.

In addition to original research evidence, evidence-based practice columns, and systematic review, we are thrilled to disseminate and integrate several case reports in this issue of *JEN*. Nicholas et al<sup>17</sup> provide a case example of an older adult presenting with heat-related illness to illustrate the introduction of their innovative practice mnemonic A CLIMATE framework/assessment tool for use in the emergency department. A CLIMATE stands for (1) **A**ct immediately to stabilize life-threatening conditions, (2) **C**onsciously consider climate, (3) **L**earn from a climate history, (4) **I**mplement a climate-focused assessment, (5) **M**anage ongoing climate emergency care, (6) **A**ct to integrate a plan addressing physical and mental health climate symptoms, (7) **T**ell the patient how climate affects their health, and (8) **E**valuate, educate, and refer for long-term follow-up. Consistent with the theme of health effects of climate change in this issue,<sup>18</sup> Baez and Suffoletto<sup>19</sup> provide a case report on Lyme disease sequelae in a potentially commonly overlooked differential diagnosis for an ED presentation. Hall and Hall<sup>20</sup> provide a case report of a patient who presented to the emergency department in circulatory shock and hypoxia and required intubation, ventilation, vasopressor support, and emergent dialysis. The case involved critical nursing interventions and astute clinical investigation in determining the differential diagnosis and causal agent. The authors have generously provided an infographic to aid in precepting and educating new emergency nurses about preparing for emergent rapid-sequence intubation. James and London<sup>21</sup> disseminate another case review requiring acute clinical mastery in responding to cardiogenic shock, third-degree heart block, and inability to tolerate transcutaneous pacing. Finally, McNicholas et al<sup>22</sup> review a case of internal abdominal hemorrhage in an adolescent with von Willebrand disease. We hope our reader's practice, education, policy, and research are enhanced with the clinical wisdom, insights, and

fast-paced practice-relevant content in these case reviews. Our case for case reviews rests on the clinical practice relevance, depth of clinical mastery, and impact on clinical reasoning inherent to this form of frontline evidence.

## DETAILS

<b>Subject:</b>	Reimbursement; Emergency medical care; Quality management; Problem based learning; Paramedics; Clinical medicine; Professional development; Interdisciplinary aspects; Physicians; Nurse practitioners; Emergency services; Efficacy; On call; Evidence based research; Evidence-based practice; Physical trauma; Advanced practice nurses; Medicine; Anesthesia; Artificial respiration; Teams; Influenza; Rare diseases; Evidence-based nursing; Epidemics; Research; Clinical nursing; Systematic review; Education; Clinical trials; Professional practice; Clinical decision making
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# Emergency Nurses' Knowledge, Attitudes, and Practices Related to Blood Sample Hemolysis Prevention: An Exploratory Descriptive Study: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

### Introduction

The aim of the study was to identify emergency nurses' knowledge, attitudes, and practices related to blood sample hemolysis prevention and explore associations between these factors and demographic characteristics. The current state is unknown. Understanding baseline knowledge, attitudes, and practices addresses a gap in the literature.

### Method

An exploratory, descriptive design with cross-sectional survey methodology employing a study-specific instrument was used.

### Results

Request for participation email was sent to a random sample of 5000 Emergency Nurses Association members, and 427 usable surveys were returned (response rate = 8.5%). Mean years in nursing was 13.85 (standard deviation = 10.78), and 226 (52.9%) were certified emergency nurses. Only 85 participants (19.9%) answered all 3 knowledge questions correctly. Answering the 3 knowledge questions correctly was significantly associated with being a certified emergency nurse ( $\chi^2 = 7.15, P < .01$ ). Participant responses to attitude items about the sequelae of blood sample hemolysis were skewed toward agreement, and most attitude items were associated with whom participants reported as being primarily responsible for phlebotomy. Emergency nurses remain primarily responsible for phlebotomy as well as addressing hemolyzed samples, but few reported that blood sample hemolysis was addressed at a departmental level.

### Discussion

Findings suggest that emergency nurses lack some knowledge related to blood sample hemolysis prevention best practices. Attitudes toward phlebotomy practices may be 1 reason practice has not changed. Every effort should be made to prevent hemolyzed blood samples to decrease delays and costs in emergency care.

## FULL TEXT

## DETAILS

<b>Subject:</b>	Emergency medical care; Electron tubes; Prevention; Investigations; Attitudes; Health care expenditures; Knowledge; Theory of planned behavior; Blood tests; Veins & arteries; Nurses; Emergency services; Polls & surveys; Best practice; Nursing; Departments; Phlebotomy; Electronic mail systems; Demography; Response rates
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# The Other Side of Immediate Bedding: A Call to Action to the Research Community: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

In "Triaging the Emergency Department, not the Patient: United States Emergency Nurses' Experience of the Triage Process," Wolf et al<sup>2</sup> define immediate bedding, or "pull until full," as the intake process of bringing patients directly to treatment areas without screening, triage, or physiological assessment. Lack of timely, accessible primary care and ED crowding are well established concerns in the emergency department.<sup>3</sup> These concerns contribute to delays in completing triage within the recommended time frames.<sup>2-4</sup> Studies have shown that direct bedding can significantly reduce door-to-provider times and left-without-being-seen rates.<sup>5,6</sup> But before we consider increasing patient throughput as synonymous with quality care, consider this illustrative scenario. Additional, more complex studies need to be performed that consider factors such as nurse staffing levels, including demographics, certifications, and experience; delays in care; patient quality outcomes; and perhaps an emergency department's physical design before pull-until-full, direct-bedding, or quick-look models are declared a best practice.<sup>2,5,6</sup> For a pull-until-full intake process to maintain or improve the quality of care delivered, resources must be present and aligned to nursing, patient, and unit needs.<sup>6,7</sup> Appropriate staffing can increase throughput, improve flow, and decrease costs; and solely focusing on productivity can compromise quality of care.<sup>8</sup> The Emergency Nurses Association<sup>9</sup> confirms that adequate staffing has contributed to the reported success of prior initiatives regarding pull-until-full/direct-bedding practices, but this cannot be validated until research that examines this intake practice includes staffing levels and other vital information in its analyses.

## FULL TEXT

Dear Editor:

It is every triage nurse's worst nightmare to lose a patient in their lobby who was waiting for care.<sup>1</sup> But could patients also be at risk of suboptimal outcomes in a patient care room while waiting to see a provider? This question and the unintended consequences of direct bedding are worthy of rigorous, systematic exploration.

In "Triaging the Emergency Department, not the Patient: United States Emergency Nurses' Experience of the Triage Process," Wolf et al<sup>2</sup> define immediate bedding, or "pull until full," as the intake process of bringing patients directly to treatment areas without screening, triage, or physiological assessment.

Lack of timely, accessible primary care and ED crowding are well established concerns in the emergency department.<sup>3</sup> These concerns contribute to delays in completing triage within the recommended time frames.<sup>2-4</sup> Studies have shown that direct bedding can significantly reduce door-to-provider times and left-without-being-seen rates.<sup>5,6</sup> But before we consider increasing patient throughput as synonymous with quality care, consider this illustrative scenario.

At 2 pm, a triage nurse leaves the ED lobby with an older adult, who speaks English as a second language, with a chief complaint of shortness of breath and palpitations. The triage nurse rooms the patient after paging the communication devices of the primary nurse, Sarah, and the technician, Rob. At this time, Sarah has received a critically ill patient who just arrived by ambulance and whom she is attending to next door. This patient will likely

require intubation. Rob has been temporarily reassigned to another area, with no one available to cover his assignment. The triage nurse assists the patient from the wheelchair to the gurney. “Your doctor and nurse will be in shortly,” they say to the patient. Briskly, they return to the lobby, which has now been unattended for 10 minutes. At 2.30 pm, as Sarah heads to the computed tomography department with her intubated patient, she notices a patient in a room that normally does not have patients in it. She asks the charge nurse to follow up on this because she will likely start tissue plasminogen activator therapy once she returns from the computed tomography department. Rob was relieved of his temporary assignment by an incoming technician and could return to his pod at approximately 3.45 pm. When he returns to his side of the department, he quickly learns that no one has seen this patient and on the basis of the patient’s chief complaint he meets the protocol for an immediate electrocardiogram. Once an electrocardiogram (revealing ST elevation) is performed, the emergency physician and charge nurse are notified immediately. Sarah returns from the intensive care unit at 4.15 pm just after the ST-segment elevation myocardial infarction notification was paged out. She jumps into the room to start an intravenous catheter and provide care to the patient.

Sarah described the situation in the hospital’s occurrence reporting system. It was not the first one she had submitted, and she knew that it would likely not be the last. This dynamic, in addition to the brand-new and much larger emergency department that they had moved into, was making the recently implemented direct-bedding intake process extremely risky.

Additional, more complex studies need to be performed that consider factors such as nurse staffing levels, including demographics, certifications, and experience; delays in care; patient quality outcomes; and perhaps an emergency department’s physical design before pull-until-full, direct-bedding, or quick-look models are declared a best practice.<sup>2</sup><sup>5,6</sup> For a pull-until-full intake process to maintain or improve the quality of care delivered, resources must be present and aligned to nursing, patient, and unit needs.<sup>6,7</sup> Appropriate staffing can increase throughput, improve flow, and decrease costs; and solely focusing on productivity can compromise quality of care.<sup>8</sup> The Emergency Nurses Association<sup>9</sup> confirms that adequate staffing has contributed to the reported success of prior initiatives regarding pull-until-full/direct-bedding practices, but this cannot be validated until research that examines this intake practice includes staffing levels and other vital information in its analyses. In their most recent investigation to establish research priorities for the Emergency Severity Index, Wolf and Delao<sup>10</sup> found the work environment and its effect on triage accuracy and processes to be the lowest priority focus. I am aware that emergency nurses who work triage regularly may feel differently, but I am reassured by the intentional focus of future research on triage in general and ESI in particular.

I would like to reiterate the conclusion of Wolf et al<sup>2</sup> and stress that “Future research should focus on intervention and comparison studies examining the effect of staffing, nurse experience, hospital policies, and length of shift on the accuracy of triage decision making.” Before we consider pull-until-full intake models as a safe or best practice, let us make sure that the research that is coming out on this topic is comprehensive and includes quality outcomes beyond the time metrics of door-to-doctor times and throughput and even beyond left-without-being-seen rates and patient satisfaction.<sup>5,6</sup> These are important, but experience suggests that there are deeper implications to this practice than are evident in the existing literature. Perhaps Dr Wolf and her research team would be willing to provide specific study design ideas to emergency nurses wishing to examine direct-bedding triage models further.

—Taryn Amberson, MPH, BSN, RN, CEN, Registered Nurse, Hawaii State Council, Pali Momi Medical Center, Aiea, HI; E-mail: amberson.taryn@gmail.com

## DETAILS

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## Response to Routsolias and Mycyk Letter: JEN

## ABSTRACT (ENGLISH)

[...]patients with opioid withdrawal symptoms benefit from its agonistic properties in the form of diminished cravings; however, its ceiling effect prevents the consequences of respiratory depression and euphoria present with full  $\mu$ -receptor agonists such as methadone.<sup>1</sup> These characteristics contribute to buprenorphine's excellent safety and efficacy profiles, protecting patients with OUD from overdose and death. [...]we respectfully disagree with the notion that "medication alone is not sufficient treatment for OUD."<sup>11</sup> In addition to the difficulties accessing treatment for OUD—including buprenorphine or buprenorphine-naloxone—that our colleagues in Chicago describe and we have seen in Maine as well, emerging literature points to other pandemic-related challenges.<sup>12,13</sup> First, evidence suggests that people with OUD may be at higher risk for experiencing COVID-19 infection due to a higher prevalence of pre-existing conditions, smoking, opioid-related immunosuppression, and the presence of structural lung disease.<sup>14-17</sup> In addition, those with OUD are more likely to reside in congregate living situations such as group recovery housing, shelters, and correctional facilities where they may be unable to maintain social distancing.<sup>14,15</sup> People with OUD also make up a disproportionate share of the United States unsheltered and unstably housed population, placing them at further risk for exposure to COVID-19.<sup>16,18</sup> Although social distancing is an important public health measure, there is potential for the isolation associated with COVID-19 to cause harm for those with OUD.<sup>19</sup> There is a strong association between social isolation, mood, and substance use disorders.<sup>20</sup> Isolation can act as a trigger for some, exacerbating existing patterns of substance use or contributing to a return to use for those who are in recovery.<sup>19</sup> In addition, many supportive and harm-reducing services for people with OUD are unavailable as a result of the current pandemic, including support groups, treatment programs, daily medication dispensing clinics, and needle exchanges.

## FULL TEXT

To the Editor:

We appreciate the interest of Drs Routsolias and Mycyk in our paper entitled, *Understanding ED Buprenorphine Initiation for Opioid Use Disorder: A Guide for Emergency Nurses*.<sup>1</sup> Although addressing the effects of the current coronavirus disease 2019 (COVID-19) pandemic on patients with opioid use disorder (OUD) was beyond the scope of our original paper, Drs Routsolias and Mycyk correctly point out the importance of this issue and the profound, multi-faceted challenges that the pandemic has created for this vulnerable group of patients.<sup>2</sup> We appreciate the opportunity to discuss this issue.

As noted by Routsolias and Mycyk, Cook County Medical Examiner data do demonstrate a record number of opioid-related deaths during 2020.<sup>3-5</sup> By June 2020, the Chicago Department of Public Health reported that 82% of overdose deaths were fentaNYL-involved, an increase of nearly 57% over the previous year. Additionally, they reported an 80% increase in fentaNYL-involved fatal overdoses in 2019, before the current COVID-19 pandemic, demonstrating the tremendous impact that the increased availability of this powerful synthetic opioid has had on Chicagoans.<sup>5</sup> Medical examiner data further reveal that by mid-2020, methadone-involved overdoses had increased by 156% over the previous year. These data clearly indicate that increased use of synthetic opioids such as fentaNYL and methadone have contributed to the growing number of fatal overdoses in Chicago, and do not indicate improved access to buprenorphine or buprenorphine-naloxone as a key factor, as suggested by our colleagues.<sup>2</sup> The pandemic may be contributing to increased opioid overdose deaths by disrupting existing drug supply chains, replacing heroin with fentaNYL because it is more powerful, less expensive to produce, and easier to smuggle, and by increasing the number of individuals using in isolation.<sup>6,7</sup> Overdose death data from the Centers for Disease Control and Prevention support the same trend on a national level—the increase in drug overdose mortality began in 2019 and continued through 2020, before the national pandemic emergency was declared in March 2020.<sup>8</sup> Further, data from the Centers for Disease Control and Prevention also indicate that the primary driver of the increase in



overdose deaths has been wide use of synthetic opioids, in particular, fentaNYL.<sup>8</sup> In addition, we would like to reiterate that, unlike methadone, buprenorphine is a partial  $\mu$ -receptor agonist. Therefore, patients with opioid withdrawal symptoms benefit from its agonistic properties in the form of diminished cravings; however, its ceiling effect prevents the consequences of respiratory depression and euphoria present with full  $\mu$ -receptor agonists such as methadone.<sup>1</sup> These characteristics contribute to buprenorphine's excellent safety and efficacy profiles, protecting patients with OUD from overdose and death. In addition, as we previously discussed, the use of combination buprenorphine-naloxone products decreases the potential for diversion and nonmedical use because the injection or inhalation of the naloxone-containing product activates its antagonistic effects.<sup>1</sup> Importantly, patients who take prescribed buprenorphine-naloxone have less frequent heroin and fentaNYL use that place them at much higher risk for fatal overdose. Finally, we respectfully disagree with the notion that "medication alone is not sufficient treatment for OUD."<sup>2</sup> As discussed in our full paper, research evidence demonstrates that medical management with buprenorphine is an effective treatment for OUD, and whereas there is also benefit in multimodal treatment programs, patients' preferences for medication alone should not preclude them from receiving opioid agonist treatment.<sup>1,9,10</sup> The National Academies of Science, Engineering, and Medicine consensus report on medications for OUD concluded that "Lack of availability or utilization of behavioral interventions is not a sufficient justification to withhold medications to treat OUD."<sup>11</sup> Further, they also conclude that "confronting the major barriers to the use of medications to treat OUD is critical to addressing the opioid crisis."<sup>11</sup> In addition to the difficulties accessing treatment for OUD—including buprenorphine or buprenorphine-naloxone—that our colleagues in Chicago describe and we have seen in Maine as well, emerging literature points to other pandemic-related challenges.<sup>12,13</sup> First, evidence suggests that people with OUD may be at higher risk for experiencing COVID-19 infection due to a higher prevalence of pre-existing conditions, smoking, opioid-related immunosuppression, and the presence of structural lung disease.<sup>14-17</sup> In addition, those with OUD are more likely to reside in congregate living situations such as group recovery housing, shelters, and correctional facilities where they may be unable to maintain social distancing.<sup>14,15</sup> People with OUD also make up a disproportionate share of the United States unsheltered and unstably housed population, placing them at further risk for exposure to COVID-19.<sup>16,18</sup>

Although social distancing is an important public health measure, there is potential for the isolation associated with COVID-19 to cause harm for those with OUD.<sup>19</sup> There is a strong association between social isolation, mood, and substance use disorders.<sup>20</sup> Isolation can act as a trigger for some, exacerbating existing patterns of substance use or contributing to a return to use for those who are in recovery.<sup>19</sup> In addition, many supportive and harm-reducing services for people with OUD are unavailable as a result of the current pandemic, including support groups, treatment programs, daily medication dispensing clinics, and needle exchanges. Social isolation is increasing the risk of fatal overdose for those with OUD, as many who typically follow harm reduction guidance to not use alone are doing so during the pandemic. This lessens the potential for administration of bystander naloxone, contributing to overdose deaths.<sup>16</sup>

There is also evidence that pandemic-related disruptions to existing drug trafficking patterns and supply chains increase risk for those with OUD.<sup>16,19,21</sup> Faced with a lack of usual supply, people who use drugs are forced to seek substances from places other than their known and trusted sources, increasing the risk of exposure to adulterated or contaminated substances.<sup>16,19</sup> Recent research conducted by Niles et al<sup>22</sup> documented a 50% increase in the risk of urine positivity for nonprescribed fentaNYL during the pandemic, despite a substantial decrease in urine drug testing overall. They also observed significant increases in positivity for high-risk drugs (heroin, fentaNYL, opioids, benzodiazepines) and dangerous drug combinations (eg, fentaNYL and opioids).

We agree with Drs Routsolias and Mycyk that additional attention to the merging of the COVID-19 pandemic and the continuing opioid epidemic is sorely needed.<sup>2</sup> Of note, there is an active study, funded through the National Institutes of Health's Helping to End Addiction Long-term Initiative, examining the effects of the COVID-19 pandemic on ED visits for opioid-related issues as well as ED buprenorphine prescribing patterns in a diverse group of EDs from across the US (PI D'Onofrio, Co-I Hawk). We look forward to the results of their analysis for a more comprehensive

look at this issue. Whereas we understand the serious constraints many of our nation's emergency departments are facing because of the pandemic, the crisis facing our patients with OUD is also of critical importance. Emergency departments continue to be the lowest barrier setting for patients with OUD to receive the evidence-based, high quality, compassionate care that they need and deserve. We call for the continued expansion of ED-based buprenorphine programs and ED-based teaching around harm reduction strategies, removal of barriers to buprenorphine prescribing for advance practice providers, and as much as possible, the safe re-opening of outpatient supportive and treatment resources.—*Tania D. Strout, PhD, RN, MS, Department of Emergency Medicine, Maine Medical Center, Portland, ME and Tufts University School of Medicine, Boston, MA. **Twitter:** @tania\_strout. **ORCID identifier:** <https://orcid.org/0000-0001-9053-1523>; E-mail: [Strout@mmc.org](mailto:Strout@mmc.org); Michael R. Baumann, MD, Department of Emergency Medicine, Maine Medical Center, Tufts University School of Medicine, Boston, MA. **Twitter:** @mikebaumann\_EM. **ORCID identifier:** 0000-0001-7420-5613; Lauren Wendell, MD, MS, Department of Emergency Medicine, Maine Medical Center, Portland, ME and Tufts University School of Medicine, Boston, MA. **Twitter:** @ltwendell. **ORCID identifier:** 0000-0002-9026-2017; Gail D'Onofrio, MD, MS, Yale School of Medicine, New Haven, CT. **Twitter:** @DonofrioGail. **ORCID identifier:** <https://orcid.org/0000-0002-3833-1871>; Kathryn Hawk, MD, MHS, Department of Emergency Medicine, Yale School of Medicine, New Haven, CT. **Twitter:** @kathryn\_hawk, **ORCID identifier:** <https://orcid.org/0000-0001-7435-5945>.*

## DETAILS

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# Emergency Nurses' Guide to Neonatal Lumbar Punctures: JEN

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## ABSTRACT (ENGLISH)

A neonatal lumbar puncture can present many challenges for emergency nurses that may not be seen with older children or adults. It is imperative that emergency nurses have the knowledge and training related to the procedure to ensure a positive process for the neonate, involved family and health care team members, as well as the overall outcomes of the procedure. This paper provides a practical guide to the essential knowledge for a neonatal lumbar puncture in the emergency department. The main points conveyed in this paper include considerations such as indications for a neonatal lumbar puncture, how to prepare for the procedure, how to position the neonate, possible complications, and caregiver support.

## FULL TEXT

### Introduction

A lumbar puncture (LP) is an invasive procedure of the lumbar spine for diagnostic or therapeutic purposes. Owing to the high risk for sepsis in the neonatal period, LPs are commonly performed when neonates present with signs or

symptoms of possible infection.<sup>1</sup> Approximately 321 000 neonates per year are seen in emergency departments.<sup>2</sup> Fever accounts for 92% of all neonatal ED visits.<sup>3</sup> A neonatal LP can present many challenges for emergency nurses that may not be seen with older children or adults. Because of this, it is important for emergency nurses to have knowledge and skills of the procedure for an LP, its indications, procedure preparation, neonate positioning, potential complications, and how to support the parents or caregiver.

### **Indications**

There is a wide range of reasons for why a neonate may need an LP. The most common reason for the procedure is fever.<sup>4</sup> Owing to neonates' underdeveloped immune system, they are at higher risk for infection and sepsis; thus, fevers must be treated seriously.<sup>5</sup> Other LP indications include seizure activity, vomiting, irritability, jaundice, or bulging fontanel.<sup>6</sup> The purpose of an LP in a neonate is to evaluate the cerebrospinal fluid (CSF) for meningitis. Meningitis in neonates is linked to a high risk of mortality and morbidity, as well as long-term complications, including neurologic deficits and cerebral palsy.<sup>6</sup> If the CSF shows increased inflammatory cells, increased protein level, or low glucose level, it could be indicative of meningitis.<sup>7</sup> The CSF should also be cultured to look for the growth of any organisms that may indicate a bacterial infection.<sup>8</sup> The culture results will determine the type of infection.

### **Preparing for the Procedure**

The preparation for an LP procedure for a neonate requires numerous supplies. Most facilities have prepackaged LP trays with the necessary equipment for a medical provider to perform the procedure. In general, the items include the following: a spinal needle, 5 mL and 10 mL syringes, 4 sterile specimen tubes, gauze pads, betadine swab sticks, lidocaine, fenestrated drape, towel, and bandage. LPs are considered sterile procedures; therefore, appropriate personal protective equipment (PPE) is required for each person in the room. Emergency nurses should follow the institutional policy and procedure for the use of appropriate PPE. The PPE includes a sterile gown, gloves, and mask. In addition, appropriate-size sterile gloves and additional needles are important to have at the bedside in case the first attempt is unsuccessful. To minimize the risk of infection during the procedure, ensure that the site is free from cellulitis before performing the LP. An LP through an area of cellulitis can cause meningitis.<sup>7</sup> The emergency nurse or the holder at the bedside should ensure that the medical provider is maintaining a sterile technique during the entire procedure. The emergency nurse should also require all staff members involved in the procedure to wear appropriate PPE to help keep the site sterile. As required by the Joint Commission, a preprocedure time-out should be taken to reduce the risk of performing a procedure on the wrong patient or at the wrong location. The preprocedure time-out should include all members of the team present for the procedure, and these team members should agree on the patient identity, the correct procedure site, and the procedure being completed.<sup>9</sup>

The procedure can cause discomfort; therefore, it is helpful to have sucrose water at the bedside. The methods of delivering sucrose water are to give the neonate a pacifier dipped in the sucrose water or give small amounts through an oral syringe. When using an oral syringe, the typical effective dosing ranges from 0.1 mL to 2 mL.<sup>10</sup> Sucrose water decreases the neonate's perception of pain by activating an opioid response.<sup>11</sup> Other types of analgesia that may be used include topical lidocaine, jet-injected lidocaine, locally injected 1% lidocaine, or intranasal fentaNYL.<sup>12</sup>

Monitoring is essential during an LP to ensure that the neonate does not have any unexpected, acute changes in vital signs. Proper monitoring and continuous airway assessment by a nurse or respiratory therapist are crucial during the procedure in case of respiratory arrest or respiratory failure owing to positioning during the procedure.<sup>7</sup> Vital sign changes that may be seen include bradypnea or apnea, bradycardia, and oxygen desaturation.<sup>13</sup> Continuous cardiopulmonary and oxygen saturation monitoring should be incorporated during all LP procedures. The emergency nurse should ensure that neonate resuscitative oxygen supplies such as a nonrebreather and bag-valve mask, suction, and emergency medications are readily available if needed.

The number of attempts should be limited to decrease the risk of infection and pain.<sup>14</sup> The emergency nurse can increase the probability of a successful procedure with limited attempts by keeping the neonate comfortable during the procedure, maintaining the neonate's correct position, and confirming the correct needle size. Emergency nurses

and trained health care providers must act as patient advocates and limit the number of attempts for the neonate.

### **Caregiver Support**

An LP can be extremely stressful for a parent or caregiver of a neonate. The emergency nurse should make every attempt to ease caregiver concerns during the entire ED visit. Providing education is one of the most important roles of the emergency nurse regarding the neonate's family. Caregivers often feel more reassured and remain calmer with information given to them regarding the process and reasoning behind the procedure for an LP.<sup>7</sup> The provider obtains consent for the procedure; however, emergency nurses may begin providing education as soon as they are aware that an LP will be performed. One opportunity for the nurse to provide parental education is while setting up for the procedure. When having these difficult conversations, it is important for the emergency nurse to be empathetic, exhibit open communication, and remember that family-centered care is the basis for pediatric care.<sup>15</sup> The parent or caregiver should be given the opportunity to ask questions, and information should be reiterated regarding the process of the LP and what to expect postprocedure.

Emergency nurses must remember that caregivers of neonates may have increased anxiety in general.<sup>16</sup> The emergency nurse or emergency staff should provide breastfeeding mothers with appropriate equipment for pumping, as well as privacy, if the neonate is unable to feed. For family and neonate comfort, the emergency nurse should assess if the families have the necessary supplies to care for the neonate while they wait, such as diapers, wipes, formula, bottles, or a pacifier. Emergency nurses should support the entire family to make them feel more comfortable with the LP process.

Caregiver presence during an LP varies by institution. Some institutions do not allow caregivers to be present owing to the risk of contamination to the sterile field. Caregivers may wait in a parent room or the ED lobby, depending on the institution. If caregivers are asked to leave, emergency nurses should carefully explain the rationale for having them out of the room during the procedure, specifically the risk of infection. Increased stress may occur owing to the separation; therefore, emergency nurses should assess and offer additional support from the social work, pastoral care, or other support staff. The emergency nurse should provide the family reassurance that the neonate will not be alone and that the caregiver can come back to the room immediately after the procedure.

After the procedure, the emergency nurse should provide the caregiver with information about how the neonate coped during the procedure. The emergency nurse should provide all necessary education to the caregiver, including the necessity of having the neonate remain lying on the back for at least an hour if possible, the signs and symptoms to watch for, and when to notify a member of the care team. Parents or caregivers should notify a member of the health care team immediately if the infant develops redness, drainage, or swelling at the site, or presents with persistent irritability.

### **Neonate Positioning**

Correct positioning is an essential component of an LP. Only trained emergency nurses and other health care professionals should be permitted to hold the neonate during an LP to prevent respiratory compromise. Parents should not be permitted to hold the neonate during the LP. Emergency nurses may place neonates in 1 of the 2 recommended positions during an LP (<sup>Figure 1</sup>). The purpose of positioning is to facilitate easier entry to the subarachnoid space and enable access to the CSF. The choice of positioning is determined by the provider. One possible position is the "sitting position." In the "sitting position," the neonate is placed in a seated position with their back facing the provider. Facing the neonate, the holder positions the neonate so that the neonate's head and legs are tucked inward toward the abdomen to give the neonate's back a rounded appearance. The hips must be aligned for the provider to find the appropriate landmarks. These landmarks are found by the provider using an imaginary line, called the intercrystal line (<sup>Figure 2</sup>), that joins the superior and posterior aspects of the right and left iliac crests.<sup>17</sup> By palpating these landmarks, the provider can then find an intervertebral space above or below the point where the needle will be inserted.<sup>17</sup>

A second possible position is the side-lying or lateral position. In this position, the neonate lies on their side with the back facing the provider performing the procedure. The holder faces the neonate and maintains proper positioning. Just as in the "sitting position," the holder should tuck the neonate's head and legs inward toward the abdomen to

give the neonate's back a rounded appearance. The hips should again be aligned correctly.

Maintaining a patent airway is an important consideration during all LP procedures. Each position used during an LP, if done incorrectly, can cause respiratory failure or respiratory arrest. Neonates have lower respiratory reserve than an older infant or child and weaker diaphragmatic muscles; therefore, it is essential that a trained health care provider such as an emergency nurse or respiratory therapist provides constant monitoring of the neonate.<sup>13</sup> The provider should be prepared to intervene when there is an acute change in respiratory status. Neonates may also cry and move during the procedure; therefore, a trained health care provider should hold the neonate to maintain the correct position. Often, an unsuccessful LP is due to the neonate's movement or improper positioning.<sup>18</sup>

### **Potential Procedural Complications**

Anticipated and unanticipated complications may occur during the procedure. Some postprocedure complications are more difficult to assess in a neonate. Astute nursing assessment is critical in the identification of postprocedural complications. Because of the many potential procedural and postprocedural complications, it is important to frequently assess vital signs and maintain cardiorespiratory and oxygen saturation monitoring during and after the procedure. Assessment of the procedure site should also be done frequently to watch for signs of bleeding or infection.

### **PAIN**

One of the most common complications is pain. Pain and discomfort are expected complications during and after LPs and should be assessed accordingly. One example of an appropriate pain scale to use in the neonatal population is the Neonatal Infant Pain Scale. It can be used to assess procedural pain in premature or full-term neonates.<sup>19</sup> Pain-reducing interventions should be used before, during, and after the procedure to ensure that pain is controlled. As previously mentioned, neonates may be given sucrose water as a nonpharmacologic pain intervention during the procedure. Other types of analgesia may be used, as discussed. Systemic pain control or general anesthesia is rarely used for pain control in this patient population.

Although unable to verbally communicate pain, neonates can display symptoms that alert the nurse to pain. Irritability and tachycardia are common symptoms of pain in neonates. Pain may be associated with a postprocedural headache. Therefore, neonates should remain lying flat for approximately 1 hour postprocedure. The caregiver can hold the neonate postprocedure but should be encouraged to keep the neonate's head level with the heart. The emergency nurse should be diligent in assessing for, and notifying the provider of, increased irritability, abnormal vital signs, or any sudden onset symptom or acute change in condition that may indicate pain and other complications.

### **Infection**

Preventing infection at the procedure site is important because infection can lead to serious complications. Assessment of the procedure site should be done frequently to watch for signs of bleeding or infection. Specific signs of infection at the procedure site include redness or swelling of the site or purulent drainage. Other possible signs of infection include pain, lethargy, and any alteration in the neonate's neurologic status. Although neonates who have an LP are not typically discharged to home from the emergency department, the signs of infection to watch for are among important home-going instructions to give caregivers at discharge from the hospital.

### **Spinal Hematoma/Abscess**

An uncommon complication, but one that the nurse should be cognizant of, is a spinal hematoma or spinal abscess. Signs and symptoms of a spinal hematoma/abscess include sensory deficits or paralysis.<sup>7</sup> These take hours to days to develop postprocedure and are more likely to develop if there are multiple attempts during the procedure. To avoid missing this complication, the emergency nurse should communicate to the admitting nurse that an LP was performed and the number of attempts that were necessary. A spinal hematoma is more likely if the LP was difficult and produced bloody CSF;<sup>7</sup> therefore, this information should be conveyed to the inpatient nurse. Although spinal hematomas are a possibility, there are limited reports of this occurring in neonates.<sup>6</sup> The emergency nurse should also educate the neonate's caregivers about the potential for this complication and provide them with information about the signs and symptoms to watch for at home.

## Implications for Emergency Nurses

An emergency nurse must be proficient in the process of an LP procedure for a neonate owing to the high risk of airway compromise and the anxiety a caregiver may have owing to the procedure. Although the LP procedure itself is similar at different facilities, each agency should have a policy and procedure regarding emergency nurse competency to assist with a neonatal LP. The emergency nurse should follow best practice but also use their own institutional policy and procedure for detailed guidance. A helpful resource that provides guidance on the process of an LP procedure is "Lumbar Puncture in the Neonate,"<sup>20</sup> available at the link in the reference list.

There are many actions that an emergency nurse should ensure happen before, during, and after the LP procedure. The emergency nurse should ensure that proper PPE is worn by all staff participating in the LP procedure. An adequately trained support person should be present for the caregiver of the neonate; they could be a child life specialist, if available, social worker, or pastoral care team member. Proper education must be provided to the neonate's caregiver preprocedure and at discharge. If the patient is being admitted, clear information must be conveyed to the neonate's inpatient nurse regarding potential complications.

Emergency nurses should also be aware of unique potential complications and the ways to prevent and treat them because prompt attention is vital to overall outcomes for neonates. First, emergency nurses must guarantee correct positioning of the neonate during the procedure. It is also imperative that the emergency nurse or respiratory therapist monitors the neonate's airway throughout the LP procedure. The emergency nurse should also be astute in recognizing pain during and after a neonatal LP to provide adequate pain management. The emergency nurse's role is critical to a successful and safe neonatal LP.

## Conclusion

Neonates frequently present to the emergency department with fever or other symptoms that may require an LP. Without proper training and knowledge, an emergency nurse should not be assisting with the process of a neonatal LP. An emergency nurse should be competent in the essential correct positioning of a neonate during an LP owing to the major risk of airway compromise. Airway monitoring and treatment of airway complications should be of the highest priority for the emergency nurse. Ultimately, the emergency nurse's understanding and expertise during the LP will improve the procedure for the neonate, involved caregivers, and members of the health care team, as well as the overall outcomes of the procedure.

## Author Disclosures

Conflicts of interest: none to report.

## DETAILS

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# Sexual Assault Nurse Examiner/Forensic Nurse Hospital-based Staffing Solution: A Business Plan Development and Evaluation: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/emergency-nurses-guide-neonatal-lumbar-punctures/docview/2552049557/se-2?accountid=211160)

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## ABSTRACT (ENGLISH)

Nationally and internationally, providing competent and sustainable sexual assault nurse examiner/forensic nurse coverage has been a shared challenge. This project, "Sexual Assault Nurse Examiner/Forensic Nurse Hospital-based Staffing Solution: A Business Plan Development and Evaluation," provides an example for assessment, construction, implementation, and evaluation of a business plan for a sustainable sexual assault nurse examiner/forensic nurse staffing solution. By using preexisting float pool positions and converting them to sexual assault nurse examiner emergency nurses, coverage for sexual assault nurse examiner examinations in a 16-hospital health system was established, which decreased sexual assault nurse examiner turnover related to burnout while increasing the sustainability of sexual assault nurse examiner nurses who provided quality care to patients who had experienced a sexual assault, domestic or intimate partner violence, elder or child abuse or neglect, assault, strangulation, or human trafficking. Implementation of the business plan resulted in a 179% increase in completed sexual assault nurse examiner examinations and a 242% increase in all types of completed forensic examinations from 2015 to 2019 as 7 new community hospitals were added to the health system. A sum of more than \$20000 allocated for training new sexual assault nurse examiners/forensic nurses was saved per year by using a sexual assault nurse examiner emergency nurse. By creating a supportive structure that fosters and sustains sexual assault nurse examiners/forensic nurses, both medical and mental health concerns can be addressed through trauma-informed care techniques that will affect lifelong health and healing as well as engagement in the criminal justice process for patients who have experienced sexual assault, abuse, neglect, and violence.

## FULL TEXT

## DETAILS

**Subject:** Workforce planning; Domestic violence; Psychiatric nurses; Healing; Adult abuse & neglect; Health problems; Child abuse & neglect; Burnout; Hospitals; Community hospitals; Emergency services; Quality of care; Abused children; Business plans; Sex crimes; Staffing; Pediatrics; Nurses; Examiners; Trafficking; Patients; Intimate partner violence; Sustainability; Trauma; Business planning; Professional training; Sexual assault; Criminal justice; Nursing; Education; Mental health; Emergency medical care

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Document 26 of 57

# Utility of the Emergency Severity Index by Accuracy of Interrater Agreement by Expert Triage Nurses in a Simulated Scenario in Japan: A Randomized Controlled Trial: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

### Objective

The Emergency Severity Index (ESI) is a highly reliable and valid triage scale that is widely used in emergency departments in not only English language regions but also other countries. The Japan Triage and Acuity Scale (JTAS) is frequently used for emergency patients, and the ESI has not been evaluated against the JTAS in Japan.

This study aimed to examine the decision accuracy of the ESI for simulated clinical scenarios among nursing specialists in Japan compared with the JTAS.

### **Method**

A parallel group randomized trial was conducted. In total, 23 JTAS-trained triage nurses from 10 Japanese emergency departments were randomly assigned to the ESI or the JTAS group. Nurses independently assigned triage categories to 80 emergency cases for the assessment of interrater agreement.

### **Results**

Interrater agreement between the expert and triage nurses was  $\kappa=0.82$  (excellent) in the ESI group and  $\kappa=0.74$  (substantial) in the JTAS group. In addition, interrater agreement by acuity was level 2=0.42 (moderate) in the ESI group and level 2=0.31 (fair) in the JTAS group. Interrater agreement for triage decisions was classified in a higher category in the ESI group than in the JTAS Scale group at level 2. Triage decisions based on the ESI in Japan maintained the same level of interrater agreement and sensitivity as those in other countries.

### **Conclusion**

These findings suggest that the ESI can be introduced in Japan, despite its different emergency medical background compared with other countries.

## **FULL TEXT**

### **Introduction BACKGROUND**

In the field of emergency health care services, triage using a scale with reliability and validity is attracting attention to respond to the increasing number of emergency patients.<sup>1-3</sup> Among the existing triage scales, the Emergency Severity Index (ESI) is a highly reliable and valid system that is widely used in the emergency department in not only English language regions but also other countries.<sup>4,5</sup>

The advantages of using the ESI include the ability to assess patient acuity based on clinical reasoning and medical resources and to make decisions according to clear algorithms.<sup>6,7</sup> In addition, the ESI limits the acuity level for requesting vital signs, which reduces the time required for triage and contributes to prompt physician examinations.<sup>8</sup>

The Japan Triage and Acuity Scale (JTAS) was developed in Japan with reference to the Canadian Triage and Acuity Scale.<sup>10</sup> However, the JTAS has not yet been widely adopted, and many emergency departments continue to use their own triage scale. In regard to the background of the emergency health care field in Japan, the concept of triage has a cultural connotation reminiscent of disasters, and ED triage has not yet become common.<sup>11</sup> In addition, the emergency health care system is also categorized into primary emergency (nonurgent, such as fever without medical history) to tertiary emergency (immediate, such as traffic injuries) according to the severity.<sup>12</sup> As a result, triage nurses have little chance to deal with patients of all acuities. Furthermore, the use of the JTAS requires specialized education, which takes effort in general hospitals. Few studies investigating triage scales, including the ESI, have been carried out in Japan.<sup>13</sup> Thus, emergency departments might not be interested in using a new triage scale. Therefore, it is important to discuss whether a triage scale more suitable for emergency clinical practice in Japan is needed.

### **OBJECTIVE**

This study aimed to examine the decision accuracy of the ESI for simulated clinical scenarios among nursing specialists in Japan compared with the JTAS.

### **Methods ETHICAL APPROVAL**

This study was registered with the University Hospital Medical Information Network Clinical Trial Registry in Japan (000033519). The experimental protocol was approved by the ethics committee of the first author's university in Japan (approval no. 28-0314). All participants provided written, informed consent after receiving an explanation of the study purpose and procedures. The present study was conducted in accordance with the Consolidated Standards of Reporting Trials statement.

### **TRIAL DESIGN**

This randomized, controlled trial was conducted using a parallel design. Randomization was carried out in a

stratified manner. This study was conducted as a single-blind test in which the researcher was blinded to the group to which the participants were assigned. This study replicated the methods used by our previous study.<sup>13</sup> Expert triage nurses were randomly assigned to the ESI or JTAS group according to a random allocation table prepared in advance in Microsoft Excel for Mac (version 16.44; Microsoft Japan Co Ltd, Tokyo, Japan).

## **PARTICIPANTS**

The recruitment period for this study was 1 year from July 2018, and a request was sent to facilities with critical care centers in Japan. Sample size and power calculations were performed using EZR (Saitama Medical Center, Jichi Medical University, Saitama, Japan) software.<sup>14</sup> The sample size of 23 participants was identified to provide the study with power exceeding 80% to detect a noninferiority margin of 20% for levels of agreement between the ESI group and the JTAS group. This was based on an assumption of interrater agreement of 80% for our earlier study, allowing a 2-sided type 1 error rate of 5%.

### **OUTCOMES Main Outcome**

The main outcome in this study was interrater agreement regarding the accuracy of the ESI and the JTAS for triage decisions in simulated clinical scenarios based on the weighted kappa coefficient.

### **Subjective Evaluations in the Simulation Tasks**

As a secondary outcome, subjective usability was evaluated using a 10-cm linear visual analog scale with no numerical range between not easy to use (0) and very easy to use (100).<sup>15</sup> The nurses assessed subjective usability by drawing a horizontal line on the visual analog scale. The time required to make a decision for the ESI and the JTAS was measured from the beginning to the end of each simulation task.

## **PROCEDURES**

The intervention involved 23 nurses assigned to undergo 3 hours of clinical lectures and a simulated clinical test with 80 case scenarios collected prospectively from the ESI Handbook using either the ESI or the JTAS (Figure). Participants learned the triage tool in the 2 rooms, which were prepared for each of the 2 groups. They were instructed not to interact with each other until the test was completed. Regarding specific contents, the age, sex, chief complaint, vital signs, and pain scale were described for each patient, and the scenarios were selected in consideration of the degree of acuity and the characteristics of patients in Japan.<sup>16</sup> Regarding the response method for the task, the nurses were asked to rate the case from level 1 to level 5. The simulated patient task targeted all age groups and acuity levels. After answering all questions, the intervention was completed by filling out the survey form when returning the test.

## **STATISTICAL METHODS**

All data were analyzed using SPSS (version 24.0; SPSS Japan, Inc, Tokyo, Japan). Interrater agreement was measured using the weighted kappa coefficient for multiple raters. The interrater agreement between expert triage nurses was evaluated using Cohen's kappa coefficient.<sup>17</sup> Many previous studies also used Cohen's weighted kappa coefficient, so this study's results could be compared more effectively using this as an index of interrater agreement.<sup>7,10,13,18</sup> Interrater agreement regarding categorization of acuity levels for the evaluation within each group was evaluated using Fleiss' kappa coefficient.<sup>19</sup> Each of the kappa coefficients was interpreted using conventional standards.<sup>20</sup> The 95% CIs and categories are shown for each measurement. Categorical data are shown as percentages in addition to the values used to calculate the percentages. All data are presented as mean (SD). The participants' characteristics were analyzed using descriptive statistics. In addition, the rates of over-triage (OT) and under-triage (UT) were calculated according to the results of interrater agreement. Sample characteristics, usability, and decision time were analyzed using the Mann-Whitney *U* test. The criterion for significance was set at 0.05.

### **Results PARTICIPANTS AND GROUP DIFFERENCES**

In total, 23 triage nurses were recruited from 10 emergency departments in Japan (ESI=12, JTAS=11). This study was limited to registered nurses with specialized knowledge to adjust for the background of the participants. All nurses were clinical specialists, such as a certified nursing specialists and nurse practitioners, who belonged to a hospital emergency department and routinely used the JTAS to assess ED patients in a clinical setting in Japan. All nurses had 10 to 20 years of work experience in the emergency department and 4 to 10 years of experience using

the JTAS. No significant differences in age (mean (SD); ESI=35.5 (5.4) years vs JTAS=35.4 (4.6) years,  $P=.75$ ), years of nursing (ESI=13.8 (3.1) vs JTAS=14.3 (2.7),  $P=.69$ ), years working in the emergency department (ESI=9.2 (3.9) vs JTAS=6.8 (41.7),  $P=.10$ ), or years of experience in triage (ESI=4.7 (0.9) vs JTAS=4.3 (1.1),  $P=.32$ ) were found between the 2 groups.

### **INTERRATER AGREEMENT BETWEEN EXPERT TRIAGE NURSES**

This study was conducted on 23 clinical specialist nurses. The interrater agreement between expert triage nurses was  $\kappa=0.82$  (excellent) in the ESI group and  $\kappa=0.74$  (substantial) in the JTAS group (Table 1). In addition, the UT and OT rates were 20.3% and 14.8%, respectively, in the ESI group and 30.3% and 16.7%, respectively, in the JTAS group.

### **INTERRATER AGREEMENT BY ACUITY CATEGORY**

Interrater agreement by acuity is shown in Table 2. The results showed that the ESI scale was associated with higher agreement than the JTAS.

### **USABILITY AND DECISION TIME BY TRIAGE SCALE**

No significant differences by triage scale were found between the 2 groups with respect to usability (mean  $\pm$  SD; ESI=6.6  $\pm$  1.9 vs JTAS=6.4  $\pm$  2.0,  $P=.95$ ) or decision time (ESI=68.5  $\pm$  22.6 seconds vs JTAS=73.3  $\pm$  26.1 seconds,  $P=.67$ ).

### **Discussion**

This study investigated interrater agreement of the accuracy of decisions by expert triage nurses in simulated clinical scenarios for the ESI and the JTAS. The results showed that the ESI scale was associated with higher agreement than the JTAS. In addition, the interrater agreement for triage decisions was classified into a higher category in the ESI than in the JTAS group at level 2. Furthermore, significant differences were seen in the rates of UT and OT between the 2 groups ( $P < .05$ ). Similarly, another study of the ESI reported excellent interrater agreement between triage nurses in clinical patients.<sup>18</sup> A meta-analysis regarding the ESI also showed similar interrater agreement to that seen in the present study.<sup>21</sup>

In the concept of triage, level 2 is the most important criterion for identifying patients who require immediate medical attention.<sup>6</sup> In the case of level 2 or higher acuity, patients should enter the examination room without waiting, but in level 3 or lower, there is waiting time in the emergency department. Patients who are not correctly assigned by this criterion have to wait a long time for a medical examination despite having a high acuity, and there are risks that their condition might worsen, the waiting time might change suddenly, or the clinical outcome might be affected.<sup>6</sup> Compared with the JTAS, the ESI had superior overall interrater agreement, more accuracy in terms of patient acuity groups, and lower rates of UT and OT. UT causes patients to wait unnecessarily for a medical examination, which causes a worsening medical condition. OT causes patients with less urgent issues to occupy the examination area, which causes problems for the entire emergency outpatient department.<sup>6</sup> Therefore, the ESI has excellent interrater agreement for triage decisions for patients who require a prompt medical examination and can accurately determine patients with high acuity. The ESI with its higher agreement could contribute to the prevention of a worsening medical condition for patients who are critically ill because it would not force patients with high acuity to wait unnecessarily.

The findings of this study also showed that triage decisions based on the ESI maintain the same levels of sensitivity and agreement among evaluators in Japan as those in countries that commonly use the ESI. The ESI has shown high interrater agreement among triage nurses and emergency physicians in clinical patients in Iran.<sup>22</sup> Grossmann et al<sup>5</sup> reported excellent interrater agreement for the ESI when translated into German. In addition, a study conducted in the Netherlands reported that ESI decisions accurately reflected patient acuity and were highly sensitive for identifying patients unlikely to require admission.<sup>23</sup> Therefore, the ESI can also be plausibly used in Japan, where English is not the official language.

### **Limitations**

This study involved an educational intervention for nurses who already had knowledge of the triage system; it was conducted in a single-blind rather than a double-blind fashion. In addition, this study was limited to clinical specialist

nurses, making it difficult to generalize the findings to all nurses. In addition, this was a simulation study, not with real patients, and the number of observers was small. The sample size was smaller than expected, but the number of people gathered was about the same as in previous studies.<sup>7,13,18,22</sup> Furthermore, no significant differences in usability or decision time were found between the 2 groups by triage tool. Because a simulated patient task was used in this study, it can be inferred that it was practically difficult to reflect the total time required for the procedure, including vital sign measurements and examinations/treatments. Therefore, future studies should carry out prospective research that more faithfully reproduces clinical triage scenes and the patient's duration of stay after presenting in the emergency department. The trial protocol was not registered.

### Implications for Emergency Nursing

The ESI may be used in the Japanese emergency department. In addition, this triage scale has higher interrater agreement for level 2 than the JTAS currently in use, and this could lead to prompt medical examination. In addition, triage decisions made based on the ESI appear to contribute to the prevention of a worsening medical condition for patients who are critically ill. Thus, the ESI could be expected to lead to reliable triage decisions by emergency nurses.

### Conclusions

The results of this study indicated that the ESI has good agreement at the most important triage level (level 2). In addition, this scale is less likely to generate OT/UT. Furthermore, the ESI can be used in Japan, despite the different background characteristics of the emergency health care system. Therefore, introducing the ESI to the triage system could be expected to contribute to a better understanding of triage decisions in Japanese clinical emergency departments.

### Author Disclosures

Conflicts of interest: none to report.

