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INSIDE

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Emergency Care Improvement Needed for Patients with Sickle Cell Disease

By Dorothy Brooks

For many years, there have been complaints about the care patients with sickle cell disease (SCD) receive in the ED. The reasons for this dissatisfaction can vary, but they tend to range from excessive waits and inadequate treatment to unfounded accusations of drug-seeking behavior.

Sophie Lanzkron, MD, MHS, director of the Sickle Cell Center for Adults at The Johns Hopkins Hospital, notes there are many complicated reasons for such complaints, but they raise valid concerns. "When I first started, I would see patients in clinic and they would be in crisis and having pain," she recalls. "The only option I had was to send them to the ED where I knew on a good day they would probably wait two and half hours for their first dose of pain medication."

To address the problem, Lanzkron opened a specialty infusion clinic in 2008, a place where SCD patients experiencing disease-related pain crises could receive rapid treatment. The clinic was well-received, and data appeared to suggest it produced superior outcomes as well, particularly regarding time-to-treatment and hospitalization rates when SCD patients were treated at the infusion clinic vs. the ED.

Lanzkron wanted to gather experts from the existing specialty infusion centers to delineate best practices. However, before anyone would fund such an effort, they wanted evidence showing whether care received in an infusion center was superior to care received in the ED. "The argument was that patients seen in the ED were probably sicker than those seen in the infusion clinic, and that was why there was a difference in [hospital] admission rates. We needed to come up with a study that compared outcomes between these two groups in an ethical way," Lanzkron explains.

Lanzkron and colleagues identified nearly 500 patients with SCD who lived close to care sites in Baltimore, Cleveland, Milwaukee, and Baton Rouge, LA. At each study site, there was either a specialty SCD infusion clinic or an infusion clinic dedicated to hematology and oncology patients,

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including those with SCD. All clinics were located in hospitals that maintained EDs. The patients were followed for 18 months, with investigators anticipating each individual would log one or two acute care visits to either a specialty infusion clinic or an ED per year.[1]

Considering the infusion clinics are open only during weekdays, Lanzkron and colleagues excluded any acute care visits that took place when the infusion centers were not open. Ultimately, there were 1,441 acute care visits included in the analysis. Of these, 241 took place in the ED and 1,200 occurred at an infusion clinic.

Lanzkron and colleagues concluded patients who visited infusion clinics for treatment of SCD-related pain crises received their first dose of intravenous pain medication more than twice as fast as patients who visited the ED. The mean time to medication administration in an infusion clinic was 62 minutes vs. 132 minutes in the ED.

Investigators also found patients visiting infusion centers for treatment of an uncomplicated vaso-occlusive crisis (a painful condition that occurs when sickle-shaped cells block blood flow through the vessels) were much more likely to be discharged home than similar patients who visited the ED for treatment. Specifically, the researchers reported the probability that a patient's acute care visit would end with a hospital admission was smaller by a factor of 4 when they were treated in an infusion clinic vs. an ED.

While they can point to evidence showing SCD patients treated in a specialty infusion clinic experience much better outcomes than similar patients treated in the ED, Lanzkron and colleagues did not delineate the specific reasons why this is the case. The faster treatment times in the infusion centers could certainly play a role, but so could the fact that patients in infusion centers are cared for by specialists in SCD. Often, these specialists are familiar with the specific patients they are treating. Some or all of these factors may play a role, and other researchers can look more closely at what factors figure most prominently in producing better outcomes.

What can EDs take away from this study, also considering specialty infusion centers generally are not accessible to patients with SCD who live far away from major urban centers? Lanzkron believes care would improve if many more SCD patients were equipped with specific treatment plans written by SCD experts for when they require emergency care. "We as providers of sickle cell care are trying to move in that direction," she says. "Patients should know that they should seek out an expert in SCD care to be seen. Maybe that means once every year or perhaps once every two years if the patient lives in a rural area."

Lanzkron notes there is telemedicine capability now, so patients can at least connect at that level with an SCD expert. However, she stresses every SCD patient should be evaluated by an expert in SCD care who can develop a patient-specific treatment plan that can be used in the ED. Without such a resource, caring for SCD patients will continue to be challenging for emergency providers.

Lanzkron works closely with emergency medicine leaders through her participation in the in the Emergency Department Sickle Cell Care Coalition. Affiliated with the American College of Emergency Physicians, this group was established

in 2015 in recognition of the fact there is a pressing need to improve ED care for patients with SCD.

"We really wanted to develop a national coalition that is led by and supported by members of the emergency medicine community in order to make progress," explains **Patricia Kavanagh**, MD, the group's current chair and an attending physician in the pediatric ED at Boston Medical Center (BMC).

While the group is led by emergency physicians, it includes all the various provider types that contribute to the care of a patient with SCD, including specialists like Lanzkron as well as advanced practice providers, nurses, and pharmacists. Also represented in the group is the patient voice. "This coalition is really pulling together all the voices that really need to be speaking in harmony in order to make change," Kavanagh says.

One of the biggest obstacles impeding improvement in this area is a general lack of knowledge about sickle cell care among emergency providers.

"Unless somehow in your medical school training you came upon a hematologist who really knew a lot about sickle cell disease, there is really not a lot of training dedicated to this disease," Kavanagh says.

As a result, when a young adult with SCD visits the ED, providers tend to place these patients behind other older patients presenting with abdominal pain or chest pain.

"There isn't that recognition that SCD is a very serious, life-threatening condition. When [SCD patients] are having a crisis of any kind, this could be a huge problem," Kavanagh says. "There are so many providers who don't realize that the average lifespan [of a patient with SCD] is in the early to mid-40s. That really has not changed that much over the last 25 years. They are at high risk of comorbidities when they present to the ED. They should be triaged at a high level ... so that they are evaluated quickly."

Another obstacle that can emerge in the ED is the stigma associated with any painful condition. "Given the shadow of the opioid epidemic that we are all living under, patients coming in with severe pain from SCD are often lumped into the category that they are drug-seeking or they are having a problem with substance abuse," Kavanagh observes. "This undermines the fact that they are coming in because they need help. They are not coming in because they like opioids or they want them."

