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Dr. Maria Frank is a hospitalist at Denver Health Hospital Authority and associate professor at the University of Colorado.

COURTESY DENVER HEALTH

Hospital disaster preparation confronts COVID

Hospitalist groups should have emergency response plans

By Larry Beresford

Jason Persoff, MD, SFHM, now a hospitalist at University of Colorado Hospital in Aurora and an amateur storm chaser, got a close look at how natural disasters can impact hospital care when a tornado destroyed St. John's Regional Medical Center in Joplin, Mo., on May 22, 2011.

He and a colleague who had been following the storm responded to injuries on the highway before reporting for a long day's service at the other hospital in Joplin, Freeman Hospital West, caring for patients transferred from St. John's on an impromptu unit without access to their medical records.

"During my medical training, I had done emergency medicine as an EMT, so I was interested in how the system responds to emergencies," he explained. "At Joplin I learned how it feels when the boots on the ground in a crisis are not connected to an incident command structure." Another thing he learned was the essential role for hospitalists in a hospital's response to a crisis – and thus the need to involve them well in advance in the hospital's planning for future emergencies.

"Disaster preparation – when done right – helps you 'herd cats' in a crisis situation," he said. "The tornado and its wake served as defining moments for me. I used them as the impetus to improve health care's response to disasters." Part of that commitment was to help hospitalists understand their part in emergency preparation.

Dr. Persoff is now the assistant medical director of emergency preparedness at University of Colorado Hospital. He also helped to create a position called physician support supervisor, which is filled by physicians who have held leadership positions in a hospital to help coordinate the disparate needs of all clinicians in a crisis and facilitate rapid response.

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THE HOSPITALIST
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'If only you knew'

By Swati Mehta, MD, FACP

Patient:

Alone in the Emergency Dept, breathless, I wait for you
"The Hospitalist will admit you" says the nurse, *"she will come in a few."*
 Muffled voices – masked faces bustle in & out of the room
 Loud beeping machines & the rushed pace, fill me with gloom
 You walk in the room, lean in to introduce
 You tell me your name and what you will do
 For a moment I'm more than a diagnosis, an H&P,
 and then the fleeting connection passes, can't you see?
 You listen, seem hurried, but I think you care
 Would you sit with me while my story I share?

Physician:

I do see you, I feel your fear & anguish
 A moment to know you too, is all that I wish
 How do I convince you that I truly care?
 When, with all my tasks I have only minutes to spare

Patient:

You diligently ask questions from your checklist of H.P.I.,
 Finalizing the diagnosis, when I hear your pager beep.
 An admission awaits I know, but please sit by my side
 Could we make our new-found meeting, a little more deep?

Physician:

The minute our day begins, it's go-go-go
 There isn't a second to pause, inhale, or be slow
 Missed lunch, it's 6 p.m., bite to eat I dare?
 My shift ended 3 hrs. back but I'm still here
 Notes, DC summaries, calls to your PCP
 Advocating for you, is more than a job to me.

Tirelessly I work, giving patients my all
 Drained, exhausted yet, for you, standing tall
 Our bond albeit short lived, is very important to me
 Watching you get better each day, is fulfilling for me!

Patient:

You take time to ask about my family, about what I like to do
 I tell you all about Beatles & my sweet grandkids
 You sit & ask me *"what matters most to you"*
 I reply: getting well for the wedding of my daughter "Sue"

Physician:

I sense loneliness engulfing you at times
 Your fear and anxiety, I promise to help overcome
 I will help you navigate this complex hospital stay
 Together we will fight this virus or anything that comes our way
 Each passing minute the line between doctor and patient disappears
 That's when we win over this virus, and hope replaces fear

Patient:

Every day you come see me, tell me my numbers are improving
 I notice your warm and kind eyes behind that stifling mask
 When they light up as you tell me I'm going home soon
 I feel assured I mean more to you, than a mere task

Physician:

Each day I visit, together we hum *"here comes the sun"*
 I too open up and share with you, my favorite Beatles song
 Our visits cover much more than clinical medicine
 True connection & mutual soul healing begins, before long.

Patient:

Today is the day, grateful to go home,
 My body may be healed due to all the medicine & potions,
 But my bruised soul was healed due to all your kind emotions.