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Triage tool	Cohen's $\kappa$ (95% CI)	Category
ESI group (n=12)	0.82 (0.80-0.85)	Excellent
JTAS group (n=11)	0.74 (0.70-0.77)	Substantial

Rating category	ESI (n=12)		JTAS (n=11)	
$\kappa$ (95% CI)	Category	$\kappa$ (95% CI)	Category	
0.67 (0.65-0.70)	Substantial	0.68 (0.66-0.72)	Substantial	2
0.42 (0.39-0.45)	Moderate	0.31 (0.28-0.34)	Fair	3
0.38 (0.36-0.41)	Fair	0.25 (0.22-0.28)	Fair	4

0.31 (0.29-0.34)	Fair	0.25 (0.22-0.28)	Fair	5
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## DETAILS

<b>Subject:</b>	Agreements; Comparative studies; Patients; Accuracy; Usability; Vital signs; Specialists; Triage; Nurses; English language; Nursing; Departments; Clinical nursing; Emergency medical care; Clinical trials
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# Hemolyzed Blood Samples in the Emergency Department - Finding Our “Why”: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

When patients present to the emergency department, they expect strong communication from the hospital staff and short wait times and to be treated with empathy and compassion.<sup>1,2</sup> Patients commonly present during a time of high stress and uncertainty, so addressing these areas of patient care as well as other areas that invoke patient harm have remained a focus for ED leaders: one area for improvement of ED care that has not received as much attention as its potential warrants is the hemolysis of blood samples. Evidence-based technique modifications that have been demonstrated to reduce the rate of hemolysis include the use of a steel-straight needle for phlebotomy, the use of an antecubital site with IV cannulation, and the use of low-vacuum tubes.<sup>8</sup> Thus, it is puzzling that the rate of hemolyzed blood samples in the emergency department continues to be significantly elevated despite the literature not only describing the importance of this topic but also suggesting simple methods for improvement. [...]the finding that most participants were unaware of blood sample hemolysis prevention initiatives when there is an Emergency Nurses Association clinical practice guideline on the topic demonstrates that there is space and need for education efforts.<sup>12</sup> Moving forward with this root knowledge in mind, further research can be conducted on system requirements such as the time spent by emergency nurses repeating hemolyzed samples versus placing IVs, the impact of high emergency nursing turnover on practice change, and the ever-increasing requirements on uniquely skilled and qualified caregivers that tax their ability to multitask in an as efficient as possible manner.

## FULL TEXT

When patients present to the emergency department, they expect strong communication from the hospital staff and short wait times and to be treated with empathy and compassion.<sup>1,2</sup> Patients commonly present during a time of high stress and uncertainty, so addressing these areas of patient care as well as other areas that invoke patient harm have remained a focus for ED leaders: one area for improvement of ED care that has not received as much attention as its potential warrants is the hemolysis of blood samples.

Hemolysis occurs when blood cells are disturbed owing to turbulence during the collection or analysis process resulting in cell lysis and the release of intracellular potassium (where most of the ion is stored). Any traumatic disturbance (such as excessive centrifugation), chemical contaminant (ethanol swab not allowed to dry, intravenous [IV] medications), improper temperature, or prolonged storage can thus lead to falsely elevated potassium levels. This can occur during analysis (estimated to be approximately one-third of cases) or during collection (two-thirds).<sup>3</sup> The American Society for Clinical Pathology has stated that there should be a baseline rate of 2% or lower for hemolysis among completed blood samples.<sup>4</sup> However, the emergency department remains the hospital department with the highest incidence of hemolyzed samples, as high as 32% reported in one study.<sup>5,6</sup> One study found that the



average length of stay in the emergency department was 62 minutes longer for patients with hemolyzed blood samples, and another found that the median length of time between blood draws after a hemolyzed sample was 145 minutes.<sup>5,7</sup> This demonstrates a clear area for improvement in patient satisfaction as short wait times is one of the most common patient expectations.

Much of the research on this topic has focused on identifying when a hemolyzed sample does not need to be redrawn as well as methods to prevent the hemolysis from occurring. Evidence-based technique modifications that have been demonstrated to reduce the rate of hemolysis include the use of a steel-straight needle for phlebotomy, the use of an antecubital site with IV cannulation, and the use of low-vacuum tubes.<sup>8</sup> Thus, it is puzzling that the rate of hemolyzed blood samples in the emergency department continues to be significantly elevated despite the literature not only describing the importance of this topic but also suggesting simple methods for improvement. Is this due to unique patient characteristics in the emergency department inevitably leading to hemolysis or have we not yet found why we are accepting this status quo?

We read with great interest the study by Burchill et al<sup>9</sup> that sought to describe emergency nurses' knowledge, attitudes, and practices (KAP) related to hemolysis prevention as well as to explore the associations between nurse demographics and their KAP. Using an exploratory, descriptive design, the authors sought the answers to this fundamental question on the topic: Why are we not doing better? Realizing that simply education about how to prevent hemolysis may not be enough, the authors<sup>9</sup> sharply used the model laid out by Ajzen's<sup>10</sup> Theory of Planned Behavior to ultimately get to the root of the behavior itself. They surveyed 427 emergency nurses, of whom all were Emergency Nurses Association members and most were clinical staff nurses with a bachelor's degree in nursing employed in a teaching hospital that served both adults and children. The survey contained 3 multiple choice knowledge items, a series of 5 attitude items answered using a Likert scale, 7 multiple choice practice pattern items, and 8 departmental demographic items. The knowledge items, which tested key facts about hemolysis, were answered correctly by only 19.91% of the participants. They found that being board certified in emergency nursing was significantly associated with answering these knowledge items correctly. The overwhelming majority of participants agreed or totally agreed with the attitude items (59.95%-95.78%). The agreement with these attitude items demonstrates that the participants know that sticking patients multiple times for blood lowers patient satisfaction and hemolyzed samples interfere with the care for other patients in the department and delay patient care. The practice pattern items demonstrated that nurses are primarily responsible for blood draws in the emergency department and primarily responsible for being notified about hemolyzed samples. Phlebotomy is most often performed with IV insertion, and a little more than half do use low-volume tubes.

The results of this study are encouraging. Understanding the depth of the knowledge gap is imperative before developing a solution.<sup>9</sup> Despite developing a deeper understanding of the KAP of emergency nurses, this study does have limitations. As the authors noted, they surveyed a rather small, self-selected convenience sample that created some selection bias. However, the characteristics of the nurses surveyed seem to be representative of the general workforce.<sup>11</sup> In addition, some of the suggestions for improvement leave questions unanswered. For instance, the authors suggest that the use of phlebotomists in the emergency department could lower the rate of hemolysis. Despite this likely being true, the results of their study demonstrated that there is plenty of room for improvement in emergency nurses' knowledge on hemolysis, making it reasonable to attempt before reassigning the role of venipuncture.<sup>9</sup> Furthermore, reassignment may simply just run into the same set of systemic challenges in meeting the expectations of a population with unique needs while still minimizing the (not too) uncommon "unavoidable" mishap of hemolysis. The authors also appropriately noted that education may not be enough because of strongly held beliefs that could prevent the adoption of best practices; however, with only 19.91% of the participants answering the knowledge questions correctly, education will clearly be fundamental in creating the gradual change necessary for quality improvement. For example, the finding that most participants were unaware of blood sample hemolysis prevention initiatives when there is an Emergency Nurses Association clinical practice guideline on the topic demonstrates that there is space and need for education efforts.<sup>12</sup>

Moving forward with this root knowledge in mind, further research can be conducted on system requirements such

as the time spent by emergency nurses repeating hemolyzed samples versus placing IVs, the impact of high emergency nursing turnover on practice change, and the ever-increasing requirements on uniquely skilled and qualified caregivers that tax their ability to multitask in an as efficient as possible manner. Understanding and predicting which patient's experiences can be most efficiently improved by using different draw techniques upfront will ultimately bring this quality improvement to the bedside. Ongoing local improvement/implementation efforts can utilize a structured approach such as the updated Behavioral Engineering Model to reevaluate progress and uptake.<sup>13</sup> Finally, the best methods for education and dissemination (as well as benchmarking) of this knowledge through departments and regional/national organizations will also have to be explored. The authors have laid the groundwork for understanding why practice patterns have not changed despite clear solutions for an important problem.<sup>9</sup> We still have a long way to go, but with the findings in this study, we have recognized an opportunity to make headway in practice pattern modification that not only raises patient satisfaction but nursing satisfaction as well.

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# A CLIMATE: A Tool for Assessment of Climate-Change–Related Health Consequences in the Emergency Department: JEN

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## ABSTRACT (ENGLISH)

Climate change is an urgent public health problem that has looming implications and associated deleterious health consequences. The intersection of climate change and health has broad implications for health professionals in a variety of settings but especially for ED settings. Climate change is already affecting human health and health systems—which includes impacts on ED care. Disaster response and emergency preparedness are critically important public health interventions in our climate-changing world, and the contributions of emergency nurses are essential. Disaster preparedness, environmental emergency response, and health emergency management are important elements of emergency nursing and are explicated in *Sheehy's Emergency Nursing Principles and Practices, 7th Edition*. The purpose of this article is to present an overview of a clinical tool and mnemonic, A CLIMATE, developed by the authors with application to a case review. It is imperative that the nursing profession—particularly emergency clinicians—address the intersection of climate and health to engage in the assessment, intervention, management, evaluation, education, and referral of those who present to emergency

departments with potential climate-related health impacts.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- The current literature lacks a specific framework for the integration of climate and health knowledge for addressing the health history, physical examination, management, and evaluation of climate-related conditions.
- This article contributes to the increasing clinician awareness and engagement in understanding the deleterious health impacts of climate change.
- Key implications for emergency nursing practice include the A CLIMATE tool for health assessment in the emergency department and other settings.

### Introduction

Climate change is an urgent public health problem that has looming implications and associated deleterious health consequences. The intersection of climate change and health has broad implications for health professionals in a variety of settings but especially for ED settings. Climate change is associated with physical health consequences—acute and chronic—and mental health sequelae that are well described in the literature.<sup>1-6</sup> Haines and Ebi<sup>2</sup> note that climate change is already affecting human health and health systems—which includes impacts on ED care. Disaster response and emergency preparedness are critically important public health interventions in our climate-changing world, and the contributions of emergency nurses are essential. Disaster preparedness, environmental emergency response, and health emergency management are important elements of emergency nursing and are explicated in *Sheehy's Emergency Nursing Principles and Practices, 7th Edition*.<sup>7</sup> The purpose of this article is to present an overview of a clinical tool and mnemonic, A CLIMATE, developed by the authors with application to a case review.

A growing body of scientific literature urges climate action as a moral imperative to avoid catastrophic health effects by 2050.<sup>4,5,8,9</sup> Climate effects on health manifest as air quality issues, respiratory illnesses, and allergies related to aeroallergens; vector-borne and waterborne illnesses; food and water insecurity; heat stress, heat strain, and heat stroke, particularly in older persons and occupational workers (construction workers and migrant farmworkers); and acute and chronic kidney illnesses (renal calculi and Mesoamerican nephropathy) related to dehydration and lack of heat breaks. The American Nurses Association<sup>10</sup> developed environmental principles that encompass health in our climate-changing world and explicitly address global climate change. The Canadian Nurses Association developed a position statement in 2009 that was updated in 2017 dealing with the role of nurses in addressing climate change and health. It is imperative that the nursing profession—particularly emergency nurses—address the intersection of climate and health to engage in the assessment, intervention, management, evaluation, and referral of those who present to emergency departments with potential climate-related health impacts.

### The Professional Obligation, Leadership, Education, Accountability, Science, and Engagement Framework and A CLIMATE Mnemonic

As 1 exemplar of a mnemonic, the Professional Obligation, Leadership, Education, Accountability, Science, and Engagement (PLEASE) framework<sup>9</sup> was illustrative in the development of our A CLIMATE mnemonic. Developed by Schenk,<sup>11</sup> the PLEASE framework is a key approach to addressing the impact of climate change and greenhouse gas emissions and the importance of environmentally safe and healthy practices. The PLEASE framework<sup>11</sup> was built on 3 foundational American Nurses Association documents: *Scope and Standards of Practice*,<sup>12</sup> *Code of Ethics*

with *Interpretive Statements*,<sup>13</sup> and *Nursing's Social Policy Statement*.<sup>14</sup> From these documents, Schenk<sup>11</sup> gleaned key concepts to develop the PLEASE framework, aimed at environmentally safe and healthy practices. These specific areas are explicated in the online supplementary material for consideration of their relevance in the integration of the A CLIMATE mnemonic for ED clinicians and interprofessional assessment, planning, intervention, and evaluation of climate-related health consequences. In the ED setting, a framework for determining the etiology of climate-related health challenges may be relevant for the accurate, time-sensitive, and important contributions of members of the ED team.

### **The A CLIMATE Assessment Framework for Addressing Health Consequences in Our Climate-Changing World**

There is a paucity of frameworks, assessment tools, or teaching tools on climate change for clinical practice. Our previous scoping review<sup>15</sup> suggested that nursing is increasingly engaging in publishing about the health impacts of climate change. Frameworks that were elicited from the literature include the United Nations Sustainable Development Goals framework and climate;<sup>15</sup> the Building Resilience Against Climate Effects framework from the Centers for Disease Control and Prevention with a public health approach;<sup>16</sup> a climate change and sleep framework;<sup>17</sup> a climate change and mental health causal pathways framework;<sup>18</sup> and an environmental protection framework.<sup>19</sup> These climate-and-health-related frameworks did not yield applicability for a framework for climate and health that would be relevant for interprofessional or ED clinicians; thus, we developed an innovative approach to the assessment of health consequences in our climate-changing world and a mnemonic—A CLIMATE—as a clinical tool for adoption in emergency settings.

Here we focus on the development of the A CLIMATE clinical tool and mnemonic, which is based on our model of contributing factors to climate-related health challenges (Table 1); this mnemonic was developed and aimed at assessing, managing, intervening, and evaluating climate-and-health-related challenges. The A CLIMATE mnemonic includes the following domains: A—Act immediately to stabilize life- and limb-threatening conditions; C—Consider the climate-and-health etiology of symptoms; L—Learn from a climate health history; I—Implement a climate-and-health-focused assessment; M—Manage the ongoing care of the climate-related emergency; A—Act to integrate an action plan that includes physiological and psychological climate symptoms; T—Treat urgent climate symptoms and consequences; and E—Evaluate, educate, and refer for long-term follow-up.

The A CLIMATE clinical assessment framework and mnemonic were developed on the basis of our understanding of contributing factors to climate-related health challenges and are meant to guide the assessment, management, interventions, and evaluation of care through a lens of climate change and its impact on health and well-being. This framework was developed from an interprofessional perspective and can be used by all members of the ED team providing patient care (Table 1). The mnemonic comprises 8 domains (Figure 1), which are described below.

#### **A—Act Immediately to Stabilize Life- and Limb-Threatening Conditions**

This domain addresses the importance of the emergency clinician in a lens of a focused primary and secondary assessment and priority intervention to address the critical first moments of rapid care in the emergency encounter. Mawardi et al<sup>20</sup> urge that disaster preparedness in our climate-changing world should be an essential priority in emergency and disaster preparedness in the community within a multidisciplinary approach. Thus, bringing the unique lens of emergency nurses to consider the health impacts of climate change in emergency settings and incorporating the rapid emergency nursing process are critical aspects of care. For example, potential life- and limb-threatening emergencies linked with climate disasters are key aspects of emergency assessment.

In the emergency setting, it is critical to triage the patient and assign a triage category and consider initiating special alerts (eg, stroke alert). For example, when heat stroke is suspected, other key interventions are to secure large-bore intravenous access and use critical-thinking skills to administer a fluid bolus for hypotension or intravenous

therapy to reduce the risk of fluid overload in an elderly patient. It is also essential to immediately initiate cooling measures (place ice packs to groin and axillae, remove clothing, and use a spray mist with a fan). It is important to consider whether an indwelling catheter is needed to measure output and check for rhabdomyolysis or disseminated intravascular coagulation and place a special indwelling catheter device to measure core temperatures. Monitoring core temperature through a rectal temperature probe or other indwelling device while obtaining a licensed independent provider's engagement for medication to control shivering and also collect blood specimens for laboratory testing including electrolyte imbalance are critical emergency actions.

### **C—Consciously Consider the Health Impacts of Climate Change Specific to the Regions in Which You Practice**

It is important that health care providers are aware of local and regional climate trends (Figure 2). For example, extreme precipitation has increased over the last 30 to 50 years, and the largest increases have been in the Midwest and Northeast. In addition, there has been an increase in floods in these same regions,<sup>21</sup> resulting in traumatic injury, mental health impacts, preterm birth and low birth weight, increases in infectious diseases, and carbon monoxide poisoning related to power outages.<sup>22</sup> Understanding regional climate trends and being aware of physical and mental health impacts related to extreme precipitation and flooding will allow ED providers to anticipate and plan for surges in ED admissions. Similarly, heat waves are more intense and are occurring with greater frequency, particularly in the western United States.<sup>1</sup> Providers who work in regions that experience increasing extreme heat events can anticipate more ED visits related to heat-related illnesses, particularly in older adults, young children, and certain occupational groups.<sup>23</sup> Moreover, ED clinicians can also anticipate an increase in admissions related to violence and aggression because there is a causal link between increasing temperatures and aggression.<sup>24</sup> A key factor is that the “C” in the A CLIMATE mnemonic encompasses a regional-level and a hospital/departmental-level response as part of the preparation for care of an individual patient by ED clinicians.

### **L—Learn From A Climate–Health History**

A climate–health history can be a key element for clinical practice in the emergency department. Understanding the associated health consequences of these impacts and knowing which groups are most vulnerable will inform how providers approach a focused health assessment, which can be key to identifying health problems that are exacerbated by climate issues. It is critical for ED clinicians to be aware of those individuals, communities, and populations who are most vulnerable to the health threats associated with climate change. Vulnerability is variable, and health impacts differ by location, pathways of exposure, adaptive capacity, and underlying susceptibility.<sup>25</sup> However, there are certain groups who have been identified as populations of concern. These include those with low socioeconomic status, some communities of color, indigenous peoples, immigrant groups, children, pregnant women, older adults, persons with disabilities, and those with pre-existing physical and mental or chronic conditions.

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Hastings<sup>26</sup> examined the impact of climate change and the role of the emergency nurse linking the integration of climate change knowledge, how climate change affects health, and the emergency nurse's role in fighting climate change (Supplementary Figure). It is important to inquire about the environments where patients live, work, and play and the impact that their environment has on their health. For example, when a child presents to the emergency department with increasing and more severe asthma attacks, learning through a climate history that the child lives, and goes to school, close to a congested, high-traffic roadway would be a significant factor in care planning. In addition, it would be equally as important to know if the same child lives in an urban area that experiences the urban heat island effect because the combination of increased greenhouse gas emissions coupled with temperature rise further decreases air quality, which will significantly affect the severity of their disease.<sup>27</sup> This aspect of the mnemonic addresses the unit level of ED care.

### **I—Individualize A Climate-and-Health-Focused Assessment to Ensure Relevant, Climate-Related Impacts are Addressed**

A climate–health history and knowledge of regional climate trends are important factors that will guide the focused assessment. The Global Consortium on Climate and Health Education (GCCHE) based out of the Mailman School of Public Health at Columbia University has developed climate-and-health core competencies, which are recommended for all health professionals. The competencies address 5 areas of practice: climate-and-health knowledge and analytical skills; climate change and public health practice; climate change and clinical practice; climate change and health policy; and communication. One of the goals for practicing clinicians is to demonstrate competence in diagnosing and managing climate-sensitive and climate-induced illness.<sup>28</sup> The outcomes they identify have relevance for conducting a climate-and-health–focused assessment. For instance, a competency specific to the assessment is to “identify and describe patient presentations and triage considerations as manifestations of direct and indirect climate change conditions.”<sup>28</sup> Examples of direct effects would include trauma and heat-related illnesses, whereas indirect effects would include symptoms related to either vector-, food-, or waterborne illnesses.

### **M—Manage Acute, Chronic, and Complex Climate-and-Health Consequences**

Climate-related health consequences can manifest as acute problems, chronic problems, and/or complex problems. Case in point: consider a patient who presents to the emergency department with symptoms of a myocardial infarction. The history reveals that the patient has been under a lot of stress because a hurricane resulted in the loss of her home and the subsequent need to relocate. Although the initial care and management will focus on stabilizing the patient’s physical condition, it will be important to address the potential mental health impacts related to her loss of home and sense of belonging. Therefore, the plan should include mental health screening. The impact will be 2-fold: to provide psychological support and to potentially improve her cardiac health because chronic compounded stress results in increased cortisol levels that have negative cardiovascular effects.<sup>24</sup> Climate-related environmental health challenges also overlap with well-known environmental exposures such as heat illness, heat stroke, and fluid and electrolyte imbalance that are well described in *Sheehy’s Emergency Nursing Principles and Practices, 7th Edition*.<sup>7</sup> In this edition, Worley<sup>7</sup> also addresses environmental emergency content that has important relevance for the treatment of urgent climate symptoms and consequences.

### **A—Act Comprehensively to Address Physiological and Psychological Climate Symptoms**

Formulating an action plan to address both physiological and psychological climate symptoms is key for the individual level of emergency care. Physiological symptoms require unique action plans that are driven by the patient’s presenting diagnosis and level of acuity. Mental health consequences—particularly for those with previous mental health challenges—are also important to recognize and address. Early recognition of, and intervention with, patients at risk for climate-related mental health sequelae can reduce the occurrence of both acute and long-term impacts; acute impacts may include depression, anxiety, increased substance use, and long-term impacts may include post-traumatic stress disorder.<sup>24</sup> As an illustration, it would be a priority to attend to the physical needs of a patient who presents to the emergency department with trauma resulting from an extreme weather event such as a hurricane or flood because it would perhaps involve life- and/or limb-saving interventions. However, to mitigate psychological effects such as post-traumatic stress disorder, anxiety, or depression, initiating treatment such as psychological first aid should be included in the planning and implementation of care<sup>24</sup> at the individual level of care. The earlier “A” (Acting immediately to stabilize life- and limb-threatening conditions addressed in this mnemonic) should be followed up with the second “A” (Act comprehensively to address physiological and psychological climate symptoms). This stage should include the need to re-evaluate the effectiveness of initial interventions to stabilize the patient, continue ongoing monitoring and stabilization, following up on the return of diagnostic results, and alerting



the interdisciplinary team of priority findings such as results consistent with rhabdomyolysis or disseminated intravascular coagulation.

### **T—Tell the Patient Explicitly in What Ways Climate Change has Influenced Their Health**

Since 2014, there has been an increase in the number of Americans who believe that the degree to which climate change is harming human health and will become more common is concerning.<sup>29</sup> On the basis of the results of a survey addressing 10 areas that focused on impacts related to extreme heat, severe storms and hurricanes, asthma and lung disease, wildfires, vector-borne disease, flooding, food- and waterborne illness, pollen-related allergies, severe anxiety, and depression, the authors found increases ranging from 13% to 28% across all categories. Of the 10 areas addressed, the 3 areas with the greatest change since 2014 include bodily harm from wildfires (28% change), bodily harm from flooding (25% change), and bodily harm from severe storms and hurricanes (21% change). Yet, only 4 in 10 Americans think that they will be personally harmed by climate change;<sup>29</sup> therefore, it is important to make explicit how climate change is affecting their health and incorporate strategies to mitigate negative health consequences and symptoms into patient education. Moreover, it is also important to offer an individualized patient approach and discuss ways to optimize the health co-benefits that come from adaptive strategies such as using alternative transportation options, including walking and biking. Patient education is a key role of the emergency clinician whereby there is explicit dialogue with the patient regarding the risk of a recurrence of a climate-change-related health consequence.

### **E—Evaluate the Effectiveness of Interventions and Ensure Appropriate Referrals and Follow-Up**

One of the most important roles that ED clinicians have is to initiate appropriate referrals on the basis of the individual patient's response to the interventions delivered. Most patients who are seen in the emergency department are either admitted to the hospital or discharged to home or another health care facility. It is critical that clinicians work collaboratively not only to provide safe, effective care, but also to ensure comprehensive handoffs that include information obtained from the climate-health history and physical assessment and the initiation of appropriate referrals. Patient education is a part of the discharge, admission, or transfer process, and a key aspect of the ED encounter. Using the example given above of the patient who presents with a myocardial infarction who reports increased life stressors such as losing her home during a hurricane, it would be important to ensure that a referral to a social worker or mental health provider—both during the inpatient stay and on discharge—be completed.

### **Application of the A CLIMATE Assessment Framework to a Case Review in the ED Setting**

Table 2 illustrates a case involving an older adult with potential heat stroke—a common yet preventable life-threatening medical condition that is exacerbated in our climate-changing world. The patient is a 74-year-old woman who resides at home alone in low-income senior housing in a densely populated urban area. Applying the A CLIMATE framework allows for a comprehensive approach that can mitigate future climate-related events and ED admissions, thus addressing the likelihood that patients such as her receive optimal care and follow-up. Below is a description of how the A CLIMATE framework could be applied in the most favorable circumstances where the patient is successfully treated and well enough to be discharged home.

### **A—Act Immediately to Stabilize Life- and Limb-Threatening Conditions**

It is essential for the emergency clinician to immediately assess this patient for priority interventions to address the critical first moments of rapid care in the emergency encounter. For this patient, prioritizing acute neurologic changes and the potential for a diagnosis of heat stroke or acute cerebrovascular accident/stroke are important differential diagnoses for the emergency clinician to consider and rapidly assess and plan urgent interventions to stabilize the patient.

### **C—Consciously Consider the Health Impacts of Climate Change Specific to the Regions in Which you Practice**

In this case, it is important to take into consideration that the heat index has been above “32.22” °C (90 °F) for several days. Heat index accounts for the combined effects of temperature and humidity. When the relative humidity is high, the rate of evaporation, a process of cooling, decreases. In general, extreme caution should be taken when the heat index ranges from “32.22” to “40” °C (90-103 °F).<sup>30</sup> Health care providers should consider these climate-related factors and be aware that older adults are more vulnerable to heat-related illness. Understanding these environmental factors will help providers to proactively plan for potential surges related to climate-change-related illnesses such as in the patient case presented here. An example of a commonly found disease is Lyme disease—its spread is increasing owing to warming of the environment—which should also be consciously considered by ED clinicians.

### **L—Learn From A Climate–Health History**

The patient’s age and socioeconomic status identify her as vulnerable to climate-related health impacts. In addition to her age, the patient’s pre-existing conditions (congestive heart failure and hypertension) increased her risk for heat-related illness. Her medications also contributed to this risk. For instance, taking a diuretic in the context of a prolonged high heat index will exacerbate dehydration, and cardiac medications such as Metoprolol can further decrease cardiac output. The patient presented with both tachycardia and hypotension in the emergency department, despite having Metoprolol prescribed. Moreover, it is important to note that the patient does not have an air conditioner at home, which also contributed to her current condition, and that she lives in an urban heat island. Furthermore, her history revealed that she has minimal social contacts. Social isolation, particularly in older adults, is a risk factor for developing heat-related illness.

### **I—Individualize A Climate-and-Health–Focused Assessment to Ensure Relevant, Climate-Related Impacts are Addressed**

Whereas heat stroke is part of the differential diagnosis, there are other diagnoses to consider, such as acute stroke, encephalitis, and infection/sepsis.<sup>31</sup> Taken together, her history and physical examination indicate signs and symptoms of heat stress or stroke and also suggest objective signs of other potential diagnoses. Therefore, considering a heat-related illness as a potential diagnosis is important. ED clinicians have recognized and treated heat stress and heat stroke in ED settings for years. However, with the increase in ambient heat in our climate-changing world, there is a significantly increased prevalence of heat-related illness in vulnerable populations, including older adults, children, and occupational workers that may include farmworkers, construction workers, and others exposed to heat.<sup>32,33</sup>

### **M—Manage Acute, Chronic, and Complex Climate-and-Health Consequences**

Given the emergent nature of heat stroke, interventions should not be delayed while other diagnoses are being ruled out. Interventions for cooling for a likely diagnosis of heat stroke while obtaining a computed tomography scan to rule out a cerebrovascular accident/stroke and considering other possible differential diagnoses are critical for the ED clinician. It is important to consider the potential for a diagnosis of heat stroke to avoid progression of the condition, which may lead to organ failure and death.<sup>31</sup> In addition to ruling out other diagnoses, it is a priority that interventions aimed at decreasing the patient’s temperature and rehydrating her (while monitoring her carefully, given her diagnosis of congestive heart failure) is an important priority of the entire ED team.

### **A—Act Comprehensively to Address Physiological and Psychological Climate Symptoms**

It is unclear if the patient has significant mental health sequelae from this event. Physiological and psychological climate symptoms are important in the assessment. These may include disorientation, delirium, and agitation as both physiological and psychological manifestations. However, it can be very distressing for patients who are

confused and who may be aware of their actions and behaviors while disoriented. Therefore, it would be important to explore this with the patient and her family once she is stabilized. This aspect of the plan of care would also be inclusive of a comprehensive understanding of her baseline neurocognitive status. Teaching the family the importance of a daily check-in during hot weather and perhaps every day should also be incorporated in the action plan.

#### **T—Tell the Patient Explicitly in What Ways Climate Change has Influenced Their Health**

Once the patient has stabilized and her neurologic status has returned to baseline, it will be important to begin patient education and discharge teaching. Communication with patients and families is critical to address population health needs related to climate change and its health impacts.<sup>34</sup> Information that should be discussed and reinforced include the following:

- What are heat-related illnesses and how can they be prevented?
- The importance of staying hydrated and the changes to perceptions of thirst that occur in older adults.
- The importance of avoiding errands, going outdoors during peak temperatures.
- How medications can impact hydration status and heart rate and blood pressure.
- Strategies for cooling such as air conditioners (if financially feasible), shades to block the sun, or local cooling centers.
- What kinds of symptoms should be reported to her primary care provider?

#### **E—Evaluate the Effectiveness of Interventions and Ensure Appropriate Referrals and Follow-Up**

The patient should be referred to her primary care physician and a comprehensive team to optimize her home care and for follow-up. A referral for a visiting nurse is necessary to continue physiological monitoring, medication teaching, and home safety. Other key members of her home care team can be engaged by the case management team and should include a home health aide, occupational therapist, physical therapist, and social worker. An occupational therapy practitioner referral would be beneficial to assess her home to determine if there are environmental factors contributing to her potential for heat-related illness, whereas a physical therapist can work on strength training and mobility. A social worker referral will also be important to ensure that she is optimizing the services for which she qualifies, such as Meals on Wheels and other elder services located in her community. Initiating other available services can also reduce her level of social isolation and minimize her chances of having another heat-related event. Implementing a comprehensive, interprofessional approach to care is critical for at-risk older adults, particularly because the frequency, intensity, and duration of extreme heat events is increasing. Education of patients about cooling centers and public spaces that can be accessed to offset exposure to heat during periods of high ambient temperatures is important. Social work or community programs that donate or support funds for air conditioners or fans for those with chronic illnesses may be another opportunity for referral. Daily check-in by the individual's professional care team and family during heat-related weather events and perhaps daily on a regular basis are important aspects of follow-up care.

#### **Conclusion**

The emergency nurse, along with the interdisciplinary team, must intervene to reduce the impacts of climate change on health, particularly for vulnerable populations who frequently use the emergency department for acute, chronic, and complex health problems. Using the A CLIMATE framework and mnemonic may increase the ability for

emergency nurses and clinicians to uncover climate-related health challenges, increase screening of patients, offer interventions, and address education for those at risk of the deleterious health consequences of climate change. This framework may guide emergency specialty practice in our climate-changing world and address the important focus on symptom identification; management; gathering a comprehensive health history; in-depth physical examination; and accurate diagnosis, intervention, referral, and follow-up. Although the prevalence of climate-change-related health consequences is increasing, intervention by emergency nurses and other health professionals is imperative to optimizing professional care.

### Acknowledgments

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### Supplementary Data

#### Author Disclosures

Conflicts of interest: none to report.

### Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jen.2020.10.002>.

Health care provider	Roles in addressing climate-related health impacts.
Advanced practice provider (physician, nurse practitioner, physician assistant)	Acute stabilization of life- and limb-threatening conditions. Perform a focused medical history and physical examination that incorporates knowledge of climate-related illness common to the region and identifies patients from vulnerable groups to ensure a comprehensive plan of care.
Registered nurse	Acute stabilization of life- and limb-threatening conditions. Assess for risk of developing, or the presence of, climate-related illnesses; provide climate-informed patient and family education aimed at prevention of future health threats and reduction in severity of climate-related illnesses; ensure a comprehensive approach to care.
Occupational therapist	Address occupation deprivation—the potential loss of meaningful roles and occupations owing to climate change—and support patients who experience life-role disruptions.
Mental health professional	Screen for climate-related mental health sequelae, and initiate a plan to provide psychological care and support.

Social worker	Coordinate outreach to appropriate community services to address individual climate vulnerabilities (eg, elder services and transportation).
Care coordinator	Ensure that all relevant inpatient or outpatient follow-up referrals to address physical and mental health sequelae are made and integrated into hospital admission or ED discharge planning.
Physical therapist	Optimize activities of daily living for those with chronic and complex illnesses exacerbated by climate change.

Background
This case takes place in early August in the northeast United States. The heat index has exceeded 32.22 °C (90 °F) for 4 days. The patient is a 74-year-old African American woman who lives in low-income senior housing in a heavily populated urban area. She does not have an air conditioner. The patient is found by her son in apparent distress; he calls 911.
Prehospital setting
The first responders find her to be febrile with acute neurologic changes (lethargic, confused, incoherent, and unable to follow commands), hypotensive, and tachycardic. Vital signs at the scene: temperature 40 °C (103.3 °F) orally, HR 110 ST, BP 84/50, RR 30, and oxygen saturation 90% on room air. An intravenous line is placed, and a 500-mL bolus of normal saline is administered. The patient is transported to the local emergency department.
Emergency department

Past medical history: HTN (stage II), hypercholesterolemia, and mild congestive heart failure (diagnosed 10 y ago); ejection fraction 40%.

Social history: The patient lives alone in low-income urban senior housing. She is a retired US postal worker. Her apartment lacks air-conditioning, but she does have a fan. She receives Meals on Wheels 3 times a week. Her husband of 45 years died 10 years ago. She has 2 children who visit approximately every 2 to 3 weeks. Other than family, she has limited social interaction outside the housing complex, apart from an occasional visit with neighbors and a visiting nurse and social worker.

Family history: Mother had hypertension, history of a myocardial infarction. Father had diabetes and died from complications of stroke. Adult children with unknown health backgrounds.

Medications: Furosemide 80-mg by mouth daily; Lisinopril 20-mg by mouth daily; Metoprolol SR 50-mg by mouth daily; Simvastatin 20-mg by mouth daily.

Allergies: No known allergies.

Objective data

Vital signs: temperature 40 °C (102.5 °F) core, HR 106 ST, BP 90/58, RR 28, and oxygen saturation 96% on 2-L/min nasal cannula.

Review of systems:

General: The patient is a 74-year-old African American woman; height 1.55 meters; weight 52.2 kilograms; no obvious signs of injury or distress noted; lying on stretcher; she is awake, unable to follow commands consistently, and appears restless. HEENT: Lips are pale and dry; buccal mucosa and tongue are dry; no nodes or masses palpated.

Neurologic: Oriented to person only; speech slurred; pupils are 3-mm equal and reactive to light and accommodation; no obvious focal deficits noted; difficult to assess systematically owing to patient's mental status. Moving limbs equally.

Cardiac: Normal S1, S2; no murmurs or bruits noted. Radial and distal pulses are 1+, equal bilaterally; +CSM; no peripheral edema noted. Decreased skin turgor, tenting noted.

Respiratory: Lungs are clear bilaterally; patient tachypneic but does not seem to be in distress; no nasal flaring or use of accessory muscles noted.

Abdominal/GI: Abdomen soft, nontender; bowel sounds present in all 4 quadrants; no pain; no masses; no bruits noted.

Musculoskeletal: Gait not assessed owing to neurologic changes. Hip flexion Skin/dermatologic: Skin is hot, dry, and intact.

## DETAILS

**Subject:** Emergency medical care; Intervention; Public health; Clinical medicine; Trends; Catheters; Health problems; Heatstroke; Emergency services; Heat; Nursing; Outdoor air quality; Older people; Emergency preparedness; Nurses; Climate change; Accountability; Organizational climate; Precipitation; Health care; Regions; Health education; Disasters; Medical personnel; Illnesses; Mental health; Disaster medicine

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## Response to Amberson Letter: JEN

Lisa Adams Wolf

[ProQuest document link](#)

## FULL TEXT

Dear Editor:

We appreciate the comments and suggestions of Amberson<sup>1</sup> on our research<sup>2</sup> on the conditions necessary for accurate triage of ED patients. Our work and that of other researchers<sup>3,4</sup> suggests that there are both individual and environmental factors that contribute to effective triage decision-making.

A significant environmental factor is the socioclinical understanding and operationalization of the role of the triage nurse as one who assesses for patient risk and is not solely a facilitator of throughput. In ED environments that identify time metrics as the driving outcomes measure, the important safety concerns that triage nurses identify can be less valued. Amberson points out, correctly, that there is little evidence examining this problem; in fact, the outcomes measures identified in the few studies around immediate bedding processes are entirely focused on left-without-being-seen numbers and door-to-provider times.<sup>5-7</sup>

Although patient outcomes are not examined in studies of immediate bedding, qualitative findings suggest that there is concern from emergency nurses about the safety of these processes regarding missed diagnoses, delayed care, and failure to rescue. Our recent studies in the exploration of triage processes around pregnancy-capable people<sup>8</sup> and occultly suicidal people<sup>9</sup> suggest that immediate bedding processes are a source of great concern to emergency nurses because critical assessments are delayed or not done, compromising patient care and safety.

This leaves us with the excellent question of how best to study the impact of different triage processes on nursing and patient outcomes. We agree with Amberson that the workplace environment is a critical element in clinical decision-making and associated patient outcomes. A useful theoretical framework that describes the intersection between the socioclinical environment and the individual nurse as it affects decision-making is the study "Integrated, ethically driven environmental model of clinical decision making in emergency settings" by Wolf.<sup>4</sup> It is an ED setting-specific theory that can examine these overlapping and interwoven threads.<sup>10</sup>

More concretely, we offer research priorities for Emergency Severity Index triage<sup>11</sup> and suggest that correlational study designs that explore the relationships between triage elements (eg, number of triage nurses, triage processes and decision-making, and nurse time in triage) and outcomes measures (eg, accuracy of Emergency Severity Index level assigned, time to triage, time to first diagnostic, and time to first intervention) would be a valuable place to start. These studies can be population-specific (eg, triage of patients classified as pediatric, geriatric, obstetrical, or psychiatric) or complaint-specific (eg, chest pain and shortness of breath), as the situation demands. Overall, each emergency department is unique in its community served and in the triage processes it uses to rapidly identify and treat patients who are acutely ill; the questions grounded in one's own emergency department present research opportunities to determine if these processes are effective in providing safe care.

## DETAILS

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# Kratom Ingestion and Emergency Care: Summary and a Case Report: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

Kratom ingestion for its psychotropic effect or to self-treat opioid withdrawal symptoms has increased over the last 10 years in the United States. Although mild adverse effects have been observed in users, reports of respiratory failure and shock after kratom consumption remain rare. In this case, a 35-year-old man initially presented to the emergency department with profound circulatory shock, metabolic acidosis, hypoxia, and symptoms of autonomic nervous system dysfunction. The patient required vasopressor support, multiregimen sedation and rapid sequence intubation, mechanical ventilation, and emergent hemodialysis. Within 72 hours, the patient's condition stabilized, and he was extubated. The patient reported regular consumption of large quantities of kratom as well as injection of

heroin and cocaine. In this report, a rare clinical presentation after kratom ingestion is described.

## FULL TEXT

### DETAILS

<b>Subject:</b>	Laboratories; Emergency medical care; Drug overdose; Drug withdrawal; Artificial respiration; Sedation; Heroin; Opioids; Consumption; Hypoxia; Nervous system; Side effects; Emergency services; Cocaine; Ventilation; Central nervous system; Autonomic nervous system; Withdrawal symptoms; Dialysis; Critical care; Case reports; Respiratory failure
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# Planning for Chaos: Developing the Concept of Emergency Preparedness through the Experience of the Paramedic: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

### Objective

Emergency preparedness is a developing specialty with a limited evidence base. Published literature primarily offers a retrospective view of experience, with few studies examining and understanding the individual lived experience of practitioners prospectively. This study explores paramedics' lived experience of emergency preparedness and applies that learning.

### Methods

Thirteen paramedics were recruited through purposive sampling. Face-to-face semi-structured interviews explored their individual experiences of emergency preparedness, in line with the idiographic focus of Interpretative Phenomenological Analysis.

### Results

Through data analysis, the following superordinate themes were identified for further discussion: self-determination, control, and experience-based practice. Participants appeared to value their role and the unpredictable environment in which they worked. Personal resilience, an area that they suggested is not covered effectively within individual preparation, was viewed as important. The participants articulated that risk, threat, uncertainty, safety, trust, and control were important concepts within individual preparedness. These paramedics valued practice-based knowledge and education as credible and transferrable to their clinical work.

### Conclusion

Evidence from this study suggests that standard emergency preparedness, with the focus at organizational level, is not sufficient for the individual workers or for an overall effective response. Dimensions of individual preparedness are presented, with the paramedic central to the experience within a conceptual model (the DiEP model), creating a new form of emergency preparedness that reflects the individual paramedic's experience.

## FULL TEXT

## Contribution to Emergency Nursing Practice

- The evidence base examining how practitioners prepare for mass casualty incidents is limited. The published literature offers a retrospective view of experience, with few studies examining and understanding the individual lived experience prospectively.
- The main finding of this research is that the individual experience of emergency preparedness is complex, multidimensional, and individualistic. Consideration of experience is important when evaluating how practitioners prepare and train for this aspect of their role.
- Key implications for clinical practice are that standard emergency preparedness, with focus at the organizational level, is not sufficient for the individual practitioner. A significant change in preincident education is required to make preparation more effective and to ensure that emergency preparedness is fit for purpose.

## Introduction

Emergency preparedness is a complex and broad concept that encompasses health care fields including medicine, nursing, and prehospital care and is 1 phase (stage) of the “disaster continuum”<sup>1-3</sup>. Emergency preparedness can include training and exercises, drills, and simulations and is focused on preparation, rather than actively dealing with a clinical incident.<sup>1,2,4,5</sup> There have been few attempts to define emergency preparedness,<sup>5-8</sup> and these definitions lack a clear link to the individual worker. While acknowledging the diversity and multidimensional aspects of the concept of emergency preparedness, a proposed weakness is the limited understanding of how theory impacts clinical practice and how the individual working in this area experiences this concept.

The multidimensional aspects of emergency preparedness as described in editorials and opinion pieces are poorly defined and described.<sup>5-9</sup> In academic literature, there is some attempt to classify emergency preparedness into the following categories: political, strategic, managerial, clinical, and educational.<sup>2,8,10</sup> The political, strategic, and managerial literature incorporates risk and threat levels, role and responsibilities, intra-agency response, organization hierarchy, and resource implications.<sup>10-12</sup> The clinical and educational categories include clinical response planning, the management and treatment of casualties, the use of specialist clinical equipment, knowledge retention, and health care professionals’ competency and clinical skill base.<sup>1-9</sup>

Unscheduled incidents include natural, transportation, and industrial disasters, mass gathering, and terrorist attacks. The threat is changing, with an increased risk of “home-grown” attacks as well as known international terrorist groups,<sup>13,14</sup> as demonstrated in the lifetime of this research. In addition, the perceived risk of a “lone-wolf” or “Mumbai” style of attack has also increased, adding a new emergency preparedness dimension for health care workers.<sup>14-16</sup> These unscheduled catastrophic events create enormous challenges for emergency personnel and their role in preparing for unscheduled episodes. Historically, major incident training was the primary domain for the emergency services. Currently, owing to heightened risk of terror threat, it is a raised priority for all health care personnel.

At a strategic level, guidelines have been put into place, and there is an increased allocation of funding for the purchase of equipment, but there are expressed concerns about training and knowledge levels.<sup>1,2,11,17</sup>

Preparedness often focuses on organizational and community planning required for an unexpected clinical incident.<sup>1,2,12</sup> The consequences of not planning and preparing for a major incident include impact on human life (death, risk of disease, long-term disability), impact on local community (grief, business continuity, financial impact), and the risk of fear within the community.<sup>2,9,12</sup> In addition, as resources are directed toward the major incident, routine medical care must continue so that adverse impact on care quality is minimized.

The participation, experience, and engagement of the paramedic within emergency preparedness plans remains unclear. Research within other areas such as the military<sup>18,19</sup> and aviation<sup>19,20</sup> suggests that an understanding of individual experience is vital for an effective response. The perspective of the paramedic is important to consider, because working as first responders, they are actively engaged in preparedness and response. Studies that explore aspects of individual experience, perceptions, or attitudes focus on training needs, knowledge retention, and access to training and protocols.<sup>1-10</sup> These studies offer an insight into the practicalities of training but do not appear to capture the personal element involved in this role. For an adequate clinical response to occur, health care personnel must be willing to undertake their role and work within this environment.<sup>21,22</sup>

Paramedics' current engagement with emergency preparedness is practical and clinically orientated rather than drawing on relevant albeit partial evidence or underpinning insights about experience.<sup>2,18</sup> A key limitation is the significant lack of conceptualization into their practice of emergency preparedness and the varying definitions. It is unclear what knowledge or evidence the paramedic draws on to inform their emergency preparedness clinical practice and whether this includes evidence of experience. Until these experiences are understood, preparation cannot be developed in a reflexive way. The currently adopted standardized approach does not acknowledge the individual workers' context, perceptions, attitudes, or requirements, resulting in a standardized model that may remain inflexible and partial. The overall result is skills-based training with minimal theoretical input.<sup>2,18</sup> New conceptual knowledge, acknowledging the individual practitioner's experience, will further develop and refine effectiveness of future clinical practice.

Consideration of how the individual paramedic experiences an emergency/disaster is key in preparing an effective response, because of the likelihood that they will be the first health care personnel at an incident. The context of individual experience needs to inform training and the transition from normal work to emergency preparedness work. The purpose of this qualitative study is to explore and understand the concept of emergency preparedness through the experience of paramedics and determine some of the motivations, barriers, and enablers when engaging in emergency preparedness.

## **Method**

An Interpretative Phenomenological Analysis (IPA) methodology was chosen for this study, enabling comprehension of the individualistic perspective of experience.<sup>23-26</sup> Listening and understanding of the human experience is the key to this research and underpins methodological choice.

Data were collected using semi-structured interviews, exploring paramedics' experience of the concept of emergency preparedness. Ethical approval was obtained from both the academic institution and the ambulance service. Before the interview, a Participant Information Sheet, which included information on an employee counseling service, was supplied to all subjects via email. Participants had the opportunity to ask questions before completing the consent form. Confidentiality and anonymity were maintained throughout.

## **Setting and Sample**

Paramedics who served in an emergency response role were recruited via in-house weekly email briefings and printed signs on their staff noticeboards. The specific attributes sampled were that the participants were registered clinical paramedics, employed by a regional ambulance service, who were likely to have experience of emergency preparedness. Thirteen paramedics consented to participate in this study. This sample size reflects the idiographic component of IPA and enables the subtle analysis of words and phrases that are required for this in-depth review of the chosen experience,<sup>27-29</sup> allowing the participants to "think, talk and be heard"<sup>28</sup> and ensuring that their individual experience remains central to the study.

## **Data Collection**

The semi-structured interviews were exploratory and interpretative, with appropriate prompts to ensure that experiences could be explored in-depth.<sup>24-27,30-32</sup> They were carried out at the participant's workplace in a quiet area, away from colleagues to minimize disruption, ensure quality audio recording, and allow a confidential dialogue to occur. The schedule (Figure 1) commenced with a broad question about their experience in the ambulance service and how it feels to work in an emergency environment. The average interview length was approximately 1 hour, 14 minutes. The total interview time was 16 hours, 10 minutes, and 51 seconds.

### **Data Analysis**

An interpretative phenomenological methodology, exploring the views of the participants, requires a data analysis method that, in addition to describing a situation, also interprets the data to increase comprehension and provide clarity, yet allows the participant to remain central to the process through the use of direct quotations.<sup>23-27,30-32</sup> This detailed, first-person account is a distinctive characteristic of this approach.

The recorded interviews were transcribed verbatim by the Principal Investigator, with symbols used to note laughter, significant pauses, and hesitations. The act of self-transcribing allowed deeper familiarity with the data and allowed "hearing" of the participants' voice. This was the first stage of data analysis.<sup>30,31,33</sup> Notes regarding the setting, the respondents' body language, and other nonverbal communication were documented to capture the atmosphere and data in its entire context. The interpretative component of IPA requires that these additional interactions be included when reviewing the exchange between the researcher and the participant,<sup>31</sup> and these were added to the transcriptions for the data analysis phase.

Each transcript was read thoroughly, multiple times, to enable familiarity with the text and provide an immersive view into each interview.<sup>30,31</sup> In addition, a research diary, with the initial notes regarding the interview and the interaction between the researcher and the participant, was reviewed alongside the transcript, enabling active engagement with the data.<sup>25,31</sup> Notes were then made at an exploratory level, and initial manual coding commenced on a line-by-line basis, alongside descriptive, linguistic, and conceptual highlights.<sup>25,31</sup> This phenomenological approach focused on key features of their individual experience. Interpretative analysis then occurred, resulting in theme generation across the transcripts.

### **Findings**

Three identified superordinate themes of self-determination, control, and experience-based practice reflected the paramedics lived experiences of emergency preparedness. Within IPA, these themes allocate a descriptive label detailing the conceptual essence of the themes contained within it.<sup>25,34</sup> Subthemes were then identified, reflecting dimensions of lived experience that have not previously been recognized in the emergency preparedness literature and offering further insight and connection to the overarching superordinate theme.

This paper reports on each theme by using key quotes from the participants to illustrate the findings. Pseudonyms are used to protect participant confidentiality.

#### **Superordinate Theme: Self-Determination**

Self-determination emerged, particularly in relation to role determination and personal resilience. Self-determination theory provides an insight into individual characteristics that impact on self-motivation and psychological resilience.<sup>34-36</sup> In this study, self-determination details the importance and impact of the individual's role perception and working culture on their motivation to work in this unpredictable environment. Moreover, the concept of personal resilience acknowledges the psychological aspect of functioning, at a personal level, within unexpected, potentially overwhelming incidents.

#### **Subtheme: Personal Resilience**

This discussion focused on how an individual copes when anticipating their experience of an incident, responds to

an incident, and potentially recovers psychologically after the experience of an incident. *I imagine, if the day comes and you deal with something like that, and you are one of the crews that turns up... even the most cold-hearted clinical person in the world, it would be likely that they would have some kind of feeling towards that, emotion towards that so it is going to be difficult. People aren't going to be robots in doing it. (James)*

The participants discussed the need to distinguish between the physical and psychological aspects of the role when actively engaging in a mass casualty incident. *"You almost have to dehumanize the patients to deal with 20, which some people don't like either." (Sally)*

The participants also noted the separation of psychological and practical domains in preparation and suggested varying approaches to decoupling emotions from the physical reality. *How would I cope with that? Mentally? Can I remember the protocols? Practically? That's another thing. If it is not endorsed with protocols, if it continuously reminded to you in weekly bulletins or through training and it is not active then it tends to be put in the back of your head really until you may need it. I suppose psychologically you think it could never happen but it will happen one day. (David)*

It is assumed that psychological preparation is part of each stage of emergency preparedness and response. This contrasts to Harry's viewpoint, who has worked in the ambulance service for 25 years. *It is going to happen you know and we have just got to deal with it whereas perhaps it will affect me later on, it wouldn't affect me.... or I feel that it wouldn't affect me too much at the that time and as I say I have not dealt with it, I don't know what it is going to be like in the future or anything like that so I would be hopeful that there would be a back-up sort of plan for us, if you know what I mean, to sort us out after. (Harry)*

All the paramedics suggested that if a disaster situation unveils, the provider must acknowledge the incident and hope that a back-up plan is in place. *If I'm honest, I don't think the ambulance service considers your mental status at all....I honestly think that it is part and parcel of the job as well. I came into the job knowing that I am going to see and deal with things, that the normal everyday jobs would never see. So I think you just learn to accept things better but again that only comes with time, doesn't it? (Edward)*

These quotes highlight some of the challenges of training for the psychological aspect of the role. Key issues include the difficulty in simulating clinical incidents, ensuring training needs are individualized, and evaluating training effectiveness.