The Emergency Department Sickle Cell Care Coalition is focused on boosting the education of emergency providers so they understand SCD and learn how to properly care for these patients. Much of this education is focused on how to appropriately and quickly manage the pain that brings these patients to the ED so often.

"There are occasionally people [for whom] a hematologist recommends a different pathway with different medicines, but most [SCD] patients really do need opioids. Then, [these medicines] should be repeated every 15 to 30 minutes for as many times as it takes to get some pain relief," Kavanagh explains.

This level of care is not always easy to accomplish in a busy ED. Some departments have developed processes that can facilitate or streamline the care of SCD patients. For example, the ED at BMC created an order for SCD patients that has both pharmacy and therapeutic approval.

"We write [a prescription] for one medicine, one opioid dose, and then we can repeat it two times as needed every half-hour," Kavanagh reports. "The physician writes the order once, but then the nurse who is doing all the work in terms of pain assessments and then administration can work more independently and not have to keep going back to that provider."

Further, the Emergency Department Sickle Cell Care Coalition has just unveiled a point-of-care tool that can guide emergency providers through the proper evaluation and care of a patient who presents with SCD.[2] The tool is broken down into several sections with pull-down menus, making it easy for the clinician to access the specific information he or she needs quickly without searching through lengthy guidelines.

In addition, there is guidance provided for every step involved in the ED encounter. The sections cover communication, triage, history, evaluation, treatment, and disposition.

Even for large urban medical centers that operate specialty infusion clinics to provide expert care to SCD patients, both Kavanagh and Lanzkron agree ED providers still can play an important role in SCD care, especially considering most specialty infusion centers are open only during weekdays.

For example, the infusion center at Johns Hopkins Hospital employs advanced practice providers who serve as liaisons to the ED. The two departments have developed a close working relationship.

"As we developed the infusion clinic model here at Hopkins, our ED colleagues were amazing champions for our patients, and we really worked in partnership," Lanzkron explains. "[Providers in the ED] opened their observation unit so that patients with SCD would get access to beds opened up there."

The ED observation unit, which advanced practice providers also manage, began to see many of the same patients as the infusion center. Thus, the infusion center staff provided added training to these providers, which has benefitted SCD patients.

"We are not open 24 hours a day, but obviously the ED is," Lanzkron says. ■

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Mobile Stroke Units, Teleneurology Units Accelerate Time to Treatment

By Dorothy Brooks

Investigators recently published evidence that appears to support the efficacy of mobile stroke units (MSU), specially equipped ambulances that essentially bring treatment to patients experiencing ischemic strokes. In a multicenter trial, researchers found patients treated on an MSU received clot-busting medication faster and demonstrated better health at 90 days than patients who were transferred to the hospital for treatment via traditional ambulance.[1]

While such results are exciting for MSU advocates, there remain financial and administrative obstacles that prevent many medical centers and EMS services from leveraging these units in their own communities, particularly at a time when the COVID-19 pandemic continues straining resources.

Meanwhile, there is growing interest in telestroke technology, capable of delivering expert care to ED patients and providers who do not otherwise have access to in-person neurologists. Although not necessarily a new innovation, the pandemic-era's push to deliver more healthcare remotely has prompted some health systems to add telestroke programs to their arsenal of telemedicine options.

The study of MSUs began in 2014 in conjunction with the launch of The University of Texas (UT) Health's mobile stroke unit. **James Grotta**, MD, one of the study authors, believed MSUs would speed care, but he knew evidence was needed. The UT Health arm of the trial was engaged in collecting data two years before other sites using MSUs joined the study. Eventually, Grotta and colleagues collected data from seven participating sites, all of whom agreed to a study design that involved alternating the use of their MSUs every other week so the care of stroke patients with MSUs could be compared with the care of stroke patients receiving care following transfer to the ED via traditional ambulance.

From 2014 to 2020, researchers enrolled more than 1,500 patients. Those treated on an MSU were more likely to receive the clot-busting medication tissue plasminogen activator (tPA) than the patients in the traditional ambulance group at a rate of 97% vs. 80%. Further, investigators reported MSU participants were more likely to receive tPA within the first hour of experiencing a stroke, faster than their traditional ambulance counterparts. Additionally, mortality at 90 days for the MSU patients was 9% vs. 12% for the traditional ambulance group.

"Even though most of the patients were in Houston, we had enough patients from the other [six] sites to say there really wasn't a lot of heterogeneity in the results," reports Grotta, director of the Houston Mobile Stroke Unit Consortium.

While there are some differences in how the various MSU programs operate, the basics are the same. Someone calls 911 about a suspected stroke, then an MSU responds to the scene at about the same time as a traditional ambulance. "We will evaluate the patient jointly. Then, if the patient is having a stroke and it looks like we can treat, we put [him or her] in the MSU. Otherwise, the patient gets transported [to the ED]," explains Grotta, director of stroke research at the Clinical Institute for Research and Innovation at Memorial Hermann-Texas Medical Center. "[Most] of the MSUs are similar in that they have a portable CT scanner on board. They have a [neurologist] available, either in person or via telemedicine."

The MSU operating in Memphis is larger than other units that participated in the study, enabling it to carry a full-size CT scanner. "Their MSU was designed primarily to try to expedite endovascular therapy ... a second, complementary type

of treatment for those strokes that are so large that they don't respond to tPA," Grotta says. "These cases require retrieval of the clot [causing the stroke] with a catheter. That procedure has to be done in the hospital."

Patients who are candidates for endovascular therapy may not be recognized right away. They may end up at a hospital that does not perform the procedure, or they may have to wait longer for treatment once they reach the hospital. "Being able to do CT angiography ... in the MSU can speed that process along, enable the patient to [bypass the ED], and go directly up to an endovascular suite," Grotta says. "It did appear that the Memphis team did achieve faster endovascular times, but they didn't enroll enough patients to drive the trial results overall with regard to that therapy."

Toward the end of the trial, some of the other participating MSUs, including the units at UTHealth and UCLA, began performing CT angiography, too. However, not all MSUs have added this evaluation as it requires added time and expense.