Time to bid adieu Dear Doc – If I meet you at our local grocery store,
 I promise I'll remember those kind eyes, and wave
 After all, you stood between me and death
 I'm indebted to you, it's my life that you did save!

Dr. Mehta is director of quality and performance and patient experience at Vuity in Emeryville, Calif.

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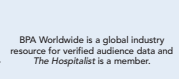
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Planning for 2021 and beyond

COVID's impact on hospital medicine administrators

By Sarah Ludwig Rausch

MDedge News

The COVID-19 pandemic has given hospitalists a time to shine. Perhaps few people see – and value – this more than the hospital medicine administrators who work to support them behind the scenes.

"I'm very proud to have been given this opportunity to serve alongside these wonderful hospitalists," said Elda Dede, FHM, hospital medicine division administrator at the University of Kentucky Healthcare in Lexington.

As with everything else in U.S. health care, the pandemic has affected hospital medicine administrators planning for 2021 and subsequent years in a big way. Despite all the challenges, some organizations are maintaining equilibrium, while others are even expanding. And intertwined through it all is a bright outlook and a distinct sense of team support.



Ms. Dede

Pandemic impacts on 2021 planning

Though the Texas Health Physicians Group (THPG) in Fort Worth is part of Texas Health Resources (THR), Ajay Kharbanda, MBA, SFHM, vice president of practice operations at THPG, said that each hospital within the THR system decides who that hospital will contract with for hospitalist services. Because the process is competitive and there's no guarantee that THPG will get the contract each time, THPG has a large focus on the value they can bring to the hospitals they serve and the patients they care for.

"Having our physicians engaged with their hospital entity leaders was extremely important this year with planning around COVID because multiple hospitals had to create new COVID units," said Mr. Kharbanda.

With the pressure of not enough volume early in the pandemic, other hospitalist groups were forced to cut back on staffing. "Within our health system, we made the cultural decision not to cancel any shifts or cut back on staffing because we didn't want our hospitalists to be impacted negatively by things that were out of their control," Mr. Kharbanda said.

This commitment to their hospitalists paid off when there was a surge of patients during the last quarter of 2020. "We were struggling to ensure there were adequate physicians available to take care of the patients in the hospital, but because we did the right thing by our physicians in the beginning, people did whatever it took to make sure there was enough staffing available for that increased patient volume," Mr. Kharbanda said.

The first priority for University of Kentucky Healthcare is patient care, said Ms. Dede. Before the pandemic, the health system already had a two-layer jeopardy system in place to deal with

scheduling needs in case a staff member couldn't come in. "For the pandemic, we created six teams with an escalation and de-escalation pattern so that we could be ready to face whatever changes came in," Ms. Dede said. Thankfully, the community wasn't hit very hard by COVID-19, so the six new teams ended up being unnecessary, "but we were fully prepared, and everybody was ready to go."

Making staffing plans amidst all the uncertainty surrounding the pandemic was a big challenge in planning for 2021, said Tiffani Panek, CLHM, SFHM, hospital medicine division administrator at Johns Hopkins School of Medicine, Johns Hopkins Bayview Medical Center, in Baltimore. "We don't know what next week is going to look like, let alone what 2 or 3 months from now

is going to look like, so we've really had to learn to be flexible," she said. No longer is there just a Plan A that can be adjusted as needed; now there has to be a Plan B, C, and D as well.

Because the hospital medicine division's budget is tied to the hospital, Ms. Panek said there hasn't been a negative impact. "The hospital supports the program and continues to support the program, regardless of COVID," she said. The health system as a whole did have to reduce benefits and freeze raises temporarily to ensure employees could keep their jobs. However, she said they have been fortunate in that their staff has been able to – and will continue to – stay in place.

As with others, volume fluctuation was an enormous hurdle in 2021 planning, said Larissa Smith, adult hospitalist and palliative care manager at The Salem (Ore.) Health Medical Group, Salem Health Hospitals and Clinics. "It's really highlighted the continued need for us to be agile in how we structure and operationalize our staffing," Ms. Smith said. "Adapting to volume fluctuations has been our main focus."