### **Subtheme: Role Determination**

Self-identity refers to "how people define themselves in relation to others"<sup>37</sup> and includes factors such as impact of identity on personal functioning, group interaction, and self-motivation. Powerful dialogue noted specific differences in their paramedics' role when compared with a more "routine job." *"I've never really wanted an office job, that doesn't suit me at all." (Jessica)*

Participants noted the diversity and unpredictability of their workload and the requirement of shift work. *There is just something nice about the fact that you don't come to work 9–5 and sit down at a desk all day for eight hours and then you have to sit in rush hour to get home. It's just nice having that unpredictability, and variety and difference. (Jessica)*

These paramedics appear to perceive their role as exhilarating in contrast to a "regular" job. The unpredictability, diversity, outside environment, and unknown element of their work appear as a motivator, rather than a barrier to engagement and offer a wider context of their experience. The working environment appeared significant to all 13 participants, with individuals valuing the personal mental and physical demands of this setting.

Participants identified their role as being action-packed and adventurous, which often complemented their personal passion for outdoor pursuits: *I wanted to treat a casualty in a dangerous, challenging environment. I think you need*

*to be up for that challenge and physically fit as well, as it is a physically demanding job so you need to keep your fitness up. (Mary)*

Paramedics identified themselves through an “action hero” and “rescuer” lens, and this appeared to be a self-motivator and influence their attitude to their role and expectations of the type of incidents they were expected to respond to. *“The excitement. Excitement. The adrenaline rush, the knowledge that you can be involved in this world and you could make that little difference.” (Sally)*

The “action hero” concept was evident from the majority of paramedics interviewed. Two divergent and conflicting accounts emerged, offering a more measured view on the day-to-day role. *“My Mum imagines that I am running into terrorism, like the London bombings every day. I don’t think she quite gets what we do [laughs].” (Sally)*

The language used by the participants offers an insight into the “culture” of the paramedics’ experience, which is often from a military or operational background, as well as the use of humor as a coping mechanism for dealing with the anticipatory response and actual response to incidents. *“I think that understanding the ambulance service as a whole is quite a mickey-taking atmosphere and I think that’s how people get through the day-to-day in this job.” (Sally)*

Together, these results provide an important insight into how paramedics work in the culture of the ambulance service. The use of functional and military language is present in all transcripts.

### **Superordinate Theme: Control**

Control as a theme emerged when exploring paramedics’ preparation and training, how they deal with uncertainty and the changing nature of an incident, and their relationship with both their clinical equipment and their training program.

#### **Subtheme: Uncertainty**

All 13 paramedics suggested that they felt a lack of control in their anticipatory planning for a terrorist incident.

*There’s a paradigm that we’ve got the watches, but the terrorists have got the time, so we don’t know when it is going to happen, we don’t know what it is going to consist of, where it is going to happen or how it is going to happen but every time that the terrorists come out with a different methodology then we have to change our preparedness. (Philip)*

This perhaps reflects the focus on response and offers an insight into the lack of control that these responders feel when dealing with this area. *“Terrorists and that kind of world is becoming very prominent, they are thinking differently and however much work we put in to it, these people are always going to be a step ahead.” (Sally)*

This could be viewed as a defeatist attitude, implying that the emergency services are engaged in a losing battle. It may reflect the paramedics’ natural reactionary response to a situation and shows some frustration of the lack of control that these health care workers have of this uncertain threat. No paramedic suggested how they could address the changing threat in the context of emergency preparation and feel more in control; rather, they acknowledged that the terrorists and their threat are evolving and that it was challenging to engage with these changes, even for experts in this specialty. *At the start of any incident, there is going to be... utter chaos, so if you encompass that into your plan, it then becomes part of your plan and then you can work on from that because it will be chaos for the first hour, it will be total and utter chaos with masses and masses of casualties. (Harry)*

Flexibility, adaptability, and the acknowledgment of uncertainty and chaos appeared important to these participants, both in their preparation and response to an incident. This concept is not currently recognized within the education provision;<sup>38</sup> rather, training content appears static and does not acknowledge the complexities in this area.

Acknowledging the uncertainty may offer some control and reassurance to these individuals as they engage in preparedness activities.



### **Subtheme: Safety and Trust**

Paramedics described how, through their training and their specialist clinical equipment, they perceive an increase in safety in the context of an incident. The symbolism of equipment and the response to training appears to offer the paramedics an element of control in an area with multiple uncertainties. All the participants discussed the use of specialist emergency preparedness equipment in their interviews. It emerged from the data analysis that their clinical equipment appeared to offer the paramedic a perceived element of safety and that they placed trust onto this equipment that enabled them to function within their role. *Within a more challenging environment, like the hot zones... I found it is about trusting your equipment and trusting what you have been told and if you can get that into your head that the ropes are going to hold you whether you are 50 foot off the ground or 150 feet off the ground. That is the key thing to me. (Edward)*

Jessica implied that the only option is to trust your equipment and that this is not a conscious decision; rather, as a professional, she needs to function in her role: *"It is going to work, you can only rely on what's there, like, trust in the equipment that they've given you whatever research they've done with it behind you know, you're just going to have to cope." (Jessica)*

She appears to suggest an additional trust relationship, and that is to the manufacturers who she perceives as accountable because they have researched and marketed this equipment.

Isla's trust in the equipment reduces her concerns about her personal safety. *[Safety], no not really, we don't really discuss it [laughs], it is not something that we ever discuss [laughs]. Yeah, but not, I don't worry because we are probably safer doing what we do than members of the public are cos' we have the equipment, all the PPE, we need to keep us safe, whereas they don't have anything to keep them safe apart from us helping them. I emphasize we should be the ones that are safe. (Isla)*

This perceived increase in safety appears to occur in response to the symbolic nature of the equipment rather than its measurable effectiveness.

Sally suggests that this feeling of trust and safety can result in individuals feeling invincible. *I think also, in some particular jobs specifically, I also think the PPE make some people feel invincible and that is the bit that I was made very aware of the other day, that people feel invincible once they put it on and I think there is still that element that you need to be slightly safe about it. (Sally)*

There is also the image of a Russian roulette type game when discussing equipment choice. She suggests that one of the pieces of equipment often fails, which suggests that the feeling of safety is perhaps a false perception. This false perception may enable practitioners to feel in control at a time of personal stress to them.

### **Subtheme: Anticipation**

This section focuses on the challenge of training for an incident that is a rarity for emergency service responders. Long periods of time with no exposure to an incident may result in practitioners suffering from exercise fatigue through constant training or a decrease in clinical skills through nonutilization. Participants reported that they value hands-on time with their clinical equipment, in contrast to classroom-based learning.

Tony uses a metaphor of having a toolbox containing implements that need to be "sharp" and ready for action. He acknowledges that being ready to respond, almost like a sprinter in their starting blocks, is their primary aim but implies that their role is like being constantly on the starting line and waiting for that starting gun to go off. *We are very lucky here as we get protected training time, which is unlike the rest of the NHS where it is so busy. Training is seen as more of a secondary need than the primary response, whereas our primary response here thankfully doesn't happen every day so a lot of what we do is train, for it is almost like a tool ready to get out of the tool box, you have to keep your tools sharp. (Tony)*

All participants acknowledged that they were in a constant anticipatory mode with regard to a mass casualty event, resulting in concern about their clinical skills. These practical skills need to be up to date and usable with little notice and with minimal real-life application.

From the participants' accounts, it was evident that there is a sensitive balance between too little training and too frequent training. Rob highlights this issue in this extract. *We have engaged in a lot of training. We sometimes get exercisitis where you do too many, and people get sort of lethargic about it, but for me, until something happens that is what we are using and it is there and we are very proactive in doing that.* (Rob)

Participants experience anticipation through constantly waiting and preparing for an incident, which has an impact on training, education, and responsiveness. A key focus in this time is training and education, ensuring that they are ready to respond with no notice. The long-term impact of anticipation on these individuals is not known, and it appears that individual consideration for their practical and psychological needs is required during this time.

### **Superordinate Theme: Experience-Based Practice**

According to the paramedics interviewed, research evidence does not appear directly related to clinical practice and protocols. These paramedics appeared to value knowledge gained from past events and then transferred and applied at a local level. There seems to be some hesitancy to determine what credible evidence is within this specialty and how this could be applied to such an unpredictable and multidimensional area. The paramedics viewed academic knowledge with some suspicion and seemed unaware regarding how to interpret and apply this at local level. They determined that practice is often a "best guess" and "made up" as one goes along.

### **Subtheme: Knowledge and Evidence**

The participants were asked how emergency preparedness evidence informs clinical practice. They indicated that their protocols are built on academic evidence, but it became clear, as they began to speak, that they questioned if this was accurate. Standard operating procedures appeared to be significantly valued because they directly influence clinical practice. From the transcripts, it appears that there is a separation between academic evidence and these clinical processes, an unawareness of anything beyond their own local protocols, with the resultant attitude that the academic evidence does not influence their practice. *I'm only aware of our own standard operating procedures. It is the bigger picture of it, I am not entirely aware of to be honest. I don't know if the SOPs are developed from an evidence base. I would like to think that they are based on evidence-based practice but yeah [laughs], I would like to think that they are.* (Edward)

Participants reflected that the ambulance service operates in isolation, resulting in paramedics who are not willing to share evidence or clinical guidelines from other professions. This is evidenced from the quote from Rob, in which he appears to take ownership of the ambulance service policy and sees no function of additional credible knowledge: *"I mean we have our own set of policies. We have a big policy and everything. The evidence base [sighs], I'm not overly convinced where it all comes from."* (Rob)

All participants noted the challenge of developing an evidence base in a specialty with limited real-world incidents: *"What does the evidence base look like in this field? Poor. Because there are very few times when anything can actually happen and that you can gain evidence on."* (Colin)

It is evident that the unpredictability and unknowns of this specialty cause concern. *"How can we ever be prepared? How can an evidence base prepare us when we don't know what is going to happen?"* (Sally)

As we were talking, it was evident that Sally had a lightbulb moment, with a realization that she had always presumed that her policies were evidence based, but in reality, she was unsure if they were. This was a pattern that occurred with 11 of 13 interviews and suggests a presumption that evidence base is something that is passively put into practice and questioned.

The limited evidence in this area appears to be dismissed as irrelevant by each paramedic that was interviewed. A reason for this may be a lack of education on research as part of their undergraduate education program, with Isla noting that paramedics did not know how to access, interpret, and implement research evidence. *Generally we can't [use research], we can read research, we can get information from it to put forward, I've read this, this and that. What do you think? And then a lot of the time it tends to get dismissed which is unfortunate. I think if they can get more paramedics then they're the ones that get listened to. General run-of-the-mill people on the road don't have the credibility for someone to actually listen to you. So this isn't right, so why don't we try doing it this way, shall we change it a little bit? (Isla)*

This suggests that perhaps research about their own perspectives and experiences needs to be put into a context that is accessible for these practitioners, in terms of both comprehension and application to their local work context. Another potential issue with paramedics using evidence is that they view academics as noncredible because they do not work in a prehospital setting. The suggestion from Isla is that prehospital paramedics should be involved with the research side of their work because other practitioners are more likely to listen to them.

Isla set forth an almost fatalistic approach to the use of evidence in practice, stating that all policies and procedures are set in place and therefore there may be no benefit to evaluating or challenging them. *To be honest, I don't really know. I've never had much to do with the evidence-base side of practice of things and I haven't been given any information to say read this, go through this and that type of thing. The procedures are all set in place, aren't they? (Isla)*

These accounts demonstrate that these paramedics appear to value experience. There is an assumption that their local protocols are evidence based, but these individuals have not explored this further. It appears that academic practice has minimal value and application in the area of emergency preparedness.

The paramedics perceive that the published evidence base appears to have limited application in clinical prehospital practice. Practitioners are unable to interpret and apply academic studies at a local level and prefer to rely on clinical policy and guidelines, which they are unsure of in regard to how they are derived. Response and decision making is often "best guess," and practice is "made up" as they go along, with minimal thought on credible research.

### **Subtheme: Practice-Based Preparation**

Training and education are a key part of emergency preparedness.<sup>1,2,4,6,7</sup> Practitioners noted that there is little exposure to real-life incidents and training, and both theoretical and practical preparation are integral to confidence and competence. An area to be examined is the frequency and methods of training, with comments of feeling under-skilled and also lethargic about their performance because of excessive training. On reflection, as a result of the practical nature of this role, practitioners were clear that they valued hands-on time with equipment, as opposed to reviewing theoretical guidelines.

All 13 participants noted the requirement for hands-on, practical emergency preparedness education, reflecting the experiential and practical nature of their role. Although each individual appeared to be aware of the relevant guidelines and algorithms, there appeared a limited opportunity to get hands-on with clinical equipment during the preparedness phase.

David appeared anxious that practical training is limited: *"The ambulance service have given us guidelines and flow charts of what we should do if we go to accidents or the procedures to follow but we don't have the practical side, the rehearsals where we could get hands on."* (David)

New emergency preparedness knowledge appears to have been derived from past experiences of actual events. Edward highlights this, suggesting that knowledge generation occurs through paramedics reflecting on the past, resulting in planning adaptation and improvements for future incidents. *"From what I understand from it, it all*

*develops from major incidents from the past, and people have reflected over different incidents on how things could be changed for the better.” (Edward)*

Reflective practice is an important component of health care workers' development.<sup>37-40</sup> Little is known, in an emergency preparedness context, how this reflection occurs and whether this is from an individual or organizational level. The participants imply that there is no standardized tool for reflection, suggesting that this process is ad hoc and that lessons learned are applied locally, rather than nationally. *“We can learn from it [Boston bombings]. We always try and look at the last incident to improve our practice here.” (Tony)*

The majority of those interviewed reported that they receive information from ambulance crews at the scene and also through interpretation of media reports, which forms a type of nonacademic evidence that may impact future clinical practice.

Numerous paramedics questioned the term “evidence base” when used in the interviews. Ben suggests a practical rather than theoretical evidence base, constructed from real-life learning, with new knowledge translated back into future practice. *Well I suppose it depends what you mean by an evidence base? Certainly, I don't think that there are any randomized controlled trials and I don't even think, unless you count exercises as being the equivalent of an observational study to learn and practice from, the evidence base is basically [pauses] we had an event and I suppose it is the aftermath of analyzing that event, that generates a little bit of evidence and a little bit of learning. (Ben)*

There was a sense among participants that evidence was solely academic quantitative studies, a category of research that they found difficult to relate to this area. Experience, among these paramedics, appeared to be valued as a form of evidence more than traditional academic research.

A learning circle where the response is reviewed, reflected on, and changed for a future event is suggested as a method for improving clinical practice. Again, this demonstrates how these paramedics appear to place importance on practical learning and real-life experience in the form of anecdotal and narrative-based evidence, rather than the use of academic literature (which was not suggested by any of the respondents). *So I would say that the evidence base that we have for emergency preparedness, really comes from looking at the large-scale incidents, in terms of the big bang stuff we try to, it's a learning circle, more so than an actual thing. So we know it is a problem, how can we actually change it, we implement a new change then we have to wait for the next incident to see if those changes have actually had any effect. (Ben)*

Emergency preparedness knowledge collation appears to occur in a subjective and nonstandardized manner, resulting in changes at a local level, with no uniform structure. Although some transferable lessons will occur, no 2 incidents are the same. As a result, not all lessons learned will be directly applicable to future incidents.

According to the interviewed paramedics, research evidence does not appear directly related to clinical practice and protocols. These paramedics appeared to value knowledge gained from past events and then transferred and applied at a local level. There seems to be some hesitancy to determine what credible evidence is within this specialty and how this could be applied to such an unpredictable and multidimensional area. The paramedics viewed academic knowledge with some suspicion and seemed unaware regarding how to interpret and apply this at a local level. They determined that practice is often a “best guess” and “made up” as you go along.

## **Discussion**

The findings of this study emphasize that emergency preparedness, through the lived experience of a paramedic, is a complex and multidimensional area. Data analysis occurred at an idiographic level, exploring the individual lived experience. All accounts appeared to suggest that within emergency preparedness, the individual context is not considered, with a primary focus on organizational preparation and limited acknowledgment of the involvement of

each individual health care personnel's personal context and characteristics. All participants discussed the aims of planning and preparation, role, and impact at organizational level; however, what appears to be absent is how this creates an individual frame of reference.

The findings indicate that emergency preparedness is more complex than the literature suggests and that an individual's experience is subjective and related to personal context. This subjective context does not appear to be acknowledged and reflected in the current practitioner preparation,<sup>1-11</sup> which is currently standardized in content and delivery. Although the risk of terrorism is perceived as uncontrollable and catastrophic,<sup>14,16</sup> these practitioners appear to actively identify and explore areas where they can gain control within their clinical preparation. Exploration of how the general public lives with this risk and deals with a constant threat has been specifically explored<sup>40,41</sup>; however, an important finding of this study is that these health care personnel, as individuals, also experience an unrecognized lack of control and uncertainty working within the recognized national threat. It is unclear to what extent their current education and preparation help them to navigate through these concerns to function in their professional role in the most optimal way, although their current education appears static and unresponsive to their individual experience, not reflecting the fast-changing and evolving nature of this threat, and does not appear to address the individual needs of the practitioner within its delivery.

The acknowledgment of chaos within the participants' planning appears informal, rather than formalized within the systems approach, and reflects one method of gaining control within a chaotic environment. This acknowledgment of chaos within the preparedness plans was unexpected, in contrast to the literature that suggested a degree of certainty through planning. Recognizing and identifying the concept of chaos as a distinct part of the process appears a form of coping for the individual worker. The literature recognizes the concept of chaos within numerous areas of health care.<sup>42,43</sup> However, chaos as a concept is not formally recognized within emergency preparedness conceptual and theoretical models; instead, these aim to negate disruption and promote order and certainty by suggesting a response process. The suggestions of adaptability within a structure, in addition to a core plan, appear to be necessary within emergency preparedness. Education and response need to evolve and update to reflect the diverse and ever-changing threat, offering individual workers the feeling of control over their preparation and clinical practice.

An additional significant theme that emerged in relation to control and safety was the trust that practitioners placed in both their clinical equipment and their training. These findings are consistent with other studies that have highlighted that trust in personal protective equipment increases willingness to work and enhances the perception of personal safety.<sup>1,8</sup> The findings that the trust relationship with clinical equipment is symbolic of control and invincibility adds new insight to an important dimension of individual experience.

The participants noted that education and training are 2 key areas of preparedness, particularly in a specialty where there is a minimal exposure to real-life experience in contrast to other clinical specialties. During the waiting state of an incident, there is a constant anticipation and requirement for readiness; however, this quiet time offers an opportunity for structured training and education to occur,<sup>44</sup> enhancing their preparedness if and when they are called to such an incident. In contrast to the predictable emergency with standard preparation, education, and training components, emergency preparedness by its very nature therefore creates challenges in preparation because the paramedic is not usually in a position to predict the type and nature of an incident. This unknown dimension creates training challenges. These include the diversity of possible incidents, the involvement of multiple departments and agencies, the demands of simulating this type of overwhelming event, and the constantly evolving threat.<sup>1,4,14</sup> Currently, training is focused on organizational preparation and response, with each individual responder viewed as a component of the team preparations, as opposed to considering the experiences and needs of the

individual within the process of preparation, which has emerged as an important but often unacknowledged aspect of emergency preparedness. In addition to preparing for possible incidents by ensuring that the correct equipment and protocols are in place, individuals need to prepare themselves for the experience and how they will interact with an unpredictable and potentially dangerous, if not life-threatening, incident. The way an individual prepares through education and training during this anticipatory period emerged as a key finding in contrast to much of the literature where the focus is primarily on organizational response. These findings suggest that emergency preparedness training needs to recognize, develop, and reflect substantially the individual worker's context, rather than the one-size-fits-all approach that is currently being used, to enable individual preparation with the aim of developing the most effective response to a clinical incident.

Evidence-based practice is a fundamental component of health care, with established frameworks in medicine and nursing.<sup>45,46</sup> Traditionally, this evidence would be derived from research<sup>45-47</sup>; however, this is problematic in an area such as emergency preparedness, where there is a lack of standardized definitions and concepts and the majority of published literature is retrospective event reporting. First, peer-reviewed publications that underpin emergency preparedness are sparse, with evidence appearing to be obtained ad hoc rather than through systematic research, and this knowledge is rarely formalized. Second, individual clinical expertise in emergency preparedness is challenging to obtain because of the rarity of real incidents. This finding has important implications when examining the current limited formal evidence base, which does not appear to consider the individual experience, resulting in clinical practice built on a best guess and personal intuition. This study suggests that participants appear to value experience and clinical protocols more than traditional forms of evidence. This lack of connection between protocol and evidence demonstrates a sense among participants that academic research has minimal value and impact on their clinical practice. This perception may be due to the noted challenges of conducting research in this area. In contrast to valuing or considering traditional evidence, these paramedics appeared to develop their own evidence base through personal experience or experience of their professional colleagues, reflecting concepts such as tacit knowledge in nursing.<sup>48,49</sup> The theme of practice-generated knowledge was consistent in all accounts. There was a sense among participants that clinical practice evolves through individual paramedics' reflective experience and that practice-based knowledge is credible. This reflective and practice-based knowledge is recognized as 1 type of evidence base for clinical practitioners. Professional craft knowledge reflects the practice context and the intuitive knowledge that these individuals use<sup>50</sup>; however, current training and emergency preparedness do not appear to recognize this.

The interviews highlighted how these individual paramedics perceive and value evidence differently to academics and those from the scientific community. From the interviews, it was concluded that they valued real-life experience and practice-based knowledge, compared with academic research studies, and they found minimal value and application of more traditional research studies, feeling that these were "out of touch" with the day-to-day work in which they were engaged. Despite this, they often felt that practice was a best guess and made up in response to the incident that they encountered. These findings have important implications for developing a respected evidence base, capturing experience both formally and informally in a format that paramedics perceive as credible, usable, and transferrable to practice.

## **Recommendations**

This study found that the individual workers' experience of emergency preparedness needs to be considered in future planning. Personal context and experience need to be accounted for within preparedness, in addition to the core clinical skills and physical response plans already in place.<sup>1</sup> In addition, preparedness needs to be adaptable and updateable to reflect the diverse and ever-changing current threat, with teaching and learning methods being

adapted to optimally meet the learning styles of this group.

### **Summary**

Through consideration of the emergency themes and discussion, the following dimensions of the individual paramedics' experience of emergency preparedness have been identified (Figure 2). Although some areas such as practice-based preparation have previously been acknowledged as important, this is the first study that has attempted to deconstruct and then reconstruct the individual paramedics' emergency preparedness experience as a whole to understand how the individual experiences emergency preparedness.

### **Limitations**

The idiographic nature of IPA results in findings that are theoretically generalizable, promoting connections between research results, the literature, and the reader's experience.<sup>26-31</sup> This results in a detailed understanding of an experience within a given context.<sup>30,31</sup> The reality faced by this group of workers will differ depending on their clinical experience, training, and region of work, and the results are viewed within this context. However, these findings can contribute to an evolving understanding of this individual dimension. It is anticipated that other health care workers and education leads can anticipate how these findings enhance the individual workers' motivation to engage in this area. This offers benefits for both the individual and the wider health care sector.

A considered limitation of this study is recall bias from the participants.<sup>51</sup> Many of the paramedics interviewed have worked for the ambulance service for many years and were recalling experiences, events, and training from their past. Although the accuracy of their recall was considered when reviewing the interview transcripts, it was determined that the opinion they offered at the time of the interview was their individual experience, determined by multiple factors, including the passage of time. This recall of past experience is advantageous because it offers a breadth to their experience, as opposed to recalling just 1 recent training event.

### **Implications for Emergency Clinical Practice**

Emergency care professionals require preparation at an individual level, in addition to an organizational level, when preparing for mass casualty events. Personal resilience needs to be individualistic in nature, reflecting personal contextual life experience, and should be delivered in addition to the generic content currently offered. This personal context should be incorporated into their preparation program, alongside the standardized core skill and knowledge already delivered as part of emergency preparedness. Simulation and hands-on practical training are vital because of the lack of exposure to real-life incidents. This type of training appeared to offer them control and confidence within their role, including formal recognition of the anticipatory state that these health care workers experience when waiting for an incident. Acknowledgment of the potential impact of this phase on the individuals' physical, psychological, and education response is required. The focus in preparedness is on education and training while waiting to respond to an incident. The current focus within preparedness is on active preparation, with little recognition of the impact of continuously waiting and anticipating an event. Reflecting this anticipatory response, consideration of the individual is required in how they respond to frequency of training, the physical and psychological demands of training, and the feeling of constantly "being on the starters blocks" and the impact of this on the individual. Formal recognition and acknowledgment of practice-generated knowledge needs to be communicated and utilized in a form that practitioners can relate to and find applicable to their role and clinical practice. Because of the lack of exposure to these large incidents in real life, these paramedics viewed storytelling as a credible and valid form of obtaining real-life information that has a clear practical-based application. This method of conveying this information needs recognition within emergency preparedness to ensure that the information is transmitted in an optimal way to meet the needs of these individuals, possibly through a central repository, containing key facts about past incidents, which should be accessible to prehospital personnel. In

addition, a standardized reporting template should be developed to allow the development of a practice-based evidence base to develop. Although central, retrospective repositories are available in other health care fields, such as resuscitation and trauma,<sup>51-53</sup> no formalized database exists in the area of emergency preparedness. Because the participants value real-life experience, and research is challenging to undertake in this area, a central repository with a collation of real-life experiences and lessons learned would be a valuable learning tool for health care workers. A standardized reporting template detailing real-life incidents, similar to the Utstein templates in the specialty of resuscitation,<sup>52,53</sup> containing uniform definitions, terminology, and data sets would enable a new form of knowledge in the field of emergency preparedness. This reporting mechanism could be used to develop evidence in this field, enhancing future training and response.

### Conclusion

Evidence from this study suggests that standard emergency preparedness, with the focus at organizational level, is not sufficient for the individual workers or for an overall effective response. There is a need for a new form of emergency preparedness that works on an individual context, recognizing the numerous personal factors, including those that have impact on preparation and response. A conceptual model has been devised, detailing some of the areas that should be considered at the individual level to enhance preparedness and the preparation of the paramedic to these unknown incidents. Standard, generic emergency preparedness serves as a preparation foundation, but a new form of preparedness needs to be developed, recognizing the individual workers' motivations, barriers, and enablers in this area. In recognizing these individualistic elements, some stability and control may be created in an area that is unpredictable and is often viewed as chaotic. This new knowledge should be used to generate new forms of clinical practice, making emergency preparedness more effective, appropriate, and resilient.

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## DETAILS

<b>Subject:</b>	Research; Emergency medical care; Paramedics; Uncertainty; Learning; Emergency preparedness; Clinical medicine; Health care; Planning; Conceptual models; Medical personnel; Unpredictable; Data analysis; Community; Interpretative phenomenological analysis; Resilience; Interviews; Self determination
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## The Loneliness of Aging: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/planning-chaos-developing-concept-emergency/docview/2524311855/se-2?accountid=211160)

### ABSTRACT (ENGLISH)

Isolation and loneliness have become buzz words when discussing older adults during the coronavirus disease pandemic; yet, these are age-old problems. Both have been studied extensively, yet there currently is no rapid or succinct tool that can be used in the emergency department to screen for either, or a consensus of evidence-based

ways to correct these issues. This is of concern because both loneliness and social isolation have been linked to poor health. Poor health, in turn, can lead to worse isolation and loneliness. These health problems may lead to the older adult seeking care in the emergency department where screening and initial treatment could be initiated. Suggestions for questions that emergency nurses can ask to identify an older adult who is lonely or suffers from social isolation, as well as steps to consider when encountering the older adult with complaints of loneliness and/or social isolation, are provided, with the realization that these are only the first steps of many that would need to be taken. The purpose of this article is to bring forward updated information that discusses loneliness and social isolation in older adults, a timely priority during the coronavirus disease pandemic and often listed as a factor in older adult deaths. A review of relevant screening tools for use in the emergency department are provided.

## FULL TEXT

“Isolation a Factor in 3 Senior Deaths”<sup>1</sup> The story accompanying this front-page headline in the *St. Paul Pioneer Press* newspaper on June 21, 2020, described how 3 older adults—all aged above 90 years—had “social isolation” listed as the “cause of death or contributing factor” on their death certificates. The reporter noted that only one of the seniors had tested positive for coronavirus disease (COVID-19), but all lived in long-term Alzheimer disease care facilities that had taken steps to decrease the risk of exposure to the virus. Each patient had been confined to their room; their interactive activities were canceled; and they were not allowed visitors, including family. The staff continued to interact with, and provide care to, these seniors, but their routines had been disrupted. The facility staff shared with the reporter that during the 3 months of confinement, the patients showed a “decreased interest in eating, spent more time sleeping, seemed to lose interest in living, and developed ‘failure to thrive.’”<sup>1</sup> Isolation and loneliness have been written about and studied for centuries and are not new problems.<sup>2-5</sup> However, the COVID-19 pandemic has led to renewed concerns about social isolation and loneliness and how to deal with them. It seems appropriate to take a look at both, including some of the causes, the effects they have on health, and some options that emergency nurses could consider when providing care for the older adult who is at risk of social isolation and loneliness, now and even after COVID-19 is not the causative factor.

Although social isolation may lead to loneliness, these terms are not interchangeable.<sup>2-5</sup> Loneliness is described as the subjective feeling of distress related to the patient’s perception of a lack of companions or social connections/network.<sup>3,4</sup> Isolation is the objective description of a lack of social connections.<sup>3-5</sup> Previous studies have discussed older adults (typically aged above 65 years) who identified as socially isolated but were not suffering a sense of feeling lonely and others who complained of feeling lonely although they were not socially isolated.<sup>3-8</sup> The studies also noted that life events that accompany aging increase the risk of an older adult becoming disconnected from society and vulnerable to developing social isolation and/or feelings of loneliness.<sup>3,7-11</sup> It is important for emergency care providers to recognize the older adult who is at risk of being lonely or socially isolated because both have been linked to poor health outcomes.<sup>8-12</sup> More importantly, there are actions that can be taken to mitigate these issues.<sup>8-12</sup>

### **Risk Factors for Social Isolation and Loneliness**

The most commonly identified risk factor leading to isolation and loneliness is the death of a spouse, significant other, or friend(s)—especially when the loss involves a support person or means of transportation.<sup>3-15</sup> Other easily recognized risk factors involving loss include loss of family involvement when children grow up, leave home, and become busy with their own lives, or a loss of the neighborhood network of friends that occurs during the process of downsizing or relocating to a smaller home, condominium, assisted care, or nursing home.<sup>10,12</sup> Retirement can also lead to loss of daily interaction with coworkers and friends, leading to loneliness.<sup>9,10,15</sup> Becoming a primary caregiver can lead to loss of time to socialize, to isolation, and to a sense of loneliness in the caregiver, especially if the ailing person in the partnership was the one who did the driving before becoming ill.<sup>8,15</sup>

Other losses related to aging may or may not immediately be recognized as the causative factor in the loneliness or isolation experienced by an older adult. Loss of the ability to drive owing to physical or cognitive changes, as well as worries about safety when driving or the lack of alternative transportation can lead to decreased opportunities for

socialization.<sup>9,10,15</sup> Extreme weather causing snowy/icy roads and sidewalks, excessive heat, humidity, or air pollution, as well as fears of falling, increased crime, and personal safety (especially related to infections—influenza as well as COVID-19) have been listed as reasons to remain homebound and thus at risk of isolation and loneliness.<sup>10,15</sup> Increased frailty, mobility issues, and lack of funds to cover the cost of socializing (eg, eating out with friends, going to movies, playing bingo) as well as concerns about being embarrassed or becoming an embarrassment in public have led to older adults staying isolated in their home to avoid these situations.<sup>9,10</sup> The need to rely on durable medical equipment (oxygen tanks, walkers, wheelchairs, and so on)<sup>15</sup> and inability to hear what others are saying or see what others are seeing can also lead to older adults staying home.<sup>16,17</sup>

Ageism and stereotyped thinking or comments such as “They are old, so ...they won’t want to, ...they can’t keep up, ...they’d rather be in bed, ...they need frequent restroom stops, ...they can’t hear, ...they can’t see, ...they won’t understand the situation” are attitudes that have led to older adults not being invited to attend social events or to their own reluctance to attend, thus leading them to be socially isolated.<sup>9,10,12,15</sup> Worse yet is when the older adult is brought to an event but ignored by the rest of the people in attendance owing to these attitudes.<sup>10</sup> Vulnerable older adults who are also first-generation immigrants have identified increased isolation owing to language barriers, and the lesbian, gay, bisexual, transgender population has reported loneliness more than other groups.<sup>7,12</sup>

It is easy to recognize the “common” reasons for an older adult to feel disconnected, socially isolated, and lonely (loss of spouse or friends). When obtaining a history to identify the older adult who is lonely or isolated, it is important to consider other aspects of the older adult’s life that allow or disallow the ability to interact with others. It is not only the physical loss of significant others or friends that puts one at risk; it may be a change within the older adult’s self-image or the way they are being treated that leads to loneliness and isolation.<sup>3-17</sup> Even after the fears of exposing our older adults to COVID-19 has gone away, these other reasons will remain and may even be perpetuated in our emergency departments.

### **The Risks of Isolation and Loneliness**

The multiple health risks associated with social isolation and loneliness make it important for health care providers to identify older adults who are isolated or lonely and attempt to intervene. Singer notes that most people are “physiologically and biologically ‘programmed’ to need social networks.”<sup>8</sup> Loss of the ability to network can lead to stress build-up and release of cortisol, which leads to an inflammatory response in the body and associated consequences.<sup>8-10</sup> Studies have shown increased platelet aggregation, instability of the autonomic nervous system, hypertension, arthritis, anxiety, depression, and suicidal ideation in persons reporting feelings of being isolated or lonely.<sup>7,8</sup> The risk of cardiovascular death increases by 90%, the risk of death from an accident or suicide attempt has been shown to double, the risk of having a nonfatal coronary event in the lonely or isolated older adult increases by 29%, the risk of having a stroke by 32%, and the risk of developing dementia by 50%.<sup>7,8,14</sup> One study equated the effects of loneliness and isolation on the body to the equivalent of smoking 15 cigarettes a day.<sup>14</sup> Patients with heart failure and loneliness had a 4-times-greater risk of death, 68% more hospitalizations, and presented to the emergency department on a more frequent basis (57%).<sup>7</sup> The ability to fight off infections is reduced owing to decreased immune system activity, and declines in renal function have also been associated with isolation and loneliness.<sup>8</sup> Poor sleep patterns, signs of accelerated cognitive decline, and a diminished ability to carry out activities of daily living have been seen in those who are isolated and lonely.<sup>7,8,12</sup> Living alone may contribute to poor eating, increased use of alcohol, and increased risk of elder abuse (scams and fraudulent financial schemes).<sup>7,8,12</sup> Premature death risk overall doubles in the patient who is lonely and isolated.<sup>13</sup>

Approximately one-fourth of adults aged above 65 years are considered to be lonely or socially isolated. Living alone, loss of friends and family, chronic illness, and hearing/vision loss are identified as the most common factors causing this.<sup>7,13</sup> It is interesting to note that although isolation and loneliness can contribute to poor health, poor health can also contribute to social isolation and loneliness.<sup>3-5,11,18,19</sup> Identifying the older adult who is lonely or socially isolated and intervening may help to break this cycle.

### **Screening Tools Looking for Social Isolation and Loneliness**

When looking at the number of adults aged above 60 years who admit to being lonely (25%-50%)<sup>3,5,7,9</sup> and/or socially

isolated (24%-30%),<sup>3,5,7,13</sup> combined with the risks of the serious medical consequences attributed to loneliness and social isolation, it would seem appropriate to identify a quick and simple screening tool that emergency nurses could use to identify those older adults who are at risk. ED staff could then work to incorporate some sort of “fix” into these patients’ plan of care to improve health outcomes.

In a meta-analysis comparing tools to measure loneliness and social isolation, Valtorta et al identified 54 instruments.<sup>4</sup> The number and variety of questions found in the various screens were numerous, wide-ranging, and not standardized. Ultimately, Valtorta et al<sup>4</sup> concluded that the questions found in the various screens could be simplified and classified as either the “function and structure of a social relationship” or the “degree of subjectivity related to the relationship,” but none of the tools screened for both. Their recommendation was to use a screen that was specific to the problem being studied: social isolation or loneliness.<sup>4</sup> It was also noted by Valtorta et al<sup>4</sup>, as well as other authors during their literature reviews, that the studies looking at loneliness and social isolation frequently lacked standardization of terminology, often did not include all the interdependent variables (isolation, loneliness, and underlying health status), and that the subjective nature of the answers related to loneliness questions compared with the objectively measured answers to social isolation questions led to challenges identifying/creating 1 tool to use.<sup>3-5,11,18,19</sup> In addition, many studies’ screening questions did not ask about health, whereas others focused entirely on the concept that social isolation and loneliness led to poor health and that poor health contributed to isolation and a sense of loneliness.<sup>3-5,11,18,19</sup> Valtorta et al<sup>4</sup> also specifically noted that most screening tools went into such depth that they took significant time to complete. Currently, there is no standardized, succinct, meaningful, and evidence-based tool that screens for both loneliness and social isolation to identify the older adult suffering from, or at risk for, these conditions in the emergency department. However, there are programs that may be helpful in identifying the potential risk of, and dealing with, social isolation and loneliness.

The Campaign to End Loneliness, started in the United Kingdom in 2011, provides a potential solution to screening.<sup>18</sup> The program has since expanded to several countries across Europe and to some degree in the United States.<sup>18</sup> The goal of the campaign was to decrease loneliness and social isolation in the “elderly population” in the United Kingdom.<sup>18</sup> In 2013, the project leaders determined that a simple screening tool was needed to measure the successes related to the interactions that had been implemented. A variety of measurement tools, including the De Jong Gierveld loneliness scale, the revised UCLA loneliness scale, and the single-item “scale” were evaluated.<sup>18</sup> The campaign leaders concluded that each of these 3 tools had their benefits, but each also had a downside (2 were more appropriate for researchers; the other was better designed to determine if services were needed by the older adult or if the services being provided were sufficient).<sup>18</sup> The Campaign to End Loneliness leaders then decided to create their own tool that synthesized and incorporated the concepts of the many screens found in the literature.<sup>18</sup> Care providers were instructed to review information about each of the loneliness scales to determine which was most appropriate for their clientele and use the tool that best served their project.<sup>18</sup> (See <sup>Table 1</sup> for components of the scales.)

When distilled down, most of the tools ask participants about feelings related to (1) having enough friends and relationships, (2) being able to trust/rely on people for help at any time, and (3) whether their relationships were as satisfying/inclusive as they would like.<sup>18</sup> Each screen calculated a score, but the leaders of the campaign reminded caregivers that the scores were a “snapshot” of the moment and only compared how the person is changing in their loneliness, not how lonely they are compared with someone else. They also noted that “someone with a score of ‘4’ may not be half as lonely as the person with a score of ‘8.’ ”<sup>18</sup>

A search to see if the United States had a version of the Campaign to End Loneliness program led to the Health Resources and Services Administration website, which provided data about loneliness in older adults and a link to the Campaign to End Loneliness in the United Kingdom.<sup>14,18</sup>

Emergency nurses who would like to quickly screen for loneliness in their ED patient could use the De Jong Gierveld loneliness scale, revised UCLA loneliness scale, single-item “scale,” the Campaign to End Loneliness Measurement Tool,<sup>18</sup> or simply ask the patient if they are feeling lonely. It should be noted that none of these tools measures the risk of social isolation, and not all have been validated or universally used, but the answers would give emergency

nurses a general sense of how the patient feels that they are doing in regard to feeling lonely.<sup>18</sup>

Social isolation is distinctly different from loneliness.<sup>3-13,18,19</sup> Living alone was the most common factor associated with social isolation, and almost 50% of the older adults lived alone.<sup>9,11,12,19</sup> It is important to note that although someone who is socially isolated may have a high loneliness score, there are just as many who meet the definition of “socially isolated,” yet are able to develop and maintain a network of contacts and connections and thus say that they do not feel lonely.<sup>11,19</sup>

The Lubben Social Networking Scale was most frequently mentioned when searching for tools that screened for isolation.<sup>20</sup> The National Social Life, Health, and Aging Project provides a list of indicators identified as potentially helpful in determining the risk of social isolation, although it is not specifically identified as a screening tool.<sup>21</sup> The American Association of Retired Persons (AARP) Foundation’s “Framework for Isolation in Adults Over 50” provided a meta-analysis of tools used to measure isolation and loneliness, noting that tools related to measuring isolation were limited.<sup>19</sup> The AARP provided a list of individual measures useful in gauging isolation, with the notation that “isolation in adults age ≥50 years occurs due to a complex set of circumstances and factors at the individual, social network, community, and societal levels.”<sup>19</sup> Living alone, mobility or sensory impairments, major life transitions, limited resources, language barriers, location, and low income were identified as some of the factors that affect the ability to connect with other people.<sup>19-21</sup> (See Table 1 for a list of indicators.) The AARP authors also noted that health status can have an impact on the ability to connect with others and that all factors contributing to social isolation can also contribute to loneliness.<sup>19</sup> Finally, the AARP authors noted that variations in how researchers described, defined, and measured work on isolation demonstrated that “additional research would be helpful in standardizing tools and interventions.”<sup>19</sup>

As noted, there are currently no simple screening tools that can be used in the emergency department to identify the older adult suffering from, or at risk for, both loneliness and social isolation. However, asking basic questions about living alone; the number of social or family contacts; and the patient’s satisfaction with quantity, quality, reliability, and trust of these contacts, as well as asking the older adult if they feel isolated or lonely may provide enough information to lead emergency nurses to take action.

### **Actions To Take When a Patient Is Lonely or Socially Isolated**

Interestingly, no specific interventions related to loneliness or social isolation have been proven to be effective in the long term, especially related to improving health.<sup>3-6,18,19</sup> In the words of 1 study’s author, there is a “dearth” and “paucity” of studies that are well constructed, evidence-based, or replicated that describe the actions to take when a patient is lonely or socially isolated.<sup>5</sup> The Agency for Healthcare Research and Quality released a study in 2019 that looked at interventions targeting social isolation and loneliness, as well as their impact on health in those aged above 60 years.<sup>11</sup> Their key messages noted a lack of consistency in terminology, screens and measurements being used, effects of interventions, adverse events as a result of interventions, and follow-through by investigators in their reports.<sup>11</sup> These sentiments were echoed in other meta-analyses reviewing this critical issue of loneliness and social isolation. Despite being in the forefront during the COVID-19 pandemic, concern regarding dealing with loneliness and isolation in the older adult is not a new concept, and evidence-based solutions to the problem are still being sought.<sup>3-6,18,19</sup> It is also important to recognize and remember that loneliness and social isolation will continue long after COVID-19 has been conquered. As 1 author put it, loneliness and social isolation are just “different epidemics to fight.”<sup>6</sup>

### **What Can Emergency Nurses Do?**

Despite a lack of standardized screens and proven methods of approaching loneliness and isolation in the older adult, emergency nurses can ask questions of the patient about feelings of loneliness or being socially isolated and take actions to help mitigate risk to an older adult’s health caused by these issues. It should be recalled that social isolation and loneliness are multifactorial; therefore, a variety of solutions should be considered when attempting to assist the older adult to reengage with others, overcome the risks of isolation and loneliness, and decrease the risks placed on their health.<sup>11,18,19</sup> Emergency nurses can make a difference by simply asking the older adult, “How are you doing? Do you live alone? Do you feel lonely or isolated? Do you feel you have the help you need and trust? Do

you get to visit with someone you like?” Then, the emergency nurse can take some steps to help reconnect the older adult.

The Campaign to End Loneliness document, as well as the AARP “Framework for Isolation in Adults Over 50” and the 2019 Agency for Healthcare Research and Quality document, all provided ideas that could be employed to combat loneliness and social isolation.<sup>11,18,19</sup> Many of these, as well as other options gleaned from the literature that emergency nurses could consider when attempting to increase connections, decrease loneliness, and lessen social isolation in the older adult, are listed in <sup>Table 2</sup>.

During an ED visit, the nurses can help keep the older adult who complains of feeling lonely or socially isolated “connected” by spending some extra time talking with the patient and connecting the patient with family using technology (eg, video chatting applications <sup>Table 3</sup>). When it is again safe to do so, nurses can create a cadre of volunteers who can sit and visit with a lonely or isolated older adult during their ED visit. Emergency nurses can also maintain lists of senior events, ride-share programs, and other volunteer opportunities that can be shared with older adults. The nurses can also connect the lonely/isolated older adult with meals-on-wheels programs, senior centers, local churches, or other senior activities in their community that may help to keep them from feeling isolated or lonely. Some emergency departments make follow-up calls to check on patients seen in the department. This is an excellent opportunity to reconnect with the older adult and decrease that sense of loneliness or isolation. It is also recommended in the American College of Emergency Physicians’ Geriatric Emergency Department Accreditation Criteria as a way to improve geriatric care.<sup>22</sup>

Emergency nurses should work with the ED provider to obtain a follow-up referral for the older adult who is at risk of being isolated or complains of being lonely. Emergency nurses should document information that validates the need for referrals and additional care on discharge. The *International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)* Z codes include categories that capture social determinants of health and things that affect patient health but are not necessarily a specific disease or injury.<sup>23,24</sup> “Problems related to living alone” (*ICD-10-CM* Z60.2) has been used to obtain additional services for the older adult who is lonely or isolated.<sup>23,24</sup> *ICD-10-CM* codes Z55 to Z65 identify additional socioeconomic or psychosocial circumstances (living alone, feeling lonely, mobility/communication issues, and so on) that may influence patient health status and provide validation for additional contact with other health services that can be helpful for the older adult who is lonely or socially isolated.<sup>23</sup>

<sup>24</sup>

Although there are currently no rapid screening tools or long-term “fixes” for loneliness and social isolation in the emergency department, it is important for emergency nurses to ask a few pointed questions and identify the older adult patient with minimal social contacts or connections, physical limitations, and living situation that places them at risk of loneliness or social isolation. If seeing a risk, set into motion actions that will help the older adult be more connected, less isolated, less lonely, and ultimately healthier. These actions may not be the final “fix,” but they can be the first steps to correcting social isolation and the loneliness of aging.

<p>Campaign to End Loneliness Measurement Tool<sup>18</sup></p>	<p>Asks 3 questions about contentment with friendships, relationships, having enough people the older adult felt comfortable asking for help and if relationships were as satisfying as they would want them to be.</p>
<p>The De Jong Gierveld 6-item Loneliness Scale<sup>18</sup></p>	<p>Asks 6 questions about feeling empty, missing people, feeling rejected, having adequate people to call upon for help and feel close to and trust completely.</p>

The UCLA Loneliness Scale <sup>18</sup>	Asks how often the older adult felt they lacked companionship, felt left out or isolated.
Single-Item Questions <sup>18</sup>	Asks about frequency and current status of sense of loneliness.
Lubben Social Network Scale (abbreviated) <sup>20</sup>	Asks about frequency and number of contacts with relatives, ease of talking with them, and comfort the older adult feels with calling for help. The same questions are repeated substituting friend for relative.
Indicators from NSHAP study <sup>21</sup>	A tool with an extensive scoring system that asks about social network characteristics, living arrangements, number of friends and family, and social support.

1. Spend quality time and connect with the older adult when they are in the department as a patient. (Remember that difficulty hearing can cause additional disconnection.)<sup>3,16,18</sup>
2. If your department does patient call backs - take the time to make that call to an older adult and re-connect with them. These call backs were shown to decrease sense of loneliness and isolation.<sup>3,16,18,22</sup>
3. Work with the provider to obtain a referral for a home visit to check on the patient. Provide documentation that validates the ICD-10-CM codes application.<sup>3,16,18</sup>
4. Talk with family about safe ways to do face-to-face visits through windows or patio doors. Once a week is recommended.<sup>3,16,18</sup>
5. Provide resources listing agencies in the area that can help with transportation, respite care, meals on wheels, volunteer activities, other social activities or ways to connect with other seniors.<sup>3,16,18</sup>
6. Promote positive thinking, meditation, appropriate physical exercise, and breathing exercises.<sup>3,16,18</sup>
7. Ask if they have considered getting a pet if appropriate.<sup>3,16,18</sup>
8. Provide education to staff and family that addresses attitudes and stereotypes about older adults with a goal to decrease ageism and shunning while increasing connecting with the older adult.<sup>3,16,18</sup>
9. Provide and demonstrate how to use new technology –video apps, etc. so the older adult can connect with others via on-line video systems.<sup>3,16,18</sup>

Apps for Mobile, Tablet or Desktop Video Chat<sup>25</sup>

Zoom
Skype
Facetime
Google Hangouts
Google Duo
WhatsApp
Facebook Messenger

## DETAILS

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# Understanding Exception from Informed Consent in Planned Emergency Research: JEN

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## ABSTRACT (ENGLISH)

Many of the current accepted treatment practices provided to patients in the first critical hour after a traumatic injury, stroke, or cardiac arrest have not been rigorously tested in clinical research trials. The inability to obtain informed consent is often a barrier to research in emergency, time-sensitive situations in which the patient is not able to provide informed consent nor is their family member immediately available to provide consent on behalf of the patient. Planned emergency research, often with exception from informed consent, is a type of research study that involves a patient with a life-threatening medical condition that requires urgent interventions, wherein the current treatments may be unproven or suboptimal, and who, because of their current condition, is unable to provide informed consent. This article summarizes the necessary components for using exception from informed consent in planned emergency research. Understanding the research design, particularly research processes specific to time-critical emergency situations, will ensure that the care provided by stretcher-side emergency nurses will result in optimal patient outcomes and is an integral aspect of emergency nursing practice.