Going forward, there are several steps that can further improve stroke care and MSU performance. First, Grotta suggests people need to be willing to call 911 soon after symptoms appear. "So many people don't call 911 in a timely fashion, and that is even worse with COVID-19," he says.

Second, it is important to arm dispatchers with training so they know when a stroke has occurred and when to dispatch the MSU to the scene. "We get called about 10 times for every one patient we are able to treat," Grotta notes. "Now that we know that stroke treatment is effective on the MSU, we should be able to develop ... a few simple [dispatcher] questions that can identify whether a patient is likely having a stroke."

Every time the dispatchers in Houston undergo training sessions, the accuracy of the calls improves, but this is a constant challenge. "There are always new medics coming in. With COVID-19, there has been a lot of turnover in the prehospital arena," Grotta says. "This requires a lot of continued in-servicing and education of EMS personnel, including the dispatchers."

Grotta acknowledges that convincing hospitals and EMS services in a region to work together in support of an MSU can be challenging, particularly in areas where several EMS agencies operate according to strict boundaries and where hospitals are highly competitive. Further, funds usually must be raised to support the purchase and operation of an MSU. However, once those issues are solved, the trial data suggest such a program can deliver benefits.

At first glance, the idea of putting an MSU into operation may seem daunting, but Grotta says that ever since Houston put its MSU into operation, the program has been running smoothly and logically. "Whatever we do on the MSU is exactly the same thing we do in the ED," Grotta says. "The system needs to be greased to make sure it works well, but from an emergency medicine perspective, it makes the workload easier."

Many ambitious healthcare initiatives were curtailed or halted at the start of the pandemic, but the urgent demand for remote care options actually accelerated plans at the University of Chicago Medicine to implement its Telestroke Network. "There was a lot of movement toward telehealth, teleneurology, and services designed to allow access to patients or providers who were working remotely. While we knew this was always going to be a part of our overarching goals ... the pandemic kicked it into overgear," explains **Scott Mendelson**, MD, PhD, chief quality officer for the department of neurology at UChicago Medicine.

The program, which launched in April 2021, provides 24/7 access to a neurologist for patients who present with possible stroke symptoms at EDs of participating UChicago Medicine hospitals. "Not only are we able to see patients and coach ED staff in the exam ... to make treatment decisions very quickly, but now we can look at imaging as well," Mendelson says. "[ED personnel] can do the diagnostic workup ... and then the teleneurologist remotely can review all of that information and help make decisions in the moment."

In the past, ED physicians often made such decisions, either without consultation with a neurologist or perhaps with communication with a neurologist by phone. "What teleneurology does is really allows the neurologist to have a virtual presence in that room with the patient and to be able to make a diagnosis along with the ED physicians in a way that they just weren't able to do before," Mendelson notes.

Starting such a program required physical assets, including cameras that can be operated remotely and easily moved from room to room and screens that enable two-way visual communications. However, the biggest part of the implementation involved working with the participating ED providers to develop processes and protocols that fit with their normal workflows.

It is not unusual for a provider to suspect a patient may be experiencing a stroke, only to discover something else is going on. Still, emergency

providers are encouraged to consult with the remote neurologist any time they are concerned about a potential stroke.

"Currently, we are working with two hospitals ... and it comes to about 30 or 40 [times] a month that we engage with them [remotely]," Mendelson says. "We have been able to facilitate administering acute stroke interventions about once per week."

Typically, such interventions involve administering clot-busting medications to reverse the symptoms of stroke. Providers also might perform endovascular procedures. "That happens infrequently, but they happen more now that we have a teleneurologist available for these patients at these hospitals 24 hours a day, seven days a week," Mendelson says.

Mendelson views the use of teleneurology networks and MSUs as complementary approaches in that both aim to shorten time to treatment for a time-sensitive condition.

"We know that not all patients live nearby or have access to primary stroke centers or comprehensive stroke centers," he says. "In areas where the density of these stroke centers is very low, there is a lot of advantage of doing telehealth in the field. If an [MSU] can get there and do the therapies more quickly than you could in transporting the patient to a stroke center, then it makes absolute sense to use an MSU as another model of neurology."

However, Mendelson notes that in densely populated areas with many stroke centers, patients can go to the hospital and receive treatment almost as quickly as an MSU can provide similar treatment. "Both systems leverage the same technology," he says. "Generally, there is no neurologist out in the MSUs ... it is just a matter of it is quicker to do this with a [specially equipped] ambulance or whether [the same care] is accessible to patients in the ED." ■

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Updated Guidelines on Recurrent, Low-Risk Chest Pain Fill in Some Treatment Gaps

By Dorothy Brooks

Chest pain is one of the most common complaints seen in the ED. Guidelines abound on how to evaluate and manage such patients. However, missing from most of this guidance are evidence-driven recommendations regarding patients with recurrent chest pain, a huge group. Data suggest 40% of patients who present to the ED with chest pain return with a similar complaint within one year.[1,2]

In such cases, should practitioners repeat the tests that were performed during the initial visit? Should patients be discharged, sent to observation, or admitted? When it comes to patients presenting with recurrent, low-risk chest pain, as determined by a validated scoring system such as the HEART score, the answers to these and other important questions are not entirely clear. This leads to significant practice variability, excess testing, and higher costs.

Considering patients with recurrent, low-risk chest pain are so common in the ED, the Society for Academic Emergency Medicine addressed this guidance gap with the first in a series of practice Guidelines for Reasonable and Appropriate Care in the ED (GRACE), an effort aimed at identifying and rooting out low-value practices in emergency medicine.[3]

Like most practice guidelines, the authors behind GRACE go into some depth regarding the reasoning behind their guidance. They offer eight specific recommendations designed to help emergency providers make good decisions for patients who have visited the ED and undergone a diagnostic workup that showed no evidence of coronary stenosis, only to return with similar complaints within 12 months.

For instance, in recommendation 1, the authors suggested that for patients with recurrent, low-risk pain that lasts for more than three hours, a single, high-sensitivity troponin result below a validated threshold can reasonably rule out acute coronary syndrome within 30 days. However, considering many U.S. medical centers have not adopted high-sensitivity troponin tests, practitioners at these sites will be unable to apply this recommendation, at least for now.