To prepare for both high and low patient volumes in 2021 and be able to adjust accordingly, The Salem Health Medical Group finalized in December 2020 what they call "team efficiency plans." These plans consist of four primary areas: surge capacity, low census planning, right providers and right patient collaboration, and right team size.

Ms. Smith is working on the "right providers and right patient collaboration" component with the trauma and acute care, vascular, and general surgery teams to figure out the best ways to utilize hospitalists and specialists. "It's been really great collaboration," she said.

Administrative priorities during COVID-19

The pandemic hasn't changed Ms. Panek's administrative priorities, which include making

sure her staff has whatever they need to do their jobs and that her providers have administrative support. "The work that's had to be done to fulfill those priorities has changed in light of COVID though," she said.

For example, she and her staff are all still off site, which she said has been challenging, especially given the lack of preparation they had. "In order to support my staff and to make sure they aren't getting overwhelmed by being at home, that means my job looks a little bit different, but it doesn't change my priorities," said Ms. Panek.

By mid-summer, Ms. Dede said her main priority has been onboarding new team members, which she said is difficult with so many meetings being held virtually. "I'm not walking around the hallways with these people and having opportunities to get feedback about how their onboarding is going, so engaging so many new team members organically into the culture, the vision, the goals of our practice, is a challenge," she said.

Taking advantage of opportunities for hospital medicine is another administrative priority for Ms. Dede. "For us to be able to take a seat at every possible table where decisions are being made, participate in shaping the strategic vision of the entire institution and be an active player in

bringing that vision to life," she said. "I feel like this is a crucial moment for hospitalists."

Lean work, which includes the new team efficiency plans, is an administrative priority for Ms. Smith, as it is for the entire organization. "I would say that my biggest priority is just supporting our team," Ms. Smith said. "We've been on a

resiliency journey for a couple years."

Their resiliency work involves periodic team training courtesy of Bryan Sexton, PhD, director of the Duke Center for Healthcare Safety and Quality. The goal of resiliency is to strengthen positive emotion, which enables a quicker recovery when difficulties occur. "I can't imagine where we would be, this far into the pandemic, without that work," said Ms. Smith. "I think it has really set us up to weather the storm, literally and figuratively."

Ensuring the well-being of his provider group's physicians is a high administrative priority for Mr. Kharbanda. Considering that the work they've always done is difficult, and the pandemic has been going on for such a long time, hospitalists are stretched thin. "We are bringing some additional resources to our providers that relate to taking care of themselves and helping them cope with the additional shifts," Mr. Kharbanda said.

Going forward

The hospital medicine team at University of Kentucky Healthcare was already in the process of planning and adopting a new funds flow model, which increases the budget for HM, when the

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Tofacitinib shows mortality benefit in patients with COVID-19 pneumonia

By Steve Cimino

MDedge News

The Janus kinase inhibitor tofacitinib reduces the risk of both death and respiratory failure in hospitalized adults with COVID-19 pneumonia, a new Brazilian study has found.

“Whether the use of JAK inhibitors is superior or additive to other specific immunomodulatory therapies in patients hospitalized with COVID-19 remains to be determined,” Patrícia O. Guimarães, MD, PhD, of the Hospital Israelita Albert Einstein in São Paulo, and coauthors wrote. The study was published in the *New England Journal of Medicine* (2021 Jun 16. doi: 10.1056/NEJMoa2101643).

The results of previous trials that tested JAK inhibitors as therapies for COVID-19 have been mixed. The second iteration of the Adaptive COVID-19 Treatment Trial (ACTT-2) found that a combination treatment of baricitinib and the Food and Drug Administration–authorized rem-

desivir was superior to remdesivir alone, but ACTT-4 – which compared baricitinib plus remdesivir with dexamethasone plus remdesivir – was stopped for futility in April 2021.

To assess the efficacy and safety of tofacitinib as a potential treatment for COVID-19, the researchers launched a randomized, double-blind trial made up of 289 patients from 15 sites in Brazil. The Study of Tofacitinib in Hospitalized Patients With COVID-19 Pneumonia (STOP-COVID) split its participants into two groups: one (n = 144) received 10 mg of oral tofacitinib twice daily and the other (n = 145) received placebo. Treatment was to be administered for up to 14 days or until hospital discharge. The participants’ mean age was 56 years, and 34.9% were women.