## FULL TEXT

Many of the current accepted treatment practices provided to patients in the first critical hour after a traumatic injury, stroke, or cardiac arrest have not been rigorously tested in clinical research trials. The Institute of Medicine's report of emergency medical services in the United States highlighted that half of prehospital interventions lacked an

adequate evidence base or had no evidentiary support at all compared with only 5% of prehospital interventions supported by high-quality evidence.<sup>1</sup> The inability to obtain informed consent is often a barrier to research in emergency, time-sensitive situations in which the patient is not able to provide informed consent nor is their family member immediately available to provide consent on behalf of the patient. To encourage research in new or better resuscitative treatment options, the US Food and Drug Administration (FDA) issued specific regulations for conducting research in planned emergency settings in which informed consent cannot be immediately obtained.<sup>2</sup> Planned emergency research is different and separate from research focused on emergency use of an investigational drug or device. Planned emergency research is a type of research study that involves a patient with a life-threatening medical condition that requires urgent interventions, wherein the current treatments may be unproven or suboptimal and who, because of their current condition, is unable to provide informed consent.<sup>3</sup> Emergency use of an investigational drug or device in a human participant in a life-threatening situation, by contrast, may occur when there is no standard acceptable treatment and there is insufficient time to obtain institutional review board (IRB) approval.<sup>3</sup>

A key component of the study design of planned emergency research is exception from informed consent (EFIC), sometimes called a “waiver of consent” provision. Informed consent is one of the foundational principles of research ethics and a key element in the protection of human subjects. The intent of informed consent is that the participant, or legally authorized representative, may freely choose to prospectively enter into a research study with full knowledge and understanding of the purpose, procedure, risk, and benefits of a treatment option, fully respecting their autonomy as a human being. There are many situations in which informed consent may not be feasibly obtained before the initiation of a research study. This may occur when (1) the research participant’s mental capacity is limited by their current medical condition, (2) the research intervention must be administered before the consent of the research participant’s legally authorized representative is feasible, and (3) there is no reasonable way to prospectively identify individuals who are likely to become eligible to participate in the research study.<sup>4</sup> Certain protected populations, including pregnant women, fetuses, human in-vitro fertilization, and prisoners are explicitly excluded from EFIC.<sup>2</sup> However, children, despite being a vulnerable population, can be included in the research protocol.<sup>2</sup>

Ensuring the protection of human subjects is a fundamental principle in any research study design. Emergency research with EFIC should always be the exception; informed consent should remain the standard in research. Planned emergency research with EFIC must be approved through regulatory bodies including the IRB in all instances and FDA should investigational medications, biologics, or devices be used.<sup>3</sup> In planned emergency research, the research intervention must demonstrate reasonable evidence that it has the potential to provide real and direct benefit to the patient either in animal or other preclinical studies. IRBs and the FDA require additional patient safeguards because of the inability to obtain informed consent before the research intervention. These safeguards include community consultations, public disclosures, and an independent data monitoring committee. These additional safeguards must satisfactorily meet the requirements of the IRB before final review and approval of the research study.<sup>4</sup>

The intent of community consultations as an added safeguard is to demonstrate respect both to the community where the study will occur and the community from which participants for the study will be drawn.<sup>3</sup> Community consultations need to focus on both the geographic area from where study participants will be drawn and the group of patients who share a specific characteristic that increases the likelihood that they will be enrolled in the study.<sup>3</sup> During these consultations, communities should be informed of the need for this research and why the process of consent is not feasible.<sup>3</sup> Discussion should also include all relevant aspects of the proposed research, specifically including the potential risks and benefits.<sup>3</sup> Community consultation is frequently multifaceted including activities such as standing civic meetings, local radio and/or television talk shows, interactive websites, focus groups, or public community meetings specifically organized to discuss the research study.<sup>3</sup> Every effort should be made to reach out to limited-English proficient individuals or minorities who may be susceptible to becoming research subjects in the study in which they might not otherwise participate. Researchers involved in the community consultation should

respond to concerns of the community and provide a means, if possible, to indicate that they would not want to be included in the study.<sup>3</sup> An example of this may be a wristband or necklace provided by the research team. Before a planned emergency research protocol begins, public disclosure through dissemination of information in the communities in which the study will occur must be sufficient enough to allow a reasonable assumption that the communities are aware that the study will be conducted and of its risks and benefits.<sup>3</sup> This disclosure should include a summary of the research study design and a description of the procedures to be followed, expected duration of the person's involvement in the study and the overall duration of the research study, a rationale as to why the study must be conducted using an exception to informed consent, and, if appropriate and feasible, the opt-out mechanisms.<sup>3</sup> Information about the study can be provided to the public through flyers, advertisements, mailings, or signs posted in the hospital and/or community. In addition, after the completion of the research study, the public must be informed of the demographic characteristics of the research population and the results.<sup>2</sup>

The IRB safeguard of an independent data monitoring committee is responsible for oversight of the clinical investigation. A data monitoring committee is a "group of individuals with pertinent expertise that reviews on a regular basis accumulating data" of a research study advising the research team about the continuing safety of current research participants and those yet to be recruited in the trial.<sup>5</sup> Specific responsibilities include monitoring for effectiveness of the research intervention, monitoring for safety, and monitoring for study conduct.<sup>5</sup> In some instances, data monitoring committees may recommend changes or terminate the research study protocol on the basis of their findings.

Surviving patients and/or their legal authorized representative must be informed about the research study enrollment as soon as feasible. This must include discussion of the patient's inclusion in the research study, details of the research, and the right to discontinue participation at any time without penalty or a loss of entitled benefits.<sup>2</sup> Should the patient or their legally authorized representative be able to provide informed consent within a window of time before initiation of the research intervention, that informed consent should be obtained rather than proceeding without consent.

Despite the ongoing need to contribute to the body of evidence supporting resuscitation treatment options and establishment of the EFIC process as an ethical means to study emergent, time-sensitive hypotheses, few studies have been completed using this research method. <sup>Table</sup> provides examples of selected exception from informed consent studies. In a 20-year review, fewer than 45 studies were identified.<sup>6</sup> The most common pathologies include cardiac arrest, hemorrhagic shock, and traumatic brain injury.<sup>6</sup> Of the body of literature that does exist specific to the use of EFIC, most focus on the regulatory requirements and their interpretation and the logistics of community consultations.<sup>6</sup> Ultimately, EFIC planned emergency research is a relatively rare occurrence.

Emergency departments can support their frontline hospital staff by establishing an education and communication plan regarding any planned emergency research studies conducted within the community. This should include a summary of the research study, what types of patients might be included, their role in meeting study obligations, and clear instructions on to whom staff should direct patients or family members for additional information.

Understanding the research design, particularly research processes specific to time-critical emergency situations, will ensure that the care provided by stretcher-side emergency nurses will result in optimal patient outcomes and is an integral aspect of emergency nursing practice.

Trial	Description
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RAMPART (Rapid Anticonvulsant Medication Prior to Arrival Trial) <sup>7</sup>	This research study compared the method (intravenous versus intramuscular) in which benzodiazepine anticonvulsants were administered by prehospital providers during status epilepticus in adult and pediatric patients.
ProTECT III (Progesterone for the Treatment of Traumatic Brain Injury) <sup>8</sup>	This research study was to determine if early treatment of moderate-to-severe traumatic brain injury with intravenous progesterone improved outcomes. This study was terminated early when the data safety and monitoring board determined progesterone showed no benefit in improving outcomes.
PolyHeme study: Safety and efficacy of PolyHeme in hemorrhagic shock following traumatic injuries in the prehospital setting <sup>9</sup>	This research study evaluated a blood substitute versus saline as resuscitation fluid when treating severely injured trauma patients in a prehospital setting when blood products were not available.
PACT (Prehospital Airway Control Trial) <sup>10</sup>	This research study aimed to compare endotracheal tube with supraglottic airway as first choice airways adjuncts in the prehospital setting.
PAD (Public Access Defibrillation) Trial <sup>11</sup>	This research study evaluated community-based trial of training in CPR versus training in CPR and use of an automated external defibrillator.

## DETAILS

<b>Subject:</b>	Patients; Emergency medical care; Clinical outcomes; Life threatening; FDA approval; Brain research; Intervention; Informed consent; Clinical research; Hemorrhagic shock; Nurses; Emergency services; Myocardial infarction; Injuries; Human subjects; Traumatic brain injury; Professional practice
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<b>Location:</b>	United States--US
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## Caring for Adults With Autism Spectrum Disorder in the Emergency Department: Lessons Learned From Pediatric Emergency Colleagues: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

The core symptoms of ASD include persistent challenges in social interaction, communication, and restricted/repetitive behaviors.<sup>7</sup> In addition, individuals with ASD may have altered sensory perceptions (eg, with regard to light and noise), comorbid medical conditions (eg, gastrointestinal disorders and seizures), and psychiatric conditions (eg, bipolar disorder, anxiety, depression, and attention-deficit/hyperactivity disorder).<sup>8-10</sup> Research shows that more than 95% of the youths diagnosed with ASD have 1 or more medical or psychiatric comorbid conditions, resulting in increased health care needs and the potential for worse health outcomes.<sup>3,10,11</sup> In this setting, escalating and triggered behaviors emerge in individuals with ASD that include anxiety, hyperactivity, aggression, and self-injury.<sup>5,12</sup> Pediatric emergency departments have made considerable progress in supporting children with ASD whose core symptoms pose unique barriers to health care providers and their ability to provide quality care. Sizable gaps exist in the training and education of nurses in the adult emergency department on ASD, psychiatric emergencies, and ways to effectively care for these patients.<sup>13</sup> Therefore, the purpose of this paper was to provide an overview of successful management approaches for children with ASD in the pediatric ED setting and identify ways in which adult ED settings can adapt these methods to improve care for individuals with ASD. Clinical Overview of the Literature On the basis of the findings in the literature, it is evident that nurses caring for adult patients with ASD in the emergency department encounter several barriers to delivering quality care. [...]of inadequate training, nurses and providers often fail to recognize the different cues and behavioral patterns of those with ASD, resulting in a more traumatic experience for the patient.<sup>15,16</sup> During acute episodes of psychiatric emergencies, this places both the patient and nurse at risk.<sup>4</sup> Implications for Emergency Clinical Practice Several initiatives to overcome barriers and improve the quality of care for children with ASD in the emergency department have been identified. [...]they have also been found to improve time management and increase the knowledge and comfort of nursing staff.<sup>17</sup> Other resources that are effective in easing anxiety while waiting for care or during an unfamiliar procedure include sensory carts, kits, and boxes.<sup>6,12,18,22</sup> These resources contain items such as noise-canceling headphones, fidget toys, stress balls, liquid motion relaxation toys, weighted lap pads, and tablet computers.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- There is a paucity of existing literature on caring for young adults with autism spectrum disorder (ASD) in the emergency department.
- This article provides a brief review of the ways that pediatric emergency departments have incorporated modifications to improve the care of children with ASD, thus delineating the steps that adult emergency departments can take to improve the quality of care for adults with ASD and other developmental disabilities once they transition away from pediatrics.
- Key implications for emergency nursing practice found in this article are effective communication, alteration of sensory perception and environment, and improved education of health care providers on how best to care for children with ASD in the ED setting.

### Introduction

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder presenting in early childhood and extending to adulthood. Currently, an estimated 1 in 54 children in the United States is diagnosed with ASD.<sup>1</sup> As this number continues to grow, so does the number of adults with ASD. The current prevalence of ASD in adults is estimated to be 2.21% (5437988) of the US population.<sup>2</sup> Studies have found youth with ASD to be far more likely to use ED services than their typically developing peers.<sup>3-6</sup> Specifically, youth with ASD are 4 times more likely to visit

the emergency department due to a psychiatric condition than youth without ASD.<sup>5</sup> This represents a growing trend in psychiatric emergencies because individuals often view the emergency department as a gateway to psychiatric care.

Considering that individuals with ASD use the emergency department at much higher rates than their typically developing peers, it is important to consider how the ASD core symptoms may limit their ability to cope with chaotic and unfamiliar settings such as the emergency department. The core symptoms of ASD include persistent challenges in social interaction, communication, and restricted/repetitive behaviors.<sup>7</sup> In addition, individuals with ASD may have altered sensory perceptions (eg, with regard to light and noise), comorbid medical conditions (eg, gastrointestinal disorders and seizures), and psychiatric conditions (eg, bipolar disorder, anxiety, depression, and attention-deficit/hyperactivity disorder).<sup>8-10</sup> Research shows that more than 95% of the youths diagnosed with ASD have 1 or more medical or psychiatric comorbid conditions, resulting in increased health care needs and the potential for worse health outcomes.<sup>3,10,11</sup> In this setting, escalating and triggered behaviors emerge in individuals with ASD that include anxiety, hyperactivity, aggression, and self-injury.<sup>5,12</sup>

Pediatric emergency departments have made considerable progress in supporting children with ASD whose core symptoms pose unique barriers to health care providers and their ability to provide quality care. As individuals with ASD move from pediatric to adult health care services, nurses in the adult emergency department face significant challenges. Sizable gaps exist in the training and education of nurses in the adult emergency department on ASD, psychiatric emergencies, and ways to effectively care for these patients.<sup>13</sup> Therefore, the purpose of this paper was to provide an overview of successful management approaches for children with ASD in the pediatric ED setting and identify ways in which adult ED settings can adapt these methods to improve care for individuals with ASD.

### **Clinical Overview of the Literature**

On the basis of the findings in the literature, it is evident that nurses caring for adult patients with ASD in the emergency department encounter several barriers to delivering quality care. These barriers include difficulties with communication, presence of altered sensory perception, and lack of ASD-specific training. Each of these barriers and unique solutions will be discussed to empower nurses and providers to deliver quality patient-centered care to individuals with ASD. A summary of these unique solutions can be found in the <sup>Table</sup>.

### **Communication Barriers**

Individuals with ASD have varying degrees of deficits in nonverbal communicative behaviors and social emotional reciprocity used for social interaction.<sup>7</sup> These communication barriers pose a significant challenge to the delivery of quality care to individuals with ASD.<sup>14,15</sup> Of particular importance is how these communication barriers affect the nurse's ability to adequately assess and manage symptom presentation.<sup>14,16</sup> Additional challenges include delayed communication processing and literal translation of communication. Questions that may seem direct, such as "tell me where it hurts," may be difficult to answer for a patient with ASD. Answering this inquiry would require the patient to first process what is being asked of them, determine where the pain is coming from, and then communicate the location of their pain. Nurses, therefore, often rely on caregivers or parents to help determine the pain level of the patient with ASD.<sup>17,18</sup> These communication barriers have the potential to affect the ability to accurately assess and manage pain for those with ASD. This has resulted in delayed recognition of emergent conditions (eg, appendicitis) and has the potential for untoward negative sequelae.<sup>19</sup>

### **Altered Sensory Perception**

Another barrier identified across the literature concerns the differences in environmental and sensory perception in individuals with ASD. ED visits are frightening for most typically developing individuals but even more so for those with ASD who have heightened altered sensory perceptions. These heightened altered sensory perceptions include

hyperreactivity to sensory input and environmental stimuli, including adverse responses to sounds or textures.<sup>7</sup> When individuals with ASD visit the emergency department, it can be overwhelming or result in sensory overload, resulting in extreme behavioral difficulties that can impair nursing care.<sup>12</sup> Seemingly small things such as bright lights, beeping monitors, unfamiliar odors, and numerous staff in 1 room during a procedure have been found to be problematic for individuals with ASD in an emergency situation.<sup>6,12</sup> Given their nature of being hyperresponsive to stimuli, individuals with ASD have difficulties regulating their emotions and responding appropriately in critical medical situations.<sup>20</sup> All of these stimuli at once are especially taxing for those with ASD, emphasizing the need to be patient and offer rest periods between procedures or assessments.<sup>15</sup>

### **Inadequate Education and Training**

Finally, a significant barrier is the paucity of health care providers who have adequate education and training on how to care for individuals with ASD, particularly in the ED setting.<sup>15,16</sup> Inadequate nursing school preparation and lack of follow-up education on entering the nursing profession have been cited as contributing factors.<sup>15</sup> Similarly, significant gaps in psychiatric training in emergency physician residency programs have been noted.<sup>13</sup> This is extremely problematic, given that many individuals with ASD present to the emergency department with psychiatric symptoms. As a result of inadequate training, nurses and providers often fail to recognize the different cues and behavioral patterns of those with ASD, resulting in a more traumatic experience for the patient.<sup>15,16</sup> During acute episodes of psychiatric emergencies, this places both the patient and nurse at risk.<sup>4</sup>

### **Implications for Emergency Clinical Practice**

Several initiatives to overcome barriers and improve the quality of care for children with ASD in the emergency department have been identified. These initiatives may be generalized beyond the pediatric population and extended to adults with intellectual and developmental disabilities and beyond. One initiative that has been successful in pediatric care is the use of a hospital passport, which provides a concise informational summary of the patient's needs when seeking medical treatment. Hospital passports include important information on how best to communicate with the patient, how pain is experienced and communicated, preferred likes and dislikes, and potential triggers. It is designed to be used by individuals to explain their unique needs to health care providers during medical treatment. This tool is helpful to inform health care workers of each person's individual needs to allow for the necessary adjustments for the delivery of patient-centered care.<sup>21</sup> Hospital passports can easily be used across various inpatient settings, including a fast-paced ED setting.

An additional tool to help enhance individualized care is the use of a coping plan. Coping plans are an approach to supporting individuals with ASD who are distressed during medical treatment. They are a formalized summary of the psychosocial and behavioral health needs of the patient with ASD. The individualized plan outlines the needs of the patient and allows for the medical team to make adaptations to lessen the stressors of the health care visit. Coping plans are shared with the medical team, documented, and updated in the electronic medical record for future encounters. The information in the coping plan includes previous health care experiences, sensory sensitivities, communication methods, stressors, and coping suggestions. Coping plans have been found to be effective in reducing maladaptive behavior in patients with ASD. In addition, they have also been found to improve time management and increase the knowledge and comfort of nursing staff.<sup>17</sup>

Other resources that are effective in easing anxiety while waiting for care or during an unfamiliar procedure include sensory carts, kits, and boxes.<sup>6,12,18,22</sup> These resources contain items such as noise-canceling headphones, fidget toys, stress balls, liquid motion relaxation toys, weighted lap pads, and tablet computers. Emergency nurses report sensory resources and modifications to be effective in calming a child with ASD, distracting them during procedures, increasing their willingness to participate in care, and decreasing the overall stress associated with an ED visit.<sup>12,22</sup>



Using private rooms, dimming the lights, and moving slowly through procedures and tasks have also been found to be effective in decreasing the distress of a child with ASD during ED visits.<sup>6,15,16</sup>

Other opportunities for improved patient care include trainings on intellectual and developmental disabilities. These trainings should include ways to approach individuals with ASD, the best forms of communication, how to handle potential triggers and stressors, and ways to effectively collaborate with families.<sup>16</sup> These trainings could be delivered through various teaching methods (eg, workshops and tutorials) and include case studies or inquiry-based learning. Such trainings have the ability to develop knowledge, skills, attitude, and confidence in caring for individuals with intellectual and developmental disabilities.<sup>23</sup> Other training considerations include multidisciplinary team training with child life specialists or social workers who can provide specialized guidance and help enhance outcomes during triage and procedures.<sup>16,24</sup> Including child life specialists and social workers early in the care of these individuals is critical to achieving maximum patient benefit. Additional trainings should also emphasize the significant behavioral and mental health comorbidities to better prepare ED providers for psychiatric emergencies for all patients. Trainings, including continuing education on psychiatric emergencies, have the ability to enhance patient care through the standardization of care for patients with psychiatric emergencies.<sup>13</sup>

Caregiver involvement is an additional theme present in the literature and one that is foundational for pediatric patients. Encouraging and using caregiver insight are critical components toward better understanding of the unique needs of individuals with ASD. Caregivers offer insight into ways the patient best communicates, evaluates pain, and perceives sensory stimuli. For adult ED visits, it is important to find the balance between communicating with the caregiver vs communicating directly with the adult with ASD. In these instances, caregivers should be seen as an important part of the team, but they do not replace the need to directly communicate with the adult with ASD.

Another effective way to enhance the care of individuals with ASD is through the use of the acronym SCRAMBLE, which aims to remind providers of the most effective strategies to incorporate in the care of individuals with ASD.<sup>15</sup> SCRAMBLE stands for “Sensory management that reduces stimuli, Communications that are kept simple and direct, Reduced or limited number of staff involved in care, Allowing for extra time, Medication reconciliation, Box of sensory toys, Listening, and Examination and treatment modification.” This acronym has been found to be effective in increasing comfort in the patient and enhancing patient cooperation in times of stress or emergencies.

## **Conclusion**

Individuals with ASD have complex health care needs and increased health care use rates. Of particular note is the increased use of emergency departments owing to psychiatric comorbidities. Pediatric emergency departments have identified helpful ways to enhance the care of this population. These interventions implemented in pediatric emergency departments can be further adapted to adult EDs. Such adaptations stand to benefit not only individuals with ASD, but also those with advanced age, dementia, psychosis, and other developmental disorders. Creating an emergency department that is sensitive to the communication challenges, behavioral patterns, and altered sensory input needs of those with ASD has the potential to result in improved patient care and outcomes. This article has provided a brief overview of the literature, summarizing various interventions that nursing leadership should strive to include in their adult ED policies. As the number of children with ASD continues to grow and the need for more emergency care increases, the number of facilities implementing these treatment modifications must grow as well.

## **Author Disclosures**

Conflicts of interest: none to report.

Example	Details	Resource
Hospital passport <sup>21</sup>	Concise informational summary outlining the patient's communication preferences, how pain is experienced and expressed, likes/dislikes, and potential triggers	<a href="https://www.autism.org.uk/about/health/hospital-passport.aspx">https://www.autism.org.uk/about/health/hospital-passport.aspx</a>
Coping plan <sup>17</sup>	Formalized summary of psychosocial and behavioral health needs. Includes sensory sensitivities, stressors, coping strategies, communication methods, and previous health experiences	<a href="https://www.autismspeaks.org/science-blog/atnwork-personalizing-hospital-care-children-autism">https://www.autismspeaks.org/science-blog/atnwork-personalizing-hospital-care-children-autism</a>
Sensory kits, carts, and boxes <sup>6,12,18,22</sup>	Includes items that aim to help the patient cope better and reduce sensory overload. Includes items such as noise-canceling headphones, fidget toys, stress balls, liquid motion relaxation toys, weighted lap pads, and tablet computers.	<a href="https://www.arnoldpalmerhospital.com/content-hub/sensory-carts-at-aph">https://www.arnoldpalmerhospital.com/content-hub/sensory-carts-at-aph</a>
Environmental modifications <sup>6,15,16</sup>	Modify the environment to reduce sensory stimuli and avoid potential triggers. Examples include providing the patient a private room, moving the patient to a room away from busy areas (eg, nurses' station), limiting number of staff involved, moving slowly through procedures, and dimming the lights.	<a href="https://www.autismspeaks.org/tool-kit/atnair-p-providers-guide-blood-draws">https://www.autismspeaks.org/tool-kit/atnair-p-providers-guide-blood-draws</a>
Team approach	Includes a team approach to the care of the patient that enables all members of the team to be informed. Examples of members of the team include child life specialists, social workers, and staff from the departments of nursing, physical therapy, occupational therapy, and medicine.	<a href="https://childrensnational.org/news-and-events/childrens-newsroom/2017/childrensnational-creates-team-dedicated-to-making-hospital-more-autismfriendly">https://childrensnational.org/news-and-events/childrens-newsroom/2017/childrensnational-creates-team-dedicated-to-making-hospital-more-autismfriendly</a> <a href="https://www.chop.edu/clinical-pathway/autism-spectrum-disorder-developmental-disorders-clinical-pathway">https://www.chop.edu/clinical-pathway/autism-spectrum-disorder-developmental-disorders-clinical-pathway</a>
Multidisciplinary team training <sup>13,16,23</sup>	Trainings that include all members of the team that are educational and brief. Trainings can be delivered through various teaching methods (eg, workshops and tutorials) and include case studies or inquiry-based learning.	<a href="https://www.cdc.gov/ncbddd/actearly/autism/case-modules/identifying.html">https://www.cdc.gov/ncbddd/actearly/autism/case-modules/identifying.html</a> <a href="https://www.cdc.gov/ncbddd/autism/links.html">https://www.cdc.gov/ncbddd/autism/links.html</a> <a href="https://www.autism.org.uk/professionals/training-consultancy/online.aspx">https://www.autism.org.uk/professionals/training-consultancy/online.aspx</a>
Caregiver involvement <sup>15</sup>	Encourage and use caregiver involvement during medical treatments. Balance caregiver involvement with directly engaging the patient.	<a href="https://www.autism.org.uk/what-we-do/professional-development/training-and-conferences/online/autism-supporting-families">https://www.autism.org.uk/what-we-do/professional-development/training-and-conferences/online/autism-supporting-families</a>

SCRAMBLE <sup>15</sup>	Incorporate sensory management that reduces stimuli, keep communication simple and direct, reduce or limit number of staff involved in care, allow for extra time, medication reconciliation, box of sensory toys, listen, and examination or treatment modifications.	<a href="https://www.autism-society.org/wp-content/uploads/2014/04/Paramedics_and_Emergency_Room_Staff.pdf">https://www.autism-society.org/wp-content/uploads/2014/04/Paramedics_and_Emergency_Room_Staff.pdf</a>
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## DETAILS

<b>Subject:</b>	Comorbidity; Emergency medical care; Behavior; Toys; Barriers; Medical treatment; Medical conditions; Communication; Patient-centered care; Hyperactivity; Health status; Computers; Nurses; Emergency services; Quality of care; Cues; Developmental disabilities; Pediatrics; Social interaction; Bipolar disorder; Self injury; Noise; Clinical outcomes; Professional training; Autistic adults; Coping; Nursing care; Sensory perception; Autism; Pain; Medical personnel; Children & youth; Departments; Adults; Gastrointestinal disorders; Children; Anxiety; Clinical medicine
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# Commentary on Underrecognition of Nonfatal Intimate Partner Strangulation Within the Emergency Health Care Setting: Reasons and Opportunities for Change: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

Strangulation is a significant indicator of heightened violence because this can very rapidly become lethal.<sup>2,4</sup> An incident of nonfatal strangulation increases the risk of homicide by sevenfold.<sup>8</sup> Patients who seek help for strangulation or IPV have a fourfold increased likelihood of future worsening violence.<sup>9</sup> Survivors of NF-IPS may not access emergency health care services because they recognize that any attempt to leave a high-risk situation has been shown to heighten the risk for, and level of, violence perpetuated against them.<sup>8,9</sup> They may not seek care in an emergency department because they fear for their lives or are trapped in the same residence as their assailant. Patients presenting to the emergency department may not disclose NF-IPS for a number of factors, including, but not limited to, memory gaps during the violence episode, lack of privacy during medical interviewing, fear of retaliation or reprisals, fear of not being believed, and distrust of the emergency medical system.<sup>10</sup> In addition, in the US, lack of health insurance or funds to cover health care expenses may deter seeking ED care. Opportunities exist for partnerships and education to be delivered by such specialty care programs to other institutions that do not have this service, including virtual care coaching for local practitioners for individual patients.<sup>12-14</sup> Emergency care practitioners are experts in the breadth of medicine. Because IPV and NF-IPS are not commonly taught within emergency medicine training programs, bedside clinicians may not recognize the subtle signs of NF-IPS.<sup>15,16</sup> Historical descriptions of an NF-IPS event may be subtle, especially in the context of other trauma, loss of consciousness, or intoxication.

## FULL TEXT

The incidence of nonfatal intimate partner strangulation (NF-IPS) is an underrecognized phenomenon within the health care system in North America.<sup>1,2</sup> In their article in this issue, Patch et al<sup>3</sup> undertake a large database population review of coded episodes of strangulation identified from the *International Classification of Diseases (ICD)* codes from the Nationwide Emergency Department Sample database. Even using this robust investigation method, the true burden of strangulation episodes is likely underestimated and represents an opportunity for investigation and education at all levels of the emergency services.

The lifetime prevalence of NF-IPS is estimated to be 10% in the United States.<sup>4</sup> Patch et al<sup>3</sup> make use of the Nationwide Emergency Department Sample, a large national sampling, as their data source for NF-IPS, with the inherent limitation that it only captures approximately 20% of the hospital-based ED visits from participating organizations and these on a voluntary basis.<sup>5,6</sup> This may be 1 reason why they find that only 1.2% of the IP violence (IPV) visits are associated with IP-NFS when the prevalence is estimated to be much higher by population data.<sup>1,2</sup> The *ICD* coding system for the capture of NF-IPS within ED visits also has limitations. Coders review the primarily physician-generated health records and assign specific codes to the information provided about the clinical encounter. Health care practitioners often document more vague terms such as neck pain, neck trauma, choking, and so on, that may not be assigned a strangulation code. *ICD* codes are most often drawn from the charting of physicians, which, in the circumstances of strangulation and in the context of a Sexual Assault Nurse Examiner (SANE) assessment, may be less extensive than that of the detailed examination documented by the SANE.<sup>7</sup> Health care practitioners also may not label this as NF-IPS because they are concerned with the stigma still associated with IPV, as well as potential downstream effects on the patient (employment and insurance issues) if this is disclosed. These inherent biases are present in any work that makes use of *ICD* codes as markers for illness burden. Strangulation is a significant indicator of heightened violence because this can very rapidly become lethal.<sup>2,4</sup> An incident of nonfatal strangulation increases the risk of homicide by sevenfold.<sup>8</sup> Patients who seek help for strangulation or IPV have a fourfold increased likelihood of future worsening violence.<sup>9</sup> Survivors of NF-IPS may not access emergency health care services because they recognize that any attempt to leave a high-risk situation has been shown to heighten the risk for, and level of, violence perpetuated against them.<sup>8,9</sup> They may not seek care in an emergency department because they fear for their lives or are trapped in the same residence as their assailant. They also may not call first responders because they may be fearful of police intervention at that time for a myriad of reasons. Initial contact points with the health care system, such as 911 dispatch systems, are a potential source of research information to contribute to the body of knowledge, as well as a point of education in the recognition of strangulation in their dispatch deployment decisions.

Another possible reason why a prevalence of NF-IPS was seen to be much less than anticipated by population may be due to incomplete disclosures by survivors. Patients presenting to the emergency department may not disclose NF-IPS for a number of factors, including, but not limited to, memory gaps during the violence episode, lack of privacy during medical interviewing, fear of retaliation or reprisals, fear of not being believed, and distrust of the emergency medical system.<sup>10</sup> In addition, in the US, lack of health insurance or funds to cover health care expenses may deter seeking ED care. This disparity in health care access may also affect the rates of NF-IPS being seen. Patch et al<sup>3</sup> found that increased rates of NF-IPS were seen in metropolitan centers and higher-level trauma centers. One reason why this may be is the availability of specialty SANE programs at these sites. The availability of SANE programs has been shown to increase the recognition and documentation of IPV and NF-IPS.<sup>11</sup> Thus, the increasing trends over time and the geographic variations seen in this study may be associated with the specialty care and knowledge of these SANE programs. This finding suggests that educational activities should be targeted to areas outside of higher-level trauma and metropolitan centers. Opportunities exist for partnerships and education to be delivered by such specialty care programs to other institutions that do not have this service, including virtual care coaching for local practitioners for individual patients.<sup>12-14</sup>

Emergency care practitioners are experts in the breadth of medicine. Because IPV and NF-IPS are not commonly

taught within emergency medicine training programs, bedside clinicians may not recognize the subtle signs of NF-IPS.<sup>15,16</sup> Historical descriptions of an NF-IPS event may be subtle, especially in the context of other trauma, loss of consciousness, or intoxication. Physical signs of NF-IPS are often not obvious, difficult to visualize, and can be very subtle on darker skin tones.<sup>17</sup> Continuing professional education regarding the recognition and management of NF-IPS tends to be more niche and not as widely adopted as other topics in emergency care. Given that IPV is extremely common—more common than many other medical diagnoses such as stroke and heart attack<sup>18</sup>—resources should be put into educational efforts to recognize and properly manage this significant health concern. Public awareness of IPV has increased over the time frame evaluated (2006-2014) in the work by Patch et al.<sup>3</sup> Massive social movements such as #MeToo have shone a light on violence against women<sup>19</sup>; however, there is still significant stigma against IPV, and thus NF-IPS may not be recognized or acknowledged. Educational campaigns targeted at frontline providers, including first responders and hospital-based health care providers, to recognize, evaluate, and document NF-IPS events accurately will lead to providing better care for their patients. Health care providers and first responders having a better understanding of the severity and consequences of NF-IPS will also inform the safety strategy for the survivor postevent. Increased identification of NF-IPS can also work to reduce the overall stigma associated with IPV, much as mental health awareness campaigns have done.<sup>20</sup> These efforts will ultimately result in a better representation of the prevalence of NF-IPS in an ED population. The research by Patch et al<sup>3</sup> is a robust and important contribution to the body of work in this vulnerable and underrepresented population.

#### Author Disclosures

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## The Courage to be Vulnerable: JEN

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### ABSTRACT (ENGLISH)

In the emergency department, many of us have learned to put up a wall to protect ourselves from the repeated pain we see in our patients and their families. This can lead to our becoming cynical as well as to burnout. The topic I want to address can be very tough for many of us: being vulnerable. Vulnerability is defined as openness to attack or hurt, either physically or in other ways. I encourage all of us to have the conversation about vulnerability because it can transcend many aspects of our lives and can help all of us elevate ourselves, others around us, and our communities. Being vulnerable allows us to be open and honest with our emotions and feelings. The profession of nursing is so rewarding and can be challenging too. The last 12 to 18 months have been especially hard on all of us. Letting ourselves be vulnerable allows us to share with others our thoughts and feelings. It gives us permission and time to reflect. This reflection is valuable in maintaining good mental health for ourselves.



## FULL TEXT

In my first presidential message, I introduced us all to my theme and challenge for 2021—To Elevate. A challenge to improve ourselves, our profession, our colleagues, and our communities around us. The March message discussed burnout and moral injury and the impact they can have on all of us and our profession. This May issue, I am addressing a topic that can help elevate many aspects of our lives as well as help mitigate burnout and moral injury. In the emergency department, many of us have learned to put up a wall to protect ourselves from the repeated pain we see in our patients and their families. This can lead to our becoming cynical as well as to burnout. The topic I want to address can be very tough for many of us: being vulnerable. Vulnerability is defined as openness to attack or hurt, either physically or in other ways. I encourage all of us to have the conversation about vulnerability because it can transcend many aspects of our lives and can help all of us elevate ourselves, others around us, and our communities. Being vulnerable allows us to be open and honest with our emotions and feelings. The profession of nursing is so rewarding and can be challenging too. The last 12 to 18 months have been especially hard on all of us. Letting ourselves be vulnerable allows us to share with others our thoughts and feelings. It gives us permission and time to reflect. This reflection is valuable in maintaining good mental health for ourselves.

Being vulnerable ourselves can help others around us. Our colleagues, friends, and families will see us taking this sometimes-scary step, and this courageous act will let them know that it is okay and safe for them to open up and be vulnerable as well, creating an avenue for supportive dialogue that will help all of us.

Nurses are very trusted members of our communities, which places us in an excellent position to make an impact. We can increase this impact by being vulnerable and honest with ourselves, especially around diversity, equity, and inclusion. Be vulnerable with others who have differences from us—start the conversation about a religion different from yours, a different race from yours, a different gender or gender identity, different political beliefs. Be honest, be vulnerable, and be respectful. We can together improve the world around us.

We as nurses love to help; it is in our blood. We all too often exhaust our energy caring and providing for others, leaving little to no time for ourselves. If we all take a small step and show vulnerability, it will channel some of our energy to helping ourselves and others around us. How empowering and energy producing, to see all of us become better. In her book, *Daring Greatly: How the Courage to Be Vulnerable Transforms the Way We Live, Love, Parent, and Lead*, the researcher and author Brene Brown writes “Vulnerability is not weakness. And that myth is profoundly dangerous. Vulnerability is the birthplace of innovation, creativity, and change.”<sup>1</sup> I challenge each of us to be brave and be vulnerable.

Stay positive, stay focused, and be the good!

ELEVATE

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# A Quality Improvement Project on Agitation Management in the Emergency Department: JEN

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## ABSTRACT (ENGLISH)

### Introduction

Agitation is common in the emergency department. When agitation is not detected early, patients can become aggressive and violent, potentially leading to restraint use and subsequent injury. The goals of the project were early detection and management of patient agitation, reduction of restraint use in the emergency department, and determination of the usability of the Behavioral Activity Rating Scale.

### Methods

This quality improvement project was assessed using a pre- and posttest single unit design, comparing 4 months of postimplementation data to historic controls at the same time of year in the previous year. The intervention was implementing the Behavioral Activity Rating Scale in the ED electronic medical record. Data were collected through retrospective chart review and nurse survey. From September through December of both 2017 and 2018, data were collected on restraint use. The 4-month 2018 data collection period included measures of Behavioral Activity Rating Scale documentation and the System Usability Scale survey for nurses to measure ease of usability of the Behavioral Activity Rating Scale.

### Results

The Behavioral Activity Rating Scale was documented frequently ( $n = 4\,867$  documentations) by emergency nurses to assess patients with behavioral health and medical complaints ( $n = 780$ ). Nurses identified 18 episodes of violent behavior in behavioral health patients on the Behavioral Activity Rating Scale (2.31%) and applied restraints 18 times. The most common chief complaints for patients who were identified as violent was suicidal ideation ( $n = 6$ ; 33.33%).

In 2017, there were 20 episodes of restraint use during the same time period, a nonsignificant difference ( $\chi^2 = 0.72$ ;  $P = 0.40$ ). However, only 2 patients were kept in restraints longer than 1 day in 2018 compared with 8 in 2017. Emergency nurses found the Behavioral Activity Rating Scale to be usable in the structured usability assessment ( $\mu = 83.46$ ;  $SD = 11.73$ ).

### Discussion

The Behavioral Activity Rating Scale is a usable tool for emergency nurses to assess for patient agitation. With the incorporation of agitation management interventions, the ED team can potentially manage agitation before violence occurs. Further studies are needed on the use of agitation or aggression assessment tools for managing patient behavioral activity such as aggression in the emergency department.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- The current literature indicates that emergency departments need improved strategies for the care of behavioral health patients and to mitigate agitation and violence.
- This article contributes evidence on integrating an assessment tool, and strategies to manage behavioral health patients who become agitated through early detection of agitation to lead to early interventions.
- Key implications for emergency nursing practice is a shift to frequent assessments for agitation detection was usable by nurses and may facilitate improved management of behavioral health patients.

## Introduction

Behavioral health (BH) patients experience an extended length of stay (LOS) in the emergency department while awaiting medical clearance or disposition of care.<sup>1-5</sup> The extended LOS and busy ED environment can cause exacerbation of agitation in BH patients.<sup>6-9</sup>

Agitated patients are more likely to become violent and require the use of restraints.<sup>5,9-11</sup> When patients are placed in restraints, staff and patients are more likely to be harmed.<sup>12</sup> Staff in the emergency department need tools to objectively assess and manage the care of agitated patients,<sup>7,9,13-15</sup> because early detection is important for behavioral control. Behavioral control through reducing psychomotor agitation is the most important intervention in the care of agitated patients.<sup>13,16</sup> Using an objective tool for measuring agitation, early warning signs can be identified, and the patient can potentially be managed using medications, -diversional activities, and verbal de-escalation before becoming violent and requiring restraints.<sup>17-21</sup>

The staff in a designated urban Baltimore emergency department reported lack of an objective tool for measuring BH patient agitation. A quality improvement (QI) project was developed to change current practice by implementing the Behavioral Activity Rating Scale (BARS) for measuring agitation in BH patients<sup>15,17,18</sup> in the electronic medical record (EMR) of the adult emergency department.

The goal of this project was to improve the early detection and management of patient agitation, to reduce the use of restraint in the emergency department, and to determine the usability of BARS.

## Methods

A 14-week QI project was planned to implement the BARS tool in the EMR (<sup>Figure</sup>) in an urban Baltimore emergency department. Data were collected from September 2017 through December 2017 to include pre-BARS implementation restraint use to compare with the post-BARS implementation restraint use, documentation of BARS to include frequency and effectiveness of interventions for agitation management using pre- and post BARS scores, and ease of usability of BARS<sup>22-24</sup>. Data were collected retrospectively from the EMR repository and prospectively from emergency nurse surveys.

## Reliability and Validity of Bars

BARS was chosen by the first author for its simple and straightforward structure in detecting changes in behavioral activity in the busy emergency department, leading to intervention such as medications or de-escalation, and in improving communication between care providers.<sup>14</sup> BARS is a 7-item validated tool designed to detect immediate changes in behavioral activity in BH patients. In randomized control trials where BARS was tested against other agitation detection scales, researchers found statistically significant convergent validity and correlation with the Positive and Negative Syndrome Scale agitation scores and the Clinical Global Impression–Severity of Illness. Researchers concluded that the BARS tool is a psychometrically valid, sensitive, and reliable scale for measuring behavioral activity in agitated patients with psychosis.<sup>25</sup>

## Implementation

Staff were educated on use of the BARS tool beginning in August 2018. To prepare the project implementation team, 8 superusers attended a 1-hour training on the use of the BARS tool led by the first author. The superusers discussed the BARS tool and interventions for patient agitation. Superusers applied their learning by completing a worksheet using 3 training scenarios that were designed by the first author. Each scenario detailed a patient presenting to the emergency department with different levels of agitation and violence, requiring the nurses to correctly identify the agitation level on BARS and the appropriate intervention.

An online module was also created to educate unit nurses on use of the BARS tool and use of 10 domains of verbal

de-escalation using recommendations from the Project BETA (Best Practices in the Evaluation and Treatment of Agitation) work group.<sup>18</sup> Nurses were assigned to complete the module by September 2018.

Superusers then conducted 4 open 4-hour sessions on the unit where nurses practiced using the BARS tool based on the 4 training scenarios. Nurses were instructed to intervene appropriately when patient scores on the BARS reached 5 to 6 and to restrain patients whose score reached 7 but to remove the restraints as soon as possible. At the beginning of September 2018, shift huddles included reminders of the new BARS tool (<sup>Supplementary Material</sup>).

Nurses began using the BARS tool to screen for patient agitation on September 17, 2018. BARS was incorporated as an automated prompt in the EMR Meditech system when patients presented with a chief complaint that was a BH disorder and could also be added by nurses if a patient presented with a non-BH chief complaint but was agitated (<sup>Supplementary Table 2</sup>). The BARS design included an indicator that turned red to remind nurses to document BARS every 2 hours during patient normal rounding times.

Superusers were used to facilitate and guide the implementation. During each nurse shift huddle, charge nurses briefly discussed the BARS tool, reminded nurses to complete the online education, and reminded nurses to use the tool during the implementation of the BARS tool for the QI project.

### **Data Collection**

Retrospective chart reviews were conducted weekly during project implementation. Data collected included the nurse's documentation of the BARS tool for BH patients, the chief complaints associated with the BARS assessments, nonrestraint interventions documented on BARS, restraint use, and episodes of agitation and violence indicated on the BARS report. Data from monthly restraint audits were also collected to determine the number of BH patients who were rated as violent on BARS and placed in restraints. This included any patients with non-BH chief complaints (<sup>Supplementary Table 2</sup>) where the nurse added BARS to the chart because the patient was exhibiting violent behavior and required restraints. Restraint audits were compared with the nurses' BARS reports for accuracy. Chart reviews were conducted to review behavioral indicators for the need for restraints for behavioral patients and verify the accuracy of type of restraint (medical versus behavioral) used.

Additionally, a questionnaire was administered during the last 2 weeks of the implementation phase of the QI project. The questionnaire included the System Usability Scale (SUS) to determine the usability of the BARS tool, 3 items designed by the first author to assess nurses' perception of safety, and demographic questions. SUS is a reliable and valid 10-item Likert-style tool for measuring usability, even with a small sample size.<sup>23</sup>

### **Data Analysis**

Data from the BARS chart review were entered in an Excel spreadsheet for analysis. Descriptive statistics were used to describe BARS documentation of agitation, nonrestraint interventions, violent rating on BARS, restraints used for violent patients, and time (in days) spent in restraints. To detect a change in restraint use after the implementation of BARS, the implementation phase, September 2018 through December 2018, was compared with the same time frame of September to December in 2017 using a  $\chi^2$  test. This allowed for comparisons between the fall months in both years when patient volumes are about the same.

### **Ethical Considerations**

The proposal for the QI project was submitted to the hospital's institutional review board and determined to be non-human subjects research. An institutional review board exemption letter was issued before project implementation. There were no associated costs with the project.

### **Results Detection of Agitation**

BARS was documented every 2 hours on 513 patient charts for 753 BH visits and 27 non-BH medical visits where nurses manually added BARS to the chart if the patient had a history of violence or suddenly became agitated (

Supplementary Table 1). Of these 780 patient charts, agitation was documented 206 times (26.41%), indicating a BARS score of 5 or 6.

### **Nonrestraint Interventions to Reduce Agitation**

Of the patient charts where nurses rated patients as agitated ( $n = 206$ ), the majority of patient's agitation levels decreased with a combination of nonrestraint interventions ( $n = 140$ , 68%; <sup>Table 1</sup>). Medications such as haloperidol, LORazepam, and OLANZapine were successfully used in combination with de-escalation and diversional activities. Interventions were not effective in reducing agitation for all patients ( $n = 6$ ; 2.91%). However, these patients never reached a violence rating of 7 on BARS and subsequently did not require restraints. In 60 charts, it was unclear whether the interventions reduced agitation because of a lack of postintervention documentation. Additionally, there were 84 patients who were rated as 4 (no agitation) on BARS for every assessment where nurses used diversional activities to prevent agitation.

### **Restraint Use**

Between September and December 2018, nurses documented 18 episodes of violent behavior in BH patients on BARS (2.31%) and applied restraints 18 times. The most common chief complaint for patients who were identified as violent was suicidal ideation ( $n = 6$ ; 33.33%). In 2017, there were 20 episodes of restraints during the same time period, a nonsignificant difference ( $\chi^2 = 0.72$ ,  $P = 0.40$ ; <sup>Table 2</sup>). However, only 2 patients were kept in restraints longer than 1 day in 2018 compared with 8 in 2017.

### **System Usability and Nurses' Perceptions**

The questionnaires were distributed to emergency department nurses ( $n = 97$ ) on day, evening, and night shifts. The response rate to the survey was 30.93% ( $n = 30$ ). Of the nurses who completed the SUS survey, 5 nurses omitted the nurse demographics and unit safety questions and were omitted from this portion of the analysis (<sup>Table 3</sup>). The average score on the SUS was 83.46 (SD = 11.73) with a range of 50 to 100. A SUS score greater than 68 indicates good usability, even with a small sample size.<sup>23</sup> The majority of the nurses' surveys indicated that BARS had good usability ( $n = 27$ ; 90%). About half of nurses ( $n = 13$ ; 52%) reported that use of BARS helped them to better detect and manage BH patients. Overall, 44% ( $n = 11$ ) of nurses felt unsure of whether BARS made them feel as though the unit was safer. Almost all nurses ( $n = 24$ ; 96%) reported that the BARS indicator turning red helped to remind them to complete the assessment (<sup>Table 4</sup>).

### **Discussion**

As found in previous studies, the use of BARS I led to frequent assessment and rapid management of agitation in BH patients presenting to the emergency department.<sup>26</sup> Studies have found that when the BARS score was greater than 5, interventions such as medications or restraints were successfully used to manage the patient's agitation.<sup>12</sup> This is similar to our results. Although there was no difference in restraint use in 2018 compared with the same time frame in 2017, patients spent less time in restraints in 2018, an important finding. Additionally, it is important to note that the overall ED LOS during the implementation phase was higher at the end of November 2018 and in the month of December 2018 than 2017. When the emergency department is crowded, the nurse may prioritize care of medical patients over behavioral patients, resulting in a delay in detection and management of agitation. Nursing staff also reported episodes ( $n = 3$ ) where patients were placed in restraints by security before attempts to intervene by nursing staff could occur and where the nurses rating on BARS indicated that restraints were not needed at the time, and the patient was removed from restraints. There was a new security team in place during the end of the BARS implementation. A full team approach to include training of security personnel is an important consideration in reducing restraint use. It is important for future researchers to consider racial bias in the use of restraints. Although racial bias was not a variable in this study, it is an important

consideration for future research. Using an objective tool to detect agitation and violence is important to aid in prevention of the use of restraints for biased reasons. In some studies, an increase in restraint use was seen in Black men versus white men (relative risk = 1.36, 95% CI = 1.15-1.61,  $P = .27$ ). Other studies suggest that staff may view some races as more threatening than others, leading to increased restraint use.<sup>28</sup> Understanding racial disparities in restraint use is important to improve equitable care to all patients.

The amount of time patients spent in restraints may have decreased in the 2018 time frame because nurses detected the need to remove calm patients from restraints sooner when using BARS. The goal of early detection of agitation was met in this study. Although the goal to see a significant reduction in restraint use was not met in the study, patients who were placed in restraints were removed sooner than was seen in the previous year. The reduction in total days in restraints, despite the insignificant difference in restraint use during the implementation phase, suggests that BARS may be useful in the care of restrained BH patients in the emergency department. The goal of ease of BARS usability was met in this study. The survey results indicated that the nurses felt that BARS had high usability in the emergency department. Nurses also used the BARS tool with high frequency and chose to add BARS to their patients' charts when there were indications of agitation or risks for violence. This suggests that the nurses found BARS useful and easy to use, which likely led to the frequent use of the tool. These findings are similar to prior studies on the use of BARS where ED staff found the tool to be easy to use<sup>9,11,12</sup> and a reliable predictor of patient behavior.<sup>11,12,16</sup> However, only about half of nurses felt that BARS helped them better detect and manage agitation and violence in BH patients, and they were equivocal on use of BARS in improving unit safety. This indicates that nurses may have already been providing assessment not captured in past documentation and quality care to BH patients by applying restraints judiciously. Frequent use of the BARS documentation may still improve overall documentation on BH patients and help nurses recognize when it is time to remove restraints. Restraint use was a relatively rare event in this emergency department, with only about 3% of BH patients requiring restraints in 2017 and 2018. The decrease in restraint use between 2017 and the introduction of the restraint tool in 2018 was very slight and nonsignificant. Considering these points, our sample sizes were likely too small to detect a significant difference in restraint use, putting the chi-square analysis at risk for Type II error. Post hoc power analysis conducted using G\*Power 3 found that, to achieve power of 80%, each sample should have at least 7 137 individuals.<sup>16</sup> For ED clinicians wishing to test interventions to reduce restraint use, it may be more practical to first determine a reasonable proportionate decrease in restraint use after intervention (eg, reduce restraint use by 30%) and conduct an a priori power analysis to determine adequate sample size.<sup>16</sup>

There are many agitation scales that exist. The Dynamic Appraisal of Situation Aggression (DASA) and the Broset Violence Checklist also measure agitation and violence.<sup>29,30</sup> At the time of the QI project, tools such as DASA had not yet been studied in the emergency department. DASA is a 7-item tool based on the Broset Violence Checklist that requires only the nurse to conduct the assessment. It has been studied in in-patient psychiatric facilities<sup>30</sup> and more recently in the emergency department, where DASA was found to have predictive validity for violence.<sup>29</sup> Use of a different tool may have produced different results in this study. Future research is needed on the use of BARS in the emergency department to improve the care of BH patients compared with other tools for agitation, aggression, and violence detection. Longitudinal studies are needed to determine the impact of use of BARS over time, because this QI project was conducted over a 4-month period.

### **Limitations**

BARS explicitly mentions restraints, which may cue nurse behavior to apply restraints when they may not have otherwise or when alternatives were still viable. We were also unable to capture the number of hours that patients spent restrained. There was a low survey response rate, introducing response bias. Interoperator reproducibility of



the SUS tool was not measured in this study. Another limitation is the design of the study and a lack of prospective randomization or control group. Additionally, there was no control for potentially confounding patient characteristics. Finally, there was a new security team in place during the BARS implementation that may have influenced the results.

