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THE NEW SURVIVING SEPSIS RECOMMENDATIONS

HIGHLIGHTS FROM THE LATEST GUIDELINES

by **TIFFANY M. OSBORN, MD, MPH**

Society of Critical Care Medicine
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ACEP endorsed the latest iteration of the Surviving Sepsis Campaign (SSC) guidelines, totaling 67 pages with 93 statements on early management and 655 references.[1,2] An important note: Guidelines should be a counselor, not a jailer. Guidelines provide a framework for direction and standardization where possible but require clinical context for individual patients. This summary includes items specifically pertinent to emergency medicine and is not intended to be all-inclusive.

DEFINITIONS

All the data informing guideline development were based on the established definitions, *not* Sepsis-3. The Sepsis-3 and established definitions were modified for the

CONTINUED *on page 6*

ILLUSTRATION:CHRIS WHISSEN; PHOTOS: SHUTTERSTOCK.COM

BUZZARRE BEE STING

Cura te ipsum: Doctor, heal thy uvula

by GREGORY PODOLEJ, MD

IT was supposed to be a nice refreshing run along a country road.

On my return loop, about a mile from my house, I felt an insect fly into my mouth. I immediately coughed it out and was a little surprised when I saw that it was not just a regular house fly—it had some yellow stripes on it. Nonetheless, I was having a good run and didn't feel like stopping to take a better look. "Even if it was a bee or a wasp," I thought to myself as I kept running, "thank God I'm not allergic."

Literally 30 seconds later, I started to feel intense pain in the back of my throat, much like a sore throat from hell. Granted, even though I am more out of shape now than I used to be, it started feeling like it was getting harder to breathe.

A few scenarios started running through my head:

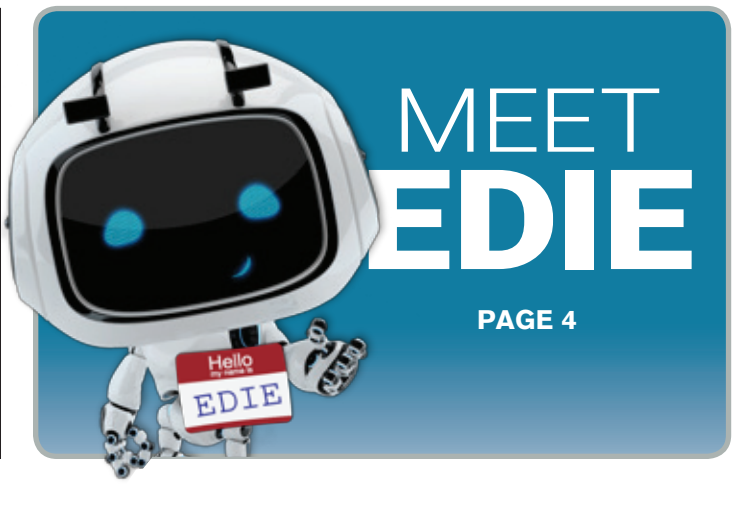
1. If my throat closes, at least I'll be by a bigger road soon and somebody will see me.

2. I wonder how long the paramedics will take to get to my rural house.

3. I'm not that far from home. I know I have a scalpel, a bougie, and an endotracheal tube somewhere.

I managed to get home and took a cursory look at the back of my throat. My posterior pharynx was quite erythematous, but most noticeably, my uvula was the size of

CONTINUED *on page 10*



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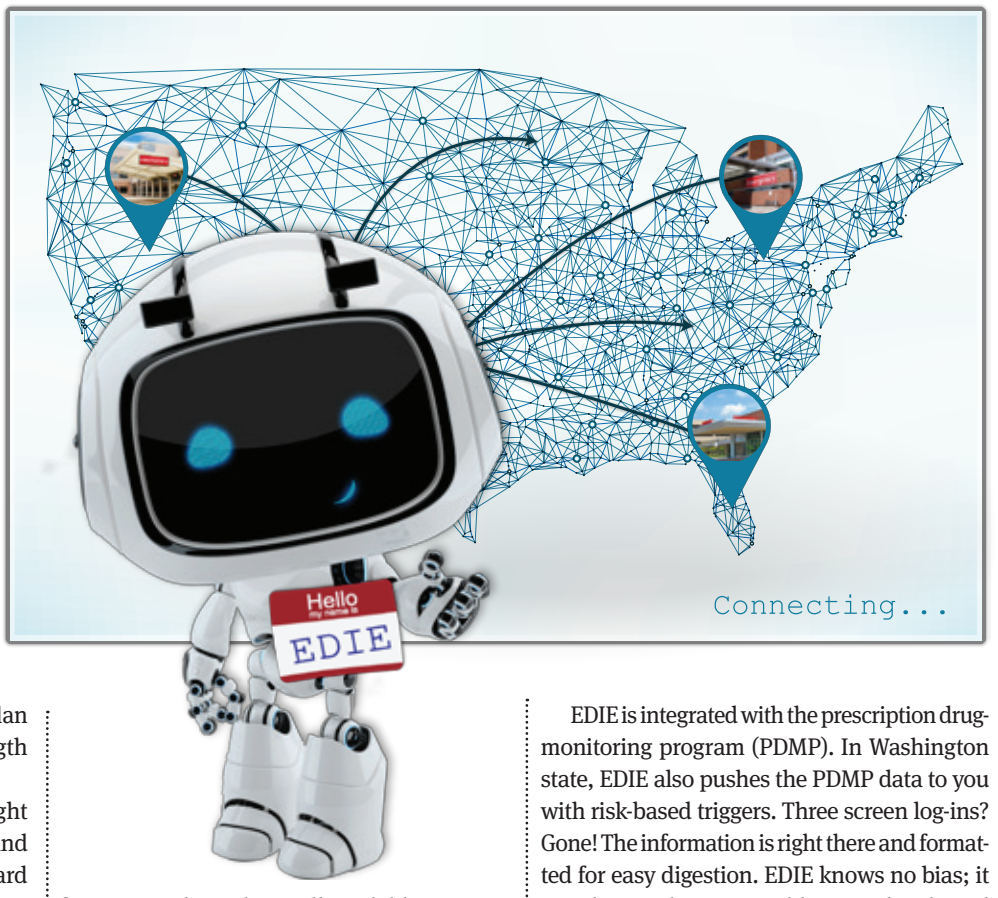
MEET EDIE

The Emergency Department Information Exchange aims to coordinate care from the start

BY STEPHEN ANDERSON, MD, FACEP



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This article is not about busting drug-seekers.

This article is about coordinating care for our emergency department's highest utilizers to give them better care, make our lives and workflow better, and save our hospitals and health systems millions of dollars.

Imagine several scenarios:

1. A patient with schizophrenia or sickle cell disease shows up in crisis, and on your tracking board, an icon shows up that directs you immediately to a patient-specific care plan that has proven success in decreasing length of stay and hospitalizations.

2. A young male says he has severe right flank pain with a history of disc disease and kidney stones. A flag on your tracking board tells you he has had eight previous ED visits this year for the same complaint, two abdominal/pelvic CTs with no stones, and a prescription-monitoring program filled-prescription history suggesting 18 opioids from seven different providers. This is all available on a single page with one click.

We don't have to imagine these patients; they show up every shift. The paradigm shift here is a tool providing upfront information. In a concise manner, it alerts you to high-risk/high-utilization attributes, protocols, and suggestions to improve the patient's overall health. A highly secure HIPAA-compliant system that starts the conversation with, "How can we find you a long-term solution?" instead of negotiating over drugs. It goes beyond hunches and clinical suspicion and is based on data and information. It enables you not just to be aware of the patient's relevant history but also to collaborate on a single patient-specific plan of care shared across all providers with a relevant treatment relationship to the patient.

This system isn't a dream. It exists already—meet EDIE! The Emergency Department Information Exchange (EDIE or PreManage ED) has changed the everyday practice of thousands of us in the trenches. It has become another tool in the armamentarium of the emergency physician, just as the CT scanner and point-of-care ultrasound have.

It is automated and real-time. It's also quite simple to implement and use. When patients register in any EDIE-connected emergency department, their demographics are immediately sent to the cloud, and in a few hundred milliseconds, your computer searches a database, compiles a patient-specific history, and scans that history for risk patterns of which you might want to be aware. In real time, it alerts you to these patient-specific insights via fax, text, direct messaging, secure email, or an electronic icon embedded in your ED tracking board. It provides critical information on patients, such as how many emergency department visits patients have had in the last year, where they presented, their drug history, other providers who are involved with the patients (along with their contact information), and finally (and perhaps most critically), if there is a patient-specific care management plan that could guide treatment today.

EDIE is integrated with the prescription drug-monitoring program (PDMP). In Washington state, EDIE also pushes the PDMP data to you with risk-based triggers. Three screen log-ins? Gone! The information is right there and formatted for easy digestion. EDIE knows no bias; it searches on the 22-year-old tattooed male and the 32-year-old housewife holding her baby just the same. If it finds something relevant, you're immediately alerted. If not, you go about your business without wasting time searching for something that may not even exist.

Care coordination across delivery systems is critical to improving care. In Oregon and elsewhere, the same EDIE information on Medicaid and other insured patients is also sent to their primary care providers.

This is a system with proven success. Through an alliance with Collective Medical Technologies (CMT), ACEP has seen this system mature in Washington and Oregon, as well as many other states, with more states coming online in 2017. Washington state, in the first year alone, experienced a 24 percent decrease in opioid prescriptions written from emergency departments, a 14 percent reduction of super-utilizer visits, and state Medicaid savings of more than $32 million.

With the emergency department serving as the gateway to health care for many individuals, ACEP's goal is to continue to promote this system, with active progress in a dozen other states. This tool shows the value of emergency medicine and truly is win-win-win for patients, providers, and health care systems.

Join us in demanding better care for our high utilizers and work with your state hospital association and department of health to add this valuable resource to your cache of tools to make a meaningful, data-driven difference for your patients.

Visit www.collectivemedicaltech.com or read "Seven Best Practice Resources" in the resources menu at http://washingtonacep.org for more information.

Disclosure: *ACEP endorses EDIE and has an agreement to exclusively promote the product as well as help develop standards for emergency department information exchange systems nationwide.*

DR. ANDERSON is an emergency physician in Seattle and a member of the ACEP Board of Directors.

A New Legislative Session Begins

115TH CONGRESS

The president, the 115th Congress, and changes to the US health care system

by L. Anthony Cirillo, MD, FACEP

Editor's Note: This article was written before the American Health Care Act was released.

For all the philosophy imbedded in the arguments and debates around the Affordable Care Act (ACA), the reality is the program isn't perfect. While much of the law is a win for emergency medicine, financing of the program is not. The expansion of Medicaid coverage, requirements to cover preexisting conditions, coverage of children up to age 26 on a parent's policy, and the establishment of a minimum benefit standard including the prudent layperson standard for emergency care are great for those of us who bear the biggest burden of the uninsured population when they have no other access to care. However, the mechanisms to fund these benefits for the long-term were inadequate even on the day the ACA became law. Expecting that healthy young people would opt to pay even a 50 percent discounted health care premium (let's say $6,000 per year) versus paying 2.5 percent of their income (which is $1,000 if they are making $40,000 per year) wasn't going to work. Without healthy people paying into the system, the existing increase in tax revenue isn't enough to finance the whole program. Expecting that insurance companies would continue to sell policies in regions where they are losing money despite subsidies is wishful thinking at best. Given their operating losses, and the loss of additional revenue under a risk corridor program that was defunded by Congress, insurers are leaving the ACA program. As of the beginning of this year, nearly 35 percent of potential ACA enrollees have only one insurance company to choose from in the health care exchange, and another 19 percent have only two choices.

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How will President Donald Trump and Congress ensure access to health care insurance—without removing the components of the ACA that everyone likes—without individual or employer mandates? That remains to be seen. Newly confirmed Secretary of Health & Human Services (HHS) Tom Price, MD, has been an ardent opponent of the ACA and will have wide latitude to change the program based upon the large number of regulatory actions that have been taken to implement and operate the program. In his first official act after his swearing in, President Trump issued the "Minimizing the Economic Burden of the Patient Protection and Affordable Care Act Pending Repeal" order. This directed HHS and all departments and agencies, "to the maximum extent permitted by law," to "delay the implementation of any provision or requirement of the Act that would impose a fiscal burden on any State or individual," "provide greater flexibility to states and cooperate within them in implementing healthcare programs," and "encourage the development of a free and open market in interstate commerce for the offering of healthcare services and health insurance."