Over 89% of participants received glucocorticoids during hospitalization, a significant increase, compared with ACTT-2’s 12%. Through 28 days, death or respiratory failure occurred in 18.1% of the tofacitinib group and in 29.0% of the placebo group (risk ratio, 0.63; 95% confi-

dence interval, 0.41-0.97; $P = .04$). Death from any cause occurred in 2.8% of the tofacitinib group and 5.5% of the placebo group (hazard ratio, 0.49; 95% CI, 0.15-1.63). The median number of days treatment was administered was 5 in the tofacitinib group and 6 in the placebo group. The median duration of hospital and ICU stays were similar across groups.



Dr. Wallace

On the eight-level National Institute of Allergy and Infectious Diseases ordinal scale of disease severity, the proportional odds of having a worse score with tofacitinib, compared with placebo, was 0.6 (95% CI, 0.36-1.00) at day 14 and 0.54 (95% CI, 0.27-1.06) at day 28. Adverse events occurred in 26.1% of the tofacitinib group and 22.5% of the placebo group, with serious adverse events occurring in 20 patients (14.1%) on tofacitinib and 17 patients

(12%) on placebo. Patients on tofacitinib suffered from events like deep vein thrombosis, acute MI, ventricular tachycardia, and myocarditis, each of which affected one person, while one placebo patient each suffered from hemorrhagic stroke and cardiogenic shock. The incidence of serious infection was 3.5% in the tofacitinib group and 4.2% in the placebo group.

“There is a lot of interest in repurposing a variety of disease-modifying antirheumatic drugs for the treatment of COVID-19, which includes JAK inhibitors,” Zachary S. Wallace, MD, of the rheumatology unit at Massachusetts General Hospital, Boston, said in an interview. “The ACTT-2 data was compelling; it did suggest perhaps a benefit associated with baricitinib for COVID. This study is more compelling.”

The trial was sponsored by Pfizer. Several authors acknowledged potential conflicts of interest, including receiving grants and personal fees from Pfizer and various other pharmaceutical companies.

Continued from previous page

pandemic hit. “This is actually very good timing for us,” noted Ms. Dede. “We are currently working on building a new incentive model that maximizes engagement and academic productivity for our physicians, which in turn, will allow their careers to flourish and the involvement with enterprise leadership to increase.”

They had also planned to expand their teams and services before the pandemic, so in 2021, they’re hiring “an unprecedented number of hospitalists,” Ms. Dede said.

Mr. Kharbanda said that COVID has shown how much impact hospitalists can have on a hospital’s success, which has further highlighted their value. “Most of our programs are holding steady and we have some growth expected at some of our entities, so for those sites, we are hiring,” he said. Budget-wise, he expected to feel the pandemic’s impact for the first half of 2021, but for the second half, he hopes to return to normal.

Other than some low volumes in the spring, Salem Health has mostly maintained its typical capacities and funds. “Obviously, we don’t have control over external forces that impact health care, but we really try to home in on how we utilize our resources,” said Ms. Smith. “We’re a financially secure organization and I think our lean work really drives that.” The Salem Hospital is currently expanding a building tower to add another 150 beds, giving them more than 600 beds. “That will make us the largest hospital in Oregon,” Ms. Smith said.

Positive takeaways from the pandemic

Ms. Dede feels that hospital medicine has entered the health care spotlight with regard to hospitalists’ role in caring for patients during the pandemic. “Every challenge is an opportunity for growth and an opportunity to show that you know what you’re made of,” she said. “If there was ever doubt that the hospitalists are the beating heart of the hospital, this doubt is now gone. Hospitalists have, and will continue to, shoulder most of the care for COVID patients.”

“We’ve put a lot of resources into physical structures and that takes away value from patients.”

The pandemic has also presented an opportunity at University of Kentucky Healthcare that helps accomplish both physician and hospital goals. “Hospital medicine is currently being asked to staff units and to participate in leadership committees, so this has been a great opportunity for growth for us,” Ms. Dede said.

The flexibility her team has shown has been a positive outcome for Ms. Panek. “You never really know what you’re going to be capable of doing until you have to do it,” she said. “I’m really proud of my group of administrative staff for how well that they’ve handled this considering it was supposed to be temporary.”