Christopher Carpenter, MD, MSC, FACEP, FAAEM, AGSF, a professor of emergency medicine at Washington University School of Medicine in St. Louis and one of the

authors of the GRACE guideline, says the panel could not identify direct evidence for conventional troponin assays. He notes investigators from the University of Texas Southwestern expect to shed more detail on this issue soon.

"Ultimately, we believe that for better or for worse, hospitals in the United States will adopt high-sensitivity troponin [assays] and discard conventional troponin [assays]. Extrapolating these results to conventional troponin assays will become a non-issue," Carpenter predicts. "Whether that uptake of high-sensitivity troponin occurs in five years or 20 years is another issue."

In recommendation 2, Carpenter and colleagues advised against repeat stress testing to reduce major adverse cardiac events (MACE) in patients with low-risk, recurrent chest pain who produced normal results on a stress test that was conducted within the previous 12 months.

Similarly, in recommendation 3, the authors noted there is not enough evidence to advise hospitalization as opposed to discharge in these patients for the purposes of mitigating the potential for a MACE within 30 days. The authors said this recommendation applies to both inpatient hospitalizations and observation stays.

Recommendation 4 refers to patients with non-obstructive (i.e., less than 50% stenosis) coronary artery disease on angiography that has been performed within five years. The authors recommended such patients be referred for expedited outpatient testing as needed rather than inpatient evaluation. In recommendation 5, the GRACE panel similarly advised a referral for expedited outpatient testing as needed rather than hospitalization for patients with no occlusive coronary artery disease on prior angiography within five years.

"We believe significant practice variability exists in this population based upon existing descriptive research and much older research," Carpenter says.[4-6] "Practice variability probably also fuels health disparities, but we lacked direct or indirect evidence to provide recommendations."

It is important for clinicians to avoid anchoring bias or relying too heavily on the first bit of information they receive with each new evaluation they do not miss alternative diagnoses that may be life-threatening or disabling. For example, Carpenter notes that soon after these guidelines were released, the parent of a recurrent chest pain patient reported her son had a pulmonary artery malformation that created recurrent chest pain, which could have been life-threatening if not accurately diagnosed.

"Emergency medicine does encounter zebras, and [practitioners] are master diagnosticians when provided adequate time and resources," Carpenter observes. "Identifying clinical pathways to safely reduce medical waste and the problem of overtesting, overdiagnosis, and overtreatment should also be valued by emergency medicine and society."

Recommendation 6 applies to patients with recurrent, low-risk chest pain and a prior coronary CT angiography (CCTA) evaluation that revealed no coronary stenosis within the previous two years. In this group, the authors suggested no further testing beyond a high-sensitivity troponin below a validated threshold to rule out acute coronary syndrome within the two-year window. Inherent in this recommendation is a message regarding the potential value of CCTA. Carpenter believes this message may produce the most profound, long-term effect.

"The majority of emergency departments do not have access to CCTA currently, but our writing panel felt that the quality and volume of research supported a moderate level of evidence and a conditional recommendation in favor of CCTA," he says. "I worry about overtesting with CCTA, but the recommendation also provides a two-year shelf life for CCTA. The test would not need to be repeated each visit."

In recommendation 7, the GRACE panel suggested practitioners use depression and anxiety screening tools for patients presenting with recurrent chest pain. These could affect the use of healthcare going forward as well as return ED visits. Further, in recommendation 8, the authors advised referring appropriate patients for anxiety or depression management.

Carpenter believes these recommendations are practice-changing because it adds the concept of anxiety and depression to his differential diagnosis of recurrent chest pain patients. Nonetheless, he carries some reservations practitioners should consider.

"One concern is to avoid premature closure by misattributing symptoms to a psychiatric diagnosis. The other concern is the unintended consequences on the overall ED operational mission if we are now expected to screen patients for depression/anxiety without resources for appropriate inpatient or outpatient care," he cautions. "Will emergency medicine be left [with any resulting] liability and patient dissatisfaction?"

Carpenter acknowledges most of the GRACE recommendations are based on a low level of evidence. The

guidance regarding CCTA is based on a moderate level of evidence, and the depression/anxiety recommendations are based on a very low level of evidence. He says each covered area requires more ED-based research, but pushes back against any suggestion the guideline is premature.

"Recurrent, low-risk chest pain patients are presenting today and every day. Physicians require CPGs [clinical practice guidelines] to support decision-making and shared decision-making," Carpenter stresses. "We do not know when or if future research will arrive. GRACE provides a foundational first step forward."

To pave the way for additional guidance for emergency providers, Carpenter wants to see federal support for a national entity that will tackle the questions that are most germane to emergency clinicians. "The world leaned heavily on emergency medicine during the COVID-19 pandemic and our specialty stood tall," he says. "Rather than simply concluding that more research is required, my vision is that the time is ripe for the NIH to create a 'National Institute of Emergency Care' with sufficient funding to realistically begin generating high-quality evidence for emergency medicine's most challenging situations. GRACE guidelines can serve as one compass for those research priorities." ■

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Legal Exposure Regarding Recurrent Low-Risk Chest Pain

By Stacey Kusterbeck

Patients with recurrent low-risk chest pain cannot (and should not) all be admitted, but discharging these patients legally exposes the EP.

"It is interesting to me that the cardiologists themselves have a bit of variability in how they handle low-risk chest pain," says **David Ledrick**, MD, associate residency director and clinical clerkship director in the department of emergency medicine at Mercy St. Vincent Medical Center in Toledo, OH.

Some cardiologists aggressively work up patients who others might discharge with only a serial cardiac troponin.

"I find it hard to say that there is an absolute standard that is in practice consistently," Ledrick says. "It seems that there is a relatively wide range of what is acceptable."

As for ED care, EPs tend to involve cardiologists for patients with recurrent chest pain, or those with higher HEART scores who might go straight to catheterization without stress testing. "We also tend to cancel the consults on patients needing a screening study as opposed to patients with an anticipated procedure," Ledrick observes.