While Sec. Price is just settling into his new office, Congress has already begun the process of undoing the law. Under a process titled budget reconciliation, the Senate and House passed a resolution directing the respective chambers to develop legislation that is linked to the passage of the budget. Although Congress, together with the president's signature, can't change the language of the ACA that is purely "policy" without being subject to the possibility of a filibuster in the Senate, they can effectively defund the program by changing the budget. Under the Congressional Budget Act of 1974, the Senate can pass, with only a simple majority and limited debate, legislation that can be used to change laws that are scored by the Congressional Budget Office (CBO), which is essentially anything that costs money or is implemented as a tax. Although the budget reconciliation process seems somewhat undemocratic, it was this same process that the Democrats utilized in 2010 to fund certain aspects of the ACA.

What will "replace" look like? The president's health care reform plan included a number of policies, in addition to the "complete repeal of Obamacare." Those include:

- Modify laws that inhibit the sale of insurance across state lines.
- Allow individuals to fully deduct health insurance premiums from tax returns.
- Allow individuals to use health savings accounts (HSAs) without annual limits.
- Block-grant Medicaid to the states (see below).

House Speaker Paul Ryan released his vision for addressing the issues facing the country in his "A Better Way" agenda in June 2016. "A Better Way to Fix Health Care" is a 30-page document within the agenda where Ryan lays out his key policy cornerstones for health care reform, including:

- Provide a refundable tax credit for people without access to employer-sponsored coverage.
- Expand the use of HSAs.
- Allow sales across state lines.
- Protect patients with preexisting conditions and allow dependent coverage up to age 26.
- Empower states to design Medicaid programs "that best meet their needs."
- Give future Medicare beneficiaries (starting in 2024) the option to choose private plans versus traditional Medicare.

Clearly, the president's and the speaker's approaches share some common themes about a comprehensive "replace" package. Republican leaders have talked about creating a "health care backpack" concept that would allow people to carry different components of coverage throughout their lives depending upon their age or their personal circumstances. It is unclear how the process of crafting a bill will actually occur as many Republicans want a quick replacement and others are calling for a more measured approach with perhaps a delay component built in to prevent a decrease in the number of insured Americans as the ACA is defunded.

Medicaid Reform

Today, Medicaid provides insurance coverage to more than 70 million Americans and costs more than $530 billion, representing approximately 13 percent of the federal budget. Approximately 11 million Medicaid recipients are people who were covered under the Medicaid expansion program of the ACA. Aside from the broader expansion of health care coverage under the ACA, Medicaid expansion significantly changed the health care delivery landscape in the United States. Under the expansion program, 31 states and the District of Columbia opted in. The incentive was that the federal government would pay 100 percent of the additional cost to cover these newly eligible individuals from 2014 to 2016, 95 percent from 2017 to 2019, and a fixed level of 90 percent by 2020. For emergency medicine, having more patients insured is an improvement both from a professional fee perspective and in providing a greater opportunity for follow-up care after an emergency department visit. What would happen to those extra payments under an ACA repeal? Would states be on the hook to continue coverage, or would they have to cut people from their Medicaid roles? Another challenge for repeal would be reconciling reductions in payments to hospitals occurring as part of the changes to the disproportionate share hospital (DSH) payments. Under the ACA, hospitals are scheduled to see a reduction in these payments of more than $17 billion. Would these payments return to pre-ACA levels or some other amount by a newly defined formula?

The nature of Medicaid being a shared-responsibility program between the federal government and the states makes any repeal of the ACA more complicated than the repeal of the health care exchanges. Given that some states opted not to participate in Medicaid expansion, there has been an unequal effect of the ACA in those states that chose to participate versus those that did not. Since the implementation of the ACA, 37 states are participating in 1,115 demonstrations or waiver projects, providing flexibility in a number of areas of the Medicaid program, including provider incentives for state-specific performance goals.

All the Other Stuff

Although the Medicare Access and CHIP Reauthorization Act of 2015 replacement for the flawed sustainable growth rate payment formula received bipartisan support and is unlikely to be repealed, many of the secondary programs that are part of the big picture of payment reform will be subject to revision or replacement. Accountable care organizations, Medicare shared savings programs, and the Center for Medicaid & Medicare Innovation Center could all go away.

Historically, newly inaugurated presidents get some degree of cooperation by the opposing party during a "honeymoon" period, especially when the president's party controls both houses of Congress. That is clearly not going to happen this year. The Democrats have already taken a very hard line in opposition to the president, as demonstrated by their refusal to vote for or even attend committee hearings for some cabinet nominees. The president has not softened his "campaign tone" and continues to push hard on controversial issues such as the immigration/travel ban. What the replacement of the ACA will look like and how it will affect emergency medicine will be interesting for all of us and will play out within the next few months.

DR. CIRILLO is director of health policy and legislative advocacy for US Acute Care Solutions in Canton, Ohio, and past chair of the ACEP Federal Government Affairs Committee.

purpose of guideline application.[3] In the 2016 SSC guidelines, sepsis equates to the established definitions of severe sepsis (infection + organ dysfunction, including hyperlactemia) and septic shock (hypotension ± lactate). The Quick Sepsis Related Organ Failure Assessment (qSOFA) did not inform any part of the guidelines. ACEP and other organizations did not support or endorse the Sepsis-3 definitions due to patient safety concerns.[4,5] The SSC guidelines acknowledged that:

1) There is insufficient data to apply the Sepsis-3 definitions to the guidelines.

2) Lactate is important and part of the established definition of severe sepsis (or sepsis in the guidelines). Additionally, the guidelines highlight the importance of lactate normalization. Both early monitoring and early management of hyperlactemia are key components of emergent resuscitation and patient care principles important in ACEP's decision to support the guidelines when it did not support the Sepsis-3 definitions.

Consistent with the law of unintended consequences, even when compatible care is provided, clinicians implementing Sepsis-3 definitions may appear to provide worse care than those using established definitions on national quality metrics (*see Table 1*). So now there are three definitions: the established definitions, the SSC definitions that are based on the established definitions, and the Sepsis-3 definitions (*see Table 1*). What a mess. Which ones do we use? I suggest that we use the established definitions for care.

Perhaps future prospective evaluation will support the use of Sepsis-3 and qSOFA. However, that should be played out in further academic work and not via national payment metrics.

New to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology is the replacement of numbers and letters with "strong or weak" recommendations followed by quality of evidence (*see Tables 2 and 3*). Best-practice statements (BPSs) are recommendations to which the committee felt GRADE criteria could not be applied but pass the "common sense" test (*see Table 4*).

Table 1: Comparisons of Established Definitions, Sepsis-3 Definitions, and SSC Guidelines

	ESTABLISHED DEFINITIONS *(used by CMS)*	SEPSIS-3 DEFINITIONS	SSC GUIDELINES
SEPSIS	Presumed/known infection + ≥2 systemic inflammatory response syndrome criteria	≥2 SOFA criteria (present or increased) Includes: hypotension + normal lactate (shock)	Sepsis = severe sepsis
SEVERE SEPSIS	Sepsis + end organ dysfunction, lactate >4 mmol/L	Not a category	"Sepsis" = established severe sepsis definition
SEPTIC SHOCK	Sepsis + refractory hypotension (± lactate)	Vasopressors and lactate >2 mmol/L	Sepsis + refractory hypotension (± lactate)
MORTALITY RATIO = OBSERVED MORTALITY / EXPECTED MORTALITY	Sepsis = low acuity Observed mortality low / Expected mortality low	Sepsis = higher acuity Observed mortality higher / Expected mortality low	NA

Mortality ratio, national quality metrics based on established definitions (expected mortality). When clinicians apply a low-acuity diagnosis (sepsis) to a higher-acuity patient (Sepsis-3 definition of sepsis), the observed mortality will be higher than expected. Results in similar care appearing worse based on different definitions applied to the same patients.

Table 2: Determining Strength of Recommendations[1,2]

RECOMMENDATION STRENGTH	STRONG	WEAK
PATIENT OR DECISION-MAKER VIEW	Most would want the treatment, but some would not.	A majority would want the treatment, but many would not.
CLINICIAN	Most would do it.	Most would probably do it, but alternate choices are probably as good.

Table 3: Determining Quality of Evidence[1,2]

	HIGH	MODERATE	LOW	VERY LOW
QUALITY OF EVIDENCE	Experts: High-confidence recommendation	Experts: Confidence in recommendation not high, better than low	Experts: Low-confidence recommendation	Experts: Limited to no confidence in supporting data
EXAMPLES	RCT	Downgraded RCT	Well-done observational study	Downgraded study, expert opinion

ED-SPECIFIC RECOMMENDATIONS AND CHANGES

Early goal-directed therapy (EGDT) is no longer recommended. Specifically, given no benefit in the general population of septic patients, central venous pressure (CVP), hematocrit, and central venous oxygen saturation ($ScvO_2$) goals are not encouraged. Additionally, given no demonstrated harm, combined with no evaluation of specific subgroups, there is no recommendation against using some of the goals if the clinician feels indications exist. The original EGDT trial was pivotal in changing the mindset of clinicians around the world regarding sepsis time sensitivity and highlighting emergency physicians as the resuscitation experts.[6] However, application over a decade later through three international randomized controlled trials (RCTs) and subsequent meta-analyses resulted in no difference between strict EGDT and usual care, with this important caveat.[7–9] All three trials had protocols providing early identification (1–2 hours from triage), early antibiotics (1–3 hours), early IV fluid (2.5–3 liters before starting EGDT), and early lactate measurement (30%–45% identified by lactate alone: normotension + lactate ≥ 4) (*see Table 5*). Institutions not having these protocols in place may not achieve equivalent findings.

FLUID RESUSCITATION

The guidelines recommend 30 mL/kg of fluid within the first three hours (strong recommendation, low quality of evidence). Denoting "low quality of evidence" demonstrates acknowledgement of limited data supporting this recommendation. This was a source of significant debate among committee members with strong opinions regarding the data on both sides. Data supporting the potential to do harm with excessive fluid administration were compared to data supporting potential harm regarding insufficient volume administration. Ultimately, it passed because, before randomization, ProCESS and ARISE used volumes consistent with 30 cc/kg and ProMISe used two liters in its usual care patient populations (*see Table 5*). Additionally, other observational evidence was supportive.[10,11] However, growing information regarding diastolic dysfunction, right ventricular dysfunction, and obesity may require reconsideration of fluid volume in the next iteration.[12,13] In most 70 kg patients, two liters may be a reasonable start. However, limited data exist in 300 kg patients; nine liters is potentially too aggressive.

SUBSEQUENT HEMODYNAMIC ASSESSMENT

To summarize, after the initial fluid challenge, most physicians would reevaluate complex patients prior to administering more fluid (*see Table 6*). When available, use of dynamic over static variables for fluid responsiveness is advised.[14] Finally, using CVP alone to determine fluid responsiveness is not justified. Emergency medicine in the United States is a leader in the use of ultrasound and other noninvasive strategies to direct emergent resuscitation. However, this is not consistent globally, where many clinicians struggle to provide the best care they can in resource-limited areas.

LACTATE

The guidelines suggest guiding resuscitation to normalize lactate. Serum lactate is not a direct measure of tissue perfusion. There are patient populations in which lactate may not represent physiologic decline, for example, those with decreased clearance (liver dysfunction) and type B lactic acidosis, such as with beta-adrenergic stimulation from endogenous or exogenous catecholamine (eg,

CONTINUED *on page 7*

Table 4: Criteria for Best-Practice Grade[1,2]

BEST-PRACTICE QUESTIONS/CRITERIA	ANSWER
Is the statement clear and actionable?	Yes
Is the message necessary?	Yes
Is the net benefit (or harm) unequivocal?	Yes
Is the evidence difficult to collect and summarize?	Yes
Is the statement better formally GRADEd?	No
Example: Septic shock is a medical emergency for which treatment and resuscitation should begin immediately.	

Table 5: Summary of ProCESS, ARISE, and ProMISe: Components of Usual Care Resuscitation

Element	ProCESS	ARISE	ProMISe
Hours to identification	1.5	1.3	1.7
Identification by lactate alone	45%	30%	45%
Hours to antibiotics	76% <3 hours	1.2	1.3
Fluids prior to randomization (liters)	2	2.5	2
Fluids 0–6 hours (liters)	2.8	1.7	2.0

Table 6: Resuscitation Guidelines Summary

RESUSCITATION GUIDELINES	GRADING
Screening protocols	BPS
Early intravenous fluids (30 cc/kg)	SR, LQE
Hemodynamic reassessment guides continued fluid administration	BPS
Use dynamic or static variable when available	WR, LQE
MAP $\leq$ 65 mmHg; vasopressors, dynamic variables	SR, MQE
Lactate normalization	WR, LQE
IV antibiotics initiation as soon as possible, within one hour for sepsis or severe sepsis	SR, MQE
Blood cultures before antibiotics	BPS
May consider steroids with persistent fluid/ vasopressor-resistant hypotension	WR, LQE
Low tidal volume strategy in non–acute respiratory distress syndrome septic patients	SR, HQE

BPS = best-practice statement; SR = strong recommendation; WR = weak recommendation; HQE = high quality of evidence; MQE = moderate quality of evidence; LQE = low quality of evidence

epinephrine). In limited patient populations demonstrating consistent physiologic stability, persistent therapies focused on lactate reduction may not be beneficial. However, this is a diagnosis of exclusion to be evaluated within specific clinical context and should not be initially applied to patients presenting in distress. The data overwhelmingly support an association between hyperlactemia and mortality. Increased mortality is reported in patients with or without hypotension, and some data support a dose-response curve.[15–18] Any lactate reduction is associated with sequential survival benefit in compromised patients and is the initial step toward the goal of normalization.