Mr. Kharbanda sees how the pandemic has brought his hospitalist team together. “I think having the conversations around well-being and family safety were the real value as we learn to survive the pandemic.”

Ms. Smith said the pandemic has brought about changes for the better that will likely be permanent, like having time-saving virtual meetings and working from home. “We’ve put a lot of resources into physical structures and that takes away value from patients,” said Ms. Smith. “If we’re able to shift people in different roles to work from home, that just creates more future value for our community.”

Ms. Dede also sees the potential benefits that stem from people’s newfound comfort with video conferencing. “You can basically have grand rounds presenters from anywhere in the world,” she said. “You don’t have to fly them in, you don’t have to host them and have a whole program for a couple of days. They can talk to your people for an hour from the comfort of their home.”

Ms. Dede says expanding telehealth options and figuring out how hospitals can maximize that use is a priority. “Telehealth has been on the minds of so many hospital medicine practices, but there were many questions without answers about how to implement it,” she said. “During the pandemic, we were forced to find those solutions, but a lot of the barriers have still not been eliminated. I would recommend that groups keep their eyes open for new technological solutions that may empower your expansion into telehealth.”



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“Enough English” to be at risk

Clinicians need well-translated documents to treat LEP patients

By Taru Saigal, MD

A hectic Friday morning at the hospital seemed less stressful amid morning greetings and humor from colleagues. In a team room full of hospitalists, life and death are often discussed in detail, ranging from medical discussions to joys and frustrations of the day to philosophy, politics, and more. It is almost impossible to miss something interesting.

People breaking into their native languages over the phone call from home always make me smile. The mention of a “complicated Indian patient unable to use interpreter” caught my attention.

My friend and colleague asked if I would be willing to take over the patient since I could speak Hindi. I was doubtful if I would add anything to make a meaningful difference, given the patient wasn’t even participating in a conversation. However, my colleague’s concern for the patient and faith in me was enough to say, “Sure, let me add her to my list.”

At the bedside, it felt like a classic “acute on chronic” hot mess situation. The patient presented with a generalized rash, anasarca, renal failure, multifocal pneumonia, and delirium. All I could gather from the patient were some incomprehensible words that sounded like Hindi. I called the family to obtain some history and to provide updates. Her son was excited to hear from me, and it didn’t take him long to guess that I was from India. But that could still mean that I might speak any of the 22 or more Indian languages.

Answering my questions one by one in perfectly understandable English, he was short and sweet. Suspicious of missing out on details, I offered hesitantly, “You could speak in Hindi with me.” Then came a flood of information with the details, concerns, questions, and what was lost in the translation.

We all attend to patients and families with limited English proficiency (LEP), immigrants, and nonimmigrants. LEP is a term used to describe individuals who do not speak English as their primary language and have a limited ability to read, speak, write, or understand English.¹ Recent data from the American Community Survey (2005-2009) report that 8.6% of the population (24

million Americans) have LEP.² It’s a large and growing population that needs help overcoming language barriers and the appropriate use of professional medical interpreter services – a backbone to safe, quality, and cost-effective patient care.

The following day at bedside rounds, the nurse reported that the patient was looking and responding better. She could cooperate with interpreter services and could speak “some English.” Over the years, one thing that sounds more alarming than “no English” is “some English” or “enough English.” Around noon I received a page that the patient was refusing intravenous Lasix. At the bedside, however, the patient seemed unaware of the perceived refusal. Further discussions with the nurse led to a familiar culprit, a relatively common gesture in South Asian cultures, a head bobble or shake.

“One way to bypass language barriers is to recognize the value added by hiring and training bilingual health care providers and fostering cultural competence.”

The nurse reported that the patient shook her head side to side, seemed upset, and said “NO” when trying to administer the medication. On the other hand, the patient reported that she was upset to be at the hospital but had “NO” problem with the medicine.