Ledrick says the most important thing an EP can do is obtain a good history and correctly interpret the ECG. "This is hardly surprising. It also seems this is easy to get wrong," Ledrick notes. As any experienced EP knows, the history surrounding chest pain can be highly variable. It can even change from provider to provider in the same visit. "We tested this once in an unpublished study in which we provided patient vignettes to emergency medicine residents and attendings," Ledrick recalls. There was little agreement over whether the HEART score history should be rated as 0, 1, or 2.

The presence of an observation unit makes things much easier on the EP. In the absence of an observation unit, Ledrick says "the institution would be well served to have a defined and easily accessed system for follow-up" on truly low-risk patients (defined as those with negative

serial ECGs and cardiac troponins, both repeated after three hours, and a concomitant history/risk factor assessment with a HEART score of less than 4). Solid documentation on medical decision-making lets anyone know the EP considered cardiac disease, whether it is another healthcare provider or a plaintiff attorney's expert reviewing the chart.

"It is impossible to get to a 0% miss rate," Ledrick admits. "Good documentation will at least demonstrate that the evaluation was a deliberate and careful one." ■

With ED Provider at Triage, Fewer Patients Leave Without Being Seen

By Stacey Kusterbeck

At St. Elizabeth Youngstown (OH) Hospital, ED providers noticed an uptick in patients who left without being seen (LWBS). "We were concerned that many patients would leave without being triaged or evaluated, and could have potentially poor outcomes," says **Chad Donley**, MD, program director and chairman for the department of emergency medicine.

The ED added an advanced practice provider at triage to evaluate patients, in conjunction with a standard nurse triage. "This helps identify some of the more subtle presentations of certain disease states," Donley says.

The provider is more likely to consider obscure diagnoses, such as epidural abscess or pulmonary emboli. "We had hoped that we could help identify those patients who were more 'silently ill' who would be difficult to pick up simply by ED nurse triage," Donley explains.

The new triage process possibly saved the life of a young patient with a chief complaint of anxiety. "One of our advanced practice providers was astute enough to identify an unusual aortic murmur, and quickly facilitated the workup," Donley recalls. An aortic dissection was diagnosed, leading to a life-saving emergency surgery that may not have been picked up with the standard triage process.

As a result of the new triage process, the ED's LWBS rate decreased from 5% to 1%, according to an analysis of 2,162 patients who LWBS from 2013-2017.[1] Patients who left the ED without seeing the provider at triage decreased by 69%. However, patients who were seen initially, but left the ED without completing treatment, decreased by only 39%. This meant a number of patients still were LWBS even though they had been seen by a provider, and might have undergone lab work or testing.

Donley and colleagues were surprised so many patients still ended up leaving the ED — most of the time, without telling anyone.

"We anticipated that by having blood work drawn and imaging testing performed that many more — closer to 90% — would stay," Donley says.

Even so, ED providers believe by testing faster, they can identify potentially life-threatening conditions sooner. "Ultimately, we are still responsible for any patient in the ED waiting room or on the premises," Donley emphasizes. "Early identification of potential critical illness is key."

To combat high LWBS rates of 7%, Springfield, MA-based Baystate Medical Center added an EP at triage. The biggest concern was too many high-risk patients were walking out of the ED because of long waits. "We had a lot of ESI [Emergency Severity Index] Level 2s waiting too long to be seen who had negative consequences in terms of delays in care," says **Niels Rathlev**, MD, chair of the department of emergency medicine at the University of Massachusetts Medical School-Baystate.

The ED used a fast-track system through which lower-risk patients could be seen (ESI Levels 3, 4, and 5), but only on weekdays. "Like just about any other ED, we have a shortage of nursing care and techs. We had providers to do that kind of service for ESI 3s, 4s, and 5s. But we didn't have the ability to do that every single day," Rathlev reports.

The ED decided to shift the focus toward assessing the high-risk Level 2s faster. If there are no Level 2 patients in the waiting room, providers then focus on the Level 3s. "In terms of safety and patient care, it really made sense to work down from the top and focus on the most acute patients, as opposed to focusing on the 4s and 5s," Rathlev says.

Staffing the triage program with techs and nurses has been a challenge. Currently, the process is used from 11 a.m. to 7 p.m. on weekdays. "We would love to do it 24/7. But we would certainly need more nursing and tech staff to do that," Rathlev notes. "To be able to do it in the middle of the night, we would

certainly need more provider staff as well."

No additional staff have been added for the physician triage program. Instead, the fast-track providers were brought in for eight-hour shifts at triage. "We also have a swing doctor who takes care of all the major traumas and resuscitations, and helps wherever they can. We converted that role and put them up front," Rathlev says.

At triage, providers are working with limited information — usually, only a history and physical exam to assess how worried they are about the patient. "You ideally want your most experienced doctors who are the best at diagnostics," Rathlev says.

Physicians have caught some Level 2s who deteriorated in the waiting room. One diabetic patient presented with high blood sugar and was triaged as Level 2. The physician recognized the patient was going into diabetic ketoacidosis, and care was instituted sooner than previously would have been the case.

Another case involved an older patient who presented with abdominal pain and eventually developed fever and tachycardia. As it turned out, this patient's condition was serious. Other Level 2s reported chest pain, even though the ECG was normal and the cardiac troponin level was negative. However, the second troponin was either positive or indeterminate.

In a few cases, the patients were ruled in for acute coronary syndrome or a non-ST-elevation myocardial infarction. Without the physician at triage, these patients may have had to wait several hours for intervention. In theory, this could have been life-threatening.

Initially, not all ED staff bought into the new triage process. "It required quite a bit of 'human engineering,' if you will, to be able to do this," Rathlev says.

Nurses, technicians, the hospital's operational excellence team, and ED providers met for three days to hammer out the details on how physician triage would be implemented. Some were concerned that giving a rapid medical evaluation to patients up front exposed ED providers to more legal risks compared with the previous process (i.e., patients staying in the waiting room until they were brought back for an EP evaluation).

"That was the perception, and something we've had to work to overcome," Rathlev says. "We are focusing on helping people, and the medical/legal risk comes secondary to that. That is really a cultural and philosophical argument."

It is impossible to know with certainty how putting a physician at triage will affect ED malpractice claims. "But we all have to be on the same page with respect to what we are trying to do," Rathlev says. "Job No. 1 is quality and safety. As long as we focus on quality and safety, that will lead to lower medical/legal risk."