### **Implications for Emergency Nursing and Future Research**

Successful implementation of protocol to manage care of agitated BH patients in the emergency department must be carefully developed and include multiple resources. Although BARS is usable for emergency nurses, staff also need medication protocols, which require interdisciplinary cooperation, and training on nonrestraint strategies to manage agitated patients. Including a medication management strategy associated with BARS agitation levels has the potential to improve the management of agitated patients while also reducing restraint use. Our results indicated that nurse use of the BARS assessment tool coincided with shorter length of restraint time for patients. Other clinical leaders and organizations may wish to consider adding BARS or other aggression or agitation assessment tools to the EMR for emergency nurse use.

### **Conclusion**

The goals of implementation of BARS were the early detection and management of patient agitation, reduction of restraint use in the emergency department, and determination of the usability of BARS in the EMR. Although there was no difference in restraint use after implementation of the BARS assessment tool, we did find that restraints were utilized for a shorter length of time. Surveyed emergency nurses ranked BARS as highly usable at the study site as indicated in the high SUS score in this study. Clinical leaders and organizations may wish to consider a change in practice to include embedding an aggression or agitation assessment tool relevant to the ED setting in the EMR with frequent assessments, such as every 2 hours during patient rounding, to detect agitation and aggression at early stages. Future research is still needed on the efficacy and effectiveness of such tools on BH patient outcomes.

### **Supplemental Material**

Description: The Behavioral Activity Rating Scale (BARS) Huddle Report was read during each change of shift meeting by the charge nurse to all nurses preparing for their shift. The purpose of the report was to help remind nurses to use BARS and how to correctly use the tool.

BARS Huddle Report

Behavioral Activity Rating Scale (BARS) Go Live is Monday September 17, 2018

Tips:

- Required assessment for all behavioral health patients
  
- Add in (easy: just type in BARS) for any patient with history of violence or who has medical complaint and develops agitation
  
- Reassess at least every 2 hours--red indicator after 2 hours to help you remember
  
- Reassess more frequently with higher levels of agitation
  
- Communicate with provider to immediately intervene when patients are agitated or becoming over-sedated from a medication intervention for agitation
  
- Documentation is important to improve the communication with the entire department when a patient is agitated: keep you and the patient safe!

••Goals of this tool:

- Early detection leading to early intervention for patient agitation
- Reduce/Avoid restraint use; remove earlier when placed and is appropriate/safe
- Calm, not sedate, our patients
- Offer PO medications for lower agitation levels/early intervention before high levels of agitation or violence occurs

**Supplementary data**

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jen.2021.01.005>.

Interventions	n	%
De-escalation only	25	16.89%
Diversional activities only	85	57.43%
Medications only	15	10.14%
Combination	149	73.22%

	2017	2018	$\chi^2$	P
Episodes of restraint use	20	18	0.72	0.40
BH visits	594	701	—	—

Demographic	n	%
Age (years)		
20-35	18	72
36-55	7	28

Level of nursing education		
Associates degree	11	44
Bachelor's or master's degree	14	56
Nursing experience (years)		
<2	6	24
3-5	11	44
6+	7	28

Safety questions	Yes		No		Unsure	
n	%	n	%	n	%	1. Do you feel as though the BARS helps you to better detect and manage behavioral health patients?

13	52.00	6	24.00	6	24.00	2. Do you feel the unit is safer since implementation of the BAR S tool in the emergency department with behavioral health patients?
----	-------	---	-------	---	-------	--

7	28.00	7	28.00	11	44.00	3. Does having the BARS turned help to remind you to complete the BARS?
---	-------	---	-------	----	-------	---

Documentation of BARS	n	%
BARS documented Q2 hours	513	65.77
BARS documented frequently Q2 hours with only 1-2 major delays	96	12.31
BARS documented only once	158	20.26
BARS documentation with major delays for each assessment	13	1.67
Totals	780	100

Chief complaint	n	%
Automatic chart assessment based on behavioral health chief complaint		
Altered mental status	260	33.33%
Alcohol ingestion	69	8.85%

Alcohol withdrawal	27	3.46%
Suicidal ideation	128	16.41%
Wants detox	25	3.21%
Feels anxious	35	4.49%
Homicidal ideation	8	1.03%
Psychosocial other	20	2.56%
Auditory hallucinations	13	1.67%
Visual hallucinations	1	0.13%
Aggressive behavior	9	1.15%
Overdose	104	13.33%
To be evaluated	27	3.46%
Drug ingestion	15	1.92%
Depressed	11	1.41%
Out of medications	1	0.13%
BARS added in the non-behavioral health patient chart by the nurse		
Motor vehicle crash	1	0.13%
Abscess	1	0.13%
Chest pain	7	0.90%
Headache	1	0.13%
Vaginal bleeding	1	0.13%
Shortness of breath	2	0.26%
Weak	1	0.13%
Cardiac other	1	0.13%

Assault	1	0.13%
Rectal bleeding	1	0.13%
Vomiting	2	0.26%
Back pain	1	0.13%
Unresponsive/unconscious	2	0.26%
Nausea	1	0.13%
Environmental exposure	1	0.13%
Foot pain	1	0.13%
Extremity swelling	1	0.13%
Abdominal pain	1	0.13%
Total	780	100%

## DETAILS

**Subject:** Emergency medical care; Quality management; Behavior; Intervention; Usability; Documentation; Complaints; Questionnaires; Violence; Nurses; Chart reviews; Emergency services; Teams; Physical restraints; Patients; Patient satisfaction; Suicidal ideation; Health behavior; Agitation; Polls & surveys; Injuries; Clinical assessment; Aggressiveness; Quality control; Quality improvement; Suicide; Suicidal behavior

**Business indexing term:** Subject: Quality control Quality improvement

**Location:** Baltimore Maryland; United States--US

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<b>Copyright:</b>	©2021. Emergency Nurses Association
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# The Indispensability of Nurses in Public Health Emergencies: Lessons Learned From the Coronavirus Disease Pandemic in Africa: JEN

Rafiat, Tolulope Akinokun

[ProQuest document link](#)

## ABSTRACT (ENGLISH)



Nurses see and practice health care through a different lens than other health professionals and are often described as the heart of health systems, serving as a direct contact with patients, as team members with other health care professionals, and as ardent advocates of patient care.<sup>2</sup> Being the most ubiquitous members of the health care team, we are tasked with the responsibility of caring for the populace. According to the International Council of Nurses in October 2020, 1500 nurses have died from the severe acute respiratory syndrome coronavirus 2 in 44 countries in the world, with the possibility that the cases have been underreported.<sup>3</sup> The COVID-19 vaccines were yet to be supplied to many African countries at the time of writing, in addition to some countries not being able to provide adequate personal protective equipment as reported in Zimbabwe, Nigeria, and Kenya.<sup>4</sup> It seems inevitable that an increasing rate of infection among nurses will continue to be recorded. Nurses have also been exposed to mental health disorders such as depression and posttraumatic stress disorder, partly due to the fear of getting infected with the virus, the trauma of losing patients who had been infected with the virus, and the need for nurses to keep safe distance from their loved ones to protect them from being infected.

## FULL TEXT

Dear Editor:

Coronavirus disease (COVID-19) has affected the health of millions of people around the world, thereby straining health care systems. Nurses make up the largest health workforce, playing key roles in promoting health, preventing illness, preserving health, and reducing suffering.<sup>1</sup> Central to all of these roles is the capacity of nurses to preserve human dignity and ensure effective communication. Nurses see and practice health care through a different lens than other health professionals and are often described as the heart of health systems, serving as a direct contact with patients, as team members with other health care professionals, and as ardent advocates of patient care.<sup>2</sup> Being the most ubiquitous members of the health care team, we are tasked with the responsibility of caring for the populace. The coronavirus pandemic came unannounced, and it has emphasized the need for nurses to evaluate and improve their current skills and knowledge as necessary to cope with future public health emergencies. Previous public health emergencies such as the Ebola outbreak in West Africa have highlighted the unique roles that nurses play as first responders to public health emergencies. Nurses are usually the first point of contact for patients requiring emergency care in hospitals, with the added role of being the closest to individuals who have been infected by helping to meet their immediate needs. The scenario is no different from that seen during the COVID-19 pandemic. Nurses specialized in health policy and information dissemination have played active roles in informing health policies and educating the public on the infection process and precautionary measures needed to curb the spread of the virus. As clinicians, we remain closest to patients and their families and have continually helped to allay their fear and provide psychological support. Triage is another critical role that emergency nurses have played at this trying time. They actively sort patients who have been infected according to the level of severity of the infection and the need for more critical management. Nurses have continued to overwork because of the high patient load, which has been compounded by the shortage of staff. We witnessed nurses continually being infected with the virus at the University College Hospital, Ibadan, Nigeria, further increasing the staff shortage because of the need for isolation or admission of the nurses who had been infected, thereby increasing the nurse-to-patient ratio to 1 nurse to 10 patients in some units at the hospital. According to the International Council of Nurses in October 2020, 1500 nurses have died from the severe acute respiratory syndrome coronavirus 2 in 44 countries in the world, with the possibility that the cases have been underreported.<sup>3</sup> The COVID-19 vaccines were yet to be supplied to many African countries at the time of writing, in addition to some countries not being able to provide adequate personal protective equipment as reported in Zimbabwe, Nigeria, and Kenya.<sup>4</sup> It seems inevitable that an increasing rate of infection among nurses will continue to be recorded. Nurses have also been exposed to mental health disorders such as depression and posttraumatic stress disorder, partly due to the fear of getting infected with the virus, the trauma of losing patients who had been infected with the virus, and the need for nurses to keep safe distance from their loved ones to protect them from being infected.

COVID-19 has continued to test our ability to think. It has specifically pushed nurses to think and act as a strong workforce battling health emergencies. As we face an uncertain and scary future with the worst pandemic we have

ever seen, our success will depend on effective collaboration within teams, communities, and nations globally.<sup>2</sup> The expertise of nurses in infection prevention and control as well as public and community health, including palliative care, will determine to a large extent the level of success or failure of global health systems at this trying time. It is essential that nurses continue to improve their skills and knowledge, inform policy, and conduct research on effective ways to deal with future public health emergencies. Although the world has continued to applaud the immense contribution of nurses in dealing with the pandemic, we recommend that extensive investment should be made to empower and support this important group of health care workers who have continued amid the fear of the pandemic to provide adequate and expert care even as the International Year of the Nurse and Midwife has been extended to 2021 by the World Health Organization.

## DETAILS

<b>Subject:</b>	Infections; Emergency medical care; Severe acute respiratory syndrome; Severe acute respiratory syndrome coronavirus 2; Patients; Equipment; Teams; Nurses; COVID-19; Post traumatic stress disorder; Health care; Mental disorders; Pandemics; Vaccines; Public health; Public health nurses; Medical personnel; Coronaviruses; Roles; Mental health
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# Strategies to Care for Patients Being Treated in the Emergency Department After Self-harm: Perspectives of Frontline Staff: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

### Introduction

Every year, approximately 500 000 patients in the United States present to emergency departments for treatment after an episode of self-harm. Evidence-based practices such as designing safer ED environments, safety planning, and discharge planning are effective for improving the care of these patients but are not always implemented with fidelity because of resource constraints. The aim of this study was to provide insight into how ED staff innovate processes of care and services by leveraging what is available on-site or in their communities.

### Methods

A total of 34 semi-structured qualitative phone interviews were conducted with 12 nursing directors, 11 medical directors, and 11 social workers from 17 emergency departments. Respondents comprised a purposive stratified sample recruited from a large national survey in the US. Interview transcripts were coded and analyzed using a directed content analysis approach to identify categories of strategies used by ED staff to care for patients being treated after self-harm.

### Results

Although respondents characterized the emergency department as an environment that was not well-suited to meet patient mental health needs, they nevertheless described 4 categories of strategies to improve the care of patients seen in the emergency department after an episode of self-harm. These included: adapting the ED environment, improving efficiencies to provide mental health care, supporting the staff who provide direct care for patients, and leveraging community resources to improve access to mental health resources postdischarge.

### Discussion

Despite significant challenges in meeting the mental health needs of patients treated in the emergency department after self-harm, the staff identified opportunities to provide mental health care and services within the emergency department and leverage community resources to support patients after discharge.

## FULL TEXT

### DETAILS

<b>Subject:</b>	Workforce planning; Emergency medical care; Community resources; Mental health care; Medical directors; Content analysis; Self destructive behavior; Health needs; Emergency services; Social workers; Community mental health services; Fidelity; Evidence-based practice; Interviews; Nurses; Self injury; Evidence-based medicine; Discharge planning; Patient safety; Mental disorders; Directors; Nursing care; Medical research; Polls & surveys; Psychiatrists; Departments; Health services; Suicides & suicide attempts; Mental health
<b>Business indexing term:</b>	Subject: Workforce planning
<b>Location:</b>	United States--US
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# Factors Associated With Secondary Traumatic Stress Among Nurses in Regional Trauma Centers in South Korea: A Descriptive Correlational Study: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

### Introduction

Trauma is a leading cause of death in South Korea. This study aimed to identify the factors associated with secondary traumatic stress of nurses working at regional trauma centers.

### Methods

A survey-based cross-sectional design was utilized. Data were collected through a structured questionnaire consisting of 5 rating scales and demographic data. Data were analyzed via descriptive statistics, *t* test, analysis of variance, Pearson's correlation, and multiple regression.

### Results

One hundred eighty-six nurses participated, and most (84.4%) reported moderate to severe secondary traumatic stress. Exposure to traumatic events averaged 34.33 (SD = 6.25) out of 65 points. Average problem-focused coping was 3.00 (SD = 0.37), emotion-focused coping was 2.57 (SD = 0.26), and dysfunctional coping was 2.17 (SD = 0.41) out of 4 points. Social support from family and friends averaged 5.85 (SD = 0.75), social support from coworkers was 5.78 (SD = 0.83), and social support from supervisors was 4.65 (SD = 1.18) out of 7 points. The factors affecting the respondents' secondary traumatic stress were type D personality ( $\beta = 0.39, P < .001$ ), dysfunctional coping ( $\beta = 0.28, P < .001$ ), problem-focused coping ( $\beta = 0.19, P < .01$ ), desire for job rotation ( $\beta = 0.17, P < .01$ ), and social support from supervisors ( $\beta = -0.12, P = < .05$ ). This regression model was statistically significant and the explanatory power was 46.7% ( $F = 33.47, P < .001, \text{Adj } R^2 = 0.47$ ).

### Discussion

Along with a personal effort to engage in stress management programs, administrators, managers, and supervisors should prioritize developing practical strategies for reducing secondary traumatic stress of nurses.

## FULL TEXT

### DETAILS

<b>Subject:</b>	Emergency medical care; Regression analysis; Rotation; Personality; Mortality; Stress management; Averages; Trauma centers; Coping; Traumatic stress; Nurses; Likert scale; Sex crimes; Social support; Trauma; Stress; Job rotation; Nursing care; Traumatic life events; Vicarious trauma; Data collection; Intensive care; Bilingualism; Friends; Supervisors
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Document 44 of 57

# Necrotic Ulceration of the Hand Case Review: Think Beyond Infection: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

Neutrophilic dermatosis of the dorsal hands is a rare neutrophilic dermatosis that can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies. The occurrence of trauma as an initiating factor and its early features of pain and inflammation followed by blistering or ulceration mean that it can be mistaken for necrotizing infection. Neutrophilic dermatosis of the dorsal hands should be considered in all patients who present with such features confined to the back of the hands, particularly those with negative microbiological results or lack of response to antibiotic therapy. A case review design was used to analyze the presentation of a woman aged 65 years in the United Kingdom, seeking care for a painful rash on the hand in the emergency department that was subsequently diagnosed as neutrophilic dermatosis of the dorsal hands. Emergency clinician awareness of neutrophilic dermatosis of the dorsal hands as a rare differential diagnosis for patients presenting with necrotic ulceration may prevent unnecessary antibiotic therapy and surgical intervention.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- Neutrophilic dermatosis of the dorsal hands is a rare skin condition belonging to a group of related disorders called the neutrophilic dermatoses. It can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies.
- Neutrophilic dermatosis of the dorsal hands can mimic infection, leading to misdiagnosis or delayed diagnosis.
- Awareness of this rare diagnosis may prevent unnecessary surgical intervention.

### History of Present Illness

A 65-year-old woman was referred by her family doctor to a hospital in the United Kingdom with a painful rash affecting the dorsal aspect of the right hand. She had awoken 1 month earlier with a painful blister on the back of the right index finger. There was no history of preceding trauma, and she suspected that she had been bitten by an

insect during the night. There was no improvement despite 7 days of oral flucloxacillin 500 mg 4 times a day for presumed skin infection. Instead, the affected area gradually enlarged, with breakdown of the skin, ulceration, and associated purulent discharge. The patient was previously physically fit and had no relevant medical or surgical history before this episode.

### Emergency Department

On arrival at the emergency department, the patient underwent a medical screening assessment in the minor injuries triage. She was afebrile (temperature 36.8 °C [98.2 °F]) and hemodynamically stable (pulse rate 80 beats per minute and regular, blood pressure 120/68 mm Hg) with normal peripheral pulses. Heart sounds I + II were present without added noises. There were some inspiratory crepitations bilaterally on auscultation of the chest but because vital signs were within normal limits (oxygen saturation 99%, respiratory rate 12 breaths per minute), these were not thought to be clinically significant. On examination of the right hand, there was a well-defined, markedly violaceous (see Definitions Box) eruption with areas of tissue ulceration (Figure 1A and 1B).

The working diagnosis based on the initial assessment was an infected ulcer. Bacterial swabs were taken from the wound, and it was dressed using a nonadherent surgical dressing. Baseline blood laboratory tests comprised full blood count, renal function, liver function, lactate, C-reactive protein, and blood cultures. The initial results of note revealed an elevated C-reactive protein (34 mg/L [normal 0-10 mg/L]) and neutrophil count ( $8.8 \times 10^9/L$  [normal  $2.0-7.5 \times 10^9/L$ ]). The patient was empirically commenced on intravenous flucloxacillin 1 g 4 times a day in line with the local antimicrobial protocol, covering common Gram positive organisms, including *Staphylococcus aureus* (the prevalence of methicillin-resistant strains is low in the UK) and *Streptococcus pyogenes*. A referral was made to the plastic surgery department for debridement of the necrotic tissue to assist wound healing.

### Hospital Admission

The patient was admitted to the hospital. The plastic surgery team continued antibiotic therapy but were concerned by the lack of improvement in the appearance of the wound, despite the bacterial swab isolating a fully sensitive *Staphylococcus aureus*. Blood cultures yielded no significant growth, and at no time did she become febrile. In view of the possibility of an inflammatory rather than infective problem, a dermatology consultation was sought. A clinical diagnosis of likely neutrophilic dermatosis—either pyoderma gangrenosum (PG) or neutrophilic dermatosis of the dorsal hands (NDDH)—was made. An incisional biopsy revealed pseudo-epitheliomatous hyperplasia, striking edema in the papillary dermis and a dense neutrophilic infiltrate throughout the dermis (Figure 2). Fungal and Ziehl-Neelsen stains were negative. Atypical mycobacterial culture was negative. Given the localized site of the eruption, the diagnosis of NDDH was confirmed.

Screening blood laboratory tests for an underlying autoimmune disease (antinuclear antibody, extractable nuclear antibody, antineutrophil cytoplasmic antibodies, lupus anticoagulant, anticardiolipin antibodies, and serum electrophoresis) were negative. However, on further inquiry, the patient reported severe lower back pain and lethargy for the preceding 2 months. Noncontrast magnetic resonance imaging of the spine demonstrated malignant infiltration of the pelvis. A computed tomography scan of the chest/abdomen/pelvis confirmed disseminated malignancy involving the liver, bone, and adrenal glands, likely originating from a primary lung malignancy. Her condition subsequently deteriorated and she was transferred to a hospice for end-of-life care 3 weeks after attending the emergency department. She died shortly afterward.

### Discussion

This case review of the presentation of NDDH to the emergency department for wounds to the hand adds a new perspective to the published literature on this rare disease. NDDH was first proposed by Mobini et al in 2000 and was considered to be a localized variant of Sweet's syndrome<sup>1</sup> (a neutrophilic rash characterized by fever, peripheral



blood neutrophilia, and a characteristic rash). The majority of cases involve the dorsal hands, but there are a number of reports of similar cases involving the lateral and palmar aspect of the hands.<sup>2</sup> The condition typically presents with painful violaceous papules, nodules, and plaques on the hands that may be accompanied by secondary epidermal changes such as necrosis and ulceration.<sup>3</sup> There may be associated fever.<sup>4</sup> The diagnosis is confirmed with a skin biopsy. Histologically, the features are essentially those of Sweet's syndrome, with prominent papillary dermal edema, along with a superficial and deep diffuse infiltrate of neutrophils, as seen in the present case. There may be leukocytoclasia and extravasated erythrocytes, but these vasculitic features are thought to be a secondary event, similar to that seen in PG or Sweet's syndrome.<sup>1</sup> The main clinical differential diagnosis for NDDH is PG, but the 2 diseases can usually be distinguished clinically and histologically. NDDH tends to present with bullae, whereas PG usually exhibits more purulence and more prominent ulceration. Histologically, there is greater neutrophilic infiltration in NDDH.<sup>3</sup>

A preceding history of trauma has been reported in up to 65% of cases of NDDH<sup>3</sup>; it has been hypothesized that this may reflect a similar phenomenon to the pathergy or Koebnerization recognized in PG, where disease occurs at sites of recent injury.<sup>3</sup> Patients thus often initially seek care in an emergency setting or from plastic or orthopedic surgeons at the onset of NDDH.<sup>5</sup>

NDDH can be associated with neoplasia, inflammatory bowel disease, and rheumatoid arthritis. There have also been case reports describing drug-induced NDDH secondary to lenalidomide, thalidomide, and vaccines and after exposure to fertilizers.<sup>6</sup> Neoplastic disorders coexist in 27% of cases<sup>1</sup> and are commonly hematological in origin. Although the association of lung cancer and NDDH as seen in this case is rare,<sup>7</sup> various solid organ neoplasms have been described in association with NDDH.<sup>1</sup>

NDDH is highly responsive to systemic corticosteroids, which remain first-line treatment. There is also anecdotal evidence for improvement with other anti-inflammatory agents including dapsone and colchicine.<sup>8</sup> Management of NDDH should be directed toward any associated autoimmune or neoplastic disorders, rather than treating skin lesions in isolation from the systemic pathology.

### **Implications for Emergency Clinical Care**

The case presented here serves as an educational exemplar and reminder to include rare diseases such as NDDH in the emergency care differential diagnoses, especially if the clinical response does not align with prognostic expectations. We wish to highlight the condition to nurses, physicians, and other licensed independent providers working in emergency clinical practice to minimize the possibility of such cases receiving unnecessary antimicrobials or being considered for procedures such as debridement. We recommend referral to dermatology for any patient with suspected or diagnosed NDDH for exclusion of an underlying disorder and medical management.

### **Conclusion**

NDDH is a rare neutrophilic dermatosis that can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies. Trauma is often an initiating factor, and its early features of pain and inflammation followed by blistering or ulceration mean that it can mimic necrotizing infection. NDDH should be considered in all patients who present with compatible skin lesions, particularly those with negative microbiological results or in patients with a lack of response to antibiotic therapy, as occurred in this case. Other clues that pointed away from a severe skin and soft tissue infection were the consistent absence of fever and lack of acute systemic symptoms. The C-reactive protein, or CRP, was only modestly raised, although this along with the neutrophilia was somewhat supportive of an infective cause. The presence of inspiratory crepitations in the absence of respiratory symptoms or low oxygen saturations did not appear to be an important finding; however, in hindsight, these may have been related to the occult lung malignancy. Although earlier imaging would have revealed this underlying

pathology sooner, it would not have changed the immediate management of the presenting complaint nor would it have altered the eventual outcome. It does, however, underline the importance of clearly communicating all positive findings from the initial assessment to the managing clinicians when handing over.

The diagnosis of NDDH should be confirmed by means of skin biopsy. Early suspicion or diagnosis of NDDH in the emergency care setting may minimize unnecessary antimicrobial therapy or debridement procedures.

#### Author Disclosures

Conflicts of interest: none to report.

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# Recognition and Treatment of Psychiatric Emergencies for Health Care Providers in the Emergency Department: Panic Attack, Panic Disorder, and Adverse Drug Reactions: JEN

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## ABSTRACT (ENGLISH)

Mental health disorders are common in the United States and may cause significant disturbances in all aspects of a person's life. Individuals with mental health disorders often present to emergency departments for health care. Recognizing and managing common psychiatric emergencies may be challenging for non-mental health providers. The Diagnostic Statistical Manual-5 diagnostic criteria will be discussed and reviewed for panic attack and panic disorder. Both pharmacologic and nonpharmacologic treatment strategies will also be addressed. Adverse drug reactions associated with antipsychotics and selective serotonin reuptake inhibitors are another common psychiatric emergency that will be examined, offering potential management strategies. The objective of this clinical manuscript is to educate emergency health care providers about specific psychiatric emergencies, including panic attack, panic disorder, and adverse drug reactions associated with mental health treatment medications.

## FULL TEXT

Health insurance coverage has been an historic issue in the United States, with recent estimates reporting that 8.5% of Americans (27.5 million) are uninsured.<sup>1</sup> As a response to economic pressures, emergency department services have evolved from treating and stabilizing acute care issues to including behavioral health services in many communities. Having accessibility to consult psychiatrists, psychiatric mental health nurse practitioners (PMHNPs), psychologists, social workers, and mental health technicians will assist in providing quality behavioral health services to those with mental health disorders. As a high-cost setting that often serves as the primary source of

health care for many uninsured patients, emergency departments are burdened with the inefficiencies of health care delivery in the US.<sup>2</sup>

Mental health disorders are common; in 2017, an estimated 46.6 million adults in the US, which is about 1 in 5 adults, were diagnosed with a mental health disorder.<sup>3</sup> There are many different types of mental health disorders, some mild to moderate and others more severe. Mental health disorders often cause significant disturbances in a person's life, including distress or impairment in important areas of functioning, such as interpersonal relationships, self-care, education, or employment.<sup>4</sup>

Policymakers have struggled with numerous complexities in coordinating care in behavioral health care settings for individuals who have mental health disorders.<sup>5</sup> Even though health care policy changes have been made to increase access for individuals with mental health disorders, it is necessary to evaluate ED utilization of individuals with mental health needs to establish quality and cost-effective mental health care. Emergency departments may be the only medical alternative for uninsured individuals with mental health disorders who may not adhere to medication management or properly manage their condition during acute psychiatric events.<sup>2</sup> In addition, patients may present with signs and symptoms that require medical evaluations to rule out any physical ailment before addressing any underlying mental health disorder. For example, patients who have intentionally harmed themselves require an involuntary admission to properly assess, treat, and reevaluate if they are still a threat to themselves or others. US trends in ED visit volume have increased substantially from 2006 to 2013. It is estimated that 1 in 8 ED patient admissions are related to mental health issues and substance use disorders.<sup>6</sup> The most common mental health disorder diagnoses for ED visits in 2013 were depression, anxiety, or stress reactions. These account for 3945 per 100000 of the US population, which is a 55% increase from 2006.<sup>6</sup> Approximately 80% of individuals who are diagnosed with a mental health disorder seek health care in medical venues as opposed to behavioral care settings; furthermore, 50% of these individuals are associated with frequent ED use and incurring avoidable high health care costs.<sup>5</sup>

### **New Information for Readers**

Several behavioral health manuscripts have been previously published in *Journal of Emergency Nursing (JEN)*. Here, we convey information about adverse drug reactions (ADRs), such as serotonin syndrome, neuroleptic malignant syndrome (NMS), extrapyramidal symptoms (EPSs), and tardive dyskinesia (TD). Previous publications related to mental health disorders' evaluation and treatment by emergency health care providers in *JEN* have included case studies addressing specific drug interactions (eg, St. John's Wort) with selective serotonin reuptake inhibitors (SSRIs) and presenting symptomatology;<sup>7</sup> however, no treatment was discussed and emphasis was made on medication reconciliation to include herbal supplements. Here, we address serotonin syndrome management. Older publications in *JEN* discussed the list of potential SSRIs that can cause discontinuation syndrome, drug half-life, and how the patient may present to the emergency department. Unlike this manuscript, Knies and Keen<sup>8</sup> did not emphasize treatment or safety, and emphasis was made to wean patients off medications. Whyte and Rosini<sup>9</sup> presented a case study addressing a patient who presented with a cardiac arrest and had a medication history of using haloperidol and OLANzapine, which resulted in neuroleptic NMS. Supplementing Whyte and Rosini's<sup>9</sup> case study, this manuscript expands on the diagnostic clinical criteria and treatment options for NMS. Lamkin and Buhl<sup>10</sup> presented 2 case studies with EPSs, that is, acute dystonia associated with atypical antipsychotics and discussed risk factors, pharmacologic mechanisms, treatment, and outcomes. Here, we elaborate on EPSs and the usage of an evidence-based screening tool. Somes and Donatelli<sup>11</sup> presented a case study focusing on an older adult who arrived at the emergency department with aggression. The authors thoroughly discussed potential treatment options and cautionary measures for treating older adults, which include potential ADRs. This manuscript emphasizes treatment for ADRs across the lifespan.

This manuscript extends the 2014 Emergency Nurses Association's Behavioral Health Committee's white paper on "Care of Behavioral Health Patients in the Emergency Department" to educate emergency health care providers on how to recognize and manage common psychiatric emergencies, including panic attack, panic disorder (PD), and ADRs associated with the usage of antipsychotic agents and SSRIs.<sup>12</sup>

## Panic Attacks and Panic Disorder

Patients who experience panic attacks are frequently seen in emergency departments. However, panic attacks do not constitute a mental health disorder. Panic attacks are often associated with other mental health disorders, such as major depressive disorder, anxiety disorders, posttraumatic stress disorder, and bipolar disorder.<sup>4</sup> In addition, panic attacks are often listed as a specifier to another diagnosis, such as PD. Panic attacks may be diagnosed in the ED setting once a more comprehensive history and physical is performed and all other medical causes have been ruled out. A PMHNP or a mental health provider in the emergency department often diagnoses a panic attack after performing a mental health assessment and mental status exam. The mental health provider often indicates if a panic attack is suspected or the patient has preexisting PD based on the assessment findings.

As mentioned previously, a panic attack is not a mental health disorder; however, the Diagnostic Statistical Manual-5 (DSM-5)<sup>4</sup> provides panic attack specifiers, which include both physical and cognitive symptoms the individual may experience. Physical symptoms may include an unexpected sudden onset of intense fear or discomfort that peaks within minutes and is associated with 4 or more of the following symptoms: palpitations; increased heart rate; sweating; trembling or shaking; feelings of shortness of breath or smothering; sensations of choking; chest pain or discomfort; nausea or abdominal distress; feeling dizzy, unsteady, lightheaded, or faint; numbness or tingling sensation; and chills or heat sensations. Cognitive symptoms may include perceptions of unreality or being detached from oneself, fear of losing control, "going crazy," or dying.<sup>4</sup> There are 2 types of panic attacks, expected and unexpected. An expected panic attack is associated with a known trigger; for example, a situation or predicament in which the panic attack occurred. In contrast, an unexpected panic attack is not associated with a known situational trigger and may occur at any time.<sup>4</sup>

PD is characterized by recurrent unexpected panic attacks. PD is among the most common mental health disorders in the US, and yearly prevalence rates are estimated at 2.7%. PD is twice as common in women than in men, and 4.7% of the population will likely experience a panic attack in their lifetime.<sup>13</sup> Highest prevalence rates for panic attacks and PD are among individuals aged 30 to 49 years.<sup>14</sup> The only social determinant associated with influencing the occurrence of PD is a recent divorce or separation from a significant other.<sup>15</sup>

According to the DSM-5, the diagnostic criteria for PD include recurrent unexpected panic attacks. During the panic attack, 4 or more of the following symptoms must be present: increased heart rate, diaphoresis, shortness of breath, choking sensation, nausea or abdominal discomfort, feeling dizzy, chills or heat sensation, numbness or tingling sensation, derealization (feelings of unreality), depersonalization (feeling detached from one's body), and fears of going crazy or dying.<sup>4</sup> The diagnostic criteria for PD must also include recurrent panic attacks, persistent concern for a month or greater about future panic attacks or consequences of future panic attacks (eg, losing control, "going crazy"), or maladaptive behavior change (eg, avoidance of exercise) related to the panic attack; in addition, the disturbance cannot be attributed to another mental health disorder or the physiological effects of a substance or a medical condition.<sup>4</sup> Approximately 90% of individuals with PD have 1 other psychiatric disorder, and about 33% have major depressive disorder before occurrence of PD.<sup>15</sup>

Even though all presenting symptoms of panic attack or PD require proper assessment and treatment, among the most common symptoms are increased heart rate, palpitations, dizziness, shortness of breath, sweating, chest pain, trembling, and choking.<sup>16</sup> Panic attack is a presentation that may have a biological and nonpsychiatric cause and is not a mental health disorder. Panic attack or PD symptoms can be a sign of certain undiagnosed or unrecognized physical disorders. According to Craske and Stein,<sup>17</sup> establishing a differential diagnosis from other underlying medical conditions, including cardiovascular (arrhythmias, supraventricular tachycardia, angina), pulmonary (asthma, pulmonary embolism), neurological (cerebrovascular attack, migraine, epilepsy), and endocrine disorders (hyperthyroidism, hyperparathyroidism, pheochromocytoma, Addison disease) and substance intoxication and withdrawal, is essential. Less than 10% of individuals arriving to the emergency department with panic attacks are correctly diagnosed, and 98% of those experiencing panic attacks who present to the emergency department with chest pain symptoms go undiagnosed for panic attacks.<sup>18</sup> Therefore, repeated medical assessments may occur, creating a huge barrier for properly intervening and treating individuals experiencing panic attacks.

ED personnel are responsible for medically stabilizing patients before transferring to a behavioral care setting or safely discharging individuals who present with mental health disorders. Health care providers in the emergency department should incorporate the use of a behavioral diagnostic tool discussed in further detail below to evaluate mental health disorders and provide a thorough hand-off report if transfer to a behavioral care setting is warranted. A no-cost, readily available PD clinician screening tool is the Panic Disorder Severity Scale. Specifically, it rates severity and treatment progress in patients with a known diagnosis of PD.<sup>19</sup> This 7-item tool is a well-validated instrument with an internal consistency (Cronbach's alpha) of 0.65 that measures symptoms of PD from the following 7 dimensions and symptomatology: (1) incidence of panic attacks, (2) distress during panic attacks, (3) anxiety about future attacks, (4) agoraphobic fear and avoidance, (5) internal fear and avoidance, (6) dysfunction in work functioning, and (7) dysfunction in social functioning. Recalling the events over the last month, mental health professionals can rate the severity of each dimension on a 4-point Likert-scale ranging from 0 (no panic or limited symptom episodes) to 4 (extreme distress, full panic), and the final score is the average of all 7 items (higher scores indicate more severe panic symptoms).<sup>19</sup>

Acute management of PD in the emergency department may include the use of a short acting benzodiazepine such as ALPRAZolam (Xanax), which is Federal Drug Administration (FDA) approved to reduce severe anxiety symptoms.<sup>20</sup> Long-term treatment must be tailored to the individual and may include a combination of modalities, such as medications, psychotherapy, education, and complementary and alternative therapies. SSRIs are first-line therapy medications used to treat PD. Examples of SSRIs approved by the FDA to treat PD include PARoxetine (Paxil), sertraline (Zoloft), and FLUoxetine (Prozac); however, these medications must be titrated slowly and take several weeks to be effective.<sup>20</sup> The use of a brief course of ALPRAZolam (Xanax) may be prescribed in conjunction with an SSRI for short-term management of PD and should be slowly titrated when the therapeutic actions of the SSRI become apparent (2-4 weeks). Caution must be taken with the use of long-term benzodiazepines because of the drugs' habit-forming potential, which may cause dependency. In addition, it is important to educate patient and family members about the potential risks versus benefits before initiation, tapering process, and alternative treatment options. Psychotherapy such as cognitive behavioral therapy and mindfulness-based stress reduction techniques can be used to treat PD, but also take effect after several weeks. Therefore, health care providers in the emergency department should properly refer and educate on general lifestyle recommendations to reduce and identify any anxiety-related symptoms, such as eliminate caffeine/stimulants/nicotine, obtain adequate sleep, and exercise daily.<sup>20</sup> In addition, relaxation techniques can easily be administered in ED settings and have the potential to reduce anxiety. An example of a nonpharmacologic anxiety-reducing strategy is deep breathing exercises, which involve consciously slowing respirations and focusing on taking regular slow deep breaths. Another strategy may include guided imagery, where the ED provider encourages the patient to imagine a serene location free of stress. Both of these methods may have a profound effect on the anxiety of patients who present with a panic attack or known PD. Individuals with PD are often prescribed SSRIs as long-term treatment to assist in reducing their anxiety and future panic attacks.<sup>21</sup> Common side effects of SSRIs include nausea, diarrhea, constipation, headache, tremors, agitation, dizziness, sweating, and sexual dysfunction. It is also important that the emergency nurse consider possible sleep disturbance, memory loss, and cognitive function changes as SSRI side effects that may impact patient safety and self-management.<sup>22,23</sup> Side effects are secondary effects to drug therapy that are known to occur and can be desirable or undesirable; in contrast, ADRs are usually rare, unintended, and tend to be more serious, even life threatening.<sup>24</sup> Even though most side effects occur immediately, they often dissipate with time.<sup>21</sup> More serious complications from SSRI medication interactions may occur, especially if patients are on more than 1 drug. Individuals with PD often have other underlying mental health disorders, such as depression, anxiety, posttraumatic stress disorder, and bipolar disorder, and are often prescribed psychotropic medications including SSRIs and antipsychotics (typical and atypical), which may result in side effects or potential ADRs. Common side effects of first-generation (typical) antipsychotics include stiffness, akathisia, TD, tremors, sleepiness, weight gain, sexual dysfunction, constipation, dry mouth, and blurred vision.<sup>21</sup> Second-generation (atypical) antipsychotics' side effects include metabolic syndrome, weight gain, decreased sex drive, sun sensitivity, seizures, and drowsiness.<sup>21</sup>

Potentially life-threatening ADRs described below associated with antipsychotics include NMS and TD; serotonin syndrome is associated with SSRIs. Emergency health care providers must be able to recognize an individual experiencing a side effect versus an ADR to effectively treat this potentially life-threatening reaction.

### **Adverse Drug Reactions**

Schatz and Weber define an ADR as “an unwanted, undesirable effect of a medication that occurs during usual clinical use.”<sup>25(p5)</sup> ADRs related to psychotropic medications often present to the emergency department from a life-disruptive to a life-threatening situation. Two life-threatening ADRs, NMS and serotonin syndrome, although not common, can be lethal if not recognized and treated. The lethality of NMS and serotonin syndrome requires emergency health care providers to reflect on and minimize their cognitive biases to ensure accurate decision making.

### **Neuroleptic Malignant Syndrome**

NMS is recognized as a life-threatening ADR. The cause of NMS remains unknown but is often associated with antipsychotics, which block dopamine receptors (specifically D<sub>2</sub>). In addition, abrupt withdrawal of antipsychotic and antiemetic drugs have been known to trigger NMS (Table 1). Dopamine neurons originate in the mesencephalon, substantia nigra, and ventral tegmental area of the brain. The dopamine pathways (nigrostriatal, mesocorticolimbic, and tuberohypophyseal) are associated with motor control and movement, thermoregulation, reward, emotions, thoughts, memory, and attention. Because blockade of dopamine receptors does not fully explain NMS presentation, other theories have been postulated. Musculoskeletal rigidity has been associated with muscle mitochondrial alterations, whereas disruption in the sympathetic nervous system has been associated with autonomic instability.<sup>26</sup> The reported incidence of NMS for persons taking antipsychotic medications ranges from 0.02% to 3.23%.<sup>26,27</sup> NMS occurs at all ages, but men experience NMS more often. A mortality as high as 20% has been reported.<sup>26</sup> A study by Modi et al<sup>28</sup> identified the following factors associated with NMS mortality: acute respiratory failure, advanced age, sepsis, acute kidney injury, and congestive heart failure.

Key findings associated with NMS are hyperthermia, “lead-pipe” muscle rigidity, altered mental status, autonomic instability, and elevated creatine phosphokinase (CPK) related to muscle breakdown.<sup>29</sup> Other findings include akinesia, tremors, diaphoresis, dysphagia, incontinence, and hypersalivation. Development of symptoms typically occurs within 24 to 72 hours after consuming the offending agent and can last up to 30 days or can occur any time over the course of treatment.<sup>30</sup> Laboratory findings may include leukocytosis, elevated liver enzymes, and metabolic acidosis.<sup>15</sup> The American Psychiatric Association has developed diagnostic criteria for NMS, which include: (1) symptoms developed within 72 hours after exposure to a dopamine antagonist or withdrawal of a dopamine agonist; (2) two episodes of hyperthermia with diaphoresis; (3) generalized rigidity; (4) changes in mental status (delirium, stupor to coma); (5) elevated CPK levels (up to 4 times the upper limit of normal); (6) tachycardia, diaphoresis, blood pressure elevation, urinary incontinence, and pallor; (7) respiratory distress and shortness of breath; and (8) absence of infectious, toxic, metabolic, and neurological etiologies.<sup>4</sup>

Treatment focuses on early recognition of NMS and rapid response, discontinuing any dopamine agonist agents and providing aggressive supportive care; rehydration, reduction of fever, and electrolyte balance are critical, as well as stabilization of the autonomic system. Monitoring for cardiopulmonary complications, renal failure, and aspiration pneumonia are also essential.<sup>31</sup> According to Widjicks,<sup>26</sup> medications used to treat NMS include (1) benzodiazepines; (2) dantrolene (Dantrium), to reduce muscle rigidity; and (3) bromocriptine (Parlodel) or amantadine hydrochloride (Symmetrel), to reduce Parkinsonism symptoms. NMS is a life-threatening crisis that requires astute assessment skills and accurate assessment of patient medications. Knowledge of symptoms associated with NMS and antipsychotic medications are vital to a successful outcome for the patient.

### **Serotonin Syndrome**

Serotonin (5-hydroxytryptamine), derived from tryptophan, is a monoamine neurotransmitter located in the central nervous system, peripheral nervous system, mast cells, and platelets. Serotonin is produced in the raphe nuclei located in the brain, and approximately 80% is localized in the gastrointestinal system. Neurons producing serotonin in the brain have an extensive modulatory role in “motor activity, pain control, and regulation of autonomic

processes...mood, anxiety, aggression, cognition, feeding, the sleep-wake cycle, and sexual behavior."<sup>15(p68)</sup>

Serotonin is broken down by monoamine oxidase and excreted in the urine.

An excess of serotonin in the central nervous system causes serotonin syndrome, also referred to as serotonin toxicity, which can be potentially life threatening. Serotonin syndrome occurs with use of serotonergic medications, such as SSRIs, often following an increase in dosage; addition of a second serotonergic medication, drug, or supplement; or addition of drugs that inhibit cytochrome P450 2D6 and/or 3A4 (<sup>Table 2</sup>). The incidence of serotonin syndrome has been difficult to determine, mainly because of lack of recognition and presentation of symptoms associated with many other disorders. However, with increased use of serotonergic medications, such as SSRIs, the incidence is expected to rise.<sup>32-34</sup>

A triad of symptomatology that includes neuromuscular hyperactivity (tremors, muscle rigidity, myoclonus, hyperreflexia, and/or bilateral Babinski), autonomic hyperactivity (hyperthermia, diaphoresis, tachycardia, hypertension, vomiting, and/or diarrhea), and mental status alterations (anxiety, agitation, disorientation, delirium, and/or restlessness) is associated with serotonin syndrome. These symptoms occur abruptly and may also include ocular clonus. Hyperthermia is often cited as a key symptom of serotonin syndrome, yet in a study by Werneke et al,<sup>35</sup> 59.7% of 266 cases reviewed had a documented fever, and 9.2% experienced hyperthermia.

Serotonin syndrome is a diagnosis of exclusion. Performing a detailed health history, physical exam, neurological assessment, and laboratory values assessment aid in establishing the diagnosis. It is imperative to obtain a comprehensive medication history, including prescribed and over-the-counter medications and illicit drugs, to establish serotonergic properties. Medication assessments must include dosage, formulation, schedule, and any recent changes. Physical exam findings of hyperthermia, fluctuating blood pressure, hyperreflexia, muscle rigidity, agitation, and ocular clonus are often associated with serotonin syndrome. Laboratory findings do not confirm serotonin syndrome; however, an elevated white blood cell count, elevated CPK, and decreased serum bicarbonate concentration can be indicative of serotonin syndrome.<sup>36</sup>

According to Boyer,<sup>36</sup> there are 5 key principles to management of serotonin syndrome. Most important are the discontinuation of all serotonergic agents; provision of supportive care and hydration and stabilization of vital signs (antipyretics should be avoided as hyperthermia is a result of muscular activity); and sedation with benzodiazepines to manage agitation (avoid physical restraints as resistance can lead to increased hyperthermia).<sup>36</sup> The fourth principle relates to antidotal therapy for treatment of continued agitation and autonomic hyperactivity using cyproheptadine (Periactin), a serotonin and histamine antagonist. Finally, the fifth key principle is to assess the need to restart the causative serotonergic agent once symptoms have been resolved.

Often, serotonin syndrome symptoms abate after 24 hours of discontinuing the serotonergic agent. However, medications with a long half-life, such as FLUoxetine (Prozac), can extend the presence of symptoms. Serotonin syndrome requires skilled nursing assessment, including knowledge of medications associated with serotonin syndrome and quick intervention to stabilize the autonomic system. Knowledge of the unique symptoms of serotonin syndrome, specifically bilateral clonus of the lower extremities and hyperreflexia, can yield early recognition, thereby producing a successful outcome.

### **Tardive Dyskinesia**

An ADR that is life disruptive but non-life threatening is TD. TD is a movement disorder associated with use of dopamine receptor-blocking agents, specifically first- and second-generation antipsychotic medication and antiemetic agents, such as metoclopramide (Reglan; <sup>Table 1</sup>). The etiology of TD is not fully understood, but TD is often associated with dopamine sensitivity as a result of chronic use of D2 receptor antagonists. Another theory relates to the dysregulation of the gamma-aminobutyric acid neurons resulting in degeneration of striatal cholinergic interneurons. A final theory links neuronal degeneration to dopamine D2 antagonists.<sup>37</sup>

The incidence of TD in patients receiving antipsychotic medications in 2016 was estimated at 10.6 per 100 000, or 26 000 adults.<sup>38</sup> Tarsy and Diek<sup>39</sup> reported the annual incidence of TD among older adults taking first-generation antipsychotics at 10% to 25% and only 5% to 7% with second-generation antipsychotics. As of 2019, Robert<sup>40</sup> reports that the annual incidence of TD for persons older than 45 years was 15% to 30% after 1 year of treatment



with dopamine receptor–blocking agents.

Symptoms of TD are frequently associated with oral facial movements (chewing, grimacing, lip smacking, and tongue protrusions) but can also include dyskinesia (rocking and swaying movements), athetosis, dystonia, chorea, and tics.<sup>39</sup> Relief from the movements occurs during sleep. Onset can be insidious but develops 1 to 6 months after initiation of dopamine antagonist medication.

When caring for individuals with suspected TD, a medication evaluation is imperative, along with a neurological assessment. The Abnormal Involuntary Movement Scale (AIMS) is a clinician-rated tool commonly used to assess severity of dyskinesias.<sup>41</sup> AIMS has been shown to have interrater and test-retest reliability in adult psychiatric populations. AIMS measures the following aspects: facial and oral movements, extremity movements, trunk movements, global judgments, and dental status. The tool consists of 12 items, with a rating scale from 0 to 4 (none, minimal, mild, moderate, and severe), and is available in the public domain. Higher scores indicate more severity of dyskinesias.<sup>41</sup>

Initiation of routine screening and documentation using a validated abnormal movement scale may prevent or limit the effects of TD, which can be a very stigmatizing condition. Early recognition is imperative, as potential for remission decreases the longer the patient is exposed to the offending agent. Tapering off the offending agent, transitioning from typical to atypical antipsychotics with lower risk for TD, and discontinuing any anticholinergic medication are first steps.<sup>35</sup> Currently, there are 2 FDA-approved medications for the treatment of TD: valbenazine (Ingrezza) and deutetrabenazine (Austedo), which are in the medication class of vesicular monoamine transporter 2 inhibitors.<sup>34</sup> Assessment and early recognition are critical to prevention of TD.

### **Extrapyramidal Symptoms**

EPSs are the most common of ADRs and typically are non–life threatening but disturbing to the patient. EPS is defined as a drug-induced movement disorder associated with use of any dopamine receptor–blocking agents. EPSs are often associated with first- and second-generation antipsychotic medication but can also be associated with antiemetics, SSRIs, tricyclic agents, lithium, and stimulants.<sup>42</sup> The EPS spectrum includes acute movement disorders, such as dystonia, akathisia, and Parkinsonism. Because the incidence of EPSs correlates to the dopamine receptor–blocking agent, first-generation antipsychotics account for 61.6% of EPS cases, whereas there is a reduced incidence of EPSs associated with second-generation antipsychotics. Novick et al<sup>43</sup> conducted a 3-year study of patients participating in the Schizophrenia Outpatient Health Outcomes and found an incidence of EPSs ranging from 7.7% to 32.8% with long-term injectables.

Akathisia occurs frequently and is defined as the inability to sit still, often displayed as shifting weight from foot to foot and an inability to keep feet still, as if there is a compelling need to move. The most frightening acute EPS is acute dystonia, intermittent to continual muscle spasms of the head and neck that can occur within hours of initial administration of the offending agent. Dystonia can also cause involuntary movement of the muscles of the back and extremities, jaw, eyes, and pelvis. Parkinsonism symptoms, which are also drug-induced, include shuffling gait, stooped posture, rigidity, tremors, mask-like facial expression, and bradykinesia.<sup>15</sup>

A detailed history, physical exam including administration of AIMS, and presenting clinical picture aid in early recognition and diagnosis of EPSs. Early recognition of EPSs is critical. Management of EPSs often begins by decreasing the dose of the agent or changing to another agent. If no relief is obtained, oral anticholinergic medications are administered to manage the symptoms. Dystonia requires immediate treatment and discontinuance of offending agent and intramuscular administration of anticholinergic medication.<sup>15</sup> Patient and family education of EPS symptomatology and consistent use of the AIMS test by health care providers can often mitigate EPS symptomatology.

### **Cognitive Bias and Communication**

Another component of patient safety is the recognition of cognitive bias by ED health care providers in caring for persons with mental disorders. Cognitive bias is defined as “systematic errors in our thinking that can affect our judgments and decisions making.”<sup>44(p14)</sup> Three common types of cognitive bias are: confirmation bias, which is “favoring information that conforms to our beliefs and disregarding or devaluing evidence that does not”; anchoring

bias, which recognizes “a heavy reliance on the first piece of information we learn”; and attention bias, which is “paying attention to some things while ignoring others.”<sup>44(p14)</sup> Awareness of one’s cognitive bias, particularly related to mental disorders, can impact clinical decision making and patient outcomes.<sup>45</sup>

Emphasis on establishing clear, nonjudgmental, and honest communication that is respectful will assist in building a therapeutic relationship that is patient-centered. Communication strategies that can be useful in any health care setting are active listening, limiting distractions, and being empathetic and patient. In addition, the health care provider may need to set limits with the individual to ensure safety. Limit setting can involve providing choices that are clear and explained as “either/or” choices, because too many options may be confusing and can potentially increase the patient’s anxiety level or exacerbate aggressive behaviors. Emergency health care providers must be specific when addressing inappropriate behaviors and discuss exactly which behaviors demonstrated are inappropriate, for example, vulgar language, removing clothing, and aggressive remarks. Emergency health care providers who can effectively use these communication strategies are in a better position to enhance the experience for individuals with mental health disorders being cared for in the emergency department.