ANTIBIOTICS

The guidelines recommend IV antibiotic administration as soon as possible after recognition and within one hour for sepsis and septic shock (strong recommendation, moderate quality of evidence). This recommendation was based upon data demonstrating increased mortality for every hour of delay in antibiotic administration for infected patients with organ dysfunction and/or shock.[19,20] These are patients in distress, most especially those in septic shock. However, a meta-analysis reported no benefit of rapid antibiotic administration. Although several poor-quality studies were included, the meta-analysis called into question the one-hour target. Ultimately, the recommendation of antibiotics within one hour for both sepsis and septic shock was considered "a reasonable minimal target" based upon the largest highest-quality studies in the meta-analysis. It is currently unclear, especially in sepsis compared to septic shock, if antibiotic administration within one hour is better than within three. Current Centers for Medicare & Medicaid Services (CMS) guidance is to administer antibiotics as soon as possible and within three hours of sepsis or septic shock diagnosis.

Although the guideline-drafting process has improved, it still is subject to the weakness of human interpretation and available data at the time of analysis. Guidelines cannot replace clinical acumen or negate our responsibility to consider unique patient variables or physiology. Emergency medicine should continue to contribute innovation to the areas of resuscitation, including:

- The screening of infected patients for the potential of decline
- Fluid volume and time endpoints, including methods of fluid-responsiveness assessment
- Use of biomarkers, including lactate
- The impact of time to antibiotics with respect to severity of illness

EGDT is no longer recommended. Specifically, given no benefit in the general population of septic patients, CVP, hematocrit, and $ScvO_2$ goals are not encouraged.

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THE SUBTLETY OF NEONATAL MENINGITIS

BIG DISEASE IN A TINY HOST

BY PINGCHING N. KWAN, MD, FACEP, AND TYLER J. WILLIAMS

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The Case

An 11-day-old female neonate with a chief complaint of jaundice was brought to the emergency department by her father. Other symptoms included spitting up with feeding and tactile fever. The patient's birth history was significant for a full-term vaginal delivery to a mother who was group B streptococcus (GBS) positive during delivery. The father stated that his daughter had been very "good" since birth, had been very "calm," and almost never cried. On physical examination, the neonate appeared toxic, listless, and jaundiced and was actively vomiting. The initial workup in the emergency department included urinalysis, complete blood count (CBC), and chest X-ray, all of which were unremarkable except for total bilirubin of 19 mg/dL.

Given the child's presentation, age, and birth history, bacterial meningitis was suspected, and a lumbar puncture was suggested. The child's mother, whom the father was talking to over the phone, initially refused the procedure. However, after extensive discussion about the reasons the procedure was indicated and the low rates of complications associated with the procedure, the child's mother was convinced, and verbal consent was obtained. The lumbar puncture was performed, and a scant amount (1 mL) of cerebrospinal fluid (CSF), which appeared to be xanthochromic and turbid, was obtained. The child was listless during the procedure. The fluid was sent for analysis and culture, and the child was started on empiric ampicillin and ceftazidime for suspected bacterial meningitis. The child was admitted to the NICU. CSF analysis and culture confirmed the diagnosis of Escherichia coli meningitis. E. coli was sensitive to cephalosporins.

PHOTOS: PINGCHING N. KWAN

Figure 1 (TOP): Sagittal brain MRI demonstrating a focal area of ischemia (arrow) secondary to meningitis.

Figure 2: Sagittal brain MRI. The ring-encasing lesion (arrow) is demonstrative of subdural empyema in the midbrain secondary to bacterial meningitis.

During her hospital course in the NICU, the child subsequently developed persistent seizures and hydrocephalus. A cranial MRI demonstrated ischemic damage to the brain secondary to meningitis (*see Figure 1, arrow)* as well as a ring enhancing area in the midbrain (*see Figure 2, arrow*) representing a subdural empyema. The child was treated with five weeks of IV antibiotics. Unfortunately, her neurological prognosis remains poor.

Discussion

Neonatal meningitis is most commonly caused by vertical transmission of GBS (Streptococcus agalactiae) during delivery, implicated in nearly 50 percent of all cases. Other common pathogens include E. coli and Listeria monocytogenes.[1] The cumulative incidence of meningitis is highest in the first month of life and is higher in preterm neonates than term neonates.[2] Patients may present with difficulty feeding, apnea, bradycardia, hypotension, irritability, or lethargy. Stupor and irritability are common in late-onset meningitis as are neurological complications. A 2015 study demonstrated that central nervous system complications associated with late-onset GBS meningitis, such as hydrocephalus, epilepsy, subdural empyema, and ischemia, may be underestimated.[3]

Serious complications can develop rapidly and include cerebral edema, hydrocephalus, hemorrhage, ventriculitis, cerebral infarction, and cerebral abscess formation. Cerebral abscess, such as subdural empyema, can be seen in as many as 13 percent of cases of neonatal meningitis.[4] It is a life-threatening condition, causing up to 25 percent of all intracranial infections, with a mortality rate of 4.4–24 percent.[5] Signs and symptoms in a neonate include mental status changes, vomiting, and irritability. Treatment should include surgical drainage and triple antibiotic therapy with nafcillin or vancomycin, plus a third-generation cephalosporin and metronidazole. Prognosis is dependent upon the time to surgical intervention as a delay in surgery of 72 hours has been shown to result in 70 percent disability rate as opposed to 10 percent when surgery is performed within 72 hours.[6] Complications associated with subdural empyema include seizures, increased intracranial pressure, cerebral infarction, and hydrocephalus.

In the process of diagnosing neonatal meningitis, it is important to keep in mind the possibility of abnormal laboratory studies. A 2006 evaluation of 9,111 neonates with culture-proven bacterial meningitis was performed to determine the correlation between CSF parameters and blood tests. This study demonstrated that 17.3 percent of the 8,312 neonates who had CBC data available had white blood cell (WBC) counts that were within normal parameters (3,000–10,000/mm3) and that the use of peripheral WBC count as a predictor for meningitis had a positive likelihood ratio of <1.0.4 Workup requires CSF cultures, as 15–30 percent of CSF-proven meningitis can be associated with negative blood cultures.[7]

Neonatal meningitis is a devastating infection that is often difficult to diagnosis due to physical signs being fairly subtle in the neonate. Therefore, lumbar puncture must be performed promptly to confirm the diagnosis.[2] However, obtaining consent for lumbar puncture in the pediatric population can sometimes be problematic. Arguably one of the most difficult scenarios experienced in the emergency department is parents declining consent to procedures that are in the best interest of their child. Research has been pursued to determine the initial reasons behind parental dissent. A qualitative analysis in two hospitals in the United Arab Emirates published in 2012 involving 55 families found that 24 families (44 percent) refused lumbar puncture. The primary reasons for refusal included fear of paralysis as a result of the procedure, pain, perception of the lumbar puncture being unnecessary, and a distrust of motives behind the consent.[8]

Both the American Academy of Pediatrics and ACEP endorse the principle that treating a minor for an emergent condition should not be delayed solely due to difficulties in obtaining consent.[9] An approach described in the Textbook of Pediatric Emergency Procedures suggests a discussion on the need for the procedure, the relatively low risk of the procedure, and the reasons parents have for dissent. If discussion fails to convince parents to consent to the procedure, consider notifying the hospital attorneys, as the hospital could pursue protective custody and obtain a court order to perform the procedure.[9]

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DIVERSITY OF FACULTY = DIVERSITY IN THOUGHT

Including diverse speakers at ACEP meetings will encourage diversity at all levels

Diversity and inclusion are critical foci for ACEP and our specialty and should include all aspects of our organization. ACEP's work should represent and benefit our membership and should be representative of our membership. To that end, our educational programs are best served by making certain that the perspectives and opinions shared reflect our diverse membership. The importance of this concept is highlighted in the experiences of Tina Wu, MD, MBA, associate chief of service and director of quality improvement for the Ronald O. Perelman Center for Emergency Services for NYU Langone Medical Center, assistant professor at NYU School of Medicine, and a physician at Bellevue Hospital Center and the Hospital for Joint Diseases, all in New York City.


Tina Wu, MD, MBA

Dr. Wu recently sat down with ACEP Now Medical Editor in Chief Kevin Klauer, DO, EJD, FACEP, to discuss her experience at ACEP's Emergency Department Directors Academy Phase 1 meeting held Nov. 14–18, 2016, in Dallas.

KK: You noticed something that concerned you regarding the Directors Academy Phase 1. Tell me about that concern.

TW: I do want to mention that I think the ED Directors Academy was very well-run. I do encourage people who are interested in leadership to attend. I noticed on the first day that there were no women or minority speakers. Some of the names of the future speakers could have been female, so I waited until day three when it became evident that there were no speakers who were women or minorities. We'd just received a lecture that was specifically on diversity with legally interviewing, hiring, and terminating, and so I found it striking to have five days, six to eight hours a day, of speakers talking about inclusion, diversity, and non-hostile environments and to not have a diverse speaker panel.

KK: That makes sense, and you're raising an important topic. Let's step back for just a moment if we can. I wanted to ask you in general your feelings about diversity and inclusion in emergency medicine. Do you feel your opportunities have been limited despite the great experiences you've had?

TW: It's less about limitations per se but more about perception. One of the questions that someone asked at the ED Directors Academy was, "If I have two candidates and one is a minority but less qualified, what should I do?" The way that people frame these questions and the way that people say, "Oh, we should give people a chance," is already putting them at a disadvantage. The reality is when you look at all sorts of leadership papers and one book, The Leadership Machine, they note that motivation and behavioral competency make up about 70 percent of the major factors that contribute to success in a job, whereas 20 percent is experience and 10 percent is functional or technical competencies. So when people say, "Oh, this person wasn't qualified," that doctor is usually interviewing them for only 30 minutes or an hour after looking at their CV.

KK: Do you think when people make these statements this displays their subconscious bias?

TW: I completely agree. We all have subconscious biases when we look at patients. That's how the world works. Our mind works in stereotyping people, and that's how we survive.

KK: I think if people are open to considering other people's perspectives, and you bring it to their attention that there is a gap between what they are thinking or saying and what others are thinking or saying, then they have an intellectual choice to decide how to conduct themselves. However, when there is subconscious bias, there is not awareness of any choice to be made. First, we need to recognize subconscious biases exist and then make certain that those biases do not impact the way we interact with others.

TW: Right, absolutely. Diversity and inclusion are not just a numbers game or to make a politically correct workplace. I think that women and minorities are able to bring diversity to the table and treat patients, maybe, in a way that a homogeneous group could not.

KK: In your professional roles, can you give me a sense, on average on a daily basis, how often you experience some sort of issue with diversity and inclusion? That could be either an insensitive comment, a decision made that is not representative of a population you are working with, or other examples.

TW: I don't think it's necessarily about outward discrimination or outward biases, but it does happen. I was in the pediatric ED and I introduced myself to a 3-year-old and I said, "Hi, my name is Dr. Wu. What is your name?" He said, "You can't be a doctor. You're a girl." You speak to any female or a lot of young doctors, and you'll find that they may be mistaken for a patient care assistant, nurse, or registration clerk. Every day I'm aware of it in everything that I say and everything that I do. The way that I dress, the way that I carry myself, my hand motions, how I speak, whether I'm too aggressive or not aggressive enough, whether I'm smiling or not smiling, my type of shoes—it's everything.

KK: You're obviously a strong, successful female emergency physician who seems unaffected by such influences, but look at all the things you do. Is it possible that over time you develop a certain acceptance and tolerance of this issue because you have no other choice?

TW: That's a good question. I think it's unfair. There are a lot of things unfair in this world. I was reading a book, The Well-Spoken Woman, and one of the things that struck me was that when women speak, people look and then listen, but when men speak, they listen. Such bias is reflected, for instance, in the number of times that people comment on what a woman is wearing or their hair. Women do the same thing. Women comment on women's hair and makeup, so we do have to try to mitigate that and acknowledge that this exists. There are biases in the world that exist, and as much as people and I would like to kick and scream about promotions being on merit and success and being purely on functional and technical competency, it's not the way the world works.