The ED's goal is shorter length-of-stay times for patients who are discharged. For patients who are admitted, "boarding still plays a large role, and [the new triage process] probably doesn't change length of stay," Rathlev says.

Total LWBS rates might not change, either, since prioritizing Level 2s means Level 4s and 5s are waiting longer. "But the advantage is fewer of the Level 2s are LWBS. We don't want anyone to walk out," Rathlev adds. "But if we had a choice, we would prefer a Level 5 to walk out rather than a Level 2." ■

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Time Spent in ED Hallways Raises Risk of Developing Delirium

By Stacey Kusterbeck

The ED can be an uncomfortable, unfamiliar, fast-paced, and disorienting environment for anyone. Hallway care makes it even more so. "The ED hallway can be especially challenging for older adults," says **Liron Sinvani**, MD, associate professor of medicine at Zucker School of Medicine at Hofstra/Northwell.

Sinvani and colleagues wanted to find out if the time spent in ED hallways was linked to the development of delirium. "ED delirium has been associated with falls, inappropriate ED disposition, longer hospital length of stay, functional decline, dementia, institutionalization, and higher 30-day and six-month mortality," notes Sinvani, director of the geriatric hospitalist service at Northwell Health. Sinvani and colleagues analyzed 25,162 patients, including

1,920 who met delirium criteria.[1] Patients with delirium spent a greater percentage of time in the ED hallway than other patients (50.5% vs. 10.8%), and stayed in the ED longer. Patients developed delirium in the ED more often than patients on the inpatient units (77.5% vs. 22.5%). Out of the 1,920 patients who developed delirium, 1,488 did so while in the ED.

"This highlights that the ED is a critical opportunity to prevent, detect, and manage delirium," Sinvani offers.

ED providers "are under enormous pressure," according to Sinvani, to simultaneously care for critically ill or injured patients, those boarding in the ED while awaiting an inpatient bed, and manage multiple other clinical duties (including screening for domestic violence and suicide risk).

"However, EDs must prioritize delirium prevention, screening, and management in order to improve the quality of care for millions of older adults presenting to our EDs each year," Sinvani stresses. The greater percentage of time spent in ED hallways, the more likely it is the patient would develop delirium. "This finding is very important for our older adults presenting to the ED," Sinvani says. "It should lead to mindfulness to the location of older adults who are waiting for disposition or beds in the ED." ■

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Cardiology, Stroke Malpractice Cases Involve ED Providers' Communication Gaps

By Stacey Kusterbeck

Multiple recent malpractice claims alleged failure to communicate among the providers in the ED, failure to carry out the EP's orders, or a combination of the two, reports **Heather A. Tereshko**, JD, principal at Post & Schell in Philadelphia. Here are common fact patterns from recent malpractice cases:

• Failure to follow the ED attending physician's orders to place a patient on telemetry monitoring when the EP suspected myocardial infarction.

In one malpractice case, the EP ordered the patient to be admitted with telemetry monitoring. The patient was admitted to the floor, but the plaintiff attorney alleged no one carried out telemetry monitoring. "The patient was reportedly found unresponsive approximately seven hours after being admitted, and, unfortunately, could not be resuscitated," Tereshko says.

• Improper communication in the ED when a patient presenting with chest pain underwent ECG testing.

In this case, the ECG was read as ruling out ST-segment elevation myocardial infarction (STEMI). The patient experienced chest pain again while in the ED. The physician assistant (PA) who was working in the ED requested that another ECG be performed. The PA specifically requested someone tell the ED attending interpreting the test result that it was the same patient who had undergone a previous ECG. No one ever communicated that information, and the second ECG was again interpreted to not reveal a STEMI.

The plaintiff attorney alleged that had the EP been made aware it was the same patient, the EP likely would have compared the later ECG to the earlier ECG, resulting in a different interpretation. "The allegation is that the second ECG was interpreted incorrectly, resulting in the patient being discharged and dying from an acute MI hours after discharge," Tereshko reports.

• Failure to follow the outgoing ED attending's order when a patient was evaluated during a shift change.

The plaintiff reported severe headache, left arm pain, and numbness, with a history of hypertension and obesity. Stroke was on the initial EP's differential diagnosis. The EP ordered a head CT without contrast and a neurology consult.

The EP's shift ended, and the outgoing EP signed out the patient to the oncoming EP, with the patient given pain medication in the interim. The patient reported a remote history of migraine headache in childhood. "Therefore, the discharge diagnosis was migraine headache, based on the ED attending's rationale that a stroke would not have responded to pain medication," Tereshko says.

The head CT was interpreted as showing no evidence of a bleed. The patient reported the headache was much better during an evaluation by the oncoming EP, who discharged the patient without waiting for the

neurology consult that had been requested. "Unfortunately, the patient suffered a more severe stroke and experienced disabling injuries, which are permanent," Tereshko says.

The patient sued the EP, alleging the bad outcome could have been prevented if the stroke had been diagnosed sooner, and that the initial ED presentation was possibly a transient ischemic attack. The case proceeded to trial and was settled before jury selection.

All these ED malpractice cases featured a similar fact pattern. In every case, the initial EP recognized the significance of a finding, but somehow it was not communicated to the next EP. "Had the initial ED physicians' suspicions of the underlying cause of the patient's symptoms been managed in the way that the initial ED physician planned, the outcome may have been different," Tereshko observes.

Taken as a whole, the ED malpractice cases show that cutting corners with poor communication, says Tereshko, "can have a devastating result for the patient." ■

Patients Offer Insight on ED Providers' Communication Skills

By Stacey Kusterbeck

Poor communication is a well-established cause of ED malpractice claims.[1] However, "there's a lack of validated methods to assess these important skills in resident physicians," says **Nicole Dubosh**, MD, assistant professor of emergency medicine at Harvard Medical School.

Faculty or attending physicians assess communication skills, which are a core competency for medical students and residents.

"Patients don't get the opportunity to do that, even though the patient is actually the recipient of the communication," notes Dubosh, director of undergraduate medical education at Beth Israel Deaconess Medical Center.