### **Implications for Emergency Clinical Practice**

Providing care to individuals with mental health disorders can be challenging to even the most experienced health care providers. Individuals who have mental health disorders (eg, schizophrenia, bipolar I disorder) are prescribed medications such as antipsychotics, which produce an array of ADRs. These ADRs are both physically and emotionally debilitating.

Despite advances in treatments, including medications for mental illness, ADRs continue. Clinically, the ambiguities associated with the pathophysiology of some ADRs (eg, TD) make management and treatment a challenge for health care providers.<sup>46</sup> Even when discontinuing the antipsychotic medications seems to be the appropriate treatment, this may not be feasible because of the individual’s mental health disorder. Therefore, prevention (initiating antipsychotics at a lower dose and titrating accordingly), early recognition (utilizing standardized screening tools), and treatment (dependent on cause) are paramount for ADRs.<sup>35,46</sup> The emergency health care provider who is knowledgeable in the recognition and care of ADRs related to antipsychotics and SSRIs is vital to a patient’s outcome.

In the emergency department, cardiac and respiratory complaints may be the predominant presenting symptomatology for individuals with panic-related anxiety, whereby establishing a mental disorder diagnosis may be unlikely. Individuals presenting with aggression or exhibiting hostile behaviors may have underlying anxiety as well. It is imperative that health care providers view the individual holistically and include both medical and psychiatric diagnoses in their differential. Psychiatric emergencies tend to have functional impairments and may affect social and interpersonal domains (personal, occupational, financial, academic). A combined pharmacologic and nonpharmacologic (eg, exercise, relaxation techniques, mindfulness) approach has been found to be the most successful.<sup>15</sup>

### **Conclusion**

Individuals with mental health disorders are seen frequently in emergency departments; therefore, it is necessary for all health care providers to be knowledgeable, therapeutic, and cognizant of their own bias to properly care for this population. The objective of this clinical manuscript is to educate ED health care providers about specific psychiatric emergencies, including panic attack, PD, and ADRs associated with mental health treatment medications. This manuscript can serve as an information and education resource for emergency clinicians about these psychiatric emergencies. Recommendation for consultation with a Psychiatric Mental Health Nurse Practitioner (PMHNP) is frequently suggested to assist emergency health care providers in establishing a mental health disorder diagnosis and to guide care. In addition, ED interventions of relaxation techniques and limit setting are in alignment with the Emergency Nurses Association’s 2014 Behavioral Health Committee’s vision to promote de-escalation and overall safety for patients and staff in the emergency department.

Antipsychotics*	Antiemetics*	Dopamine agents* (withdrawal of drug)
First generation/typical	Domperidone	Amantadine
ChlorproMAZINE	Droperidol	Bromocriptine
FluPHENAZine	MetoCLOPRAmide	Entacapone
Haloperidol	Ondansetron	Levodopa
Loxapine	Prochlorperazine	Tolcapone
Thioridazine	Promethazine	
Second generation/atypical		
ARIPiprazole		
OLANZapine		
QUetiapine		
RisperiDONE		
Ziprasidone		

SSRIs*	Tricyclics*	Other serotonergic agents*
Citalopram	Amitriptyline	Cyclobenzaprine
Escitalopram	Amoxapine	Meperidine
FLUoxetine	ClomiPRAMINE	Methadone
Fluvoxamine	Desipramine	Pentazocine
PARoxetine	Doxepin	TraMADol
Sertraline	Imipramine	Triptans
Vilazodone	Nortriptyline	

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**Database:** Public Health Database

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Document 46 of 57

# Moral Dilemmas of Nurses and Paramedics During In-Flight Medical Emergencies on Commercial Airlines: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

During commercial flights, in-flight medical emergencies may lead the cabin crew to request assistance from qualified health care professionals among the passengers. Although a physician's function and role are well known and virtually universal globally, the role, education, and scope of practice of nurses and paramedics varies significantly. This article analyzes the possible dilemmas that medical professionals other than physicians who assist during in-flight medical emergencies may face and presents recommendations for aviation authorities. There is an identified need for universal cross-border regulations and an awareness of legal and ethical boundaries for medical responders other than physicians on board commercial international aircraft.

## FULL TEXT

### Introduction

In-flight medical emergencies on commercial airline flights are not rare events and occur in approximately 1 in 604 commercial flights.<sup>1</sup> When an in-flight medical emergency occurs, the cabin crew will usually be the first to respond, assess the situation, and provide first aid. However, in most cases of uncertainty or apparent urgency, the cabin crew will seek medical assistance by making an announcement requesting the help of any medical professionals on board.<sup>2</sup> Historically, the terminology used in such announcements included the word doctor,<sup>3</sup> which effectively left out all other health care professionals who may also be suited to handle the emergency. This is ironic, given that nurses were employed as flight attendants<sup>4</sup> to provide professional care in case of a medical emergency in the early years of commercial passenger aviation. On the basis of personal observations and experiences, airlines have recently begun to change the terminology in their announcements from "medical doctor" to "medical professional,"<sup>2</sup> likely because of improved understanding of changes in medical qualifications and the roles of different professionals in the modern medical world.

In-flight medical emergencies can be broadly divided into 2 categories: injury-related and health-related. Today, most injury-related medical emergencies occur as a result of "rough-air" or turbulence. However, burns (especially by hot water or ovens) and falls (typically involving elderly passengers) are also common.<sup>5</sup> Health-related emergencies range from issues related to atmospheric pressure changes (eg, dizziness; nausea; vomiting;

vasovagal syncope; gastrointestinal issues; and ear, nose, and throat issues), respiratory difficulties (usually because of pre-existing medical conditions) and may even include complex cardiovascular emergencies, which can lead to fatal arrhythmias and possibly death.<sup>6</sup>

A passenger who experiences an urgent medical condition during a flight may prefer to have an emergency medicine physician, preferably with aeromedical training, on board.<sup>5</sup> However, encountering such a physician on commercial flights may not be particularly common. Experienced nurse practitioners, emergency nurses, or paramedics may be available. These professionals may be more adept to handle medical emergencies than physicians with a nonemergency background. However, the many health professions, other than physicians, mentioned previously are unique to the North American education and licensing model and are not recognized globally.

Currently, there are no unified, international standards relating to the medical assistance during in-flight medical emergencies nor regulations regarding who is authorized or to what extent health care professionals are authorized to assist a passenger in distress. Therefore, in-flight medical emergencies may create moral dilemmas for responding volunteers.

### **Scope of Practice, Legal Status, and “Duty to Help”**

In contrast to physicians, who hold the title of doctor and are universally accepted as medical authorities, the education, scope of practice, and regulation of nurses and paramedics are highly diverse worldwide.<sup>7</sup> Therefore, nurses and paramedics from different countries vary significantly in their knowledge, abilities, public perception, and protection from liability. During an in-flight medical emergency, a nurse or a paramedic must not only gain the trust of the patient but also the flight crew, who are the gatekeepers to the onboard medical kit and other aircraft resources.<sup>5</sup> It is logical to assume that the crew’s trust and perception of the responding medical provider will be based on their mental model, which is framed by their experiences with their home country’s medical system. Although the professional title may be nurse, the skill set behind the title might be different depending on the country of origin. In more conservative, entirely physician-based medical systems, nursing roles are mostly instrumental, assisting, and “order dependant.”<sup>8</sup> It is likely that airline crews from such countries may not feel comfortable entrusting nurses to solely manage an in-flight medical emergency, particularly if it may cause flight diversion.<sup>9</sup> In other situations, airline crews may have unrealistically high expectations of a nurse, based on a nurse’s role in their home country’s medical system. However, the nurse on board may not be capable nor legally permitted to perform diagnostic or treatment procedures on the basis of their country of licensure. For example, an aircrew from the United States or Canada may expect a relatively high level of skill and independence from a nurse on the basis of their personal experiences in their home countries. However, an individual presenting as a nurse from a country where nurses have mainly assisting duties would not live up to the flight crew’s expectations.

This same situation also applies to paramedics. Many countries do not have the paramedic role, but rather they have physician-based prehospital emergency medical systems. Even the word paramedic has a different meaning in different countries. In some countries, such as the US, Canada, or Israel, a paramedic is an independent advanced emergency medical professional. In other countries, such as former Soviet Union countries, a paramedic is a first responder with basic first aid training. Additionally, certain medical roles exist only in several former Soviet Union countries. For example, “the feldsher” is a medical professional who has extensive autonomy, especially in the prehospital setting and is capable of managing a wide range of emergencies and chronic conditions.<sup>10</sup> The role of a feldsher is somewhat similar to the nurse practitioner in the US but more focused on the prehospital emergency setting. As a result of these differences and the lack of universal regulations across the global airline industry, legal aspects of medical treatment by health professionals other than physicians on board an aircraft are not well defined and may become complicated. Such uncertainty, coupled with unclear regulations, may lead to skilled and qualified professionals not volunteering in cases of onboard medical emergencies.<sup>11</sup>

### **Good Samaritan Laws**

There are 2 fundamental versions of Good Samaritan laws. The first is common in the US (in 47 states), Canada, and the United Kingdom and protects bystanders from legal prosecution in the case of assisting another person in

distress. The second exists in several countries and territories (including 3 US states), most commonly in continental Europe, and declares a mandatory duty to assist a person in distress (sometimes also called a “Duty to Help” law) (Table).<sup>12</sup> The legal and ethical differences between these 2 versions are significant. The first version provides a safety net for the health care professional to volunteer, whereas the second version theoretically mandates the health care professional to step forward, with the potential for sanctions if they do not. Variations in a nurse’s scope of practice and differences in autonomy, decision-making ability, and legal requirement to act, based on their country (or state) of practice, may lead medical professionals who are not physicians into a morally distressful decision between their duty to care for an ill or injured passenger and the potential legal consequences of applying their knowledge and skills on board an aircraft.

The fundamental ethical principle of duty to care may be perceived as universal and independent from the situation’s setting and legal variables.<sup>11,13-15</sup> Therefore, the responding health professional may feel it is ethically required of them to offer their skills if requested, especially if they normally practice in a setting that mandates them to do so under a duty to help law. In most cases of in-flight medical emergencies, medical professionals volunteered and assisted.<sup>16,17</sup> This may be because of the strong moral compass of the health professionals, coupled with the perceived duty to care and the ethical principles of beneficence and nonmaleficence, leading them to step up. However, it is also possible that nurses and paramedics from countries with the mandatory version of the Good Samaritan law would more frequently step forward and offer help than those from countries where the law only provides legal protection. However, there is no literature to date investigating this.

Good Samaritan laws (in all variations) do not apply in cases of gross negligence and “legal bonds”—if the person is on official duty (and is being paid, in some states), he or she must provide medical or nursing care within their scope of practice.

### **Overview of the Authority on Board**

A review of the current international aviation regulations and legislation suggests that there is no organized or universal methodology for involving passengers with medical qualifications during an in-flight medical emergency. Moreover, there is no unified methodology for handling in-flight medical emergencies, and generally speaking, the airline industry has not made an effort to address the problem. Statistically, owing to increased air traffic, the chances of having a health care professional on board decline each year. Airlines have been advised by several international aviation organizations (eg, International Civil Aviation Organization [ICAO] and International Air Transport Association [IATA]) to build protocols under the guidance of their company medical advisor.<sup>18,19</sup> Many airlines have also established a relationship with medical facilities and medical consulting companies to have physicians on call to assist during emergencies by satellite phone, which is available to the flight crew in most modern aircraft.

According to international aviation law, decisions on board ultimately remain in the pilot-in-command’s (PIC’s) (or captain’s) hands. The origins of the captain’s authority are deeply rooted in maritime law and tradition. At sea, operations in an unnatural environment required a single responsible authority. A ship’s captain had absolute authority and was the unquestioned commander responsible for the ship, cargo, and crew.<sup>20</sup> Depending on the country’s flag being flown, the captain could order someone to be restrained or locked up, remove any staff member, refuse to carry passengers or cargo, and perform a marriage legally.<sup>21</sup> The modern aviation law differs slightly between countries, but the same concept of the PIC’s almost absolute power is present. Federal Aviation Regulation 91.3 states, “The PIC of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft.” The regulation further notes that in the event of “an in-flight emergency requiring immediate action, the PIC may deviate from any rule to the extent required to meet the emergency.”<sup>22</sup> During an in-flight medical emergency, the captain’s authority is an essential factor for responding health professionals to consider. It may also create a distressing situation for the responding clinician because the captain’s decisions may conflict with what they think is best for the patient on the basis of their view of the situation.<sup>1</sup>

### **Possible Conflicts Between Health Professionals and the PIC**

An ethical and legal dilemma may arise from the fundamental difference in the responsibility between responding

health professionals and the aircraft captain. Health care professionals are typically expected to be fully dedicated to the patient's health. However, the captain of the aircraft is responsible for all of the passengers and crew on board while also subject to company and governmental regulations. If a conflict occurs between the health care professional and the aircraft captain, the health care professional must remember that the captain's authority is superior, despite their responsibility to the patient's health. Although it is highly unlikely, the captain may ignore not only the onboard responder's opinion but also the opinions of the on-call consultant physician. This may be because of flight safety issues, security, or even political reasons, of which health care professionals may not be aware. The PIC may refuse to land because of technical issues (eg, aircraft being too heavy to perform an immediate landing or lack of suitable runway) or because of the inability to land in an enemy state of the home country of the airline. The additional but no less important factor that the PIC should consider is the presence (or absence) of suitable medical facilities in the vicinity of the possible airport of the diversion. All these factors may lead the PIC to decide differently from the medical volunteer and/or airline consulting physician. In such cases, the captain's decision must be respected by the volunteering health professional. However, it should be documented in the airline medical incident form (an airline form that medical volunteers may be required to fill out and is generally similar to a standard ED chart page). However, the health professionals are ethically expected to continue to provide the best possible treatment for the patient.

### **Challenges Among Onboard Responder, Patient, and Medical Authorities Remote Phone Consultant**

Thanks to satellite technology, direct contact with medical advisors on the ground have become an available and reliable tool for both the aircrew and the volunteer responders who assist. When an airline consulting physician is contacted and the onboard volunteer is a nurse or a paramedic, the traditional chain-of-command is expected to be followed with the physician providing medical direction to the onboard responders. However, the challenge is that the volunteer responder on board the aircraft is the only individual who can visualize and interact with the patient. Being an independently licensed health care professional, nurses and paramedics must be able to make clinical judgments that are best for the patient, even if they differ from the medical consultant. Such a unique environment and unique dilemmas demand specifically tailored regulatory solutions for the airline industry. For example, a health care provider from an airline's home country may need to provide prescribed treatments and recommendations to a nurse from another country about treating a patient from a third country. The ground consultant may follow protocols and clinical approaches, which may be considered wrong, outdated, inappropriate, or insufficient by the nurse or the paramedic on board. Guided by patient advocacy, which is an essential value of the nursing profession, the nurse may face a dilemma in whether to follow the medical consultant's treatment plan.<sup>23</sup> Such a complicated ethical and legal matrix should have a regulatory basis in international aviation regulations and offer clear protections for responding health care professionals.

### **Informed Consent**

Another dilemma that may be faced by responding professionals involves informed consent of the patient to receive treatment. Patients may be reluctant to receive care from a health professional with whom they are unfamiliar. The patient's interaction with their home country's health care system may lead them to refuse treatment from a nurse or a paramedic because they may have a different set of preferences or understanding based on their experiences. Health care professionals are expected to respect patient autonomy and do their best to protect patient health and life as much as possible in coordination with the patient, the family, and the crew.<sup>9</sup> Refusal of treatment by the patient on the basis of a mistaken perception of the volunteer health care professional's qualifications may cause further damage and deteriorate a situation. Global licensing management and international regulation regarding the scope of practice may assist a crew in reassuring the patient of the qualifications of a specific volunteer health care provider, based on the country of origin and license, and ultimately help the patient to have "truly" informed consent.

### **Handing Off Critical or Deceased Patient**

Additional challenges may arise in extreme situations (eg, resuscitation efforts or other critical conditions) in the context of decision-making about landing. It is important to recall that local laws may apply to the volunteer health care professionals and may not be in favor of "non-doctor" treatment in the case of diversion and emergency landing



in different countries.<sup>24</sup> Ethical and legal considerations of providing medical treatment and then “handing off” the patient to local health care providers may create problematic situations in countries where Good Samaritan laws do not exist. For example, a critically ill patient may be declared dead on landing, and onboard volunteers may be held accountable if neither variant of the Good Samaritan law is established in the country. The PIC should be aware of the diversion’s circumstances and the potential complications of landing with a critically ill or even deceased person on board. Preferably, the concerns should be discussed with the volunteer health care professionals before making the decision.<sup>17</sup> Landing with a deceased person on board (even if the physician on the ground does the declaration of death after landing) may lead to a local investigation (in some places a criminal investigation) and may involve the health care volunteers who assisted during the flight. The volunteer health care provider may not be held accountable for the outcome, but it may cause other challenges for the volunteer. For example, they may be removed from the flight until a more complete investigation is conducted. Flight crew, ground staff, and health professional volunteers must be aware of these potential complications and be prepared to handle such situations. Comprehensive, international regulations are needed to help ensure an equitable process in place for such situations.

### **Multiple Responders**

When more than 1 health care provider volunteers to assist during an in-flight emergency, it may create a distressing situation and regulatory challenge. When health care volunteers come from different countries and health systems, issues of hierarchy and work relations may be encountered. Cabin crews, especially in-flight service managers (pursers), should be aware of the potential tensions and work toward preventing the complex situation from escalating. Adding to the complex nature of the interaction is that most volunteer health care providers are accustomed to practicing in institutional environments, not in the confined space of an aircraft with limited medical supplies. Even paramedics, who are familiar with out-of-hospital environments, might be under increased stress being in an aluminum tube 10 miles above the ground.<sup>25</sup>

The common assumption is that a physician should step forward to assist, on the basis of the Hippocratic oath requiring them to do so ethically.<sup>24</sup> This ethical duty, which many health care professionals may have, combined with the supposed protection (or requirement) provided by a Good Samaritan law, may propel health care professionals to volunteer. The volunteering health care professionals may quickly find themselves in a stressful, unknown situation in an unfamiliar environment. Stress has negative effects not only on personal and professional performance but also on interpersonal relationships between health care professionals. All of these stressors combined can quickly lead to poor decision-making capacity, poor outcomes, and additional challenges and dilemmas. The aircrew, which is familiar with the environment, should continuously supervise and manage the situation and must be involved in all stages of the response, even if the care being provided is out of their scope.

### **Current Situation and Recommendations for the Airline Industry**

Standardization and universality are cornerstones of modern air transport. As a critical element of flight safety and efficient air space management, pilots and dispatchers worldwide must use the same terminology, maps, navigational aids, radio frequency ranges, and more. The ICAO and the IATA manage de-facto the global airline and airport industry by publishing guidance materials, which are nearly universally accepted by local aviation authorities as mandatory regulation papers. In 1998, the US House of Representatives legislated the Aviation Medical Assistance Act, which includes a section about release from the personal liability for the person assisting in the case of an in-flight medical emergency.<sup>26</sup> However, to date, there is no similar international regulation.

### **Onboard Equipment and Regulations**

Medical manuals by ICAO and IATA focus almost exclusively on the medical aspects of crew certification and occupational hazards (eg, fatigue issues), but little on passengers’ health in general and in-flight medical emergencies in particular.<sup>18,19</sup> Manuals include a suggested content list for the onboard medical kit (sometimes called a doctor’s kit), but this list is not mandatory. Therefore, every airline creates an inventory for their medical kits that may be quite different.<sup>27</sup> A typical onboard medical kit includes oral non-narcotic analgesics, antihistamines, anti-nausea agents, and bronchodilators. Most kits worldwide will include intravenous access cannulas, at least 1

type of intravenous crystalloid fluid, and cardioresuscitation drugs. A kit usually includes equipment to measure blood pressure (automatic or manual), a stethoscope, airway management and ventilation equipment such as laryngoscope, airway, and bag valve masks. The kit also typically includes hemorrhage control equipment such as tourniquets and bandages. Nasogastric tubes and urinary catheters may be included but are not common. However, the variety among different kit supplies, especially medications, is significant and is another cause of added stress for the responding health care professional. Therefore, onboard volunteer health care professionals will not know what they will find inside the kit and what other medical equipment is available (eg, an automatic external defibrillator or a pulse oximeter). Unfortunately, there are no standard, unified cross-industry guidelines on how to respond to an in-flight medical emergency or even how to identify which personnel are qualified to use the equipment.

### **Personnel Identification and Definition of the Scope of Practice**

Some airlines have made attempts to map medical personnel beforehand on a voluntary basis and have created special frequent flyer programs for licensed medical personnel in their home country. This entices them to fly with their airline and gives the airline the ability to locate health care professionals in the case of a medical emergency.<sup>28</sup> However, these few programs are limited to individual airlines and cannot resolve the global problem of authorizing or identifying onboard volunteer health care professionals. The growth in air traffic has increased the availability of flights and, as a result, has led to the growth in the incidence of in-flight medical emergencies.<sup>16</sup>

This increase in in-flight medical emergencies demonstrated the need for an organized global effort to map health care personnel flying as passengers. This would allow aircrews to contact willing health care volunteers directly, should the need arise. This should be supported by universal regulations, outlined by ICAO and IATA advisory documents, which could further lead to the creation of universal policies and procedures of managing in-flight medical emergencies. The involvement of both organizations is vital to ensure sufficient support from member states in ICAO and member airlines in IATA because many modern airlines operate and have bases in more than 1 country. In coordination with local aviation authorities, airlines can provide an option for passengers to provide their medical qualifications during the ticketing process, and licensing can be verified by passengers' country medical authority, thereby enabling them to be called on to assist.

Universal regulation of the response methodology to in-flight medical emergencies, responsibilities of passengers who assist as health care professionals, and even more critical, universal and global application of Good Samaritan laws on all commercial flights are also necessary and may save lives and promote flight and passengers' safety. Promoting nursing and paramedic assistance during in-flight medical emergencies requires involvement of not only aviation regulators, but also medical and nursing professional organizations, such as the American Medical Association, American Nurses Association, Emergency Nurses Association, National Registry of Emergency Medical Technicians, International Association of EMT's and Paramedics, European Society for Emergency Nursing, Asia-Pacific Emergency Nursing network, and others. In addition to professional organizations, which are reliable and efficient at evaluating and defining the scope of practice and ethical boundaries for their members, cooperation between local nursing and paramedic authorities (eg, Ministry of Health, schools of nursing, and emergency medical services agencies) of the ICAO member countries and local aviation authorities is vital. These groups can contribute to the identification of differences in education and scope of practice for nurses and paramedics from different countries and help build a unified response plan for in-flight emergencies that can be adopted globally.

### **Conclusion**

The current response to in-flight medical emergencies is fraught with challenges and dilemmas for the responding volunteer health care professional. The current system is a patchwork of policies, processes, and regulations that is highlighted by the global airline industries' disarray, lack of universality, and limited standardization in managing in-flight emergencies. This creates moral, legal, and ethical dilemmas, especially for medical personnel who are not physicians. The formation of easily translatable, universal policies is long overdue but requires close cooperation between aviation authorities and professional medical and nursing organizations for harmonization between aviation realities and the abilities and values of nurses and paramedics. The United Nations-based ICAO can and should coordinate between member states, and IATA can facilitate the dissemination and adoption of the regulations for

commercial airlines. Additional research and legal analysis are necessary to establish the compatibility of universal laws and regulation with aircraft legal status issues mentioned in the Tokyo Convention<sup>29</sup> and liability limitation mentioned in the Montreal Convention.<sup>30</sup> Clear and transparent definitions of what can be done, by whom, and what should be avoided will help nurses and paramedics step forward during an in-flight medical emergency and will help aircrews understand their abilities and set realistic expectations for these health care professionals.

Protection only	Protection with a duty to help
Australia, Canada (except Quebec), India (not in all states), Ireland, Romania, United States (47 states and DC)	Argentina, Belgium, Brazil, Canada (Quebec), Denmark, France, Finland, Germany, Greece, Israel, Russia, Serbia, Spain, United States (Minnesota, Vermont, Rhode Island)

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# The Coronavirus Disease Pandemic Continues to Challenge Patients in Need of Buprenorphine for Opioid Use Disorder: JEN

## ABSTRACT (ENGLISH)

Compared with the 3-month period before that order, in the following 3 months the total number of prescriptions dispensed for buprenorphine-naloxone decreased almost 30%; however, the average quantity of tablets per prescription significantly increased by 60%, and there was a 22% increase in new prescriptions originating from the emergency department. Before the pandemic, patients were referred directly to a clinic or treatment center from the emergency department, but if there were delays to immediate referral (eg, night, weekend, or treatment center at capacity) our emergency department provided 3 days of buprenorphine-naloxone with linkage to in-person treatment during that time. In 2020, Cook County set a record for opioid deaths in the midst of a pandemic.<sup>2</sup> We do not know if this occurred primarily because of limited access to addiction specialists, if this was linked to the increased supply of buprenorphine-naloxone available on the streets from larger prescriptions, if this was associated with increased depression as a consequence of the pandemic, or if there were other reasons.

## FULL TEXT

Dear Editor:

We thank Strout et al<sup>1</sup> for their well-written and comprehensive review “Understanding ED Buprenorphine Initiation for Opioid Use Disorder: A Guide for Emergency Nurses” in this journal. Patients with opioid use disorder (OUD) are vulnerable, and we think their review should be read by all involved in clinical ED care, not just by nurses as mentioned in their title.

We write to highlight one area not mentioned in their well-written review: how the prolonged coronavirus disease 2019 (COVID-19) pandemic has challenged treatment of patients with OUD and their access to buprenorphine. The example at our institution is generalizable to others and important for all to recognize as the pandemic continues. At Cook County Health, the largest public health hospital serving the Chicago area since 1857, we care for a large diverse population of patients with OUD. We have a busy medication assistance treatment (MAT) clinic and team of recovery coaches who provide rapid linkage to the MAT clinic from the emergency department and our outpatient and inpatient facilities. Unfortunately, access to our MAT clinic and the affiliated continuity clinics has been disrupted by the pandemic; therefore, patients have needed to use the emergency department for care and refills of medication for OUD. We have tracked our prescriptions for buprenorphine-naloxone in our health system pharmacy and have seen a significant change in medication for OUD prescribing since the onset of the pandemic.

The Illinois state “shelter-in-place” order took effect on March 21, 2020. Compared with the 3-month period before that order, in the following 3 months the total number of prescriptions dispensed for buprenorphine-naloxone decreased almost 30%; however, the average quantity of tablets per prescription significantly increased by 60%, and there was a 22% increase in new prescriptions originating from the emergency department. Before the pandemic, patients were referred directly to a clinic or treatment center from the emergency department, but if there were delays to immediate referral (eg, night, weekend, or treatment center at capacity) our emergency department provided 3 days of buprenorphine-naloxone with linkage to in-person treatment during that time. Now, during the pandemic, our ED procedure is to prescribe a full 30-day course with the understanding that linkage to an addiction specialist may not happen during that period. We know that medication alone is not sufficient treatment for OUD. In 2020, Cook County set a record for opioid deaths in the midst of a pandemic.<sup>2</sup> We do not know if this occurred primarily because of limited access to addiction specialists, if this was linked to the increased supply of buprenorphine-naloxone available on the streets from larger prescriptions, if this was associated with increased depression as a consequence of the pandemic, or if there were other reasons.

Some experts have labeled the problem of OUD during the pandemic as a “crashing of the crises,” and we think it deserves more attention.<sup>3</sup> The pandemic has amplified known risks or unmasked new challenges to the health and well-being of patients with OUD. We need to advocate for multipronged collaboration among health care providers,

elected officials, first responders, pharmacy companies, and community leaders. Although we were thrilled to see that more prescriptions originated from the emergency department during this pandemic following the guidelines described by Strout et al,<sup>1</sup> fewer came from the health system's outpatient treatment clinics. Our experience highlights the challenges faced by this cohort of patients, and we worry that there is a direct association with the increased number of overdose deaths reported during this same period when more buprenorphine-naloxone tablets were dispensed per prescription. How telehealth availability, increased ED traffic, and other health access strategies can enhance substance use disorder treatment during a pandemic warrants priority attention in these pages and by policymakers. This is an issue for frontline emergency nurses and all others who care for patients in any setting during this pandemic.—*Joanne C. Routsolias, RN, PharmD and Mark B. Mycyk, MD, Cook County Health, Chicago, IL; E-mail: jroutsolias@cookcountyhhs.org.*

## DETAILS

<b>Subject:</b>	Prescriptions; Pharmacy; Pandemics; Opioids; Specialists; Addictions; Buprenorphine; Emergency services; Naloxone; Analgesics; Coronaviruses; Prescription drugs; Nurses; Narcotics; COVID-19; Substance use disorder
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# Postpandemic Psychological Recovery and Emergency Nursing: Creating a Narrative for Change: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

Examples of recommendations include immediate/individualized access to mental health resources; quality, accessible personal protective equipment; and individual and organizational strategies to improve nutrition, exercise, sleep quality, and mindfulness, and to reduce burnout.<sup>17</sup> On the basis of recovery efforts from previous disasters, simply creating a space for human connection to occur through sharing experiences can facilitate healing and subvert the stigma that may come with seeking mental health services.<sup>18</sup> Understanding the experience of psychological and nurse-specific trauma during the COVID-19 pandemic is necessary to optimize a healthy recovery process and enhance the future resilience of those in the nursing profession. Restoring and improving the stability and resiliency of the health care system to optimize patient outcomes and enhance community well-being; along with implementing strategies to protect the safety and health of recovery workers from the effects of post-disaster environments are outlined as core capabilities under the Health and Social Services infrastructure system in the NDRF, necessary to achieve the National Preparedness Goal.<sup>12</sup> In this issue of the Journal of Emergency Nursing, Woo and Kim<sup>19</sup> discuss secondary traumatic stress among nurses and emphasize that solutions at the structural level (ie, administrative and leadership support) are needed to mitigate the negative effects of such issues. [...]victim trauma The guilt a nurse experiences after a medical error or from believing nursing care is not meeting the patients' needs because of insufficient resources (inadequate or ill-prepared staff).

## FULL TEXT

Unlabelled image

The COVID-19 pandemic has pushed the emergency care sector beyond its breaking point, exacerbating preexisting issues such as ED crowding, boarding, unsafe patient assignments, suboptimal/unacceptable work

environments, and psychological distress.<sup>1-3</sup> As this pandemic continues into its second year, the prevalence of psychological distress, moral injury (a phenomenon that often follows moral distress on the continuum of moral harm<sup>4</sup>), and stress-related disorders among nurses and health care workers are higher than ever before.<sup>5,6</sup> Suicide rates, which were higher among nurses and health care workers before the pandemic, are likely to have increased.<sup>7-10</sup> Collective grief, disillusionment, and weariness may remain present in disaster recovery efforts, despite vaccine administration.

As frontline workers, emergency nurses have experienced first-hand the mass occupational trauma that the International Council of Nurses refers to as unprecedented and complex.<sup>5,6</sup> As health care organizations desperately try to conserve resources, many units are attempting to function at minimal staffing levels, further intensifying the physical, mental, and emotional demand on their already depleted workforce.<sup>11</sup> Owing to increasing organizational demands, little (if any) organizational resources have been made available to emergency nurses within the United States at a systems level.<sup>2,3,11</sup> The feelings of frustration and exhaustion in the nursing profession are palpable in departments across the nation and in mainstream news and social media channels. The International Council of Nurses predicts a substantial “COVID-19 Effect” on the overall nursing workforce: a mass exodus from the profession.<sup>5</sup> This is a sobering prediction, given that globally we were expected to be 10 million nurses short in 2030...and this was a prepandemic prediction.<sup>5</sup>

Although general activities of disaster response (eg, meeting basic human needs, providing life-saving care) will continue within the emergency department, recovery efforts on a larger scale should focus on “how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of communities.”<sup>12</sup> According to the National Disaster Recovery Framework (NDRF), it is not unusual for disaster recovery to begin while response is still occurring. Prioritizing psychological and emotional recovery, a core principle of the NDRF, is necessary to maximize the opportunity for successful disaster recovery.<sup>13</sup> This core principle should be prioritized among emergency nurses and health care workers during COVID-19 recovery efforts. Dr. Karen Foli's Middle Range Theory of Nurses' Psychological Trauma<sup>13-15</sup> provides a mental model for understanding nurse-specific trauma, something that is particularly relevant in disaster recovery efforts given the psychological ramifications of COVID-19 on the nursing workforce. This theory includes individual, professional, and system/organizational factors as influences on the allostatic load (physiological responses from chronic exposure to stress) of the nurse.<sup>14</sup> Individual or humankind trauma refers to trauma outside of the nursing profession and work environment and includes potential traumas from adverse childhood experiences. At the professional level, types of nurse-specific trauma may be unavoidable (eg, vicarious trauma through patient care), but can be exacerbated or alleviated through organization and system factors. Examples of nurse trauma are provided in <sup>Table 1</sup>, and include workplace violence, system-induced or medically induced trauma, historical or intergenerational trauma, second-victim trauma (ie, medical errors), trauma related to disaster work, and insufficient resource trauma.<sup>14,16</sup> Insufficient resource trauma, the most recent addition to this theory, results from the lack of personnel, supplies, and expertise/knowledge required for nurses to fulfill their organizational, professional, and ethical responsibilities.<sup>14</sup> This particular form of trauma is undeniably salient in the context of this past year. Of note, trauma resulting from the work environment can be prevented through system forces. Foli outlines these major concepts and examples in the <sup>Figure 14</sup>.<sup>14</sup> Protective factors such as resiliency, posttraumatic growth, and organizational recognition can buffer the overall allostatic load.<sup>14</sup> Resiliency, although a protective factor, should not be viewed as an individual's responsibility, but rather an organizational and collective one.<sup>2</sup> The first step in creating and conveying the reality of what we as emergency nurses have been experiencing is to name our experiences,<sup>16</sup> and Foli's Middle Range Theory provides an organized framework to do just that.

The Federal Emergency Management Agency's definition of “*resilience*,” as defined in the NDRF, is “*the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.*”<sup>12</sup> The very definition of resilience is strikingly similar to what emergency nurses do every day; even outside of the context of disaster response. As disaster response and recovery efforts begin/continue in the context of this pandemic, augmenting psychological and emotional recovery among front line workers should be prioritized by health care

organizations, hospital executives/leadership, and policy makers.<sup>3,11,13</sup> In a scoping review regarding the impact of COVID-19 on health care worker wellness, Shreffler et al<sup>17</sup> recommend strategies to enhance health care worker wellness. Examples of recommendations include immediate/individualized access to mental health resources; quality, accessible personal protective equipment; and individual and organizational strategies to improve nutrition, exercise, sleep quality, and mindfulness, and to reduce burnout.<sup>17</sup> On the basis of recovery efforts from previous disasters, simply creating a space for human connection to occur through sharing experiences can facilitate healing and subvert the stigma that may come with seeking mental health services.<sup>18</sup> Understanding the experience of psychological and nurse-specific trauma during the COVID-19 pandemic is necessary to optimize a healthy recovery process and enhance the future resilience of those in the nursing profession. Restoring and improving the stability and resiliency of the health care system to optimize patient outcomes and enhance community well-being; along with implementing strategies to protect the safety and health of recovery workers from the effects of post-disaster environments are outlined as core capabilities under the Health and Social Services infrastructure system in the NDRF, necessary to achieve the National Preparedness Goal.<sup>12</sup>

In this issue of the *Journal of Emergency Nursing*, Woo and Kim<sup>19</sup> discuss secondary traumatic stress among nurses and emphasize that solutions at the structural level (ie, administrative and leadership support) are needed to mitigate the negative effects of such issues. Emergency nurses within the US and around the world make up a unique community of interest, identity, and circumstance.<sup>18</sup> Now is the time to collectively advocate through health care systems, hospital executives/leadership, nurse unions, federations and professional organizations like Emergency Nurses Association, and other avenues mentioned in <sup>Table 2</sup> for tangible support of the nursing workforce as we recover from this pandemic disaster. As a specialty, we can harness the momentum within the context of disaster recovery to build guiding coalitions<sup>20</sup> and advocate for healthier work environments, psychological support, and more equitable health care systems.

#### Author Disclosures

Conflicts of interest: none to report.

Types of nurse psychological trauma	Examples
Vicarious/Secondary trauma	Secondary traumatic experiences with patients who are dying without family members physically present; Witnessing the psychological and physical distress of other nurses and staff.
Historical trauma	Embedded institutional racism, evidenced by higher morbidity and mortality rates from COVID-19 among African Americans and ethnic minority groups <sup>21</sup> ; Nurses, as an oppressed group, being used by others to interface with patients, thus endangering their lives.
Workplace violence	Organizational dismissal of distress after a traumatic experience; Nurse physically or verbally abused by a family member who is upset when they cannot come into the hospital to see their family member.
System/Medically-induced trauma	A patient who suffers from a medical error or is in distress due to mechanical ventilation, or painful and invasive interventions.

Insufficient resource trauma	Lack of PPE; unmanageable patient assignments due to the number of patients or patient acuity; Non-critical care nurses assigned to care for patients without being adequately oriented and trained.
Second-victim trauma	The guilt a nurse experiences after a medical error or from believing nursing care is not meeting the patients' needs because of insufficient resources (inadequate or ill-prepared staff).
Trauma from disasters	Engaging in crisis standards of care, not providing life-saving care to a patient who would have received resources outside of a disaster context; Having to decide which patients receive life-saving measures; Worrying about transmitting the virus to loved ones at home.

•The Joint Commission's Office of Quality and Patient Safety: Comments may be submitted online, via phone or fax (personal identifying information is not required)<sup>22</sup>•Join the EN411 Action Network: The Emergency Nurses Association creates sample letters that can be personalized to share your experiences directly with your local legislators regarding specific issues relevant to emergency nursing<sup>23</sup>•Blogging: Not only does the act of blogging enhance emotional well-being,<sup>24</sup> but it generates discourse to reflect and create reality<sup>16</sup>•Other discourse including social media, magazines, newspapers and editorials

## DETAILS

<b>Subject:</b>	Emergency medical care; Disaster recovery; Patients; Healing; Burnout; Equipment; Emergency services; Nursing; Community mental health services; Capabilities; Social services; Resilience; Nurses; Leadership; COVID-19; Infrastructure; Clinical outcomes; Lifesaving; Stigma; Guilt; Consciousness; Individualized; Health professional-Patient communication; Pandemics; Critical incidents; Disaster management; Nutrition; Disasters; Disaster medicine
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Document 51 of 57

# The Effects of a Novel Mindfulness-based Intervention on Nurses' State Mindfulness and Patient Satisfaction in the Emergency Department: JEN

[ProQuest document link](https://www.proquest.com/scholarly-journals/postpandemic-psychological-recovery-emergency/docview/2524211370/se-2?accountid=211160)

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## ABSTRACT (ENGLISH)

### Introduction

The objective of this study was to examine the effect of a novel mindfulness-based time-out intervention on state of

mindfulness among emergency nurses and, accordingly, on patient satisfaction.

### Methods

A pre-post intervention design among nurses in the emergency department was used with a between-subjects factor of patients who were nested within each nurse. The study was conducted between January 2017 and June 2018 among 48 nurses in the emergency department of a public tertiary academic hospital. For each nurse, a consecutive sample of 20 patients who attended the emergency department was recruited ( $n = 1920$  patients; 960 in each phase). The mindfulness-based time-out intervention was based on theoretical mindfulness principles and carried out every 4 hours with direct communication to the patient at their bedside. Nurses' sociodemographic and professional characteristics and trait mindfulness were collected preintervention. Pre- and postintervention, data was collected on patients' sociodemographic and satisfaction, nurses' state mindfulness, and ED workload.

### Results

An increase in nurses' state mindfulness and patients' satisfaction was found after the mindfulness-based time-out intervention compared with before the intervention (4.35 [SD = 0.64] vs 4.03 [0.82],  $P < .001$  and 4.03 [0.41] vs 3.16 [0.44],  $P < .001$ , respectively). A positive correlation was found between patients' satisfaction and nurses' state mindfulness ( $r = 0.29$ ,  $P < .001$ ). The findings also demonstrated that state mindfulness was higher among nurses, characterized by high trait mindfulness, after the mindfulness-based time-out intervention implementation.

### Discussion

By adapting mindfulness principles to the dynamic environment of the emergency department, we showed that the mindfulness-based time-out intervention was associated with a significant improvement in state mindfulness and patient satisfaction. The findings elucidate the interrelation among several conceptualizations of mindfulness that are increasingly reported in the literature, namely trait and state mindfulness, and interventions to promote mindfulness.

## FULL TEXT

## DETAILS

<b>Subject:</b>	Emergency medical care; Intervention; Stress; Hypotheses; Patient satisfaction; Consciousness; Nursing care; Sociodemographics; Mindfulness; Design; Health professional-Patient communication; Nurses; Emergency services; Informed consent
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# Commentary on “The Effects of a Novel Mindfulness-Based Intervention on Nurses’ State Mindfulness and Patient Satisfaction in the Emergency Department”: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

The authors described using a brief at the start of each shift,<sup>2</sup> another TeamSTEPPS tool.<sup>3</sup> Briefs are timed events at shift start, and they review items such as roles and responsibilities, patients’ clinical status, care plans, and any resource issues.<sup>3</sup> Briefs establish clear goals, and the use of a checklist can help facilitate a brief.<sup>3</sup> Although the authors’ briefs were to remind staff to complete the MBTI, it helped set a goal of achieving the MBTI for the shift. <sup>4</sup> The quote is related to a patient’s reevaluation when you perform an intervention such as dressing a wound or administering pain medication.<sup>4</sup> According to the Emergency Nurses Association’s clinical practice guidelines, position statements, white papers, and practice resources, there are no patient reassessment guidelines.<sup>5</sup> McGhee et al<sup>6</sup> recommend reassessment for patients classified as Emergency Severity Index level 1 every 5 to 15 minutes;

level 2 every hour; level 3 every 4 hours unless abnormal, then every 2 hours; level 4 every 4 hours; and level 5 at discharge.<sup>6</sup> Their recommendations came after reviewing the literature and finding no guidelines or protocols for reevaluating ED patients.<sup>6</sup> Many emergency departments have organizational or unit-based policies that delineate patient reassessment time frames. Other studies on TeamSTEPPS in trauma training discovered significant team communication improvement, leading to improved patient safety and outcomes.<sup>10,11</sup> The authors chose to exclude patients admitted to the resuscitation bays; yet, they did not delineate if the exclusion included patients with trauma.<sup>2</sup> An MBTI may be too time-consuming because patients typically leave resuscitation bays once they are stabilized or ready for the operating room.

## FULL TEXT

Patient satisfaction is tied to reimbursement and is publicly reported.<sup>1</sup> With this transparency, patients can now compare hospitals and providers or “shop” for their care needs. Organizations are looking for new and innovative ways to improve patient satisfaction. In this issue of the *Journal of Emergency Nursing*, Saban et al<sup>2</sup> discuss implementing a mindfulness-based timeout intervention (MBTI) and its effect on nurses’ state mindfulness and patient satisfaction.

The MBTI is a timed intervention that occurs every 4 hours throughout a shift in an emergency department.<sup>2</sup> The authors hypothesized that an increasing state of mindfulness would increase patient satisfaction with nursing care. The authors designed their own MBTI to help nurses focus on their state mindfulness. The study's mindfulness principles included paying attention to different signs in the moment and resiliency in the face of failure, with the outcome of nurses reevaluating signs and symptoms to identify changes in the patient.<sup>2</sup> Bedside MBTI encourages decision-making at the patient's bedside, improves learning processes, and prevents failures while using a homegrown template in the medical record to facilitate MBTI documentation. The team used text message reminders and a brief at the start of each shift to reinforce the MBTI. Patients who were critical and who had been admitted to the resuscitation bays were excluded from this study.<sup>2</sup> The study found that the MBTI statistically improved nurses’ state mindfulness and patient satisfaction.

Saban et al<sup>2</sup> suggest that there are similarities between the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) huddle and their intervention, the MBTI. Huddles occur as needed, have minimal structure, and include reviewing pertinent patient information and modifying the existing care plan.<sup>3</sup> Huddles help keep all team members informed so that they have a shared mental model. Although TeamSTEPPS focuses on team communication, the huddle is just 1 small component of the TeamSTEPPS toolkit.<sup>3</sup> Having a timed and structured process around a huddle could produce the same results as the intervention studied by the authors. The authors described using a brief at the start of each shift,<sup>2</sup> another TeamSTEPPS tool.<sup>3</sup> Briefs are timed events at shift start, and they review items such as roles and responsibilities, patients’ clinical status, care plans, and any resource issues.<sup>3</sup> Briefs establish clear goals, and the use of a checklist can help facilitate a brief.<sup>3</sup> Although the authors’ briefs were to remind staff to complete the MBTI, it helped set a goal of achieving the MBTI for the shift. The Emergency Nurses Association's Trauma Nurse Core Course teaches nurses, “When you mess, reassess.”<sup>4</sup> The quote is related to a patient's reevaluation when you perform an intervention such as dressing a wound or administering pain medication.<sup>4</sup> According to the Emergency Nurses Association's clinical practice guidelines, position statements, white papers, and practice resources, there are no patient reassessment guidelines.<sup>5</sup> McGhee et al<sup>6</sup> recommend reassessment for patients classified as Emergency Severity Index level 1 every 5 to 15 minutes; level 2 every hour; level 3 every 4 hours unless abnormal, then every 2 hours; level 4 every 4 hours; and level 5 at discharge.<sup>6</sup> Their recommendations came after reviewing the literature and finding no guidelines or protocols for reevaluating ED patients.<sup>6</sup> Many emergency departments have organizational or unit-based policies that delineate patient reassessment time frames.

The study by De Simone et al<sup>7</sup> demonstrated a positive correlation between nurses’ satisfaction and work engagement on patient satisfaction, supporting the authors’ finding of this MBTI study.<sup>2</sup> Nurses were more engaged with their team members and their patients, which improved nurse and patient satisfaction. Although they did not use



a form of the MBTI or TeamSTEPPS huddle, they did focus on interdisciplinary collaboration, which the MBTI facilitated in the authors' study.

The use of TeamSTEPPS in the outpatient setting led to reduced clinical errors and improved patient satisfaction.<sup>8</sup> Previous studies using TeamSTEPPS in the trauma bay included several TeamSTEPPS tools, not just the huddle.<sup>9-11</sup> Harvey et al<sup>9</sup> found that using a multidisciplinary TeamSTEPPS simulation-based training improved patient outcomes during trauma resuscitation. The program included several TeamSTEPPS tools such as the prebrief, call out, check back, 2-challenge rule, situation monitoring, huddle, and debrief. Other studies on TeamSTEPPS in trauma training discovered significant team communication improvement, leading to improved patient safety and outcomes.<sup>10,11</sup>

The authors chose to exclude patients admitted to the resuscitation bays; yet, they did not delineate if the exclusion included patients with trauma.<sup>2</sup> An MBTI may be too time-consuming because patients typically leave resuscitation bays once they are stabilized or ready for the operating room. For patients with trauma, the goal of the door-to-disposition time is 20 minutes. Dispositions for patients with trauma include computed tomography scan, the operating room, interventional radiology, or an inpatient bed. Patients in the resuscitation bay would triage to an Emergency Severity Index level 1, which requires vital signs monitoring and reassessment every 5 to 15 minutes. There has not been an evaluation of a formal TeamSTEPPS huddle or an MBTI in the trauma bay for feasibility or for any patient or provider outcome.

The literature supports structured communication tools and periods of formal team evaluation.<sup>8-11</sup> Both patient and provider benefit when the team collaborates effectively and has a shared mental model. When a team comes together with clear goals and effective communication, it reduces clinical errors, improves nurse and patient satisfaction, and improves patient outcomes. Further study on using the MBTI<sup>2</sup> or TeamSTEPPS<sup>8-11</sup> huddle is warranted to determine their usefulness in trauma resuscitation as well as their effects on nurse wellness and retention.

#### Author Disclosures

Conflicts of interest: none to report.

## DETAILS

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Document 53 of 57

# Cannabinoid Hyperemesis Syndrome: A Review of the Presentation and Treatment: JEN

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

After the increasing legalization of cannabis, there has been a rising trend in cannabis consumption, especially among heavy users. Cannabinoid hyperemesis syndrome is a syndrome of cyclic vomiting related to chronic cannabis use. The difficulty of diagnosis and treatment of this syndrome has led to a disproportionately high use of health care resources. Although the exact mechanism of cannabinoid hyperemesis syndrome is still unknown, patients typically progress through prodromal, hyperemetic, and recovery phases. Persistent vomiting in a patient who reports relief with hot showers should trigger the consideration of cannabinoid hyperemesis syndrome as a possible diagnosis. For treatment, antipsychotics such as haloperidol or droperidol have been shown to be more

effective than conventional antiemetics for symptom control. Capsaicin should also be considered, given its positive efficacy and low adverse-effect profile. Providers must be aware of cannabinoid hyperemesis syndrome, its diagnosis, and treatment, given the increasing prevalence. Further research is required to elicit the exact mechanism and additional therapies for this syndrome.

## FULL TEXT

### Cannabinoid Hyperemesis Syndrome

Cannabinoid use in the United States continues to increase, as does the number of patients with cannabinoid hyperemesis syndrome (CHS). Data previously published in the *Journal of Emergency Nursing* identify the challenges that CHS causes for ED staff and frontline nurses.<sup>1</sup> CHS is of increasing concern because of the proliferation of nontraditional cannabis products such as those in electronic cigarettes. In a 2020 *Morbidity and Mortality Weekly Report*, up to 20% of the e-cigarette users have admitted to using cannabis in their e-cigarettes.<sup>2</sup> In addition, the coronavirus disease pandemic may also be a contributor to the increasing number of cases of CHS because marijuana sales have skyrocketed in states where it has become legal.<sup>3</sup> This may be a result of state lockdowns or the belief that cannabis consumption may help to ease the stress and anxiety of the pandemic.<sup>3</sup> Cannabis is the most widely consumed drug worldwide, with an estimated 188 million users (approximately 3.8% of the global population) between the ages of 15 years and 64 years.<sup>4,5</sup>

As of 2020, recreational cannabis in the US has been legalized in 11 states and decriminalized in another 15.<sup>6</sup> This represents a significant change in cannabis access, use, and public acceptance since Pizarro-Osilla<sup>1</sup> published her article on CHS in 2018. The continued increase in legalization, coupled with the reported increase in cannabis use as well as an increase in flower and concentrate potency and cannabis use disorder diagnoses, highlights the need for this updated paper.<sup>4,5,7</sup> We will review the incidence, pathophysiology, clinical manifestations, and treatment of CHS because emergency nurses must be aware of this debilitating disorder because the likelihood of their managing a patient presenting with CHS is only increasing.