KK: Your comments really help illustrate how many of us see our colleagues, like you, who manage it well, thus we don't realize some of the accommodations you've had to make for others in the world who may impose subconscious biases on others. I'm looking forward to the day when you don't have to pay such close attention to your hand gestures or exactly what outfit you choose for that day or if you're being too assertive or not assertive enough. Why can't you just be you?

TW: It speaks to the point of the importance of having a more diverse leadership group that is nationally recognized because then you start to break down those barriers. It's not just about putting a female out there and making us talk; it's actually about the audience seeing different types of leaders. There are different types of leadership out there, but when you're only used to seeing one type of leader, it may bias everything you do.

KK: Let's go back to the ED Directors Academy for a minute. At what moment did you say, "I need to say something to somebody," and what prompted you to do that?

TW: I think what prompted me to do that was I felt like I could change things. I really did. I really did think that my voice made a difference. That was what prompted me to speak up about it. I didn't think it was outright racism or anything that was malicious at all. I thought it was just an oversight. When you point out these oversights, people say, "Oh my goodness, we'll change this for next time." I don't complain without doing something about it. I hear complaints, as medical directors hear a lot of complaints about the ED, and I use that as an opportunity to do something about it.

KK: So you went to Robert Strauss Jr., MD, FACEP, who's a great guy and who's been running that program since its inception, and he was pretty receptive to your concerns?

TW: Absolutely. I think he was very, very receptive. He wasn't defensive at all, and I was very, very glad about that reception. He didn't try to make excuses; he was just very open to changing it for the future.

KK: This has been discussed at the ACEP Board level, and the ACEP Education Committee is actively engaged in evaluating and addressing this issue. I think it was wonderful that you brought this up in a constructive way. There have even been changes made for this course and for all future educational offerings.

THE BREAK ROOM

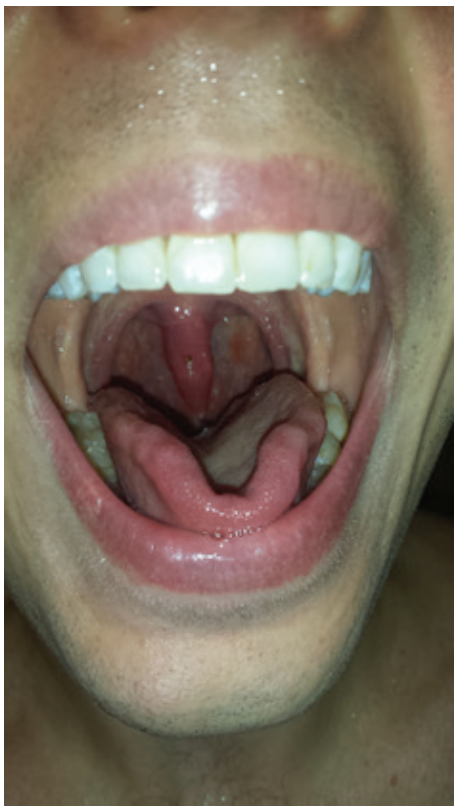
DIVERSITY ESSENTIAL IN TIME OF UNCERTAINTY

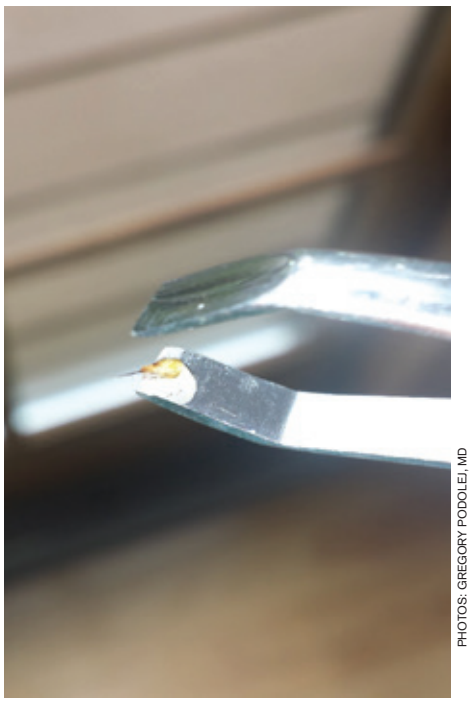
Recent news events, including a travel ban encompassing seven majority Muslim countries and the proposal to build a wall on the southern border, have initiated a sense of uncertainty among residents in the United States. This uncertainty can lead to feelings of isolation, frustration, and fear. Considering the diversity of our country, departmental staff, and patient population, it is important that we foster broad and inclusive practices to show support and solidarity for not only our colleagues but also our patients who are being directly affected by this ordeal. It is arguably more imperative now than ever to promote diversity and inclusion, to celebrate our global communities, and to show our advocacy in the emergency medicine field. Tasks such as coordinating opportunities in which residents may express their concerns and providing resources to help manage new hurdles can make an immense difference during these tenuous moments. As an immigrant, a US combat veteran, woman, and Mexican-American emergency medicine doctor, I invite all residency programs to accept these uncertain times as an opportunity to improve on their approach and fulfillment of diversity and inclusion.

Thank you.

— Maria V. Gomez, MD
Chicago, Illinois

SEND YOUR THOUGHTS AND COMMENTS TO ACEPNOW@ACEP.ORG





PHOTOS: GREGORY PODOLEJ, MD

Figure 1 (left): Dr. Podolej's uvula with the bee stinger embedded in the mucosa.

Figure 2 (above): The bee stinger with attached empty venom sac after removal.

UVULA | CONTINUED FROM PAGE 1

my thumb (*see Figure 1*)! Thankfully I wasn't having any other symptoms except throat pain and massive uvular edema. I drank a glass of cold water to see if it would help, but I was still in a lot of pain. I closely reexamined my uvula and noticed a small black foreign body that was embedded in the mucosa. I thought to myself, "Could that really be what I think it is?" I grabbed some tweezers, gave it a tug, and sure enough, out came a bee stinger with an attached empty venom sac (*see Figure 2*). I quickly decided it might be best to be in a health care environment in case things got worse. I threw Betadine, a scalpel, a bougie, and an endotracheal tube in the front seat of my car and drove to the hospital.

The Buzz on Bee Stings

Hymenoptera are stinging insects that are grouped into three families: Apidae (honeybees, bumblebees), Vespidae (wasps, hornets, yellow jackets), and Formicidae (ants).[1] Bee stingers have microscopic barbs that keep the stinger buried in tissue. When the bee flies away, the stinger is avulsed (along with part of the abdomen), and the bee eventually dies. Therefore, bees can only sting once. Wasps, on the other hand, have smooth stingers that allow them to sting a victim several times.

Hymenoptera stings cause more deaths in the United States than any other envenomation. Reactions range from a local inflammatory response to full-blown anaphylaxis.[2] Bee stings to the oropharynx, especially the uvula, are exceedingly rare.[3,4] Clinicians should have increased suspicion of airway compromise and be exceedingly conservative in the management of oropharyngeal hymenoptera stings because even a local reaction can cause significant airway compromise. It is crucial to perform a careful pharyngeal exam, and it is prudent to remove the stinger if possible.

It is important to emphasize that any patient presenting with anaphylaxis, hypotension, bronchospasm, or tracheo-laryngeal edema (not from direct sting to the area, as in my case) should be referred for venom immunotherapy (VIT).[5] This is also true of adolescents older than 16 who present with urticaria or angioedema.[5] VIT has been effective in reducing the allergic response in subsequent venom exposures, which can be lifesaving.[6]

Case Resolution

I never ended up checking into the emergency department. After curbsiding one of my colleagues for a quick exam, I felt silly wasting their time. I thought to myself, "What would I do for a similar patient without anaphylaxis? Diphenhydramine, ranitidine, steroids, maybe epinephrine, and probably admission for observation?" I had a night shift later that evening and didn't want to be admitted or receive any medications that would require my being observed.

My symptoms were stable. I worked my night shift without any symptoms except for a sore throat and a funny-sounding voice.

Needless to say, this experience could have been much worse. If I were allergic to bees, I don't know that I would have made it home without airway collapse. I also don't recommend the treatment option I chose. I know that emergency physicians are very stoic and wait until the last possible moment to seek treatment, but although we can manage almost any condition, I think it is equally important to know when to let someone help you.

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Fixing Hyponatremia While Avoiding Catastrophe

Assess the rapidity of onset of hyponatremia and diagnose the underlying cause

by ANTON HELMAN, MD, CCFP(EM), CAC, FCFP

Hyponatremia is the most common electrolyte abnormality seen in clinical practice. Not only is it found in about 20 percent of hospital admissions, but hyponatremia is an independent predictor of mortality. Part of the reason for this is, unfortunately, iatrogenic because misguided efforts to correct hyponatremia can be devastating for the patient and are a common reason for medical-legal action. Overcorrection can put patients at risk for osmotic demyelination syndrome (ODS), formerly known as central pontine myelinolysis.

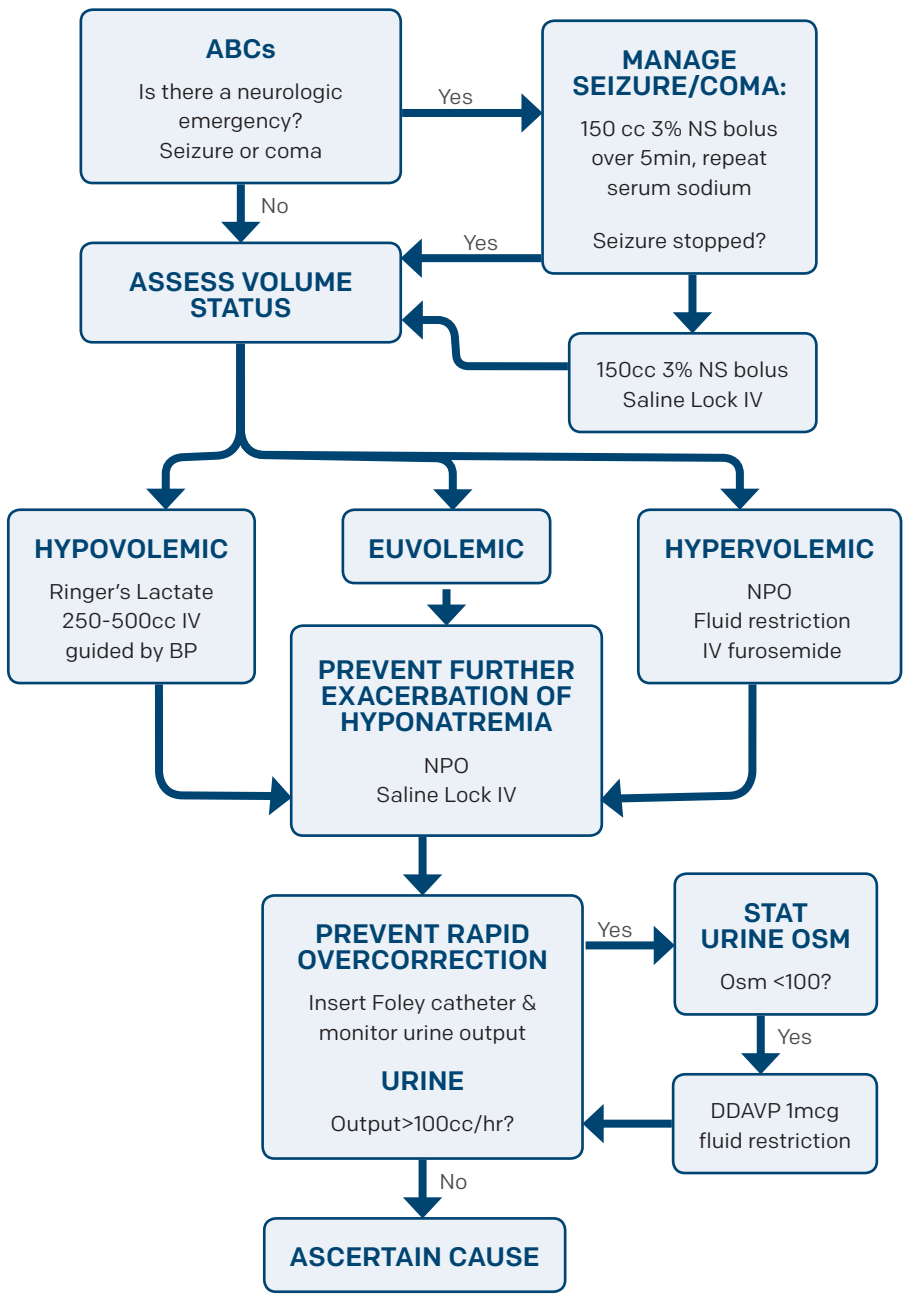
There are two factors that influence how symptomatic a patient will be from hyponatremia: severity of hyponatremia and the acuity of onset. The lower the sodium and the faster the fall, the more symptomatic a patient will become. The rapidity of onset is important to ascertain because aggressive rapid correction of a slow-onset hyponatremia is more likely to result in complications. Symptoms are often vague and nonspecific and include headache, irritability, lethargy, confusion, agitation, and unstable gait leading to a fall. Thus, hyponatremia is often discovered incidentally on "routine" blood work.