Dubosh and colleagues wanted to know if attending physicians and patients would rate communication skills of emergency medicine residents differently. During ED shifts at an academic medical center in 2017-2018, researchers asked 1,097 attending physicians and 952 patients to rate the communication skills of 26 residents.[2]

Participants were asked to rate how well the resident communicated with colleagues, patients, and nursing/ancillary staff. Ratings of attending physicians and patients varied significantly. The researchers were not surprised by this finding. "This is a starting point for further study on how to assess this domain," Dubosh says. "We are always looking at the best way to assess our learners. We don't have a gold standard tool to assess communication."

EDs use various methods to do this. "The questions arise: How valid are these tools that we are using? How good are we at assessing?" Dubosh asks.

For ED visits, many factors come into play with how patients perceive the provider's communication skills. Patients' emotions and perhaps unrealistic expectations can cloud their perception. "It's possible the resident conveyed all information perfectly well, yet the patient left confused," Dubosh offers.

An attending physician may note the resident conveyed everything the patient needed to know, but what is really important is whether the patient actually understood the information and retained it. The discrepancy in ratings showed the importance of gathering feedback not only from attendings but also patients. "As we've found, they do differ," Dubosh says. "With what we call '360' evaluations, you are getting input from multiple people — the attending, the nurses, the patient."

With better communication, ED patients are more likely to follow recommendations and experience better outcomes.[3] "Furthermore, there is decreased chance of litigation if the patient perceives their doctor to be a strong communicator," Dubosh adds.

There are many studies on communication assessment tools, but none are statistically significantly different enough to be considered a best practice, according to **Jay M. Brenner**, MD, FACEP, medical director of the community ED at SUNY Upstate University Medical Campus.

"Ultimately, I think that the best practice is for an ED medical director to pay attention to their direct observation of their ED clinicians' communication behavior," he says.

Some ED clinicians will be able to self-correct if they receive feedback from a patient.

"Some, however, will require more intensive coaching and mentoring. All may benefit from emotional intelligence training," Brenner suggests. "Alternatively, observation of simulation behavior can be informative."

For example, communication skills demonstrated during resuscitation drills may be a good indication of how EPs behave with actual patients and give an opportunity for brief feedback. "Patient surveys have become an industry standard; however, they can be ripe with issues, such as bias and discrimination," Brenner cautions.

For instance, patients might give terrible scores because the EP adhered to strict opiate prescribing guidelines. "Nevertheless, surveys are an easy and available indicator of how your ED clinicians are perceived," Brenner says. ■

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Discussions on Patient Care Could Become Discoverable

By Stacey Kusterbeck

If a group of EPs want to discuss a case as part of a peer review process, they probably assume that discussion is protected from discovery during litigation. In fact, states vary widely in this regard, with gaps in peer review protections identified in 17 states and the District of Columbia.[1]

"We were definitely surprised to find so much variability among the states," says **Rachel A. Lindor**, MD, JD, the study's lead author and research chair in the department of emergency medicine at Mayo Clinic in Phoenix.

In those 18 jurisdictions, common exceptions included peer review without a specific number of participants, peer review that was not formally mandated by the institution, and statements made by participants outside the formal peer review process.

"We felt that it was important to get this information out there," Lindor says. "The exceptions that we identified are really not intuitive."

For example, there is no apparent reason why information should not be confidential if only nine people are present as opposed to 10. "But if you live in certain areas, that is the law," Lindor notes.

If one EP's evaluation of another EP is labeled as "peer review," there is a common misconception that it is going to be protected from discovery. "Unfortunately, labeling an evaluation of a healthcare provider as peer review does not necessarily provide peer review protection," says **Patricia S. Hofstra**, JD, a partner in the Chicago office of Duane Morris. "Peer review is protected from discovery when the peer review is conducted in strict compliance with medical staff bylaws and state and federal legal and regulatory requirements."

If a court determines peer review protections do not apply, the material can be used as evidence against a defendant EP. "That is not always a bad outcome," Hofstra says.

Evidence indicating the EP conducted peer review diligently and in good faith could help the defense. Considering the possibility of discoverability, EPs should avoid inaccurate, sarcastic, or unnecessary comments during peer review.

"A worse outcome is that the plaintiff is able to show that the ED providers knew that an EP defendant presented a danger to patients or staff, but did nothing to protect patients or staff from that individual," Hofstra says.

Some states do not extend protection to peer reviews conducted by an ED group practice. A Pennsylvania court held that an emergency medicine provider group did not qualify for peer review protection under the Pennsylvania Peer Review Protection Act.[2]

In that case, review should be conducted by the hospital's medical staff (in accordance with the hospital's medical staff bylaws) to take advantage of the peer review discovery protections.

The ruling "clearly creates some significant concerns for ED providers and the ED medical groups who, in Pennsylvania at least, are completely unprotected by any peer review privilege. That's a big concern," says **Mark Kadzielski**, JD, a partner at Baker Hostetler in Los Angeles.

The ruling raises doubts about exactly what can be protected from discovery. The Pennsylvania Supreme Court has used the case in other

decisions.[3] Those subsequent cases have not involved ED providers.

"But the fact is that the ruling has been upheld repeatedly by the supreme court, which has major ramifications for other states," Kadzielski says.

Pennsylvania ED providers now need to ensure peer review is conducted by medical staff committees, not the ED medical group. It is possible other states may take the same position.

"Individual ED physicians need to be very conscious of the fact that if peer review isn't conducted by a hospital committee, they're at risk of having information in a performance file, or whatever the ED group calls it, subjected to discovery. It can be used against the ED medical group as well as the individual EP in any malpractice lawsuit," Kadzielski warns.

If EPs meet to examine cases where there was an unexpected bad outcome, regardless of whether their discussion is discoverable, depends on a few factors. If the EPs are members of the medical group who are discussing the matter for the purpose of performance evaluation, hiring, firing, and promotions, "that's probably not going to be protected in most states," Kadzielski says.

However, if the EPs are members of the medical staff committee in the department of medicine, and they are focused on the quality of ED care within the hospital, and minutes are created through the hospital peer review committee that are approved by the medical executive committee, "then it's probably protected," Kadzielski notes.