With the increasing prevalence of heavy marijuana use, it is important for health care providers to be aware of a major adverse effect of this drug associated with chronic use: CHS. CHS is defined as a syndrome of cyclic nausea and vomiting in the setting of regular cannabis use that resolves after abstinence from cannabis.<sup>8</sup> It was first described in 2004 by Allen et al<sup>9</sup> and has since been found to be particularly difficult to diagnose and treat in the emergency department. A study by Perrotta et al<sup>10</sup> that looked at the health care costs of CHS patients during a 2-year period found an average cost of \$76920, with an average of 5.3 computed tomography scans, 17.3 ED visits, and 6.8 hospital admissions per patient. Patients averaged 17.9 ED visits before a diagnosis was made.<sup>10</sup> It is important for emergency nurses to understand and recognize CHS to prevent patients from experiencing inappropriate diagnoses, costly testing, and unnecessary suffering.

There have been many proposed mechanisms for CHS, the leading of which suggests a dysregulation of the endocannabinoid system. It has been proposed that with chronic cannabis intake, there is desensitization of the peripheral cannabinoid receptors in the enteric nerves, causing slowing of gastric motility.<sup>11,12</sup> In addition, a review paper by Sorensen et al<sup>11</sup> described 7 major, commonly cited diagnostic characteristics with their respective incidence: history of regular cannabis for any duration of time (100%), cyclic nausea and vomiting (100%), resolution of symptoms after stopping cannabis (96.8%), at least weekly cannabis use (97.4%), compulsive hot baths with symptom relief (92.3%), abdominal pain (85.1%), and male predominance (72.9%). Seventy-five percent of the CHS patients met 4 criteria, and 92% met at least 3 criteria. Other characteristics that were associated with CHS included reliable return of symptoms within weeks of resuming cannabis use, normal bowel habits, negative medical workup, and weight loss less than 5 kg. Notably, the ED visits were mainly attributable to inhaled cannabis, with no reports of CHS in patients only using cannabis-infused edibles.<sup>8</sup> There is a significant overlap between CHS and cyclic vomiting syndrome, a functional gastrointestinal disorder. Studies suggest that many patients currently diagnosed with cyclic vomiting syndrome may in fact have CHS.<sup>13</sup> Ultimately, CHS is a diagnosis of exclusion, and therefore further workup is needed during initial presentation.

## Clinical Manifestation of CHS

There are 3 main phases of CHS: prodromal, hyperemetic, and recovery.<sup>14</sup>

The prodromal phase is characterized by mild nausea and abdominal discomfort, typically in the mornings. Patients may start taking hot showers or increase their cannabis use to self-treat their symptoms.<sup>14</sup> The hyperemetic phase is when patients often present to the emergency department. Their chief complaints may be nausea, vomiting, or abdominal pain and often with episodes of retching 5 times per hour.<sup>15,16</sup> This phase typically lasts 1 day to 2 days but may last from 1 day to 10 days and often presents with dehydration, acute kidney injury, electrolyte derangements, or weight loss.<sup>9,10,15</sup> Patients may stand in the shower for hours, during which they describe a temperature-dependent relief, with the relief being directly correlated to the temperature of the water.<sup>12</sup> Such severe symptoms have led to reports of patients presenting with burns from prolonged hot water exposure or pneumomediastinum from repetitive vomiting.<sup>17,18</sup> Finally, patients eventually transition to the recovery phase, during which they slowly improve their nutritional intake, regain their weight, and normalize bathing patterns. Of note, many will relapse in their use of cannabis, with eventual reentry into the prodromal phase.<sup>14,16</sup>

## Treatment of CHS in the Emergency Department

Management of symptoms has been historically difficult because conventionally used antiemetics such as serotonin antagonist (eg, ondansetron), antihistamines (eg, diphenhydramine), dopamine antagonists (eg, metoclopramide and prochlorperazine), and benzodiazepines have demonstrated limited success.<sup>10,11,19</sup> It is the failure of these conventionally used antiemetics that results in increased health care use such as laboratory testing, imaging studies, and hospital admissions.

Antidopaminergic antipsychotics such as haloperidol and droperidol have been found to be moderately successful in controlling symptoms during the hyperemetic phase.<sup>20,21</sup> A recent retrospective review by Lee et al<sup>22</sup> found that CHS patients treated with droperidol had less than half the length of stay compared with those treated with conventional therapies. It has been shown that delta-9-tetrahydrocannabinol increases dopamine synthesis, turnover, efflux, and cell firing, which may explain the mechanism of the success of this class of medications.<sup>23</sup> Typical dosing has been suggested to be 5 mg intravenous or intramuscular of haloperidol and 0.625 mg to 2.5 mg intravenous droperidol.<sup>10,22</sup> A potential adverse drug effect includes QT prolongation, which has been reported in both agents.<sup>24</sup> The risk for QT prolongation typically occurs with intravenous administration and with quantities exceeding that of the recommended dose.<sup>24</sup> Other adverse effects include sedation, extrapyramidal symptoms, neuroleptic malignant syndrome, and hypotension.<sup>24</sup>

Capsaicin has also been described as an inexpensive, readily available, and safe treatment for CHS with reasonable efficacy.<sup>25-27</sup> Capsaicin is theorized to activate the TRPV1 G-protein-coupled receptor, which interacts with the endocannabinoid system.<sup>25-27</sup> The suggested regimen described is topical application of 0.075% concentration capsaicin cream to the patient's abdomen or back of arms 3 times daily, keeping caution to avoid sensitive areas of the face, eyes, nipples, and perineum. The applicator should wear nitrile gloves when applying the cream and wash their hands afterward.<sup>10,28</sup> The patient may experience initial discomfort, and the adverse effects may include local burning, itching, redness, and swelling, especially if higher doses are used.<sup>28</sup> If there is excessive irritation, washing the skin with soap or alcohol is more effective at removing the capsaicin than plain water.<sup>28</sup> Many hospitals carry this product on formulary, and it can be either found in the automated dispensing machines in the emergency department or be obtained from the inpatient pharmacy.

In addition, supportive therapies may include intravenous fluids for dehydration or electrolyte repletion for any derangements to prevent end-organ damage or arrhythmias, respectively.<sup>29</sup> Opioids should be avoided because an association with bowel dysfunction and worsening gastrointestinal adverse effects has been reported.<sup>11</sup>

## Monitoring in the Emergency Department

In the emergency department, the patients should be monitored for adverse drug effects related to the selected treatment medications and resolution of cyclic vomiting. In addition, they should be provided education on cannabis cessation because abstinence is the only known cure. Once a patient stops cannabis use, it may take up to 10 days for full resolution.<sup>10,11</sup> Referrals should be made to recovery coaches, social workers, or other professionals trained in

addiction medicine to prevent propagation of this cycle experienced by patients with CHS.

### Implications for Emergency Nursing Practice

With legalization of cannabis and increasing prevalence of heavy cannabis use, nurses need to be familiar with the adverse effects of this drug, especially CHS. Emergency nursing can be crucial in the prompt recognition of CHS, and screening should be performed on all patients for marijuana use. Furthermore, nurses should be aware of the novel treatments because they are atypical compared with the treatments used to care for the usual vomiting patient.

### Conclusion

CHS is a syndrome of cyclic vomiting in the setting of heavy cannabis use that can be difficult to diagnose and treat. Relief with hot baths or showers is virtually diagnostic. Opioids should be avoided, whereas conventional antiemetics may be attempted. However, priority needs to be given to antipsychotics and capsaicin over other treatment modalities in the emergency department.

### Author Disclosures

Conflicts of interest: none to report.

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# United States ED Visits by Adult Women for Nonfatal Intimate Partner Strangulation, 2006 to 2014: Prevalence and Associated Characteristics: JEN

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## ABSTRACT (ENGLISH)

### Introduction

Nonfatal intimate partner strangulation poses significant acute and long-term morbidity risks and also heightens women's risk for future femicide. The lifetime prevalence of nonfatal intimate partner strangulation has been estimated to be approximately 10%, or 11 million women, in the general United States population. Given the potential for significant health risks and serious consequences of strangulation, this study adds to the limited literature by estimating prevalence and describing the associated characteristics of strangulation-related visits among United States ED visits by adult women after intimate partner violence.

### Methods

Prevalence estimation as well as simple and multivariable logistic regression analyses were completed using data from the Nationwide Emergency Department Sample spanning the years 2006 to 2014.

### Results

The prevalence of strangulation codes was estimated at 1.2% of all intimate partner violence visits. Adjusting for visits, hospital characteristics, and visit year, higher odds of strangulation were noted in younger women,

metropolitan hospitals, level I/II trauma centers, and non-Northeast regions. Increases in strangulation events among intimate partner violence–related visits in recent years were also observed.

## Discussion

A relatively low prevalence may reflect an underestimate of true nonfatal intimate partner strangulation visits owing to coding or a very low rate of ED visits for this issue. Higher odds of strangulation among intimate partner violence visits by women in more recent years may be due to increased recognition and documentation by frontline clinicians and coding teams. Continued research is needed to further inform clinical, postcare, and social policy efforts.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- This study's main finding is that prevalence of strangulation codes among ED intimate partner violence visits by women was estimated at 1.2%. Statistically, higher odds of strangulation coding were observed in younger women, metropolitan hospitals, level I/II trauma centers, and non-Northeast regions.
- The prevalence of strangulation-coded ED visits in this study was lower than expected, given an existing United States general population survey estimate of 900 000 women experiencing nonfatal intimate partner strangulation in the past 12 months.
- A key emergency nursing practice implication from this research is that recognition and documentation of strangulation in women visiting the emergency department are critical to both immediate and long-term health. Emergency nurses are well positioned to lead poststrangulation identification and treatment efforts.

### Introduction

Nonfatal intimate partner strangulation (NF-IPS) poses significant acute and long-term health threats<sup>1,2</sup> and heightens women's risk for future femicide.<sup>3,4</sup> Defined as external pressure to the neck that occludes the air passages and/or blood vessels, strangulation can dangerously limit oxygenation and result in acute and long-term injuries to physical structures,<sup>5-8</sup> psychological terror,<sup>9,10</sup> brain trauma,<sup>11-13</sup> and possibly death.<sup>14-16</sup> The lifetime prevalence of NF-IPS has been estimated in the general United States population to be approximately 10%, or 11 million women.<sup>17</sup> Strangulation has also been found to be higher in subpopulations of women such as those enduring intimate partner violence (IPV), seeking criminal justice services,<sup>18</sup> and presenting to domestic violence shelters.<sup>1,16,17</sup> Data further suggest that strangulation in the US is a gendered phenomenon,<sup>17,19</sup> with more than 10 times more women reporting NF-IPS than men.<sup>17</sup>

The literature on NF-IPS is limited, albeit growing, with the estimated proportion of women seeking emergency health care subsequent to NF-IPS varying widely from 5% (sample of 300 women whose cases were submitted for prosecution)<sup>20</sup> to 69% (sample of 102 women presenting for clinical forensic evaluation).<sup>21</sup> A myriad of factors may influence care-seeking after strangulation, including individual-level symptom severity and perceived risk,<sup>20-22</sup> provider-level (eg, health, law enforcement, and advocacy) communication and response, and community- and societal-level access to services. Women also report lack of recognition regarding the potential negative health consequences of NF-IPS and minimization of poststrangulation symptoms as reasons for why they do not seek health care.<sup>23</sup>

Recent studies have allowed initial insights into the pervasive nature of NF-IPS.<sup>24-29</sup> Given the significant health risks and serious consequences of NF-IPS, there is an urgent need for a broad-scale analysis of ED visits to support emergency clinicians' response to this vulnerable and high-risk population. Examining national-level, multiyear data can contribute important insights to inform ED practice protocols and policy efforts. Thus, the aim of this study was

to estimate the prevalence and identify the associated characteristics of ED visits in the US by women with a diagnosis and external cause-of-injury codes for an IPV event that included strangulation.

## Methods

A cross-sectional analysis of 2006 to 2014 Nationwide Emergency Department Sample (NEDS) data was conducted, accessed from the Healthcare Cost and Utilization Project (HCUP) of the Agency for Healthcare Research and Quality.<sup>30</sup> NEDS is the largest publicly available all-payer ED database in the US.<sup>30</sup> Stratified by geographic region, location (urban/rural), teaching status (ie, hospital with residency program), ownership, and trauma-level designation, NEDS includes a representative sample of approximately 20% of the hospital-based ED visits taken from the participating organizations. Data are entered into the NEDS database voluntarily by partner agencies. For complete details on this dataset, please refer to the NEDS Database Documentation website.<sup>30,31</sup> Its large sample size allows data analysis across various hospital types and for relatively uncommon conditions.<sup>30</sup> Providing deidentified information, researchers have used this to estimate ED visit prevalence for various illnesses and injuries, including IPV<sup>32,33</sup> and other abuse.<sup>34,35</sup> This study was determined by the Johns Hopkins Medicine Institutional Review Board to be exempt research.

## Inclusion and Exclusion Criteria

Visits by women aged 18 years or older with an *International Classification of Diseases, Ninth Revision, Clinical Modification* code (*ICD-9-CM*; henceforth “code”)<sup>36</sup> of E967.3 (“battering by spouse or partner”)<sup>32,33</sup> were included in this analysis. Because this study focused on NF strangulation cases that were not self-inflicted, visits in which the patient died (either in the emergency department or during the concurrent inpatient visit) or that included a concurrent code for “suicide and self-inflicted injury” (E950-E959) were excluded from this analysis.

## Measures

The outcome measures included the proportion of IPV visits with an NF strangulation code as well as demographics and characteristics related to NF-IPS. NF-IPS was defined by the following codes: 994.7 (“asphyxiation and strangulation”), E963 (“assault by hanging and strangulation”), E983.8 (“strangulation or suffocation by other specified means undetermined whether accidentally or purposely inflicted”), or E983.9 (“strangulation or suffocation by unspecified means undetermined whether accidentally or purposely inflicted”). The independent variables (Figure) included visit and hospital characteristics, HCUP Clinical Classification Software categories, and visit year. For this analysis, the following variables were maintained in their original NEDS categories: income quartile for patient’s zip code,<sup>33</sup> hospital region,<sup>33,35</sup> and hospital teaching status.<sup>35</sup> On the basis of prior IPV literature, ages were combined into 4 categories: 18 to 24, 25 to 34, 35 to 44, and  $\geq 45$ ,<sup>33</sup> and ED disposition was collapsed into 2 categories: treated/released or admitted.<sup>17</sup> Trauma centers were collapsed into level I/II and level III/nontrauma. In addition, 3% of the visits fell into another category, “Trauma Center Level I, II, or III, collapsed category in the 2006-2010 NEDS,” and were subsequently combined into the level I/II category.

## Statistical Analysis

Power calculation was conducted a priori using NCSS PASS version 14.0 (NCSS Statistical Software, LLC, Kaysville, UT) to determine detectable odds ratios (ORs), given an expected sample size of 26 284 IPV visits by women per year<sup>33</sup> or 236 554 visits over the 9-year period. Given the large sample size and multiple analyses, we set a conservative  $\alpha$  level of 0.01 and statistical power at 80%. On the basis of prior literature, we estimated strangulation among IPV-related visits by women from 5%<sup>20</sup> to 35%.<sup>37</sup> Because the distributions of the independent variables were unknown, the prevalence of each independent variable varied from 10% to 30%. With these estimates and sample size, we determined that the minimal detectable ORs would vary from 1.03 to 1.11. Statistical analyses were completed using Stata/SE version 14.2 (StataCorp, LLC).<sup>38</sup> To account for the complex



survey design of the NEDS dataset, we used discharge-level survey weights provided by HCUP in all analyses. Independent variables were summarized using means and 99% CIs or by frequency distributions and percentages. Four logistic regression models were constructed to progressively examine the relationship between visit characteristics and strangulation coding. Hospital teaching status was found to be collinear with hospital urban/rural status and subsequently removed from the models. For all statistical tests, a 2-tailed *P* NEDS has a well-documented approach to data-cleaning before making data available to investigators.<sup>31</sup> No variables had missing values in the final dataset except patient zip code income quartiles, which had a very small percentage missing (2.88% for IPV-only visits and 1.99% of the strangulation-coded visits). Given the distribution of missing observations in both nonstrangulation- and strangulation-coded visit groups, similar key characteristics in both groups were assumed, and imputation was not performed.

## Results

Prevalence and baseline characteristics are presented in <sup>Table 1</sup>. The weighted prevalence of visits with co-occurring strangulation codes among those with IPV codes was estimated at 1.2% (99% CI, 1.00%-1.47%). Strangulation-coded visits reflected younger mean ages than those without strangulation codes (32.94% [99% CI, 31.82%-34.06%] vs 35.37% [99% CI, 35.14%-35.61%]), and a higher percentage of strangulation-coded visits in younger age groups (18-24 years and 25-34 years). IPV visits with strangulation codes were more likely to be reported by hospitals in the Midwest and Western regions of the US, in level I/II trauma centers, and metropolitan hospitals with teaching roles compared with IPV visits without strangulation codes. The annual distribution of total IPV visits coded over the total 9 years of NEDS data studied reflected relatively stable year-to-year percentages, ranging from a low of 9.82% (in 2013) to a high of 12.06% (in 2010). However, a nearly 3-fold increase in strangulation-coded visit distribution was observed from 2006 (7.08%) to 2014 (20.63% of the total 9 years of visits). No differences were observed in the percentage of strangulation-coded visits by patients' zip code-specific income quartile, ED disposition, or payer information.

In the fully adjusted model (<sup>Table 2</sup>), visits by younger women (age group 18-24 years) and to metropolitan hospitals were associated with higher odds of co-occurring strangulation codes than visits by older women (age group 35-44 years: OR = 0.69; 99% CI, 0.49-0.96; age group ≥45 years: OR = 0.49; 99% CI, 0.33-0.73) or to nonmetropolitan hospitals (OR = 0.59; 99% CI, 0.35-0.97). Characteristics significantly associated with higher odds of a concurrent strangulation code compared with the references included visits from the third quartile (OR = 1.51; 99% CI, 1.04-2.20) and fourth quartile (OR = 1.55; 99% CI, 1.01-2.39) of patient zip code-specific income level, level I/II/collapsed trauma center (OR = 1.64; 99% CI, 1.10-2.46), hospitals from non-Northeast regions (Midwest: OR = 3.01; 99% CI, 1.67-5.43; South: OR = 1.92; 99% CI, 1.11-3.32; and West: OR = 2.42; 99% CI, 1.47-4.01), and visits from the years 2012 (OR = 2.29; 99% CI, 1.17-4.48) and 2014 (OR = 3.21; 99% CI, 1.68-6.13). The year 2013 also demonstrated an increase in odds of NF-IPS visit codes compared with 2006 (OR = 1.97; 99% CI, 1.00-3.88).

## Discussion

A main finding of this study is the relatively low percentage of strangulation-related visits (1.2%) on the basis of coding among US ED IPV-coded visits of women from 2006 to 2014, equating to an approximate aggregate of 2700 visits over 9 years. General population survey estimates demonstrate almost 900 000 US women reporting partner-inflicted "choking or suffocation" in the preceding 12 months,<sup>17</sup> suggesting that strangulation is either underreported during ED visits, not specifically coded in ED datasets, or does not result in a high proportion of ED visits. The lack of applied strangulation codes may be influenced by women's reluctance to disclose the abuse<sup>23</sup> or by loss of memory from physical and psychological trauma, challenges in recognizing strangulation by the ED team, documentation shortfalls influencing subsequent coding/billing, and/or practice variations of the coders or billing

teams. If this prevalence finding underestimates the true ED visit frequency of women after NF-IPS, it becomes challenging to quantify the need for appropriate resource prioritization supporting strangulation-specific injury prevention and reduction efforts. Aligning incentives to encourage appropriate strangulation documentation and coding could strengthen confidence in these estimates.<sup>39</sup> Transition to upgraded visit coding through *ICD-10-CM* in October 2015<sup>40</sup> may also offer new analytic opportunities.

We observed an increasing trend of co-occurring IPV-/strangulation-related visits within the study period from 2006 to 2014. Given that the total IPV-related visits for women were relatively stable from year to year, this increase likely was not due to greater visit volume. Coordinated efforts and leadership by many organizations in recent years<sup>41-43</sup> are driving improvements in strangulation-specific legal penalties and multidisciplinary training for health care, law enforcement, and advocacy staff. These temporal changes may be influencing this increased trend through heightened recognition of strangulations by ED clinicians; availability of ED staff trained in forensic assessment, including strangulation; more accurate *ICD* code assignment owing to improved documentation, and increasing public awareness of strangulation as a high-risk form of violence. It is also possible that the findings reflect the increasing violence by strangulation. However, the exact role played by these factors requires additional data and further study.

Although limited, the literature suggests that multiple factors may affect the identification of strangulation among patients seeking care. It can be more difficult to identify bruising in darker skin tones.<sup>1</sup> The ability to visualize a bruise on the outer layers of skin can vary, depending on several additional factors both inherent in the assaulted individual (eg, thinning skin and coagulability) and the mechanisms associated with the assault (eg, pressure exerted and body surface area affected). Superficial bruising may be seen earlier than deeper bruises, which can take hours to days to appear.<sup>44</sup> Fatal and near-fatal strangulation injuries without any overt external findings have also been reported.<sup>14</sup> Without this “clue” to guide clinicians and in the absence of other supporting evidence, strangulation could be inadvertently missed. Further study of emerging technologies to enhance latent injury identification, such as alternative light sources, may prove helpful.<sup>25,45</sup> In addition to skin tone, clinician- and hospital-level factors such as IPV and strangulation screening protocols and partnerships with forensic nursing and community-based advocacy or criminal justice organizations can also affect patient disclosures.

Other findings highlight the need for continued research regarding NF-IPS as well. It was observed that visits made by women from younger age groups, non-Northeast hospitals, and level I/II trauma centers had a higher percentage of strangulation codes. The IPV-related ED visits by women in the study sample had a mean age of 35.4 years, consistent with the studies that focused on ED visits coded for IPV but not specific to strangulation.<sup>33,46</sup> In addition, similar to findings in female IPV populations with most of the women reporting strangulation,<sup>18</sup> the mean age for strangulation-coded visits was 32.9 years. This study also replicates the age difference patterns seen in the study by Glass et al<sup>3</sup> between women with and without strangulation across 3 abuse groups. These observations suggest a possible increased strangulation risk in younger women experiencing IPV or potentially a decreased suspicion and recognition in older age groups, necessitating additional study.

Visits related to NF-IPS were more frequently reported from trauma centers, which may receive more severely injured patients, possibly increasing the likelihood of recognition, documentation, and subsequent coding of this unique mechanism. Curiously, both income quartiles 3 and 4 (highest income) had higher odds of having a concurrent strangulation code than quartile 1. Of note, dataset limitations precluded further sociodemographic examination of these results, but this finding reinforces that NF-IPS permeates all aspects of society. Further analyses of other national- and state-level datasets, which capture variables not available in NEDS, may provide additional insights.

## Limitations

This study has limitations owing to the inherent design of the NEDS dataset. NEDS includes individual ED discharge records of visits not by unique patients. Owing to deidentification of the dataset, we were unable to determine whether individual patients had multiple visits, which could overestimate the proportions of women seeking care but not NF-IPS from the ED perspective. The study design prohibited direct access to additional patient-level information. NEDS does not collect narratives provided by patients that may be available in the medical records and could provide context to the analysis. Because NEDS was originally designed to evaluate ED health care costs and use through administrative/billing data, it was not possible to examine the impact of additional factors that were not collected (eg, patient income level, education, and employment) on the likelihood of reporting strangulation codes. In addition, if medical record documentation did not clearly link strangulation as a contributor to injury diagnoses, the opportunity to administratively apply a strangulation-specific code may have been missed. Given the nature of these dataset limitations, the findings of this study should act as a catalyst for future hypothesis-guided research regarding the diagnosis and documentation of NF-IPS.

To maximize identification specificity, our study defined IPV-related visits using *ICD-9-CM* code E967.3 (“battering by spouse or partner”) as found in previous NEDS-based IPV studies.<sup>32,33</sup> This code captures IPV-specific visits and filters out other abuse-related visit codes included in other studies.<sup>46</sup> Davidov et al<sup>33</sup> estimated closer to 26 284 IPV-related visits by women per year, which is consistent in general but slightly greater than the estimate of 25 081 IPV-related visits per year found in our study. Our conservative approach may have excluded IPV-related visits that were lacking associated coding.

Multiple patient or provider factors not captured by NEDS may affect identification, documentation, and coding of strangulation. Women may experience memory loss related to hypoxia or other injuries related to the physical assault as well as from the psychological trauma of the event, limiting their ability to recall and share this important mechanism with their health care team.<sup>1</sup> In addition, if identification and subsequent documentation and coding of strangulation are reliant on the clinicians’ ability to visualize injuries, these findings may be woefully underestimating the prevalence of strangulation in IPV-related ED visits. Despite use of standard coding manuals and trainings,<sup>47</sup> studies of *ICD-9-CM* coding used to identify other illnesses/injuries have reported that variable accuracy and miscoding of visits exist.<sup>48-52</sup> In other IPV subpopulations, patients and clinicians have voiced safety and privacy concerns with adding abuse diagnoses to their medical records. These valid concerns—ranging from issues with disclosing abuse to a provider one might see regularly to concerns with obtaining insurance related to preexisting conditions to fear of the records being disclosed to an abuser—are unexplored factors that may further affect strangulation disclosure, documentation, and coding even after a patient seeks care.<sup>53-55</sup>

Finally, many barriers exist that prevent women from seeking care after strangulation, such as not realizing the potential seriousness of the consequences, being prevented from seeking care by their partner, or worrying about the cost of ED care. NEDS does not include visits by women who decline or are unable to seek ED care, which could contribute to variation between medical coding and other data sources. Women experiencing multiple strangulations have been reported to seek care at greater frequencies than those with fewer strangulations<sup>37</sup>; therefore, those coded as such in this sample may also indicate increasing abuse severity.

## Implications for Emergency Clinical Care

Recognition of strangulation in women visiting the emergency department is critical to both their immediate and long-term health. Emergency nurses on the front lines of care are well positioned to lead poststrangulation identification and treatment efforts. We recommend having a heightened index of suspicion for women visiting for IPV and encouraging clinical colleagues to consider this high-risk violence mechanism in their assessments, differential

diagnoses, and decision-making.

Accurate documentation of strangulation and detailed notes describing symptoms and injuries can support an individual woman's needs for acute and long-term care follow-up and future legal recourse in addition to larger epidemiologic studies. Complete and thorough documentation can support the work of colleagues coding medical records. To our knowledge, no agreed upon standards exist for medical coding of NF-IPS. National organizations may consider developing specific guidance on this issue. Meticulous data privacy protections are also critical to the safety of this population.

Routine IPV inquiry and counseling for all patients is generally recommended for women of childbearing age. We strongly advise using validated measures that include strangulation (eg, Abuse Assessment Screen<sup>56</sup> and Danger Assessment<sup>57,58</sup>) and behavior-specific questions related to strangulation for those endorsing IPV histories. For example, emergency nurses can ask about any pressure applied to the neck vs "strangled" or "choked," which has been found to be more confusing to patients. Past and multiple strangulation events should also be assessed because NF-IPS places women at greater risk for long-term neurologic symptoms and IP homicide.

Subtle findings during both clinical history-gathering and physical assessment can give clues to recent strangulation. Significant risk to life can exist with limited to no external injuries. In addition, we recommend considering the potential for brain injury in this population during assessments, care, and discharge planning.

We also recommend looking to organizations such as the Training Institute on Strangulation Prevention, the International Association of Forensic Nurses, the Academy of Forensic Nursing, and the Emergency Nurses Association for guidance on developing institution- and community-specific training and protocols.<sup>41-43,59,60</sup> Further exploration of how best to provide emergency departments as a welcoming environment with enhanced postvisit safety is warranted.

## Conclusions

Strangulation can result in significant and potentially lethal injuries. This study provides an initial exploration into this unique violence mechanism by examining 9 years of ED NF-IPS coding trends among visits by women seeking care for IPV. A lower prevalence than that reported in earlier studies may either reflect an underestimate owing to the lack of documentation or breakdown between documentation and coding, or it may suggest a very low rate of ED care-seeking for this vulnerable population. The increased reporting of concurrent strangulation codes among IPV visits by women in more recent years may reflect greater recognition and documentation of strangulation by patients, frontline clinicians, and coding teams. Further study is needed to better understand care-seeking and analyze documentation of injuries and interventions for NF-IPS ED visits.

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Conflicts of interest: none to report.

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**Data Availability**

Patch M, Anderson J. Nonfatal Intimate Partner Strangulation, 2006-2014: Prevalence and Associated Characteristics, Analysis Code. 2020. DOI 10.17605/OSF.IO/HY6NT.

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Variable	Total IPV visits	IPV visits, no strangulation codes	IPV visits with strangulation code(s)	$\chi^2$ (P-value)
N, unweighted	49 675	49 073	602	
N, weighted	225 727	222 991	2736	
Weighted prevalence (99% CI)		98.79% (98.53-99.00)	1.21% (1.00-1.47)	
	Column %	Column %	Column %	
Age categories, y				35.61 (<.01) <sup>†</sup>
18-24	19.36	19.30	23.62	
25-34	34.47	34.39	41.14	
35-44	24.90	24.95	20.88	
≥45	21.27	21.36	14.37	
Income quartile for patient's zip code*				13.05 (.10)
Quartile 1	35.83	35.90	30.16	
Quartile 2	28.13	28.13	27.83	
Quartile 3	21.67	21.62	25.65	

Quartile 4	14.37	14.35	16.36	
ED disposition				1.46 (.28)
Treat/release	95.28	95.26	96.25	
Admit	4.72	4.74	3.75	
Payer				14.21 (.12)
Medicare	7.19	7.19	6.74	
Medicaid	34.35	34.31	37.28	
Private, including HMO	25.36	25.41	21.27	
Self-pay	27.16	27.18	26.23	
No charge/other	5.94	5.91	8.48	
Hospital region				82.63 (<.01) <sup>†</sup>
Northeast	18.48	18.59	9.74	
Midwest	26.55	26.40	38.62	
South	33.18	33.27	25.97	
West	21.79	21.75	25.66	
Trauma center indicator				54.28 (<.01) <sup>†</sup>
Level III/nontrauma	70.21	70.37	57.44	
Level I/II or collapsed	29.79	29.63	42.56	
Urban-rural hospital location				38.00 (<.01) <sup>†</sup>
Metropolitan	80.89	80.78	89.59	
Nonmetropolitan	18.12	18.23	9.14	

Collapsed NOS	0.99	0.99	1.27	
Teaching status				39.83 (<.01) <sup>†</sup>
Metropolitan, nonteaching	39.57	39.55	41.47	
Metropolitan, teaching	42.31	42.23	49.40	
Nonmetropolitan	18.12	18.23	9.14	
Survey year				114.26 (<.01) <sup>†</sup>
2006	12.00	12.06	7.08	
2007	11.07	11.12	7.16	
2008	11.63	11.67	8.06	
2009	11.15	11.17	9.28	
2010	12.06	12.06	11.78	
2011	10.70	10.72	9.35	
2012	11.03	10.98	15.11	
2013	9.82	9.80	11.55	
2014	10.55	10.42	20.63	

Variable	Bivariate relationships, OR (99% CI)	P-value	Fully adjusted model, <sup>*</sup> OR (99% CI)	P-value
Age categories, y				
18-24	1.00 (ref)		1.00 (ref)	
25-34	0.98 (0.74-1.29)	.84	0.94 (0.70-1.26)	.61
35-44	0.68 (0.49-0.95) <sup>†</sup>	< .01 <sup>†</sup>	0.69 (0.49-0.96) <sup>†</sup>	< .01 <sup>†</sup>

≥45	0.55 (0.39-0.78) <sup>†</sup>	< .01 <sup>†</sup>	0.49 (0.33-0.73) <sup>†</sup>	< .01 <sup>†</sup>
Income quartile for patient's zip code				
Quartile 1	1.00 (ref)		1.00 (ref)	
Quartile 2	1.18 (0.77-1.81)	.33	1.25 (0.83-1.88)	.17
Quartile 3	1.41 (0.96-2.08)	.02	1.51 (1.04-2.20) <sup>†</sup>	< .01 <sup>†</sup>
Quartile 4	1.36 (0.87-2.13)	.08	1.55 (1.01-2.39) <sup>†</sup>	< .01 <sup>†</sup>
ED disposition status				
Treat and release	1.00 (ref)		1.00 (ref)	
Admit	0.78 (0.44-1.41)	.28	0.83 (0.45-1.52)	.42
Primary payer				
Medicare	1.00 (ref)		1.00 (ref)	
Medicaid	1.16 (0.72-1.86)	.42	0.81 (0.47-1.39)	.31
Private/HMO	0.89 (0.54-1.49)	.57	0.72 (0.42-1.24)	.12
Self-pay	1.03 (0.63-1.68)	.88	0.81 (0.48-1.37)	.31
No charge/other	1.53 (0.67-3.50)	.18	1.10 (0.52-2.34)	.75
Trauma center status				
Level III/nontrauma	1.00 (ref)		1.00 (ref)	
Level I/II or collapsed	1.76 (1.15-2.69) <sup>†</sup>	< .01 <sup>†</sup>	1.64 (1.10-2.46) <sup>†</sup>	< .01 <sup>†</sup>
Hospital urban/rural status				
Metropolitan	1.00 (ref)		1.00 (ref)	
Nonmetropolitan	0.45 (0.27-0.75) <sup>†</sup>	< .01 <sup>†</sup>	0.59 (0.35-0.97) <sup>†</sup>	< .01 <sup>†</sup>
Collapsed NOS	1.16 (0.53-2.55)	.63	0.81 (0.34-1.97)	.55
Hospital region				



Northeast	1.00 (ref)		1.00 (ref)	
Midwest	2.79 (1.52-5.14) <sup>†</sup>	< .01 <sup>†</sup>	3.01 (1.67-5.43) <sup>†</sup>	< .01 <sup>†</sup>
South	1.49 (0.88-2.53)	.05	1.92 (1.11-3.32) <sup>†</sup>	< .01 <sup>†</sup>
West	2.25 (1.34, 3.77) <sup>†</sup>	< .01 <sup>†</sup>	2.42 (1.47, 4.01) <sup>†</sup>	< .01 <sup>†</sup>
Year				
2006	1.00 (ref)		1.00 (ref)	
2007	1.10 (0.58-2.06)	.71	1.09 (0.60-2.01)	.71
2008	1.18 (0.70-1.96)	.41	1.17 (0.69-1.99)	.44
2009	1.41 (0.70-2.86)	.21	1.36 (0.68-2.70)	.26
2010	1.66 (0.83-3.32)	.06	1.53 (0.76-3.05)	.11
2011	1.48 (0.75-2.96)	.14	1.44 (0.72-2.85)	.17
2012	2.34 (1.18-4.64) <sup>†</sup>	< .01 <sup>†</sup>	2.29 (1.17-4.48) <sup>†</sup>	< .01 <sup>†</sup>
2013	2.01 (1.01-3.98) <sup>†</sup>	< .01 <sup>†</sup>	1.97 (1.00-3.88)	.01
2014	3.37 (1.72-6.59) <sup>†</sup>	< .01 <sup>†</sup>	3.21 (1.68-6.13) <sup>†</sup>	< .01 <sup>†</sup>

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# Commentary on “Care of the Behavioral Health Patient in the Emergency Department”: JEN

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## ABSTRACT (ENGLISH)

The authors' recommendations to counteract this inadequacy are to use technology to access mental health specialists, to provide the ED staff more training about emergency patients with behavioral health-related presentations, and to collaborate with behavioral health resources in the community. According to a study by Wolf et al,<sup>4</sup> approximately 40% of the study's nurse participants indicated little continuing education related to mental health emergencies since their prelicensure nursing curriculum in spite of the fact that patients with behavioral health-related presentations are a significant portion of the ED population. [...]education gaps lead to nurses' feelings of inadequacy, frustration, potential missteps in patient care, fear, burnout, and many other negative possibilities.<sup>1</sup> Behavioral health care is complex, and emergency nurses need to be just as familiar with the assessment, diagnosis, and treatment of mental illnesses as they are with presentations of other kinds of illness seen in the emergency department. Emergency nurses have a responsibility to be knowledgeable in the care of patients with behavioral health-related presentations just as they would be for any diagnostic group of patients who are frequently treated in emergency departments. Because implicit bias can lead to a compromised quality of care for marginalized groups, as emergency nurses we owe it to our patients, colleagues, and others to examine ourselves truthfully and honestly for implicit biases that we might hold, particularly for those with a history of mental illness.

## FULL TEXT

In this issue of the *Journal of Emergency Nursing*, there are 3 excellent articles that discuss various aspects of caring for patients with behavioral health-related presentations in the emergency setting.<sup>1-3</sup> Although a very large number of diagnoses are subsumed under the broad heading “behavioral health,” the specific illnesses and their manifestations are quite distinct. The aforementioned 3 articles demonstrate these distinctions well. Patients being treated after self-harm need to be assessed and treated quite differently from patients experiencing a panic attack, and both differ markedly from the assessment and management of the patient who is agitated and has the potential for violence. However, the essentials of care that patients with behavioral health-related presentations need and deserve from emergency caregivers are similar in many ways.

### Environment

The aforementioned articles describe the environmental and systemic realities of caring for patients with behavioral health-related presentations in the emergency department.<sup>1-3</sup> Over the years, emergency departments were designed with the care of patients who were physically ill or injured as the focus. Given that circumstance, the physical structure of the emergency department can often present barriers in the care of patients with behavioral health-related presentations.<sup>1</sup> Privacy, for example, can be a difficult issue to manage. Visitation for patients with behavioral health-related presentations in the emergency department can present additional challenges and considerations. The safety of staff and patients is another issue of concern, especially in the circumstance of agitation, outbursts, and even violence made all the worse in the absence of adequate space and trained support staff. In addition, many departments are not designed adequately for the long length of stay that so many patients with behavioral health-related presentations experience.

True et al<sup>1</sup> describe a lack of resources as an impediment to providing care to patients with behavioral health-related presentations. Included in that impediment is the ready availability of mental health specialists. The authors'

recommendations to counteract this inadequacy are to use technology to access mental health specialists, to provide the ED staff more training about emergency patients with behavioral health–related presentations, and to collaborate with behavioral health resources in the community. The allocation of specified areas within the emergency department set aside for the care of patients with behavioral health–related presentations can also be useful to providing quality compassionate care.

### **Nursing Knowledge**

As noted by Valdes et al,<sup>2</sup> there is a timely and important opportunity for emergency nurses to improve their knowledge about the assessment, diagnosis, and treatment of common psychiatric emergencies. According to a study by Wolf et al,<sup>4</sup> approximately 40% of the study's nurse participants indicated little continuing education related to mental health emergencies since their prelicensure nursing curriculum in spite of the fact that patients with behavioral health–related presentations are a significant portion of the ED population. Predictably, lack of current knowledge in the care of emergency patients with behavioral health–related presentations can result in suboptimal patient care. In addition, education gaps lead to nurses' feelings of inadequacy, frustration, potential missteps in patient care, fear, burnout, and many other negative possibilities.<sup>1</sup> Behavioral health care is complex, and emergency nurses need to be just as familiar with the assessment, diagnosis, and treatment of mental illnesses as they are with presentations of other kinds of illness seen in the emergency department. The articles in this issue can be a great help in that regard.

The education of emergency nurses in the care of patients with behavioral health–related presentations is essential! To provide this important knowledge to emergency nurses, the Emergency Nurses Association (ENA) has a number of offerings that can help. These include an ENA Topic Brief, "Care of Behavioral Health Patients in the Emergency Department"<sup>5</sup>; a white paper, "Care of the Psychiatric Patient in the Emergency Department"<sup>6</sup>; clinical practice guidelines<sup>7</sup>; and infographics (Supplementary Appendix). Readers can also access the related courses "Managing Adult Behavioral Health in the Emergency Department" and "Pediatric Behavioral Health Online Course" on the ENA website.<sup>8</sup> In addition, many ENA annual Scientific Assembly offerings and other ENA conferences include behavioral health–related classes.

### **Patient Care**

In this issue of the *Journal of Emergency Nursing*, the use of tools as aids to assessment is discussed.<sup>3</sup> Assessment of patients with behavioral health–related presentations is critical. It must be on target, accurate, and timely. The availability of tools can be a mixed blessing when used with patients with behavioral health–related presentations. Having a brief tool that can yield important patient assessment information in a standardized way can give not only an initial assessment, but over time can also alert staff to changes in the patient's condition as well. Tools, however, can fail to elicit important patient-specific information if not accompanied by a careful patient interview and observation. Tools cannot replace thorough nursing assessments.

One relatively recent strategy in the care of patients with behavioral health–related presentations in the emergency department is accessing mental health professionals through telehealth. This has proven to be a valuable resource in enabling a timely assessment and plan for the care of patients with behavioral health–related presentations.<sup>1</sup>

An interesting topic mentioned by Valdes et al<sup>2</sup> is the notion of cognitive bias in the assessment, diagnosis, and care of patients with behavioral health–related presentations. They describe cognitive bias as being of 3 possible types: confirmation bias, in which the provider looks to confirm existing beliefs and minimizes disconfirming information; anchoring bias, which tends to have an overreliance on the initial information gleaned; and attention bias, which gives more weight to some information and less weight to other information. All 3 types of bias can result in errors in judgment, leading to inaccurate assessment, diagnosis, and treatment.

Other articles suggest bias in a different way. Legambi et al<sup>3</sup> refer to the potential implications of racial bias in their findings because previous studies have found differences in the use of restraints between white and Black men as an example.<sup>9</sup> True et al<sup>1</sup> note the belief that the ED environment and staff are more suited to physical health emergencies than to mental health emergencies. This notion can lead to a bias that patients with behavioral health–related presentations are inappropriate users of the emergency department. These statements are examples

of implicit bias.

Implicit bias is not discussed frequently in the literature related to patients with behavioral health–related presentations in the emergency department, but it exists and should be recognized for the negative effect it has on the care of patients with behavioral health–related presentations. Implicit bias differs from explicit bias in that explicit bias is a conscious belief that one recognizes and may act on, for example, refusing to care for a particular type of patient. Implicit bias is a subconscious or unconscious bias that one holds but might be unaware of; yet, it can affect one's judgment of a person or group of persons.

It is critically important for nurses as well as other health care providers to become mindful of their own implicit biases. Not surprisingly, mental illness—and thus patients with behavioral health–related presentations—is a recognized source of common implicit bias. Other implicit biases that have been shown to influence the care of patients with behavioral health–related presentations include those related to minority populations; gender; elderly persons; lesbian, gay, bisexual, transgender, and queer populations; persons who are obese; non-English–speaking populations; homeless individuals; and others.<sup>10</sup> Provider and patient relationships can be negatively shaped by implicit bias. It can affect how words and actions are interpreted and reacted to by both caregivers and patients. There are numerous tools available on the internet to explore one's implicit biases. The ENA offers a course entitled “Understanding the Impact of Bias and Stereotypes in Healthcare.”<sup>8</sup> Reflection on one's answers might help unmask any subconscious implicit biases.

### **Implications for Emergency Nurses**

Although many ED settings are not ideally conducive to the care of patients with behavioral health–related presentations, emergency nurses must strategize to employ evidence-based practice in the care of patients with behavioral health–related presentations. Strategies include increased education and support for nurses and other staff regarding the care of patients with behavioral health–related presentations. The allocation of specified areas for the care of patients with behavioral health–related presentations can be useful. The presence of mental health specialists in the department is advantageous. Psychiatric mental health nurse practitioners can be invaluable in the ED setting not only in the care of patients with behavioral health–related presentations, but also as support and as role models for staff. The use of technology can assist in the assessment, diagnosis, and management of patients with behavioral health–related presentations. Emergency nurses have a responsibility to be knowledgeable in the care of patients with behavioral health–related presentations just as they would be for any diagnostic group of patients who are frequently treated in emergency departments.

Because implicit bias can lead to a compromised quality of care for marginalized groups, as emergency nurses we owe it to our patients, colleagues, and others to examine ourselves truthfully and honestly for implicit biases that we might hold, particularly for those with a history of mental illness.

Recognizing biases is the first step to eliminating them. Eliminating bias will allow us to give the care that we are capable of giving and that our patients with behavioral health–related presentations deserve. Competent and bias-free emergency nursing care is essential to meeting the obligations set forth in our scope and standards of practice: “The emergency nurse acts with compassion and respect for human dignity and the uniqueness of the individual.”<sup>11</sup> Reprinted with permission from the Emergency Nurses Association. Unlabelled image Reprinted with permission from the Emergency Nurses Association. Unlabelled image

## **DETAILS**

**Subject:** Continuing education; Emergency medical care; Illnesses; Health care; Medical diagnosis; Patients; Mental disorders; Mental health care; Health behavior; Burnout; Specialists; Bias; Nurses; Emergency services; Quality of care; Medical technology; Curricula; Frustration; Mental health services

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# Perceived Care Quality Among Women Receiving Sexual Assault Nurse Examiner Care: Results From a 1-Week Postexamination Survey in a Large

# Multisite Prospective Study: JEN

[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

### Introduction

This study examined the perspectives of female patients who had been sexually assaulted regarding the quality of care provided by sexual assault nurse examiners, including whether the patients' perspectives varied by their demographic characteristics and health status before the assault.

### Methods

A total of 695 female patients who received care from sexual assault nurse examiners at 13 United States emergency care centers and community-based programs completed standardized surveys 1 week after receiving sexual assault nurse examiners' care for sexual assault.

### Results

Most patients strongly agreed that the sexual assault nurse examiners provided high-quality care, including taking patients' needs/concerns seriously, not acting as though the assault was the patient's fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information. The perceptions did not vary by the patients' demographic characteristics or preassault health status.

### Discussion

Female patients who had been sexually assaulted and who were evaluated at 13 widely geographically distributed sexual assault nurse examiners' programs consistently reported that the sexual assault nurse examiners provided high-quality, compassionate care.

## FULL TEXT

### Contribution to Emergency Nursing Practice

- Few studies have examined female patients' perspectives of the care provided by sexual assault nurse examiners (SANEs), and none have examined whether the perspectives differ according to the demographic characteristics of the patients who had been sexually assaulted or their preassault health status.
- Nearly 700 female patients who had been sexually assaulted and who were evaluated at 13 widely geographically distributed SANE programs reported receiving high-quality SANE care, including taking their needs/concerns seriously, not acting as though the assault was their fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information. There were no significant differences in the perceptions of care according to demographic or preassault health characteristics.
- SANEs provide critical services greatly valued by female patients who have been sexually assaulted. SANEs should be used whenever possible in emergency nursing settings to treat women who have been sexually assaulted.

### Introduction

Sexual assault is a major public health problem for United States women and is common across sociodemographic groups.<sup>1,2</sup> Women who present for emergency care after sexual assault commonly experience high levels of pain and distress, and multiple negative health sequelae after sexual assault are common.<sup>3,4</sup> The sensitive provision of emergency nursing services is essential to appropriately address the needs of this diverse group of patients.<sup>5</sup>

The first sexual assault nurse examiner (SANE) programs developed in the 1970s, with programs becoming more



widely available in the 1990s.<sup>6,7</sup> SANEs are specially trained nursing specialists who offer patients who have been sexually assaulted comprehensive acute care and collect evidence that can be used in assailant prosecutions.<sup>8,9</sup> SANEs are trained to prioritize addressing patients' needs and concerns, create a nonjudgmental atmosphere, demonstrate care/compassion, provide clear explanations of the sexual assault examination, and provide important follow-up information.<sup>6</sup> SANEs have been shown to effectively collect forensic evidence, provide needed clinical care, and foster collaborative relationships among the professionals involved in sexual assault cases.<sup>10-14</sup> In contrast, little research has gathered patients' perspectives of the quality of their SANE care. Moreover, to our knowledge, no studies have examined whether the perspectives of SANE care differ according to the female patients' demographic characteristics and health status before the assault, important questions given the diversity of the population consisting of patients who had been provided SANE care. One of the few investigations that examined patients' views of SANE care was a Canadian qualitative study of 8 patients who had been provided SANE care. The patients felt that the SANEs cared about them, made them feel safe, were not pushy, believed them, were emotionally supportive, and provided clear information.<sup>15</sup> Another study found that 85% of the 70 patients who had been provided SANE care in Minneapolis felt that the SANEs listened to them.<sup>16</sup> Another investigation of 52 patients from a Midwestern SANE program found that virtually all patients perceived that the SANEs provided clear explanations about the sexual assault examination, took the patients' needs/concerns seriously, listened to the patients, showed care/compassion, and provided clear medication instructions.<sup>17</sup> A qualitative investigation of 20 primarily white female patients who had been raped and were evaluated at a Midwestern SANE program found that the patients appreciated receiving the SANEs' explanations of the examination process, being given choices during the examination, and being treated with care/compassion.<sup>18</sup>

This past pioneering research on patients' perceptions of SANE care offers important insights. However, the generalizability of these studies is limited by small samples, single SANE programs evaluated, and limited racial/ethnic diversity. To extend this research, in this study we investigated the perceptions of a large, diverse group of female patients who had been sexually assaulted and who received care from SANEs working at 13 geographically distributed emergency care and community-based programs in the US. We addressed 2 questions: (1) to what extent did patients perceive that the SANEs provided high-quality care, including taking the patients' needs/concerns seriously, not acting as though the assault was the patient's fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information? (2) Did the patients' perceptions of SANE care differ by the patients' demographic characteristics (including age, race, ethnicity, education level, employment status, income level, and marital status) and health status before the assault (including symptoms of anxiety, depression, and posttraumatic stress, as well as somatic and pain symptoms)?

### **Materials and Methods Settings and Samples**

This research is part of the Women's Health Study, the first large-scale, emergency care-based, multisite longitudinal cohort study of adult female patients who have been sexually assaulted.<sup>19</sup> The main purpose of the overall study was to better understand acute, persistent, and chronic pain development among female survivors of sexual assault, and the current subanalyses were designed to address how patients perceive SANE services. The current results have not been reported elsewhere. From 2015 through 2019, 706 study participants (Figure<sup>e</sup>) were fully consented and enrolled for a 1-week postexamination survey from 13 geographically distributed US emergency care and community-based SANE programs: Albuquerque SANE Collaborative (Albuquerque, NM), UHealth Memorial Hospital (Colorado Springs, CO), Tulsa Forensic Nursing Services (Tulsa, OK), Austin SAFE (Austin, TX), Denver Health (Denver, CO), Crisis Center of Birmingham (Birmingham, AL), Hennepin Healthcare (Minneapolis, MN), Christiana Care (Newark, DE), University of Louisville SANE Hospital (Louisville, KY), Philadelphia Sexual Assault

Response Center (Philadelphia, PA), Cone Health (Greensboro, NC), Wayne State University Hospital and Wayne County SAFE (Detroit, MI), and DC SANE (Washington, DC).<sup>20</sup> The full description of exclusion rates and reasons is available elsewhere. A power analysis for the sample size was based on the proposed main outcomes for the overall study.<sup>19</sup> Women who were aged at least 18 years and presented for SANE care within 72 hours of sexual assault were eligible to participate. Patients were not eligible if they could not provide informed consent, were pregnant, were living with the assailant, had an assault-related fracture or required hospital admission, did not speak English, did not have a telephone/ mailing address, were unwilling to provide blood samples, or were incarcerated. Research staff provided the patients with informed consent information.<sup>19</sup>

### **Assessment**

The participants completed self-administered survey assessments 1 week after receiving SANE care at a follow-up visit. These surveys were completed on laptop computers in private rooms. The surveys asked about the patients' perceptions of SANE care, demographic characteristics, and health status before the assault. The perceptions of SANE care were evaluated using 5 survey questions that assessed whether the SANE took the patient's needs/concerns seriously, did not act as though the assault was the patient's fault, showed care/compassion, explained the sexual assault examination, and provided follow-up information. The patients responded to each survey question using a scale from 1 (strongly disagree) to 4 (strongly agree), with higher scores indicating a higher quality of care. In addition, for each patient, an overall care quality score was created by computing the mean of the responses on the 5 survey items. The care quality score could range from 1 to 4, with higher scores indicating a higher overall quality of care.