Step-Wise Approach to Managing Hyponatremia

1. Treat neurologic emergencies related to hyponatremia. In the event of a seizure, coma, or suspected cerebral herniation as a result of hyponatremia, 3% hypertonic saline 150 mL IV over five to 10 minutes should be administered as soon as possible. If the patient does not improve clinically after the first bolus, repeat a second bolus of hypertonic saline. It is important to stop all fluids after the second bolus to avoid raising the serum sodium any further. If hypertonic saline is not readily available, administer one ampule of sodium bicarbonate over five minutes.

2. Defend the intravascular volume. In order to maintain a normal intravascular volume, the patient's volume status must first be estimated. Although volume status is difficult to assess with any accuracy at the bedside, a clinical assessment with attention to the patient's history, heart rate, blood pressure, jugular venous pressure, the presence of pedal and sacral edema, the presence of a postural drop, and point-of-care ultrasound is usually adequate to make a rough estimation of whether the patient is significantly hypovolemic (requiring fluid resuscitation) or significantly hypervolemic (requiring fluid restriction or diuretics).

Figure 1: Algorithm for Managing Hyponatremia in the Emergency Department



In a patient who is hypovolemic and hyponatremic, the priority is to restore adequate circulating volume. This takes priority over any concerns that the hyponatremia might be corrected too rapidly and lead to ODS.

Which type of fluid is best? Ringer's lactate has a sodium concentration of 128 mmol/L, which is more isotonic to the hyponatremic patient. Administering Ringer's lactate will likely result in a slower rise in serum sodium than normal saline and therefore have a lower risk of causing ODS. I therefore recommend Ringer's lactate as the fluid of choice for resuscitation of the hypovolemic/hyponatremic patient.

For hyponatremic patients deemed to be hypervolemic, management includes sodium restriction, free water restriction, and diuretics.

Euvolemic patients with hyponatremia do not require any particular treatment to defend intravascular volume, and management should concentrate on preventing worsening hyponatremia. The syndrome of inappropriate antidiuretic hormone (ADH) secretion (SIADH) is hyponatremia and hypo-osmolality secondary to secretion of ADH despite normal or increased plasma volume. This results in impaired water excretion. It is important to understand that SIADH is a result of an excess of water rather than a deficiency of sodium. SIADH is usually caused by a medication, cancer, respiratory illness, or central nervous system illness.

3. Prevent worsening hyponatremia. After restoring adequate circulating volume, the goal is to prevent further exacerbation of the hyponatremia by strict fluid restriction and an IV saline lock. It is vital to communicate this to the patient's family and health care team. Water can literally kill the patient!

4. Prevent rapid overcorrection: the rule of 10os. It is important to understand that the fluid itself that is given to the hyponatremic patient is not the cause of a rapid increase in the serum sodium but rather the free water diuresis that results shortly afterwards. Thus, monitoring the urine output is key in preventing overcorrection and possible complications. To prevent rapid overcorrection:

1. Insert a urinary catheter and monitor ins and outs.
2. If urine output >100 cc/hour, send a STAT urine osmolarity and sodium.
3. If urine osmolarity <100, consider 1 mg desmopressin (DDAVP) IV.
4. Continue following steps 2–4 as per urine output.

Correcting Hyponatremia: the Rule of 6s

"Six in six hours for severe symptoms, then stop. Six a day makes sense for safety."

If you need to rapidly increase serum sodium due to a neurological emergency, do not correct more than 6 mmol. Do not exceed an increase of sodium of more than 6 mmol/day. While different sources will cite different ranges, targeting six is a conservative approach.

Ascertain the Cause of Hyponatremia

- Assess the chief complaint: Search for conditions that can increase output or decrease intake such as vomiting and diarrhea, pain, or altered level of awareness.
- Review the medication list: Search for those that cause SIADH, especially thiazide diuretics and selective serotonin reuptake inhibitors. Patients who have been on chronic steroids may have adrenal insufficiency as a cause for their hyponatremia.
- Evaluate the past medical history: Look for a history of end organ failure (congestive heart failure, liver failure, or renal failure) or cancers (a common cause of SIADH).
- Evaluate the lab work: Assess the glucose (hyperglycemia), potassium (hyperkalemia may suggest adrenal insufficiency), and thyroid-stimulating hormone (hypothyroidism).

Next time a weak and dizzy older person presents to your emergency department with a serum sodium concentration in the boots, simply follow this algorithm (see Figure 1) so that your patient will make a smooth recovery and you won't be asked by the admitting physician a week later, "Do you remember that hyponatremic patient you saw the other day?"

Thanks to Dr. Melanie Baimel and Dr. Edward Etchells for their contributions to the EM Cases podcast that inspired this article.

ONE MORE REASON NOT TO ORDER AN X-RAY

SOUND ADVICE

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The Ultrasound-Guided Serratus Anterior Plane Block

An opioid-sparing technique for acutely managing patients in the emergency department with rib fractures

by ARUN NAGDEV, MD; DANIEL MANTUANI, MD, MPH; EDWARD DURANT, MD; & ANDREW HERRING, MD

Pain management of the acutely injured patient with rib fractures can be difficult for even the most experienced emergency physician. Severe pain from multiple rib fractures (or even one) can impair ventilatory function, decreasing the ability to clear respiratory secretions and increasing rates of nosocomial pneumonias.[1,2] A multimodal approach to pain control via intravenous medications (eg, opioids, ketamine, acetaminophen, etc.) is reasonable but often insufficient. Epidural analgesia, recommended strongly by trauma guidelines for patients with multiple rib fractures, is often not acutely available in the emergency department. An opioid-sparing multimodal approach that integrates regional anesthesia is believed to be optimal for patients.[3] Alternatives such as intercostal blocks are time-intensive, involve multiple injections, are often more difficult to perform, and necessitate patient repositioning.[4] The ultrasound-guided serratus anterior plane block (SAPB) is a promising single-injection method to anesthetize the chest wall in patients with multiple rib fractures, providing optimal emergency department care.[1]

Anatomy and Innervation

The chest wall is innervated from the lateral cutaneous branches of the thoracic intercostal nerves (T2–T12). The thoracic intercostal nerves run with the intercostal artery and vein, just under the rib, traveling in an anterolateral direction. As the thoracic intercostal nerve reaches the midaxillary line, the lateral cutaneous branch of the intercostal nerve pierces the internal intercostal muscle, external intercostal muscle, and serratus anterior muscle to innervate the musculature of the thorax. The serratus anterior muscle is a readily visualized sonographic landmark, located posterior to the lateral edge of the pectoralis muscle and anterior to the lateral edge of the latissimus dorsi muscle *(see Figures 1A and 1B)*. The distal branches of the thoracic intercostal nerves (lateral cutaneous intercostal nerves) provide innervation to the lateral thoracic cage and lie in the fascial plane just superficial to the serratus anterior muscle *(see Figure 2)*. Placing large-volume dilute anesthetic solution into this potential space (formed by the serratus anterior muscle) is theorized to spread in a cephalad and caudal direction with patient respirations, providing analgesia for thoracic injuries (and specifically rib fractures).[5]

CONTINUED *on page 13*

Figure 1.

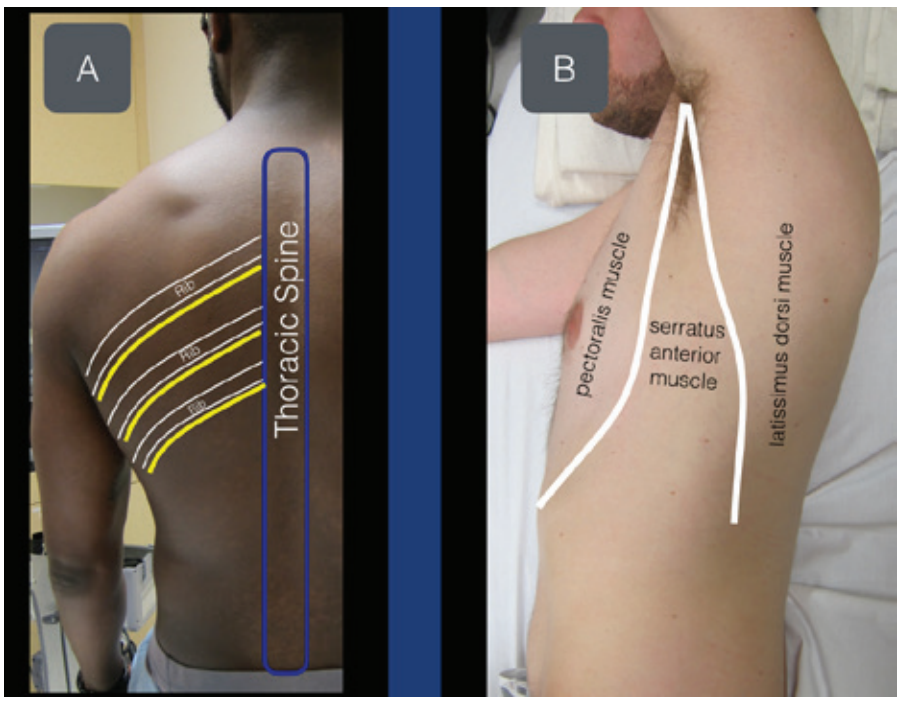


Figure 2.

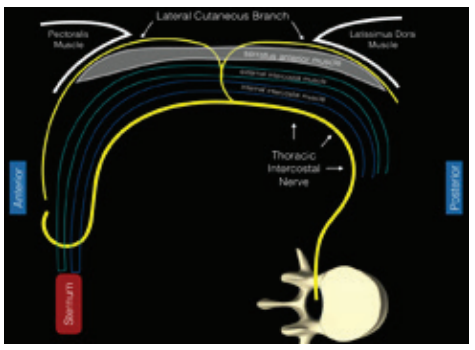


Figure 1A: View of the thoracic intercostal nerves as they exit the spine inferior to the ribs.
Figure 1B: The serratus anterior muscle sits between the pectoralis muscle (anterior) and latissimus dorsi muscle (posterior).

Figure 2: Schematic representation of the intercostal nerves as they travel from the thoracic spine. The distal lateral cutaneous branch exits at approximately the midaxillary line and pierces the internal intercostal muscle, external intercostal muscle, and serratus anterior muscle. The anterior fascial plane above the serratus anterior muscle acts as the target for this planar block.

Figure 3.