The unintended consequence is EPs will think twice about engaging in candid, albeit confidential, discussions. "The other twist here is that the credentialling process, at least in Pennsylvania, appears not to be protected at all," Kadzielski observes.

This means if an EP is terminated from one ED group or hospital, and moves to another hospital and is sued for malpractice, the plaintiff attorney can request the credentialling files from the first group or hospital. "That creates all kinds of implications," Kadzielski says.

Joshua E. Gajer, JD, says that as a general rule, peer review protections are only going to apply if the state where the provider practices has a peer review statute on the books, the information at issue was exchanged in formal compliance with the technical requirements of the applicable statute, and the purpose of the discussion was to improve future outcomes (not to manage risk related to a prior bad outcome).

PHYSICIANS SHOULD AVOID INACCURATE, SARCASTIC, OR UNNECESSARY COMMENTS DURING PEER REVIEW.

"Although the public policy rationale and general framework for peer review protection is largely similar among states that employ it, the technical details of how the protection operates can vary state to state," says Gajer, counsel at Philadelphia-based White and Williams LLP.

Court rulings have emphasized the importance of maintaining strict technical adherence to the requirements of the applicable statute for protections to attach.[4] "This change is consistent with an overall trend throughout the country, which disfavors peer review protections," Gajer says.[5,6]

Gajer says peer review protections must strike the right balance between the plaintiff's right to discover information and the need for providers to openly discuss care without fearing legal repercussions. "What good are quality improvement efforts if you cannot share the learnings from past mistakes with other members of the institution without risking waiver of applicable privileges?" Gajer asks.

Maintaining robust peer review protections are critical to ensuring hospital providers, including EPs, "can continue to engage in the type of unflinching self-criticism that promotes constant quality improvement in medicine for the betterment of all patients," Gajer says.

EPs often believe any discussions about patient care with colleagues are peer review-protected. "Discussions in the hallway, the elevator, the medical staff office, or a physician lounge area are examples of discussions that are not protected," Hofstra explains.

Also problematic: text messaging or emails for informal "curbside consults" that used to happen exclusively in person. "These messages, sent in the aftermath of an unexpected outcome, are often raw, emotional reactions made without the benefit of rigorous reflection and careful analysis," Gajer notes.

Such communications are unlikely to be protected under the applicable peer review statute in any state. "This can be very problematic in subsequent litigation," Gajer cautions.

ED providers may disagree on whether the standard of care was met in any given case, or whether even in a clear case of deviation from the

standard of care that the deviation actually harmed the patient. "ED providers should be wary of speaking about a case or putting anything in writing outside the formal peer review setting," Gajer offers.

Discussions often occur without the benefit of outside expert review or complete information (e.g., from pending lab results or an autopsy). "Accordingly, preliminary conclusions drawn during these meetings will not always conform to the ultimate medical reality," Gajer says.

Any of those communications could become discoverable in a subsequent malpractice lawsuit. "The potential risks to hospitals and providers due to further erosion of peer review protections are substantial," Gajer says. "Peer review discussions are often, by nature, wide-ranging and speculative."

At teaching hospitals in particular, residents and fellows routinely discuss patient care with attending physicians. The purpose of these conversations is to help residents and fellows learn, with the objective of improving future care. Even so, says Gajer, "if these discussions are held in any forum outside of the formal peer review process, they will be discoverable in litigation."

In the heat of the moment, EPs sometimes send texts to colleagues, raising the inference of substandard care. "Even truly benign messages can be misinterpreted," Gajer says.

Gajer has seen EPs send texts stating, "I wish we would have caught it sooner" and "Oh my God, that is horrible. Do you think we killed him?" and "Do you think there is anything we should have done differently? I feel so terrible about everything."

"ED providers may wonder aloud or in writing whether they should have made the 'missed' diagnosis sooner, or if they could have done anything differently to change the outcome," Gajer says.

If disclosed in discovery, these statements can be problematic for the defense. It is difficult for defense attorneys to support the care using an outside expert if there is evidence indicating the involved EP thought there was a deviation from the standard of care.

"It can make even a medically defensible case, where everything was done appropriately, extraordinarily difficult to defend," Gajer says. ■

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CME/CE QUESTIONS

1. **Emergency care of patients with sickle cell disease (SCD) could improve if more patients were equipped with:**
   a. treatment plans prepared by SCD experts.
   b. better knowledge of their disease.
   c. reminders of when to take their medicines.
   d. primary care providers.

2. **Many emergency providers do not realize the average lifespan for a patient with SCD is:**
   a. in the early to mid-30s.
   b. in the early to mid-40s.
   c. in the early to mid-50s.
   d. in the early to mid-60s.

3. **Patients with SCD present to the ED because:**
   a. they have tachycardia.
   b. they have overdosed on opioids.
   c. they are experiencing extreme nausea.
   d. they are having a pain crisis.

4. **According to new guidelines on the treatment of patients with recurrent, low-risk chest pain, what should clinicians avoid so they do not miss alternative diagnoses that may be life-threatening or disabling?**
   a. Overconfidence
   b. Relying too heavily on old data
   c. Anchoring bias
   d. Rushing through a patient's medical history

5. **Which did a recent study reveal regarding an ED provider at triage?**
   a. Patients with epidural abscess were mistriaged as low acuity.
   b. Pulmonary embolism cases were missed.
   c. Fewer patients left without being seen.
   d. Patients underwent unnecessary diagnostic tests that otherwise would not have been ordered.

6. **Which did a recent study reveal regarding hallway care and dementia in ED patients?**
   a. Younger adults developed delirium after hours in the waiting room.
   b. ED delirium was linked to shorter hospital length of stay.
   c. Patients with delirium spent less time in the ED hallway than other patients.
   d. Of patients who developed delirium, most developed delirium while in the ED.

7. **Which is true regarding discoverability of ED peer review materials?**
   a. Labeling an evaluation of a healthcare provider as peer review is the only way to ensure the material is not discoverable.
   b. States can no longer base peer review protections on the number of participants.
   c. Some states do not extend peer review protection to peer review conducted by an ED group practice.
   d. Courts have rejected the importance of maintaining strict technical adherence to requirements to encourage candid discussions.