My patient’s “some English” was indeed “enough English” to put her at risk due to medical error, which is highly likely when patients or providers can speak or understand a language to “get by” or to “make do.” Like my patient, the LEP patient population is more likely to experience medical errors, longer hospital stays, hospital-acquired complications, surgical delays, and readmissions. They are also less likely to receive preventive care, have access to regular care, or be satisfied with their care. They are much more likely to have adverse effects from drug complications, poor understanding of diagnoses, a greater risk of being

misunderstood by their physicians or ancillary staff, and less likely to follow physician instructions.³⁻⁵ One study analyzed over 1,000 adverse incident reports from six Joint Commission-accredited hospitals for LEP and English-speaking patients and found that 49% of LEP patients experienced physical harm versus 29.5% of English-speaking patients.⁶

I updated the patient’s LEP status that was missing in the chart, likely because of altered mental status at the time of admission. Reliable language and English proficiency data are usually entered at the patient’s point of entry with documentation of the language services required during the patient-provider encounter. The U.S. Census Bureau’s operational definition for LEP is a patient’s self-assessed ability to speak English less than “very well,” but how well it correlates with a patient’s actual English ability needs more study. Also, one’s self-assessed perception of ability might vary day to day, and language ability, by itself, is not static; it can differ from moment to moment and situation to situation. It may be easier to understand words in English when the situation is simple and less stressful than when things are complicated and stressful.

With a definition of LEP rather vague and the term somewhat derogatory, its meaning is open to interpretation. One study found that, though speaking English less than “very well” was the most sensitive measure for identifying all of the patients who reported that they were unable to communicate effectively with their physicians, it was also the least specific.⁷ This lower specificity could lead to misclassification of some patients as LEP who are, in fact, able to effectively communicate in English with their physicians. This type of misclassification might lead to costly language assistance and carry the potential to cause conflicts between patient and provider. Telling a patient or family that they may have a “limited English proficiency” when they have believed otherwise and feel confident about their skills may come as a challenge. Some patients may also pretend to understand English to avoid being embarrassed about their linguistic abilities or perceive that they might be judged on their abilities in general.



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Exiting the room, I gently reminded the RN to use the interpreter services. “Who has never been guilty of using an ad hoc interpreter or rushing through a long interpreter phone call due to time constraints?” I thought. A study from 2011 found that 43% of hospitalized patients with LEP had communicated without an interpreter present during admission, and 40% had communicated without an interpreter present after admission.⁸ In other words, a system in place does not mean service in use. But, the use of a trained interpreter is not only an obligation for care providers but a right for patients as per legal requirements of Title VI of the Civil Rights Act and the Standards for Culturally and Linguistically Appropriate Services (CLAS) by the Department of Health & Human Services’ Office of Minority Health.⁹ In January 2010, The Joint Commission released a set of new and revised standards for patient-centered communication as part of an initiative to advance effective communication, cultural competence, and patient- and family-centered care.

Despite the requirements and availability of qualified medical interpreter services, there are multiple perceived and experienced barriers to the use of interpreter services. The most common one is that what comes as a free service for patients

is a time commitment for providers. A long list of patients, acuity of the situation, and ease of use/availability of translation aids can change the calculus. One may be able to bill a prolonged service code (99354-99357) in addition to the appropriate E/M code, although a patient cannot be billed for the actual service provided by the interpreter. Longstanding CMS policy also permits reimbursement for translation/interpretation activities, so long as they are not included and paid for as part of the rate for direct service.¹⁰

The patient, however, insisted that she would rather have her son as the interpreter on the 3-way over the phone (OPI) conference call for interpretation. “He speaks good English and knows my medical history well,” she said. I counseled the patient on the benefits of using interpreter services and explained how to use the call button light and the visual aids.

Placing emphasis on educating patients about the benefits of using, and risks of not using, interpreter services is as essential as emphasizing that care providers use the services. Some patients may voluntarily choose to provide their own interpreter. Use of family members, friends, or unqualified staff as interpreters is one of the most commonly reported causes of errors by frontline staff. Using in-language collateral may help these patients understand how medical interpretation may create a better patient experience and outcome. A short factsheet, in different languages, on qualified interpreters’ expected benefits: meaning-for-meaning communication, impartiality, medical privacy, and improved patient safety and satisfaction, can also come in handy.