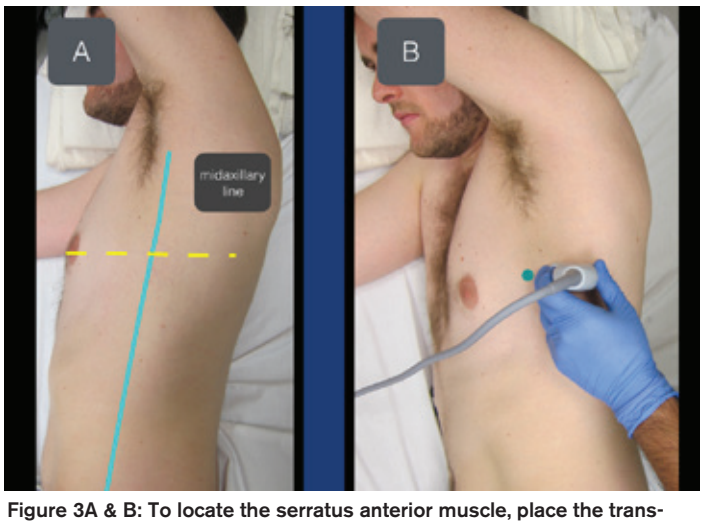
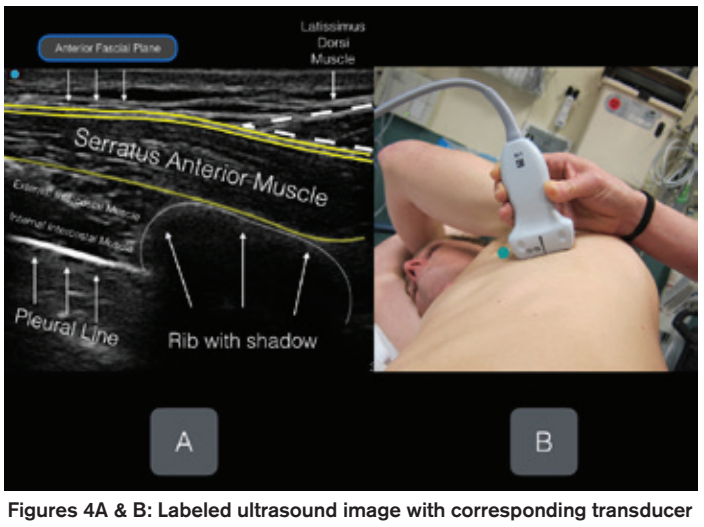


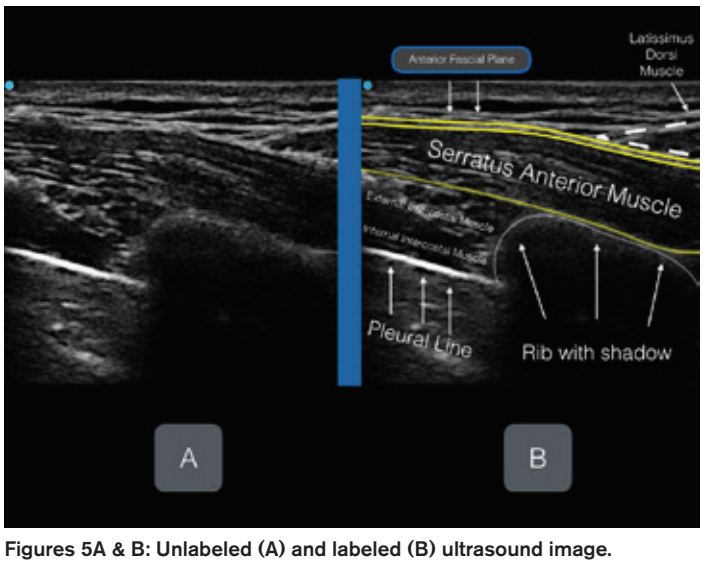
Figure 3A & B: To locate the serratus anterior muscle, place the transducer at the level of the nipple in the midaxillary line. The transducer marker (green dot) should point toward the nipple.

Figure 4.



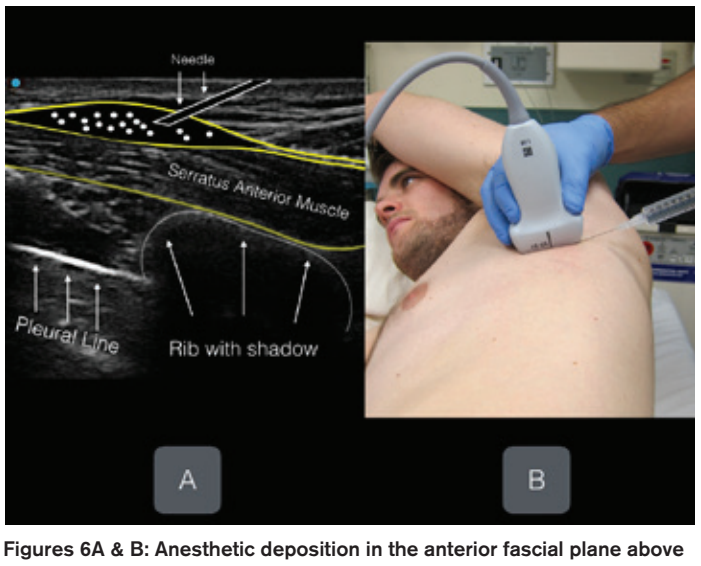
Figures 4A & B: Labeled ultrasound image with corresponding transducer positioning. Note the anterior fascial plane of the serratus anterior muscle. The goal of the planar block is to place anesthetic in this fascial plane.

Figure 5.



Figures 5A & B: Unlabeled (A) and labeled (B) ultrasound image.

Figure 6.



Figures 6A & B: Anesthetic deposition in the anterior fascial plane above the serratus anterior muscle.

SOUND ADVICE | CONTINUED FROM PAGE 12

Supplies

1. High-frequency linear transducer (13–6 MHz)
2. Anesthetic: 15 mL bupivacaine 0.5% (5 mg/mL; maximum 2 mg/kg) and 15 mL normal saline placed in a 30 mL syringe (note: in patients under 40 kg, please be aware of the need to lower the volume of anesthetic)
3. 22 g blunt-tip block needle or 20–22 g Quincke spinal needle
4. 91 cm or 36" tubing (or similar tubing)
5. Cleaning solution
6. 25–30 g needle for local skin wheal

Because of the large volume of dilute anesthetic planned to be deposited in the fascial plane above the serratus anterior muscle, we recommend a two-provider technique. In a 30 mL syringe, place a mixture of 15 mL 0.5% bupivacaine and 15 mL normal saline. Connect the needle to the tubing and prime the circuit to ensure all air is removed.

Procedure

1. Pre-block.

Whenever performing an ultrasound-guided nerve block, we recommend the patient be placed on continuous cardiac monitoring and pulse oximetry. Also, the operator should be aware of the possibility of local anesthetic systemic toxicity (LAST). The clinician should know the availability of 20% lipid emulsion therapy and dosing (lipidrescue.org).

2. Survey scan.

Moving acutely injured trauma patients is often not possible. In our experience, the following two patient positions have allowed for successful SAPB in all of our acutely injured patients.

Position 1: Lateral decubitus. Roll the patient in a lateral decubitus position (contralateral to the injury). If possible, ask the patient to place a hand behind the head.

Place a high-frequency linear transducer in the transverse plane (probe marker facing the nipple) at the level of the fifth rib (surface anatomy = approximately at the level of nipple) in the midaxillary line *(see Figures 3A and 3B)*. Ultrasound landmarks that will be easily recognized by clinicians with some chest sonography experience include the hyperechoic ribs (anechoic shadow) and the pleural line. Find these basic landmarks first and then slowly attempt to locate the more superficial soft tissue structures. The serratus anterior muscle (flat and elongated) lies just superficial to the ribs, with the intercostal muscles deeper and in between the bony ribs. The latissimus dorsi muscle will be seen superior and posterior to the serratus anterior muscle and can act as a nice landmark *(see Figures 4A and 4B and Figures 5A and 5B)*.

In some patients, a slight clockwise rotation of the transducer will allow for an improved cross-sectional view of the ribs and the pleural line.

Position 2: Supine. The SAPB can be performed with the patient in a supine position as well and may be ideal in cases of multitrauma or cervical spine injury or when the lateral decubitus position is not tolerated.

Place the transducer in the midaxillary line (probe marker facing the nipple) and locate the ribs (anechoic shadow), pleural line, and serratus anterior muscle (as above). The latissimus dorsi muscle may not be clearly visualized with the transducer in the more anterior position. Again, the fascial plane located on top of the serratus anterior muscle will be the target for anesthetic deposition.

3. Skin wheal.

After cleaning the area under and around the transducer, place an anesthetic skin wheal (3–5 mL lidocaine with epinephrine) posterior to the transducer with the patient in a lateral decubitus position and anterior to the transducer with the patient in supine position. Clean the area and apply a transparent dressing over the transducer.

4. Needle entry.

Inject the skin wheal with an in-plane approach, always noting the needle tip. Once the visualized needle tip is located just above the serratus anterior muscle, aspirate to confirm lack of inadvertent vascular puncture and slowly inject 1–2 mL of anesthetic solution. Fluid placed in the fascial plane will immediately spread away from the needle tip and open the fascial plane. Anesthesia placed incorrectly in the serratus anterior muscle will not separate the fascial plane. Once the fascial plane is clearly opened, aspirate, then gently inject 2–3 mL of dilute anesthetic solution in a sequential manner until all 30 mL of dilute anesthetic is injected *(see Figure 6)*. Ensure clear needle-tip visualization and lack of inadvertent vascular puncture during deposition of the entire dilute anesthetic volume. Clinicians should be aware that onset of analgesia is often longer for planar blocks; expect 15–30 minutes before onset of the block.

Unlike other nerve blocks that are classically thought to target a single nerve, the goal of the ultrasound-guided SAPB is to deposit a large volume of dilute anesthetic in a fascial plane. Anechoic anesthetic fluid will slowly spread with patient respirations and anesthetize the interconnected lateral cutaneous branches of the thoracic intercostal nerves.

Summary

Acute pain control in the emergency department for patients with multiple rib fractures can be a conundrum. A multimodal pain strategy that centers around the ultrasound-guided SAPB could offer significant pain relief without altering sensorium or respiratory drive. This ultrasound-guided planar block could alter the classic, and often ineffective, algorithm for the treatment of patients with acute rib fractures in the emergency department while maintaining vital pulmonary function.

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DOGMA FEELS RIGHT UNTIL YOU STEP IN IT

SKEPTICS' GUIDE TO EMERGENCY MEDICINE

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Hydrocortisone and Sepsis

Prevention methods for septic shock

by KEN MILNE, MD, MSC, CCFP-EM, FCFP, FRRMS

The Case

A 70-year-old man with a history of hypertension and type 2 diabetes presents to the emergency department from home with fever, cough, and shortness of breath for two days. He is a nonsmoker and was immunized against influenza in the fall. Vitals at triage are temperature 102.7°F, blood pressure 105/61 mmHg, heart rate 118 bpm, respiratory rate 22 bpm, and oxygen saturation 89% on room air. The chest X-ray confirms pneumonia. The nurses have already established two intravenous (IV) lines of normal saline and provided supplemental oxygen via nasal cannula that corrects his hypoxia. He is also receiving appropriate antibiotics. His blood pressure begins to drop but responds to IV fluids. You wonder if IV hydrocortisone would provide any additional benefit.

Background

The Surviving Sepsis Campaign recently published its 2016 guidelines. It continues to give a weak recommendation for the use of intravenous hydrocortisone at a dose of 200 mg per day in patients with refractory septic shock (ie, inadequate response to fluid resuscitation and vasopressor therapy); this is based on low-quality evidence. As stated by the campaign:

We suggest against using IV hydrocortisone to treat septic shock patients if adequate fluid resuscitation and vasopressor therapy are able to restore hemodynamic stability. If this is not achievable, we suggest IV hydrocortisone at a dose of 200 mg per day (weak recommendation, low quality of evidence).

Clinical Question

In adult patients with severe sepsis, does the use of IV hydrocortisone prevent the development of septic shock?

Table 1: Key Results of the HYPRESS Trial

OUTCOME	PLACEBO ARM	HYDROCORTISONE ARM	p VALUE
Septic Shock	22.9%	21.2%	0.70
28d Mortality	8.2%	8.8%	0.86
30d Mortality	16.7%	19.9%	0.44
180d Mortality	22.2%	26.8%	0.32
Secondary Infections	16.9%	21.5%	0.26
Weaning Failure	8.5%	8.6%	0.96
Muscle Weakness	23.8%	30.7%	0.16
Hyperglycemia	81.5%	90.9%	0.009
Delerium	24.5%	11.2%	0.01

Reference

Keh D, Trips E, Marx G, et al. Effect of hydrocortisone on development of shock among patients with severe sepsis: the HYPRESS randomized clinical trial. JAMA. 2016;316(17):1775-1785.

- **Population:** Adult patients in intermediate care units or intensive care units.
  - **Inclusion:** Evidence of infection, at least two SIRS criteria, and organ dysfunction present for not longer than 48 hours.
  - **Exclusion:** Septic shock, younger than 18 years of age, hypersensitivity to hydrocortisone or mannitol, history of regularly on glucocorticoids, pregnant, breastfeeding, moribund, or had a do-not-resuscitate order.
- **Intervention:** 50 mg IV bolus of hydrocortisone, followed by a continuous infusion of 200 mg/24 hours for five days followed by dose tapering until day 11.
- **Comparison:** Placebo (mannitol).
- **Outcome:**
  - **Primary:** Development of septic shock (defined as hypotensive despite adequate fluid resuscitation or needing vasopressors for more than four hours) within 14 days.
  - **Secondary:** Time until septic shock or death (whichever came first); mortality in the ICU and hospital; mortality at 28, 90, and 180 days; duration of stay in the ICU and hospital; Sequential Organ Failure Assessment score; duration of mechanical ventilation; renal replacement therapy; and frequency of delirium.
  - **Adverse Events:** Development of secondary infections, weaning failure, muscle weakness, gastrointestinal bleeding, and hyperglycemia.

Authors' Conclusions

"Among adults with severe sepsis not in septic shock, use of hydrocortisone compared with placebo did not reduce the risk of septic shock within 14 days. These findings do not support the use of hydrocortisone in these patients."

Key Results

In the study, 380 adult patients were randomized to receive hydrocortisone (n = 190) or placebo (n = 190). The mean age was 65 years, with 65 percent being male.