The survey also asked about the patients' demographic characteristics. The characteristics assessed included age, race (white, black/African American, American Indian/Alaskan Native, or other), Hispanic/Latina ethnicity (yes or no), education level (more than high school graduate, high school graduate, or less than high school graduate), employment status (working full-time, working part-time, unemployed, student, or receiving disability benefits), annual income level (more than \$100 000, \$60 000-\$99 999, \$20 000-\$59 000, less than \$20 000, or did not know), and marital status (never married, married, or separated/divorced/widowed).

The survey also asked the patients specific questions about their health before the assault. Anxiety symptoms during the week before the assault were assessed by the Patient-Reported Outcomes Measurement Information System Short Form 8a.<sup>21</sup> Scores of 60 or higher indicated clinically relevant levels of anxiety symptoms. Depression symptoms during the week before the assault were assessed by the Patient-Reported Outcomes Measurement Information System Short Form 8b,<sup>21</sup> with scores of 60 or higher indicating clinically relevant levels of depression symptoms. Posttraumatic stress symptoms (PTSS) during the month before the assault were assessed using 10 items adapted from the Posttraumatic Stress Disorder Checklist.<sup>22</sup> The endorsement of reexperiencing, avoidance, and hyperarousal symptoms at least 2 times a week along with distress or impairment at least 2 times a week were considered clinically relevant symptoms. Somatic symptoms during the week before the assault were assessed using 21 items,<sup>23</sup> with scores of 19 or higher suggestive of clinically relevant symptoms. Overall pain severity 1 week before the assault was assessed using an item from the Pain Severity Numeric Rating Scale,<sup>24</sup> with scores of 4 or higher indicating moderate or severe pain.

### **Data Analyses**

The analysis data set included 695 of the 706 enrolled patients (98% of the enrolled sample) who had completed the survey information available on the survey questions examining SANE care. Participants who did not complete any SANE care items (n = 11) were excluded; otherwise, participants with missing data were dropped pairwise. Descriptive statistics examined patients' demographic characteristics, health status before the assault, and

perceptions of care provided by SANEs. Bivariate analyses and Kruskal-Wallis nonparametric 1-way analysis of variance tests<sup>25</sup> investigated whether the patients' overall care quality scores varied by their demographic characteristics and health status before the assault.

### **Institutional Review Board Approval**

The study protocol was approved by the institutional review boards at the University of North Carolina at Chapel Hill and at each study site.

### **Results**

Table 1 presents information on the patients' demographic characteristics. The patients ranged in age from 18 years to 68 years, with a mean age of 28 years. Sixty-five percent were white, 13% were black/African American, 6% were American Indian/Alaskan Native, and 15% were another racial group. Twenty-six percent were Hispanic/Latina. Most (67%) had more than a high school education, 24% were high school graduates, and 8% had not completed high school. Thirty-eight percent worked full-time, 21% worked part-time, 19% were unemployed, 11% were students, and 9% received disability benefits. Incomes ranged from more than \$100 000 (8%) to less than \$20 000 (36%). Seventy-nine percent of the patients had never married, 7% were married, and 15% were separated, divorced, or widowed.

Table 2 presents information on the patients' reported health before the sexual assault. Anxiety scores ranged from 37.10 to 83.10 (mean = 52.66), with 27% of the patients reporting clinically relevant anxiety symptoms. Depression scores ranged from 37.10 to 81.10 (mean = 51.69), with 23% of the patients reporting clinically relevant depressive symptoms. Posttraumatic stress scores ranged from 0 to 36 (mean = 13.89), with 37% of the patients reporting clinically relevant PTSS. Somatic scores ranged from 0 to 199 (mean = 15.47), with 26% of the patients reporting clinically relevant somatic symptoms. Pain severity scores ranged from 0 to 10 (mean = 1.82), with 19% of the patients reporting moderate or severe pain.

Most of the female patients who had been sexually assaulted and who participated in this survey reported receiving a high quality of care by the SANEs (Table 3). Most patients "strongly agreed" that the SANEs took their needs/concerns seriously (90%), did not act as though the assault was their fault (89%), cared and showed compassion (88%), explained the sexual assault examination (86%), and gave follow-up information (75%). The mean scores for each of the 5 survey items ranged from 3.67 to 3.85, showing that most patients reported that the SANEs provided high-quality care on each of the 5 domains assessed. Moreover, the mean overall care quality score (3.79) indicated that the patients reported receiving an overall high quality of care from the SANEs.

Table 4 shows that overall care quality scores did not differ significantly by patients' demographic characteristics or health status before the assault. For each category of age, race, ethnicity, education, employment status, income, and marital status, the mean overall care quality score was extremely high, ranging from 3.66 to 3.87. In addition, the overall care quality scores did not differ significantly between the patients who had clinically high levels of depression, anxiety, PTSS, or somatic and/or pain symptoms before the assault and those who did not have clinically high levels of these symptoms before the assault. For each category within these groups, the mean overall care quality score was extremely high, ranging from 3.70 to 3.82.

### **Discussion**

To our knowledge, this study is the first to examine assessments of SANE care by a large group of female patients who had been sexually assaulted and who presented to diverse SANE programs in the US. Our results are consistent with smaller studies in showing that most of the patients who participated view the SANEs as providing high-quality care.<sup>15-18</sup> Our results extend this past research by showing that this is true for each of the 5 care domains examined in this study, including taking patients' needs/concerns seriously, not acting as though the

assault was the fault of the patient, showing care and compassion, explaining the sexual assault examination, and providing follow-up information. In addition, our results also extend previous findings by demonstrating that most female patients who had been sexually assaulted and were willing to participate in research view their SANE care as high quality across geographically, demographically, and administratively (ie, emergency care-based and community-based) diverse SANE programs, diverse demographic groups consisting of patients who had been sexually assaulted, and female patients who had been sexually assaulted with diverse mental and physical health statuses.

These quantitative findings are consistent with the participants' qualitative reports. For example, 1 female patient who had been sexually assaulted wrote, "The SANE nurse that I experienced was PHENOMENAL...her general attitude and humor greatly affected me in positive ways after the assault." Another patient who had been sexually assaulted wrote, "Everything was really good...I didn't even know they had that SANE organization...You guys are doing everything right."

This research also has clinical and policy implications. Of note, SANE programs are not available in all locations across the US. Indeed, 1 report noted a shortage of SANE programs in every US state evaluated.<sup>26</sup> Specifically, it may be particularly difficult for women in rural areas to access SANE care.<sup>27</sup> The lack of availability of SANE programs in all areas may be in part attributable to difficulties with funding. SANE programs are typically funded through a combination of governmental funds, hospital donations, fundraising, and money from nongovernment agencies and other grants, as well as funding from the Violence Against Women Act and Victims of Crime Act. However, SANE programs often face budget cuts<sup>13</sup> and operate at a loss, given that SANE programs (including equipment and training) can be expensive to maintain.<sup>28</sup> Indeed, empirical studies have indicated that lack of funding is a "major problem" for more than half of the SANE programs.<sup>29</sup> When SANE care is not available, other resources (eg, nonclinical forensic evaluations or other interdisciplinary clinician teams) may provide services. Such teams may not have the advanced multidisciplinary training and breadth of experiences that SANEs have in providing health care, collecting forensic evidence, and fulfilling these needs in a trauma-informed and compassionate manner. The SANEs' training and experience in cultural competency may play a role in the high ratings for SANEs across various demographic groups. Although it is critical to strive for continuous improvement in cultural competency, SANE training emphasizes the need to be aware of, and respect, cultural differences.<sup>30</sup> Nationally representative surveys have found conflicting results regarding whether demographic characteristics play a role in who seeks SANE care. Resnick et al<sup>31</sup> found that women who did not identify as white were more likely to receive postassault care, whereas the more recent findings by Amstadter<sup>32</sup> indicated that white race and income less than \$20 000 predicted being more likely to seek postassault care (not specific to SANE care). Thus, more research is needed to determine whether there are health disparities in access to SANE care, but our research indicates that when women do receive such care, they are typically satisfied, regardless of their demographic characteristics.

### **Limitations**

As with all research, this study has strengths and limitations. The strengths include the large sample of patients seen by SANEs in diverse SANE programs and the use of standardized assessment procedures. However, the emergency centers/programs participating in the study were not specifically selected to be nationally representative of all SANE programs; thus, our results cannot be viewed as providing specific estimates of experiences with SANEs at all programs across the US. In addition, only female patients aged 18 years or older were studied; therefore, the findings may not be generalizable to male or teen patients. The results are also not generalizable to patients who were ineligible to participate in our study, including those who presented for care more than 72 hours after the assault, not alert/oriented, incarcerated, pregnant, living with the assailant, admitted for acute care, fracture(s), and

other reasons listed in the Figure. Future research should include children and men as well as lesbian, gay, bisexual, and transgender patients who have been sexually assaulted because they may face unique challenges and have different perspectives on SANE services. Moreover, the preassault health concerns examined were limited to emotional health and pain symptoms; therefore, these findings may not be generalizable to patients who have been sexually assaulted and who present with other types of preassault health conditions. Most of our sites were in urban/suburban areas; therefore, future research should examine SANE care satisfaction among patients living in rural areas. Finally, considering that most of the patients' responses were at the upper end of our scale, it is possible that ceiling effects existed in our measurement of the perceptions of SANE care or that a social desirability bias affected the results. Future research should consider more nuanced measures such as using Likert scales with 7 to 10 possible response options.

### **Implications for Emergency Clinical Care Nurses**

The results of this research strongly reinforce the importance of including SANEs whenever possible in treating female patients who have been sexually assaulted. SANEs provide an emotionally supportive and respectful environment for patients while performing evidence collection and/or providing health-related services in the immediate aftermath of assault, and these services are critical in helping to begin the emotional and physical healing process. Leaders of hospitals and community health centers should develop and support their SANE programs to ensure that patients who have been sexually assaulted can receive the high quality of care that they deserve.

### **Conclusions**

Most adult female patients who had been sexually assaulted and were seen by SANEs at 13 geographically and demographically diverse emergency care- and community-based SANE programs in the US, and who were willing to participate in our follow-up study, reported that SANEs provide a high quality of care. Adult female patients who had been sexually assaulted consistently reported that the SANEs took their needs/concerns seriously, did not act as though the assault was their fault, showed care and compassion, explained the sexual assault examination, and provided follow-up information. These perceptions were consistent among patients with varied demographic characteristics and preassault health status. We encourage all health services and facilities that treat patients who have been sexually assaulted to include SANE care as part of their routine response to these patients with trauma.

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Conflicts of interest: none to report.

Demographic characteristics	Range	Mean	SD
Age	18-68	28.30	9.58

Symptom domain	Symptom scores before sexual assault	Mean	SD	Clinically high symptom levels before sexual assault	%
Range	n	Anxiety symptoms (n = 686)	37.10-83.10	52.66	11.34
185	26.6	Depression symptoms (n = 687)	37.10-81.10	51.69	10.69
157	22.6	PTSS symptoms (n = 686)	0-36.00	13.89	11.17
260	37.4	Somatic symptoms (n = 691)	0-198.00	15.47	26.91

179	25.8	Pain severity (n = 681)	0-10.0	1.82	2.41
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Survey items	Strongly agree (coded 4)		Agree (coded 3)		Disagree (coded 2)		Strongly disagree (coded 1)		Score	
	n	%	n	%	n	%	n	%	Mean	SD
Took needs/concerns seriously	623	89.6	56	8.1	2	0.3	14	2.0	3.85	0.50
Did not act like it was my fault	621	89.4	40	5.8	8	1.2	26	3.7	3.81	0.64
Cared and showed compassion	608	87.5	68	9.5	4	0.6	15	2.2	3.83	0.53
Explained the exam	598	86.0	76	10.9	8	1.2	13	1.9	3.81	0.54
Gave follow-up information	519	74.7	141	20.3	16	2.3	19	2.7	3.67	0.66
Overall care quality score	—	—	—	—	—	—	—	—	3.79	0.44

Demographic characteristic	Mean	SD	Kruskal-Wallis nonparametric 1-way ANOVA P value
Age, y			.14
18-20	3.73	0.54	

21-30	3.82	0.41	
31-40	3.83	0.36	
41-50	3.79	0.37	
≥51	3.66	0.58	
Race			.62
White	3.82	0.37	
American Indian/Alaskan Native	3.67	0.64	
Black/African American	3.81	0.30	
Other	3.75	0.58	
Hispanic/Latina ethnicity			.35
No	3.76	0.51	
Yes	3.81	0.41	
Education level			.10
More than high school graduate	3.82	0.41	
High school graduate	3.72	0.51	
Less than high school graduate	3.87	0.24	
Employment status			.14
Full-time employment	3.84	0.35	
Student	3.83	0.36	
Part-time employment	3.73	0.58	
Disability benefits	3.74	0.41	
Unemployed	3.76	0.50	
Annual income			.40



>\$100 000	3.85	0.27	
\$60 000-\$99 999	3.85	0.39	
\$20 000-\$59 999	3.80	0.43	
<\$20 000	3.76	0.49	
Marital status			.51
Married	3.85	0.30	
Never married	3.79	0.45	
Separated/divorced/widowed	3.75	0.47	

## DETAILS

**Subject:** Emergency medical care; Collaboration; Patients; Rape; Women; Health status; Emergency services; Compassionate care; Ethnicity; Quality of care; Females; Sex crimes; Examiners; Perceptions; Stress; Sexual assault; Pain; Information systems; Sympathy; Multiculturalism & pluralism; Polls & surveys; Nursing; Secondary schools; Post traumatic stress disorder; Demography; Community-based programs; Womens health; Anxiety

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## Bibliography

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Case report detailing an inferior myocardial infarction, third-degree heart block, and cardiogenic shock: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 557-562. doi:<https://doi.org/10.1016/j.jen.2021.04.003>

An infarction in the right coronary artery affects the inferior wall of the heart and can also cause impedance to the cardiac conduction system. The right coronary artery perfuses the sinoatrial and atrioventricular nodes, and a loss of blood flow contributes to a breakdown in the communication system within the heart, causing associated bradycardias, heart blocks, and arrhythmias. This case report details the prehospital and emergency care of a middle-aged man who experienced an inferior myocardial infarction, concomitant third-degree heart block, and subsequent cardiogenic shock, with successful revascularization. This case is informative for emergency clinicians to review symptoms of acute coronary syndrome, rapid lifesaving diagnostics and intervention, and the unique treatment and monitoring considerations associated with right ventricular involvement and third-degree heart block.

The story of a broken heart: Takotsubo cardiomyopathy: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 635-642. doi:<https://doi.org/10.1016/j.jen.2020.12.014>

Licensed independent practitioners in emergency clinical practice are tasked with differentiating acute cardiac presentations. Despite its similarity in clinical presentation to acute coronary syndrome, Takotsubo cardiomyopathy is a unique cardiac disorder characterized by a stress-induced ballooning of the myocardium. Also known as the broken heart syndrome, Takotsubo cardiomyopathy most frequently occurs after an overwhelming emotional or physical stressor. The subsequent impaired contractility of the heart places the patient at risk of complications, including acute heart failure, cardiogenic shock, thromboembolism, arrhythmias, and left ventricular outflow obstruction. Takotsubo cardiomyopathy is similar in presentation to other cardiac disorders; therefore, clinicians in emergency settings must be efficient and effective in their diagnosis of this disorder on the basis of its distinct criteria. The current article uses most recent evidence to describe the etiology, pathophysiology, diagnosis, and recommended treatment for Takotsubo cardiomyopathy to support licensed independent practitioners in emergency departments in improving patient outcomes and reducing morbidity.

Migrating swollen joint and lyme disease: A case report: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 543-550. doi:<https://doi.org/10.1016/j.jen.2021.04.009>

This article discusses a case involving a pediatric patient who presented to a large urban children's hospital in the Northeastern United States with complaints of migratory monoarticular joint swelling. The patient had presented with a swollen and painful left knee but with no other associated symptoms. He was nontoxic appearing, afebrile, and had normal vital signs. On examination, he was noted to have a tender and swollen left knee that was not erythematous, bruised, or warm to the touch. There was a history of fevers over the summer after returning home from a camping trip in a park located in the northeastern United States. A plain film knee x-ray showed signs of joint effusion but no osseous abnormalities. A bedside ultrasonography of the knee showed a pocket of fluid in the joint space. With parental consent, the left knee joint was aspirated under direct ultrasound guidance, with collection of dark yellow synovial fluid. This was sent for analysis that included cultures, Gram stain, crystal analysis, and Lyme antigens. The patient was admitted, and his symptoms improved during his hospitalization. The results were positive for Lyme and he was discharged home on a 3-week course of Amoxicillin with complete resolution of his symptoms.

Table of contents: JEN. (2021). *Journal of Emergency Nursing*, 47(4), A1-A3. doi:[https://doi.org/10.1016/S0099-1767\(21\)00144-6](https://doi.org/10.1016/S0099-1767(21)00144-6)

Adolescent with von willebrand disease type 3 spontaneous abdominal hemorrhage: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 661-668. doi:<https://doi.org/10.1016/j.jen.2021.04.008>

An adolescent female classified as unstable with a spontaneous abdominal hemorrhage was transferred to a level 1 pediatric trauma tertiary emergency department. Pertinent medical history included von Willebrand disease type 3, menorrhagia, and obesity. Preparation before patient arrival included mobilization of multidisciplinary medical team

experts in hematology, pharmacy, blood bank, radiology, and nursing who provided lifesaving interventions. The administration of factor products, blood products, interventional radiology, emergent hepatic angiography, and embolization coordination resulted in a successful outcome. After an 18-day intensive hospital course, the patient returned home close to her baseline health status.

Implanted port access in the emergency department: A unit-level feasibility study of a nurse-led port access algorithm: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 599-608. doi:<https://doi.org/10.1016/j.jen.2021.01.010>

**Introduction**The objective of this study was to determine the impact of an emergency nurse-led implanted port access algorithm for ED patients with implanted ports admitted to the hospital.**Methods**A feasibility study evaluated the implementation of a central line-associated bloodstream infection algorithm in the emergency department over a 1-month study period. Emergency nurses received central line-associated bloodstream infection education and training for port access algorithm implementation. Pre- and postimplementation surveys measured the nurses' knowledge, attitudes, and behaviors regarding central line-associated bloodstream infections. The nurses' perceptions of the algorithm were assessed pre- and postimplementation. ED patient port access and central line-associated bloodstream infection rates were compared with preimplementation rates.**Results**Emergency nurses (N = 32) received central line-associated bloodstream infection education and algorithm training. Pre- and postimplementation as well as knowledge, attitude, and behavior surveys were completed by 59% (n = 19) of the nursing staff. Knowledge regarding central line-associated bloodstream infections significantly improved,  $t(19) = -4.8$ ,  $P < .001$ . The nurses' pre- and postimplementation attitude and behavior scores did not differ significantly. They expressed no concerns regarding implementation of the algorithm; 89% (n = 17) reported that the algorithm "fit well" with the ED workflow, and 21% (n = 4) integrated the patient's decision regarding venous access into their shift report. The ED port access incidence during the study period was 17.6% (n = 3), compared with 83.3% (n = 15) in the month before the study.**Discussion**The emergency nurse-led port access algorithm decreased ED port access rates. The nurses' pre- and postimplementation knowledge of central line-associated bloodstream infections increased. The emergency nurse-led port access algorithm empowered emergency nurses to educate their patients on implanted port access and decreased central line use.

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Incorporating end-of-life care into the management of dead on arrival patients in the emergency department: Invited commentary: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 521-523. doi:<https://doi.org/10.1016/j.jen.2021.05.001>

...]both the Emergency Nurses Association<sup>8</sup> and American Heart Association<sup>9</sup> support policies and practices for family presence and family-witnessed resuscitation, as many families find reassurance in the knowledge that all possible steps were taken to revive their loved ones.<sup>10</sup> Although incorporating end-of-life care into the management of DOA patients will undoubtedly improve patient care and family experience, addressing the needs of DOA patients and families is ultimately an ethical issue. Beyond the obvious potential physical harms of resuscitative efforts, from pneumothoraces to survival with devastating neurologic injury, being a bystander to resuscitation has been identified as a potentially traumatic event for those involved.<sup>11</sup> Moreover, when the provision of cardiopulmonary resuscitation appears to be medically inappropriate (some would use the word "futile") by emergency medical personnel, such providers are at risk for moral injury.<sup>12</sup> To this end, advance care planning (ACP) provides an opportunity for the medical and nursing communities not only to align the end-of-life care desired by patients with that delivered but also potentially to prevent distress experienced by families and providers alike. In the United States, for instance, the Centers for Medicare & Medicaid Services instituted regulations in 2016 designed to encourage ACP documentation by specifically reimbursing providers for time spent on such activities.<sup>15</sup> More recently, the emergency department setting has been identified as an underutilized venue for ACP activities, and further efforts are underway to bolster emergency department-based ACP.

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Pain medication administered and prescribed to patients with an ankle sprain treated in an emergency department: A record-based cohort study: JEN. (2021). Journal of Emergency Nursing, 47(4), 609-620.e3.  
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**Introduction**Recent data indicate that patients treated in the emergency department for an ankle sprain receive multiple medications. However, research has not been able to accurately identify all the medications because of study limitations. The primary purpose of this study was to document the type of medication, number of doses, and number of encounters given a prescription at discharge or instructions to take over-the-counter medication. The secondary purpose was to determine if the proportion of encounters given each type of medication varied on the basis of age, sex, race, and year.**Methods**A retrospective record-based cohort study design was used to review the electronic medical records (N = 1740) of encounters reporting to a southeast academic level 1 trauma center and diagnosed with an ankle sprain between 2013 and 2017. All relevant data were extracted for nonsteroidal anti-inflammatory drugs, muscle relaxants, opioids, and nonopioid analgesics.**Results**Fifty-eight percent of the encounters had at least 1 dose of medication administered in the emergency department. Twenty-eight percent received a prescription at discharge, and 54.5% were instructed to take over-the-counter medication. Cumulatively, opioids accounted for most of the medications, but the yearly rates declined from 2013 to 2017. A greater proportion of patients aged  $\leq 15$  years received nonsteroidal anti-inflammatory drugs or nonopioid analgesics. Most of the patients aged  $>15$  years received opioid medication.**Discussion**Patients are primarily given an opioid or nonsteroidal anti-inflammatory drug in the emergency department. Fewer patients receive a prescription at discharge but are regularly instructed to take over-the-counter medication.

Looking to the 12 points of the scout law as inspiration: JEN. (2021). Journal of Emergency Nursing, 47(4), 509-510.  
doi:<https://doi.org/10.1016/j.jen.2021.05.003>

The 12 points of the Scout Law were recited weekly at my Scout meetings as a youth and now as an adult leader. Helpful: Do we take that extra step to help the person in the hospital who looks lost? Do we pick up that piece of trash along the sidewalk when we are out running errands or pick up and recycle the bottle we see on the hiking trail?

Editorial board: JEN. (2021). Journal of Emergency Nursing, 47(4) doi:[https://doi.org/10.1016/S0099-1767\(21\)00145-8](https://doi.org/10.1016/S0099-1767(21)00145-8)

Mitigating the effects of climate change on health and health care: The role of the emergency nurse: JEN. (2021). Journal of Emergency Nursing, 47(4), 621-626. doi:<https://doi.org/10.1016/j.jen.2021.05.004>

**Description** Earth's climate is changing more rapidly than at any other point in the history of modern civilization, and it is largely a result of human activity.<sup>1-7</sup> The impact of climate change is being experienced globally and is projected to intensify in the future.<sup>4,6,8</sup> Climate change affects communities in many ways: the economy, social systems, quality of water, ecosystems, agriculture and food, infrastructures, oceans and coasts, tourism, human health, and quality of life.<sup>4,6,7</sup> A major contributor to the warming of the climate system is the health care sector, accounting for 8% of greenhouse gas emissions in the United States and 4.5% globally.<sup>8-10</sup> The main greenhouse gases responsible for climate change are carbon dioxide, methane, nitrous oxide, and fluorinated gases.<sup>11</sup> In conjunction with black carbon, these gases impair the earth's reflective capacity while simultaneously absorbing solar radiation that is re-emitted to Earth's atmosphere, ultimately leading to surface warming.<sup>11</sup> Rising global temperatures are associated with more frequent and severe storms, intense heat, drought, worsening air quality, and changes in the distribution of pathogens.<sup>8,11-16</sup> Water scarcity, land degradation, and desertification also have accelerated in the past century owing to natural disasters, environmental pollution, and destruction of green space.<sup>12,17-21</sup> More frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to damage infrastructure, ecosystems, and social systems that provide essential benefits to communities. The physical environment where people live, learn, work, and play, which is

affected by rising global temperatures, is a social determinant of health.<sup>22,23</sup> Future climate change is expected to further disrupt many aspects of life, posing challenges to those most vulnerable populations including children, older adults, pregnant women, some communities of color, immigrants, lower-income and under-resourced communities, and those with comorbidities (eg, immunocompromised, allergies, respiratory disease) who have a lower capacity to prepare for and cope with extreme weather and climate-related events.<sup>1,2,4,6-8,24-26</sup> Ambient air pollution contributes to 4.2 million premature deaths worldwide and is associated with increased morbidity from numerous illnesses.<sup>27,28</sup> More than 90% of children are subjected to fine particulate matter that exceeds health standards, whereas maternal exposure is associated with an increase in preterm births, low birth weight, and stillbirths.<sup>29</sup> Poor air quality also leads to emergency visits for asthma, chronic obstructive pulmonary disease, cardiovascular events, and mental health complaints.<sup>7,12,26-28,30</sup> In 2018, a record number of older adults (220 million) were exposed to at least 1 heatwave,<sup>8</sup> with exposure to the stress of extreme heat causing nephropathy, electrolyte disturbances, cerebrovascular events, congestive heart failure, and preterm births.<sup>8,12,31,32</sup> Psychological stress owing to displacement, socioeconomic consequences, and exposure to trauma is anticipated to rise with the increased prevalence of climate-related natural disasters.<sup>12</sup> Providing education to patients and their families on climate change and disaster readiness may help them prepare and mitigate these consequences. According to the World Health Organization,<sup>28</sup> climate change can be mitigated by transitioning to sustainable and efficient energy practices, conserving and protecting resources, designing climate-resilient infrastructure, and adopting methods of sustainable waste disposal and management practices. ...]emergency care settings can upgrade to energy-efficient equipment, replace incandescent light bulbs with LED bulbs, and install lighting control systems such as occupancy sensors.<sup>16,20,24,59-61</sup> The use of renewable and alternative energy sources (eg, solar-powered photovoltaic, water pumps, wind) are additional means of reducing fossil fuel use.<sup>9,16,59-62</sup> Combined heat and power technology is another alternative; this technology captures excess heat from electricity generation and uses it for thermal energy.<sup>9</sup> Energy production is not the only source of carbon emission: more than half of the nitrogen oxides emitted globally are from fuels used for transportation.<sup>8</sup> Using locally sourced food and on-site food production (eg, rooftop gardens) in hospital cafeterias and catering are methods of reducing emissions from transporting supplies while modeling sustainable food practices.<sup>8,16,24</sup> Emergency care settings can further reduce transport emissions by supporting staff use of environmentally conscious forms of transport (eg, cycling) and advocating for vehicles (eg, ambulances) that use alternative fuel, are electric, or have zero emissions.<sup>12,63</sup> Emergency nurse leaders can incorporate climate resilient solutions into facility renovation and future design.<sup>8,12,59</sup> For example,

Lesbian, gay, bisexual, transgender, queer cultural competency training to improve the quality of care: An evidence-based practice project: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 654-660.

doi:<https://doi.org/10.1016/j.jen.2020.12.007>

**Background**One evidence-based practice strategy to improve the provision of care for the lesbian, gay, bisexual, transgender, queer population is providing cultural competency training. The aim of this evidence-based practice project was to improve Knowledge and Skills, Openness and Support, and Oppression Awareness for emergency nurses when providing care to the lesbian, gay, bisexual, transgender, queer population in the military health system.**Methods**The single-unit, educational intervention posttest compared with unit personnel historical controls project took place in an emergency department within the military health system. The participants included registered nurses or licensed practical nurses working in the emergency department. The Ally Identity Measure tool was administered to an unmatched convenience sample of emergency nurses in a military health system pre- and postintervention to assess the intervention's effectiveness. Descriptive statistics and group difference testing (t test) were used.**Results**The mean Knowledge and Skills subscale score was improved between the pre- and postintervention groups ( $t(70) = -3.33, P = .001$ ). The mean Openness and Support subscale score was improved between the pre- and postintervention groups ( $t(70) = -2.06, P = .04$ ). The mean Oppression Awareness subscale demonstrated no significant difference between the pre- and postintervention groups ( $t(70) = -0.93, P = .36$ ).**Conclusion**This project illustrated the feasibility of an educational intervention to promote culturally competent care in the ED environment for the lesbian, gay, bisexual, transgender, queer population. The results illustrated that emergency nurses in this military health system were aware of the oppression that this vulnerable population faces.

Trajectory of research and dissemination through mentorship and passion: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 511-513. doi:<https://doi.org/10.1016/j.jen.2021.04.014>

A report by the Institute of Medicine, "The Future of Nursing," called for a doubling of the 28 369 doctorally prepared nurses in 2008 by 2020.<sup>1</sup> Although this goal was achieved, it was done primarily through the expansion of Doctor of Nursing Practice programs in the United States. In 2019, the number of nurses graduating with a practice-focused doctorate (Doctor of Nursing Practice) was more than 9 times higher than the number of nurses graduating with a research-focused doctorate (Doctor of Philosophy): 12 250 graduates vs 1306 graduates, respectively.<sup>2</sup> Given the number of nurses seeking a doctoral degree, it is important for emergency nurses to consider the meaningful aspects of the research doctorate. In this guest editorial, I relay my own career trajectory from being a stretcher-side emergency nurse to my role today as an emergency nurse scientist and leader. It is my hope that emergency nurses will seek opportunities similar to the ones I was afforded through mentorship and dissemination to also become emergency nurse scientists and/or research-focused academic faculty members.

Alignment of nurse practitioner educational preparation and scope of practice in United States emergency departments: A systematic review of the literature: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 563-581. doi:<https://doi.org/10.1016/j.jen.2021.04.005>

**Introduction**National debate persists surrounding the expanded use of nurse practitioners in the emergency department. Current understanding of the alignment of nurse practitioner educational preparation and practice parameters in United States emergency departments is inchoate. The objective of this review was to seek evidence to support that nurse practitioner education and training align with current practices in the emergency department.**Methods**A Preferred Reporting Items for Systematic Reviews and Meta-Analyses guided systematic review of the existing literature was conducted of 4 relevant databases. Level of evidence and quality assignments were made for each article using Grading of Recommendations, Assessment, Development, and Evaluation or Confidence in Evidence from Reviews of Qualitative Research as appropriate.**Results**Nurse practitioners are increasingly staffing emergency departments, providing care to both patients classified as high-acuity and low-acuity. Reports of nurse practitioner scope of practice vary widely. No studies evaluated alignment of educational preparation and training for actual clinical practice.**Discussion**This review of the literature was inconclusive, and the review team was unable to find evidence that supports the alignment of nurse practitioner educational preparation and training with scope of clinical practice in United States emergency departments. Future research should seek to articulate the landscape of nurse practitioner academic preparation for specialty practice in the emergency department and to specifically examine the alignment of educational preparation with scope of practice and impact on clinical outcomes of patients seen in the emergency department.

Emergency nursing review questions: July 2021: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 633-634. doi:<https://doi.org/10.1016/j.jen.2021.03.008>

Correct answer: C Absence of urticaria, delay in the use of EPINEPHrine, severity of reaction, biphasic reaction, age above 65 years, cardiovascular or pulmonary disease, medication as a trigger, and uncontrolled asthma are all factors that increase the risk for severe, near-fatal, or fatal anaphylaxis.<sup>1</sup> 2. Correct answer: B Biphasic anaphylactic reactions are characterized by an initial reaction, followed by an asymptomatic period of 1 hour or more and then a subsequent return of symptoms without further exposure to antigen. Correct answer: D The signs of pediatric cold shock include tachycardia; tachypnea without increased effort; delayed capillary refill time (>3 seconds); weak peripheral pulses; narrow pulse pressure; decreased urine output; irritability; decreased level of consciousness; and cold, pale, mottled, diaphoretic skin.

Commentary on "A CLIMATE: A tool for assessment of climate-Change-Related health consequences in the emergency department": JEN. (2021). *Journal of Emergency Nursing*, 47(4), 518-520. doi:<https://doi.org/10.1016/j.jen.2021.04.004>

...]they can ensure that health care and public health systems are resilient in the face of climate change and weather extremes and, at the same time, are taking steps to become carbon-neutral and optimally sustainable. Owing to this

focus on ultimate disposition, it may not be feasible to accomplish the full framework within the ED visit, especially for patients who are critically ill. ...]it is vital to expand this framework to health care providers working in the inpatient setting as well as outpatient settings. From fact sheets and videos to complete lesson plans, there are many valuable resources available to aid in education of both members of the public as well as health professionals to learn more about the health impacts of climate change.<sup>8</sup> Finally, providers can work to systematically reduce the carbon footprint of emergency departments and spur larger health system changes through interventions that improve energy resource management and operational expenditures.<sup>9</sup> Perhaps the most devastating aspect of climate change's impacts on health is that those who are already vulnerable owing to gender, race, ethnicity, geography, socioeconomic, or health status are most likely to suffer the worst of the impacts.<sup>1</sup> Health outcomes for vulnerable individuals depend on a multitude of factors, many of which can be addressed through careful application of the A CLIMATE framework<sup>2</sup> during clinical encounters. Because emergency providers are already trained to recognize social determinants of health and vulnerability, this framework allows for that understanding to be combined with climate change and health awareness, ultimately acting as a positive force in protecting the most vulnerable from climate change impacts.

Patient characteristics of persons dead on arrival received in a danish emergency department: A retrospective review of health records: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 582-589.e1.  
doi:<https://doi.org/10.1016/j.jen.2021.01.007>

**Introduction**In addition to treating living patients, emergency nurses are also responsible for receiving and caring for persons who are dead on arrival and their relatives. There is limited knowledge about the dead on arrival patient and family population as well as care practice for the dead and their relatives. The first step in improving care for dead on arrival persons is to know the size and characteristics of the population. Therefore, the aim of this study was to describe the size and characteristics of the dead on arrival population in a Danish emergency department.**Methods**A retrospective review of health records was undertaken for all consecutive dead on arrival persons received in 1 Danish emergency department between January 2018 and December 2019.**Results**A total of 719 dead on arrival persons were included, 350 in 2018 and 369 in 2019. Males accounted for 64%. The mean age was 71 years with a range from 18 to 102 years. The place of death was 80% at home, and more than half (54%) were found either dead or dying by a spouse, cohabitant, or son/daughter. In most cases, the cause of death was described as unknown (92%), whereas suicide and accidents accounted for 8%.**Discussion**The population of dead on arrival persons in a Danish emergency department were mainly men, found dying or dead by relatives and brought in from home. Additional research and development are warranted regarding care practices for dead on arrival and their families in the emergency department.

A case for case reviews: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 514-517.  
doi:<https://doi.org/10.1016/j.jen.2021.05.005>

In the rural setting, we also worked many nights and weekends with physicians who were not board-certified in emergency medicine but were willing to cover the shift with exceptional backup support from anesthesia on call or advanced paramedics should emergent intubation or other acute stabilization skills be required. Time constraints such as those involved in completing a quality improvement–focused capstone project in 1 academic semester are especially dissonant in the ED setting where there is clear and profound seasonality in the types and volumes of presentations.<sup>5,6</sup> Furthermore, sustainability over time is a crucial component of implementation science and quality improvement in the clinical setting, and addressing sustainability tends to be well outside the feasible scope of the usual single DNP project time frame.<sup>7</sup> The emergency department in January, susceptible to patient-volume spikes from infectious epidemics such as annual influenza, is a vastly different context from the same emergency department in June wherein the team can often be found in the throes of the traumatic injuries peak of the 100 days of summer. ...]the time is ripe to revisit, reimagine, and reinvent educational pathways for advanced emergency practice, clinical residencies or fellowships, interdisciplinary preceptorship, and capstone project focus and requirements. At JEN, we strongly encourage the submission of case reviews that are relevant to care in the ED setting from authors across all levels of educational preparation and professional development using the CARE (for CAsE REports) transparent reporting guidelines.<sup>8</sup> Astute observation of both clinical and laboratory anomalies has



long been an essential starting point for far-reaching scientific discoveries and breakthroughs.<sup>9</sup> Case reviews have been dubbed as the “first line” of evidence-based practice in the evidence hierarchy.<sup>10</sup> Although we acknowledge that there is an important hierarchy of evidence to inform the efficacy of practice interventions with a high value placed on the well-designed randomized controlled trial at the top of the pyramid, case reviews serve many important additional purposes in evidence-based nursing practice and clinical reasoning development. ...[an important resource about ongoing research and evidence-based education for patients and clinicians on rare diseases can be found at the Genetic and Rare Diseases Information Center of the National Institutes of Health.<sup>11</sup> Case reviews serve as an essential problem-based learning tool to develop and refine clinical reasoning processes in education and professional development.

Emergency nurses' knowledge, attitudes, and practices related to blood sample hemolysis prevention: An exploratory descriptive study: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 590-598.e3. doi:<https://doi.org/10.1016/j.jen.2020.12.015>

**Introduction**The aim of the study was to identify emergency nurses' knowledge, attitudes, and practices related to blood sample hemolysis prevention and explore associations between these factors and demographic characteristics. The current state is unknown. Understanding baseline knowledge, attitudes, and practices addresses a gap in the literature.**Method**An exploratory, descriptive design with cross-sectional survey methodology employing a study-specific instrument was used.**Results**Request for participation email was sent to a random sample of 5000 Emergency Nurses Association members, and 427 usable surveys were returned (response rate = 8.5%). Mean years in nursing was 13.85 (standard deviation = 10.78), and 226 (52.9%) were certified emergency nurses. Only 85 participants (19.9%) answered all 3 knowledge questions correctly. Answering the 3 knowledge questions correctly was significantly associated with being a certified emergency nurse ( $\chi^2 = 7.15$ ,  $P < .01$ ). Participant responses to attitude items about the sequelae of blood sample hemolysis were skewed toward agreement, and most attitude items were associated with whom participants reported as being primarily responsible for phlebotomy. Emergency nurses remain primarily responsible for phlebotomy as well as addressing hemolyzed samples, but few reported that blood sample hemolysis was addressed at a departmental level.**Discussion**Findings suggest that emergency nurses lack some knowledge related to blood sample hemolysis prevention best practices. Attitudes toward phlebotomy practices may be 1 reason practice has not changed. Every effort should be made to prevent hemolyzed blood samples to decrease delays and costs in emergency care.

The other side of immediate bedding: A call to action to the research community: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 529-530. doi:<https://doi.org/10.1016/j.jen.2020.11.010>

In “Triageing the Emergency Department, not the Patient: United States Emergency Nurses' Experience of the Triage Process,” Wolf et al<sup>2</sup> define immediate bedding, or “pull until full,” as the intake process of bringing patients directly to treatment areas without screening, triage, or physiological assessment. Lack of timely, accessible primary care and ED crowding are well established concerns in the emergency department.<sup>3</sup> These concerns contribute to delays in completing triage within the recommended time frames.<sup>2-4</sup> Studies have shown that direct bedding can significantly reduce door-to-provider times and left-without-being-seen rates.<sup>5,6</sup> But before we consider increasing patient throughput as synonymous with quality care, consider this illustrative scenario. Additional, more complex studies need to be performed that consider factors such as nurse staffing levels, including demographics, certifications, and experience; delays in care; patient quality outcomes; and perhaps an emergency department's physical design before pull-until-full, direct-bedding, or quick-look models are declared a best practice.<sup>2,5,6</sup> For a pull-until-full intake process to maintain or improve the quality of care delivered, resources must be present and aligned to nursing, patient, and unit needs.<sup>6,7</sup> Appropriate staffing can increase throughput, improve flow, and decrease costs; and solely focusing on productivity can compromise quality of care.<sup>8</sup> The Emergency Nurses Association<sup>9</sup> confirms that adequate staffing has contributed to the reported success of prior initiatives regarding pull-until-full/direct-bedding practices, but this cannot be validated until research that examines this intake practice includes staffing levels and other vital information in its analyses.

Response to routsolias and mycyk letter: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 527-529.  
doi:<https://doi.org/10.1016/j.jen.2021.03.012>

...]patients with opioid withdrawal symptoms benefit from its agonistic properties in the form of diminished cravings; however, its ceiling effect prevents the consequences of respiratory depression and euphoria present with full  $\mu$ -receptor agonists such as methadone.<sup>1</sup> These characteristics contribute to buprenorphine's excellent safety and efficacy profiles, protecting patients with OUD from overdose and death. ...]we respectfully disagree with the notion that "medication alone is not sufficient treatment for OUD."<sup>11</sup> In addition to the difficulties accessing treatment for OUD—including buprenorphine or buprenorphine-naloxone—that our colleagues in Chicago describe and we have seen in Maine as well, emerging literature points to other pandemic-related challenges.<sup>12,13</sup> First, evidence suggests that people with OUD may be at higher risk for experiencing COVID-19 infection due to a higher prevalence of pre-existing conditions, smoking, opioid-related immunosuppression, and the presence of structural lung disease.<sup>14-17</sup> In addition, those with OUD are more likely to reside in congregate living situations such as group recovery housing, shelters, and correctional facilities where they may be unable to maintain social distancing.<sup>14,15</sup> People with OUD also make up a disproportionate share of the United States unsheltered and unstably housed population, placing them at further risk for exposure to COVID-19.<sup>16,18</sup> Although social distancing is an important public health measure, there is potential for the isolation associated with COVID-19 to cause harm for those with OUD.<sup>19</sup> There is a strong association between social isolation, mood, and substance use disorders.<sup>20</sup> Isolation can act as a trigger for some, exacerbating existing patterns of substance use or contributing to a return to use for those who are in recovery.<sup>19</sup> In addition, many supportive and harm-reducing services for people with OUD are unavailable as a result of the current pandemic, including support groups, treatment programs, daily medication dispensing clinics, and needle exchanges.

Emergency nurses' guide to neonatal lumbar punctures: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 627-632. doi:<https://doi.org/10.1016/j.jen.2020.12.004>

A neonatal lumbar puncture can present many challenges for emergency nurses that may not be seen with older children or adults. It is imperative that emergency nurses have the knowledge and training related to the procedure to ensure a positive process for the neonate, involved family and health care team members, as well as the overall outcomes of the procedure. This paper provides a practical guide to the essential knowledge for a neonatal lumbar puncture in the emergency department. The main points conveyed in this paper include considerations such as indications for a neonatal lumbar puncture, how to prepare for the procedure, how to position the neonate, possible complications, and caregiver support.

Sexual assault nurse Examiner/Forensic nurse hospital-based staffing solution: A business plan development and evaluation: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 643-653.e2.  
doi:<https://doi.org/10.1016/j.jen.2021.03.011>

Nationally and internationally, providing competent and sustainable sexual assault nurse examiner/forensic nurse coverage has been a shared challenge. This project, "Sexual Assault Nurse Examiner/Forensic Nurse Hospital-based Staffing Solution: A Business Plan Development and Evaluation," provides an example for assessment, construction, implementation, and evaluation of a business plan for a sustainable sexual assault nurse examiner/forensic nurse staffing solution. By using preexisting float pool positions and converting them to sexual assault nurse examiner emergency nurses, coverage for sexual assault nurse examiner examinations in a 16-hospital health system was established, which decreased sexual assault nurse examiner turnover related to burnout while increasing the sustainability of sexual assault nurse examiner nurses who provided quality care to patients who had experienced a sexual assault, domestic or intimate partner violence, elder or child abuse or neglect, assault, strangulation, or human trafficking. Implementation of the business plan resulted in a 179% increase in completed sexual assault nurse examiner examinations and a 242% increase in all types of completed forensic examinations from 2015 to 2019 as 7 new community hospitals were added to the health system. A sum of more than \$20000 allocated for training new sexual assault nurse examiners/forensic nurses was saved per year by using a sexual assault nurse examiner emergency nurse. By creating a supportive structure that fosters and sustains

sexual assault nurse examiners/forensic nurses, both medical and mental health concerns can be addressed through trauma-informed care techniques that will affect lifelong health and healing as well as engagement in the criminal justice process for patients who have experienced sexual assault, abuse, neglect, and violence.

Utility of the emergency severity index by accuracy of interrater agreement by expert triage nurses in a simulated scenario in Japan: A randomized controlled trial: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 669-674. doi:<https://doi.org/10.1016/j.jen.2021.03.009>

**Objective**The Emergency Severity Index (ESI) is a highly reliable and valid triage scale that is widely used in emergency departments in not only English language regions but also other countries. The Japan Triage and Acuity Scale (JTAS) is frequently used for emergency patients, and the ESI has not been evaluated against the JTAS in Japan. This study aimed to examine the decision accuracy of the ESI for simulated clinical scenarios among nursing specialists in Japan compared with the JTAS.**Method**A parallel group randomized trial was conducted. In total, 23 JTAS-trained triage nurses from 10 Japanese emergency departments were randomly assigned to the ESI or the JTAS group. Nurses independently assigned triage categories to 80 emergency cases for the assessment of interrater agreement.**Results**Interrater agreement between the expert and triage nurses was  $\kappa=0.82$  (excellent) in the ESI group and  $\kappa=0.74$  (substantial) in the JTAS group. In addition, interrater agreement by acuity was level 2=0.42 (moderate) in the ESI group and level 2=0.31 (fair) in the JTAS group. Interrater agreement for triage decisions was classified in a higher category in the ESI group than in the JTAS Scale group at level 2. Triage decisions based on the ESI in Japan maintained the same level of interrater agreement and sensitivity as those in other countries.**Conclusion**These findings suggest that the ESI can be introduced in Japan, despite its different emergency medical background compared with other countries.

Hemolyzed blood samples in the emergency department - finding our "Why": JEN. (2021). *Journal of Emergency Nursing*, 47(4), 524-526. doi:<https://doi.org/10.1016/j.jen.2021.04.002>

When patients present to the emergency department, they expect strong communication from the hospital staff and short wait times and to be treated with empathy and compassion.<sup>1,2</sup> Patients commonly present during a time of high stress and uncertainty, so addressing these areas of patient care as well as other areas that invoke patient harm have remained a focus for ED leaders: one area for improvement of ED care that has not received as much attention as its potential warrants is the hemolysis of blood samples. Evidence-based technique modifications that have been demonstrated to reduce the rate of hemolysis include the use of a steel-straight needle for phlebotomy, the use of an antecubital site with IV cannulation, and the use of low-vacuum tubes.<sup>8</sup> Thus, it is puzzling that the rate of hemolyzed blood samples in the emergency department continues to be significantly elevated despite the literature not only describing the importance of this topic but also suggesting simple methods for improvement. ...]the finding that most participants were unaware of blood sample hemolysis prevention initiatives when there is an Emergency Nurses Association clinical practice guideline on the topic demonstrates that there is space and need for education efforts.<sup>12</sup> Moving forward with this root knowledge in mind, further research can be conducted on system requirements such as the time spent by emergency nurses repeating hemolyzed samples versus placing IVs, the impact of high emergency nursing turnover on practice change, and the ever-increasing requirements on uniquely skilled and qualified caregivers that tax their ability to multitask in an as efficient as possible manner.

Board of directors: JEN. (2021). *Journal of Emergency Nursing*, 47(4) doi:[https://doi.org/10.1016/S0099-1767\(21\)00146-X](https://doi.org/10.1016/S0099-1767(21)00146-X)

A CLIMATE: A tool for assessment of climate-Change-Related health consequences in the emergency department: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 532-542.e1. doi:<https://doi.org/10.1016/j.jen.2020.10.002>

Climate change is an urgent public health problem that has looming implications and associated deleterious health consequences. The intersection of climate change and health has broad implications for health professionals in a variety of settings but especially for ED settings. Climate change is already affecting human health and health systems—which includes impacts on ED care. Disaster response and emergency preparedness are critically important public health interventions in our climate-changing world, and the contributions of emergency nurses are

essential. Disaster preparedness, environmental emergency response, and health emergency management are important elements of emergency nursing and are explicated in Sheehy's *Emergency Nursing Principles and Practices*, 7th Edition. The purpose of this article is to present an overview of a clinical tool and mnemonic, A CLIMATE, developed by the authors with application to a case review. It is imperative that the nursing profession—particularly emergency clinicians—address the intersection of climate and health to engage in the assessment, intervention, management, evaluation, education, and referral of those who present to emergency departments with potential climate-related health impacts.

Lisa, A. W. (2021). Response to amberson letter: JEN. *Journal of Emergency Nursing*, 47(4), 531. doi:<https://doi.org/10.1016/j.jen.2021.02.005>

Kratom ingestion and emergency care: Summary and a case report: JEN. (2021). *Journal of Emergency Nursing*, 47(4), 551-556.e1. doi:<https://doi.org/10.1016/j.jen.2021.02.004>

Kratom ingestion for its psychotropic effect or to self-treat opioid withdrawal symptoms has increased over the last 10 years in the United States. Although mild adverse effects have been observed in users, reports of respiratory failure and shock after kratom consumption remain rare. In this case, a 35-year-old man initially presented to the emergency department with profound circulatory shock, metabolic acidosis, hypoxia, and symptoms of autonomic nervous system dysfunction. The patient required vasopressor support, multiregimen sedation and rapid sequence intubation, mechanical ventilation, and emergent hemodialysis. Within 72 hours, the patient's condition stabilized, and he was extubated. The patient reported regular consumption of large quantities of kratom as well as injection of heroin and cocaine. In this report, a rare clinical presentation after kratom ingestion is described.

Planning for chaos: Developing the concept of emergency preparedness through the experience of the paramedic: JEN. (2021). *Journal of Emergency Nursing*, 47(3), 487-502. doi:<https://doi.org/10.1016/j.jen.2021.02.001>

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