There was no statistical difference in developing septic shock within 14 days in the placebo arm versus the hydrocortisone arm (difference, –1.8%; 95% CI; –10.7% to 7.2%; P = .70). There was no statistical differences in mortality at 28, 90, or 180 days. More delirium was noted in the placebo arm versus the hydrocortisone arm. There was no statistical difference in adverse events except more episodes of hyperglycemia in the hydrocortisone arm versus the placebo arm (see Table 1).

EBM Commentary

1) Power: One issue with the study is its power to detect a difference. It was designed to detect an absolute difference of 15 percent between the hydrocortisone group and placebo group with a significance level of 0.05 (P value) and power of 0.8. It only found a 1.8 percent difference favoring hydrocortisone that was not statistically significant. Perhaps, a larger sample size would have confirmed this difference. It also assumed 40 percent of the patients in the placebo group would have septic shock, but the observed rate was only 23 percent. As prevalence goes down, the required sample size goes up. In the end, this resulted in an underpowered study.

2) Measurement Bias: Another issue is measurement bias. Progression from severe sepsis to septic shock is not a very precise measure and exists on a continuum. It is somewhat subjective despite being based on quantitative measures.

3) Clinical Versus Statistical Significance: One of the most important problems with this study is the issue of clinical versus statistical significance. Even if the study was properly sized to detect a smaller difference that was statistically significant, it may not be clinically significant. Progression from severe sepsis to septic shock is a disease-oriented outcome, not a patient-oriented outcome like mortality.

This underpowered study failed to detect a statistical difference in a surrogate marker between IV hydrocortisone and placebo in adult patients with severe sepsis.

Bottom Line

The use of IV hydrocortisone cannot be recommended at this time to treat adult patients with severe sepsis in order to prevent septic shock.

Case Resolution

You choose not to start IV hydrocortisone but continue with IV fluids, IV antibiotics, and supplemental oxygen.

Thank you to Dr. Salim Rezaie from REBEL EM for his help with this review. Dr. Rezaie is an emergency physician from San Antonio, Texas. **Remember to be skeptical of anything you learn, even if you heard it on the Skeptics' Guide to Emergency Medicine.**

YOU HAVE YOUR HEALTH UNTIL YOU DON'T

WELLNESS

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DR. MARTIN is professor of emergency medicine and internal medicine at The Ohio State University Wexner Medical Center in Columbus.

Encouraging Resilience

Resilience training and mindfulness can help protect against everyday stress of the ED

by DANIEL R. MARTIN, MD, MBA; & REBECCA GOETT, MD, ON BEHALF OF THE ACEP ETHICS COMMITTEE

According to Bonnano, "Resilience is the process of experiencing an adversity and managing to maintain a relatively stable trajectory of healthy functioning and adaption."[1] Deveson describes resilience as "a life force that promotes regeneration and renewal" and "the ability to confront adversity and still find hope and meaning in life."[2] Resilient providers experience stress and distress, but the resulting symptoms remain mild and transient and do not interfere with long-term functioning. Resilient providers recover quickly in response to challenging situations, and they also grow stronger.

Clearly, the emergency department is a work environment full of stressors. These include high-acuity patients, large volumes of patients, frequent interruptions, high expectations of family and friends, long wait times, boarders, consultants' demands, inability to reach required performance indicators, and many others. As such, stress-induced activation of the sympathetic nervous system, when chronic, has deleterious health effects, resulting in depersonalization, emotional exhaustion, loss of enthusiasm, compassion fatigue, cynicism, and a low sense of accomplishment. Beyond individual health effects, being constantly stressed can affect one's capacity to make medical judgments, which may impair ED teamwork and ultimately compromise patient care.

The profession of medicine is held in high esteem, but there is also widespread agreement that strategies and education are needed to improve resilience and well-being in physicians' professional and personal lives. Such improvement correlates with work engagement. Crowe mentions the importance of resilience training as a method of controlling one's range of emotional responses to adversity by building compassion satisfaction and lowering compassion fatigue.[3] Self-compassion is a first step and can be protective. Also, building a repertoire of empathic responses to stressful situations may condition providers, allowing them to externalize adversity as part of a larger experience rather than learning to internalize the negativity as an individual failing. Thus, managing situational stress by applying strategy to it eventually makes the focus, practice, and exercise become teachable moments. By using these events to teach that experiencing a range of emotions is normal and then offering support, team cohesion can be encouraged. Leading and teaching in this manner can be effective role modeling, facilitate connecting with team members, and promote the recognition and use of empathy.

Various mindfulness training methods, such as mindfulness-based interventions (MBI) and mindfulness-based stress reduction (MBSR), emphasize using one's sensory awareness and self-reflection to promote well-being and resilience.[4,5] Klatt characterized mindfulness as "nonjudgmental, sustained moment-to-moment awareness of physical sensations, perceptions, affective states, thoughts, and imagery." Many studies have noted positive effects of mindfulness training techniques when done on-site during the stressful workday.

Educators like Beckman realize that a culture change to improve resilience must become a necessary part of medical education.[6] Some of his recommendations include making wellness a metric for training; using reflection and talking about stressors, the fear of mistakes, and the positives of medical education; using interdisciplinary mindfulness training; promoting the use of guilt-free time for self-care; developing and discovering resilient role models and mentors; and including at least short times for movement, relaxation, yoga, meditation, or spirituality. Wellness among emergency physicians has been associated with exercise and leisure activities. [7]

In summary, the resources brought by organizations to address the problem of physician burnout primarily focus on improving wellness and entraining resilience. Clearly this focus, while beneficial, does not begin to address the increasing need for operational solutions at the organizational level to address the problem.[8]

The recently announced National Academy of Medicine Action Collaborative on Clinician Well-Being and Resilience is an example of the unified approach necessary to address the issues involved in professional burnout.[9] Solving this problem will require cooperation at every level of the health care system.

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THE BEST IN FREE EM EDUCATION

FOAMcast

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Nothing Gets Your Heart Racing Like Bradycardia

Experts weigh in on pacemakers for the bradycardic patient

by JEREMY SAMUEL FAUST, MD, MS, MA, & LAUREN WESTAFER, DO, MPH

Nothing gets your heart racing like bradycardia. Wait, that sounds backwards. How about, "Nothing makes you as diaphoretic as your patient like unstable bradycardia does." That's better.

On a recent episode of FOAMcast, we dove into some of the various approaches to the patient with a slow heart rate who isn't looking well. Of course, because our mission is to bridge the world of Free Open Access Medical education (FOAM) to core content and the peer-reviewed literature, we looked at a number of FOAM resources on the topic, compared that to material in our most cherished textbooks, and then checked out some articles on PubMed. Usually, the criticism of FOAM is that it is more "cutting-edge" and "aspirational" than what you would find in reality. However, we found the peer-reviewed papers more out of touch with reality than the FOAM.

Specifically, there seems to be little to no disagreement on when to emergently pace bradycardic patients. Are patients hemodynamically unstable or worrisomely symptomatic? Do they have a high-degree AV block? Do they have sick sinus syndrome? We're all on the same page; pace these patients!

The controversy is how to emergently pace. First, should transcutaneous pacing even be attempted? According to a lecture by Joe Bellezzo, MD, FACEP, featured on the Ultrasound Podcast (@ultrasoundpod), subtly titled, "Transcutaneous Is Just Stupid," the answer is no. Why? First, he argues, it works less than half of the time, with a 40 percent capture rate. Additionally, patients are often diaphoretic or are sticky with nitroglycerin paste, the procedure is painful, most sedatives you would use—other than ketamine—might cause additional hypotension, and finally, the artifact from the transcutaneous pacer might mask ventricular fibrillation. An informal poll of a handful of other FOAM thought leaders revealed to us that, while he may be right that these are setbacks, transcutaneous pacing is an important adjunct while setting up for the sterile placement of the transvenous pacemaker. Placing a transvenous pacer, we are told by Dr. Bellez-

CONTINUED *on page 16*

zo, should only take about six minutes, including setting up, getting sterile, placing the line, floating the pacer, and securing the setup.

Six minutes? We can just hear all the old-timers yelling out, "That's ridiculous and impossible!" The next thing you know, my residents are going tell me that they heard on some fancy podcast that a transvenous pacemaker only takes six minutes to perform!

Here's the problem, and don't blame FOAM. Dr. Bellezzo cited the peer-reviewed literature when he quoted this number.[1] Meanwhile, a previous study gave the somewhat more realistic estimate of 18 minutes.[2] In reality, we all know that this procedure takes somewhere between 15 and 45 minutes, depending on a number of complexities. Just to make sure we weren't crazy, we informally polled a handful of critical care emergency physicians. They told us we are correct about our estimate of the timing. For example, Al Sacchetti, MD, FACEP, has a video demonstrating the placement of a transvenous pacemaker (find it on YouTube) that lasts around 10 minutes, but in the video, he and his assistants are already sterile and draped. Also, the video ends before they suture the lines in place and clean up—and he is Al Sacchetti, and we most definitely are not. Where do Tintinalli and Rosen stand? Tintinalli's Emergency Medicine says that a drawback to transvenous pacemaking is that it is "time consuming," and by that we don't think they mean six minutes. Rosen's Emergency Medicine mentions both transcutaneous and transvenous pacing as options but does not weigh in on the timing.

FOAM does a great job of providing resources for helping to learn and teach challenging procedures such as transvenous pacing. No matter how beautiful a book illustration may be, some procedures simply must be demonstrated to be understood. So in addition to Dr. Bellezzo's lecture and Dr. Sacchetti's video, we also refer people to a video by Jason Nomura, MD (@Takeokun), "Practical Pointers on Setting Up Emergent Pacing." Dr. Nomura's video is particularly useful because it shows looping short clips of various aspects of the procedure so you can see what to do repeatedly without having to rewind over and over again. For a wonderful combination of videos, diagrams, and text, also check out "Dr. Smith's ECG blog" by Stephen Smith, MD (@smithECGblog), at hqmeded-ecg.blogspot.com.

Whether your patient has unstable bradycardia or another emergent need for pacing, we are curious what your approach is. Any tricks for successful placement of either transcutaneous or transvenous pacers? We'd love to hear them. Tweet at us @FOAMpodcast or visit our website, www.foamcast.org. See y'all online!

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CLASSIFIEDS

CODING WIZARD

NAVIGATE THE CPT MAZE, OPTIMIZING YOUR REIMBURSEMENT

Editor's Note: *Cutting through the red tape to make certain that you get paid for every dollar you earn has become more difficult than ever, particularly in our current climate of health care reform and ICD-10 transition. The ACEP Coding and Nomenclature Committee has partnered with ACEP Now to provide you with practical, impactful tips to help you navigate through this coding and reimbursement maze.*

CESSATION COUNSELING FOR SMOKERS

by **HAMILTON LEMPERT, MD, FACEP, CEDC**

Question: Can I bill for smoking cessation counseling in the ED?

Answer: Yes, you can bill for this. The CPT codes used are time-based (greater than 3 minutes to 10 minutes [99406] and greater than 10 minutes [99407]). You must document the time spent counseling. The service involves specific validated interventions of assessing the patient's readiness for change, identifying barriers to change, suggesting specific actions for change, motivational counseling, and arranging follow-up. There should be an ICD-10 diagnosis code to support the service, such as Z71.6 (tobacco counseling) with F17.21 (nicotine dependence, cigarettes). This service is reimbursable from many payers and carries an RVU value of 0.35 for 99406 and 0.73 for 99407. However, some payers may put a limit on the number of times per year these codes can be used per patient. We see patients at potentially pivotal moments in their lives and have the opportunity to change their behavior. These CPT codes allow us to bill for these life-altering services.

For more information, please refer to the Behavior Change Intervention FAQ at www.acep.org/Physician-Resources/Practice-Resources/Administration/Financial-Issues-/-Reimbursement/Behavior-Change-Intervention-FAQ/

Brought to you by the ACEP Coding and Nomenclature Committee.

DR. LEMPERT is chief medical officer, coding policy, at TeamHealth, based in Knoxville, Tennessee.

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Baylor College of Medicine

EMERGENCY MEDICINE RESIDENCY PROGRAM
Service ▪ Education ▪ Leadership

Exciting Academic Emergency Medicine Opportunities

The Baylor College of Medicine, a top medical school, is looking for academic leaders to join us in the world's largest medical center, located in Houston, Texas. We offer a highly competitive academic salary and benefits. The program is based out of Ben Taub General Hospital, the largest Level 1 trauma center in southeast Texas with certified stroke and STEMI programs that has more than 100,000 emergency visits per year. BCM is affiliated with eight world-class hospitals and clinics in the Texas Medical Center. These affiliations, along with the medical school's preeminence in education and research, help to create one of the strongest emergency medicine experiences in the country. We are currently seeking applicants who have demonstrated a strong interest and background in medical education, simulation, ultrasound, or research. Clinical opportunities are also available at our affiliated hospitals. Our very competitive PGY 1-3 residency program currently has 14 residents per year.

MEDICAL DIRECTOR

The program is searching for a dedicated Medical Director for the Ben Taub General Hospital, The Medical Director will oversee all clinical operations at Ben Taub, with a focus on clinical excellence. The successful candidate will be board certified and eligible for licensure in the state of Texas. The candidate will have a solid academic and administrative track record with prior experience in medical direction. Faculty rank will be determined by qualifications.

Those interested in a position or further information may contact Dr. Dick Kuo via email dckuo@bcm.edu or by phone at 713-873-2626. Pleases send a CV and cover letter with your past experience and interests.

LOS ANGELES CALIFORNIA

DOWNTOWN LOS ANGELES:
Quality STEM Stroke Center, good Metrics, paramedic receiving (no peds inpatients). Physician coverage 38-40 hrs/day with NP & PA 12-20 hrs/day. 1.9 pts/hr, stable 26yr contract, core group physicians average 23 years tenure. Require Board certified or Board eligible (residency trained) with experience. Day & night shifts (max 5 nights/mo.). Salary competitive.

TUSTIN – ORANGE COUNTY:
New ER opening December, parametic Receiving, 110-bed hospital, 9 bed ER, Anticipate 600-900 visits/mo.
Base + Incentive (patient volume + RVU) 24 hr. Shifts

LOS ANGELES:
Low volume 700/mo. urgent care non-Paramedic receiving, less stress, 20 yr. contract w/stable history. Patients 1/hr.
Base + incentive

NORWALK:
Low volume 600/mo. Paramedic receiving. Patients 8/hr. 10-year history stable. $110/hr. 24hr shifts available

FAX CV to 213-482-0577
or call 213-482-0588, or email
neubauerjanice@gmail.com

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EMERGENCY MEDICINE PHYSICIANS

Central California (Modesto/Manteca)

Robust Salary + $350,000 Potential
FORGIVABLE LOAN PROGRAM

CENTRAL CALIFORNIA

THE PERMANENTE MEDICAL GROUP, INC. (TPMG)
Our Central Valley Service Area is currently seeking BC/BE Emergency Medicine Physicians to join our department in Modesto and Manteca, California.

- Physician-led organization–career growth and leadership
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- Home loan assistance potential
- Malpractice and tail insurance

Life is good in the Central Valley: an hour from the Bay Area, an hour from the ski slopes, minutes from world-class wineries, excellent public schools, and affordable real estate (yes, in California).

Please send CV to: EDrecruitingCVA@kp.org

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FOR MORE INFORMATION:

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215.442.5038
james.mcmillin@emcare.com

EmCare®
Emergency Medicine
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The University of Florida
Department of Emergency Medicine

Advancing Health Care in Florida, our nation and the world through excellence in education, clinical care, discovery and service.

Seeking Emergency Medicine Faculty – All Ranks, Emergency Medicine Clinical Faculty for community practices and Emergency Medicine Fellows to support our existing programs.

The University of Florida Department of Emergency Medicine in Gainesville Florida is seeking talented, highly motivated emergency medicine physicians to join our robust dynamic department of 44 Faculty, with an expanding residency program and increased fellowship opportunities.

The UF Department of Emergency Medicine is part of the UF Health Shands Hospital and Academic Health Center which is North Central Florida's largest teaching institution, a Level 1 trauma center and burn center, and the major referral center for North Central Florida Region.
Emergency medicine faculty and fellows will enjoy the academic benefits of working in one of the country's few academic health centers with six health-related professional colleges, nine major research institutes and versatile research facilities located on a single contiguous major university campus. There are numerous opportunities within our department and within the College of Medicine for emergency physicians with teaching, research and administrative interests. Fellowship opportunities include:

Emergency Medical Services, Research, Ultrasound, International Emergency Medicine, Critical Care, Sports Medicine as well as Toral Foundation Sponsored Fellowships in Neuro Critical Care and Neuro Sports Trauma.

Gainesville is a beautiful, dynamic and vibrant college town, centrally located in North Florida. Residents are close to major airports, family entertainment and some of the best beaches in the world. Home of the "Gator Nation:' award-winning college sports and year-round outdoor activities, Gainesville has repeatedly been voted as one of the best places to live in the U.S.

Join the UF College of Medicine faculty and earn an extremely competitive salary commensurate with experience and duties. Enjoy the full range of University of Florida state benefits.

When applying, please address correspondence including a CV and cover letter to Joseph A. Tyndall, MD, MPH, Chair Department of Emergency Medicine.

UFHealth
UNIVERSITY OF FLORIDA HEALTH

UF | UNIVERSITY of FLORIDA

The University of Florida requires all applications to be submitted online.

For additional information or to apply for a position, visit emergency.med.ufl.edu/opportunities.

Questions? Please email Amy Smith at amysmith@ufl.edu.

Women and minorities are encouraged to apply. The University of Florida is an Equal Opportunity Employer.

EMPLOYMENT MODELS: WHICH FITS YOU BEST?

PHYSICIANS ARE ENJOYING A FAVORABLE EMPLOYMENT MARKET.

As a job seeker, you might be tempted to snag the best-paying opportunity. But there's another factor you should consider: culture. Each employment model has cultural benefits and limitations that will significantly impact your day-to-day practice. Below are the four major types to consider.

BY SURINDER YADAV, MD
Vice President of Hospital Medicine for CEP America

HOSPITAL EMPLOYEE

For most of us, this is the most familiar model and the one we experienced during residency. Its attractions include defined benefits with predictable schedules and workloads. The hospital also assumes responsibility for billing, risk management and staffing. As a result, their physicians have relatively little administrative burden.

This model has potential downsides. For one, clinical autonomy is limited. Directives affecting the practice often come from the top down. This can squelch engagement and limit opportunities for career development. In this model, highly motivated physicians may find themselves working alongside those who only do the minimum for productivity requirements.

COMPANY EMPLOYEE

Several companies are in the business of managing physician practices for hospitals. Some focus on one specialty, while others offer multiple service lines. When it comes to designing hospital medicine programs, management companies often have a greater depth and breadth of experience than hospital leaders. They can bring expertise, fresh ideas, and best practices to the table.

Being employed by a management company has some of the same perks as working directly for a hospital, including predictable schedules and benefits. Most also offer practice management services, though the level of support varies.

Individual physicians employed in this model have very little voice in practice matters. In some large companies, the top clinical leaders oversee an enormous number of physicians and practice locations. Even if they are in touch with the needs of the front-line hospitalists, they may be spread too thin to offer meaningful support. In addition, some physicians find corporate culture at odds with clinical practice.

INDEPENDENT CONTRACTOR

Self-employment is another option. Physicians choosing this model work as independent contractors for hospitals and practice management companies.

Independent contractors can choose long- or short-term jobs, take breaks between assignments, and increase their workload to boost earnings. On the downside, these physicians have fewer opportunities to innovate or create change.

PHYSICIAN PARTNER

Another model to consider is a physician partnership or independent group. These can be local, regional or national. CEP America is one example of a national physician partnership.

Partnerships are practices in which all physicians have the opportunity to become owners. Finances are transparent, and physician owners share profits, as well as responsibility for success.

This model fosters cooperation among physicians, because everyone is motivated toward the same goal. This collaborative spirit can also cross service lines. For example, when a partnership staffs both the hospital and emergency department, colleagues work together to facilitate admissions. Patients see everyone working together as one team, which is a great satisfier.

Partnership is ideal for physicians who hunger for autonomy, as well as collaboration. In larger groups, the partnership provides administrative support so that physicians can focus locally on patient care, workflows, schedules and so on.

Being an owner requires an entrepreneurial mindset. The partnership model is a good fit for physicians who want to be engaged in developing best practices and innovative protocols that fit the needs of their hospital and patient community.

Salary is an important consideration, but in the end, cultural fit will be the best predictor of your long-term career satisfaction.

MAKING THE RIGHT DECISION

Salary is an important consideration, but in the end, cultural fit will be the best predictor of your long-term career satisfaction. Being familiar with the basics of each employment model can help inform your decisions.

Assistant/Associate Residency Program Director

Emergency Medicine Core Faculty

Pediatric Emergency Medicine Faculty

Community-Based Site Opportunity

The Emergency Medicine Department at Penn State Health Milton S. Hershey Medical Center seeks energetic, highly motivated and talented physicians to join our Penn State Hershey family. Opportunities exist in both teaching and community hospital sites. This is an excellent opportunity from both an academic and a clinical perspective.

As one of Pennsylvania's busiest Emergency Departments treating over 75,000 patients annually, Hershey Medical Center is a Magnet® healthcare organization and the only Level 1 Adult and Level 1 Pediatric Trauma Center in PA with state-of-the-art resuscitation/trauma bays, incorporated Pediatric Emergency Department and Observation Unit, along with our Life Lion Flight Critical Care and Ground EMS Division.

We offer salaries commensurate with qualifications, sign-on bonus, relocation assistance, physician incentive program and a CME allowance. Our comprehensive benefit package includes health insurance, education assistance, retirement options, on-campus fitness center, day care, credit union and so much more! For your health, Hershey Medical Center is a smoke-free campus.

Applicants must have graduated from an accredited Emergency Medicine Residency Program and be board eligible or board certified by ABEM or AOBEM. We seek candidates with strong interpersonal skills and the ability to work collaboratively within diverse academic and clinical environments. Observation experience is a plus.

For additional information, please contact:
Susan B. Promes, Professor and Chair, Department of Emergency Medicine, c/o Heather Peffley, Physician Recruiter, Penn State Hershey Medical Center, Mail Code A590, P.O. Box 850, 90 Hope Drive, Hershey PA 17033-0850, Email: hpeffley@hmc.psu.edu OR apply online at www.pennstatehersheycareers.com/EDPhysicians

PennState Health
Milton S. Hershey
Medical Center

The Penn State Health Milton S. Hershey Medical Center is committed to affirmative action, equal opportunity and the diversity of its workforce. Equal Opportunity Employer – Minorities/Women/Protected Veterans/Disabled.

An open letter

to our emergency medicine colleagues:

No doubt many of you have heard of the recent failed negotiations between Summa Health of Akron, Ohio, and its longstanding emergency medicine group, Summa Emergency Associates (SEA). Some of you followed it closely and may have a firm opinion of how the events unfolded. Though our company has been largely caught in the middle, the issues raised in the aftermath loom large over healthcare.

These issues deserve a reasoned and substantive discussion. We work in a difficult industry amid massive change. Payers and health systems continue to consolidate rapidly. The challenges of healthcare delivery in this country cannot be solved by one group, one hospital, or one industry association. Reasonable people will disagree on the way forward. Regardless of the disagreements, however, *all* emergency clinicians endeavor to put patients first. We are no exception to this rule.

The USACS mission is as follows: *To care for patients.* That's it. Simple, straightforward, and at the heart of every decision we make. Our core values are a *servant's heart* and an *owner's mind.*

So when negotiations at Summa broke down, USACS stepped up. Dozens of physicians, APPs and support staff cut vacations short, worked through the holidays, and picked up shifts to ensure every patient that came through the door was seen and treated by a board-certified emergency physician. That's what physician owners do for their patients and each other.

USACS is a group made up of nine independent, physician-owned emergency medicine groups committed to the principle that the best patient care and the best hospital partnerships result when physicians maintain ownership and leadership of their group.

Amid rapidly increasing consolidation amongst payers and health systems, we believe all independent physician groups face a choice: Continue to take your chances as a small, independent group; sell out to a big, publicly-traded or investor-owned corporation and lose your leadership voice; or do what we did—join together with other like-minded groups to preserve your commitment to physician ownership and physician-directed patient care. That is the core of our strategy at USACS. Furthermore, we manage (either primarily or secondarily) 10 EM residency programs, and our commitment to graduate medical education is longstanding and unwavering. These are the principles we bring to Summa Health and many other hospital systems across the country.

Our commitment to physician ownership allows us to continue to grow and compete in an environment where the only constant is change. Our culture ensures that we always remain focused on why we're here in the first place: When the call comes to care for patients, we rise to the occasion. That's what emergency medicine physicians do.

On behalf of the 1,956 physician owners and the 1,108 advanced practice providers of US Acute Care Solutions,

Dominic J. Bagnoli, MD, FACEP, FAAEM
CEO, US Acute Care Solutions

US Acute Care Solutions

Own your future now. Visit usacs.com
or call Travis Ulmer, MD, FACEP at 1-800-828-0898. TUlmer@usacs.com