However, if the patient still refuses, providers should document the refusal of the offer of free language services, the name of the interpreter designated by the patient, the interpreter’s relationship to the LEP person, and the time or portions of the patient encounter that the interpreter’s services were used. Yet, language interpretation alone can be inadequate without document translation. According to one study, despite the availability of on-site professional interpreter services, hospitalized patients who do not speak English are less likely to have signed consent forms in their medical records.¹¹ Health care professionals, therefore, need well-translated documents to treat LEP patients. Translated documents of consent

forms for medical procedures, post-discharge instructions, prescription and medical device labels, and drug usage information may enhance informed decision-making and safety and reduce stress and medical errors.

An unpopular and underused service needs it all: availability, convenience, monitoring, reporting, and team effort. Because of the sheer unpopularity and underuse of interpreter services, institutions should enhance ease of availability, monitor the use and quality of interpreter services, and optimize reporting of language-related errors. Ease of availability goes hand in hand with tapping local resources. Over the years, and even more so during the pandemic, in-person interpretation has transitioned to telephonic or video interpretation because of availability, safety, and cost issues. There are challenges in translating a language, and the absence of a visual channel adds another layer of complexity.

The current body of evidence does not indicate a superior interpreting method. Still, in one study providers and interpreters exposed to all three methods were more critical of remote methods and preferred videoconferencing to the telephone as a remote method. The significantly shorter phone interviews raised questions about the prospects of miscommunication in telephonic interpretation, given the absence of a visual channel.¹²

One way to bypass language barriers is to recognize the value added by hiring and training bilingual health care providers and fostering cultural competence. International medical graduates in many parts of the country aid in closing language barriers. Language-concordant care enhances trust between patients and physicians, optimizes health outcomes, and advances health equity for diverse populations.¹³⁻¹⁵ The presence of bilingual providers means more effective and timelier communication and improved patient satisfaction. But, according to a Doximity study, there is a significant “language gap” between those languages spoken by physicians and their patients.¹⁶ Hospitals, therefore, should assess, qualify, and incentivize staff who can serve as on-site medical interpreters for patients as a means to facilitate language concordant care for LEP patients.

The Agency of Healthcare Research and Quality also has a guide on how hospitals can better identify, report, monitor, and prevent medical

errors in patients with LEP. Included is the TeamSTEPPS LEP module to help develop and deploy a customized plan to train staff in teamwork skills and lead a medical teamwork improvement initiative.¹⁷

“Without my family, I was scared that nobody would understand me”

Back to the case. My patient was recovering well, and I was tying up loose ends on the switch day for the hospitalist teams.

“You will likely be discharged in a couple of days,” I said. She and the



family were grateful and satisfied with the care. She had used the interpreter services and also received ethnocultural and language concordant and culturally competent care. Reducing language barriers is one of the crucial ways to reduce racial and ethnic disparities in quality of care and health outcomes, and it starts – in many cases – with identifying LEP patients. Proper use and monitoring of interpreter services, reporting language-related errors, hiring and testing bilingual staff’s language proficiency, and educating staff on cultural awareness are essential strategies for caring for LEP patients.

At my weeks’ end, in my handoff note to the incoming providers, I highlighted: “Patient will benefit from a Hindi speaking provider, Limited English Proficiency.”

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Hospitalists and medical malpractice

A look at some sobering trends

By Adam C. Schaffer, MD, MPH

Among the pressures felt by hospitalists are concerns about being subject to a malpractice claim. Anxiety about malpractice influences the way hospitalists practice, giving rise to defensive medicine.

One survey, which asked hospitalists to retrospectively rate which of their orders represented defensive medicine, found that 28% of orders were deemed defensive.¹ Defensive medicine can lead to low-value medical care, drive up health care costs, and potentially subject patients to unnecessary testing.^{2,3}

Encouragingly, medical malpractice claims rates have, overall, been downtrending. An analysis of data from the National Practitioner

hospitalists, a recent study examined claims against hospitalists using the Comparative Benchmarking System (CBS), a national database of malpractice claims containing approximately 30% of all U.S. malpractice claims, which is maintained by CRICO, the malpractice insurer for the Harvard-affiliated medical institutions.⁶

Claims in the CBS database are examined by trained nurse coders who review the claims, along with the associated medical and legal records, to understand the contributing factors behind the adverse event leading to the claim.

Contrary to the trends for nearly all other physician specialties, the malpractice claims rates of hospitalists were not downtrending, going from 1.77 claims per 100 physician-years for 2009-2013 to 2.08

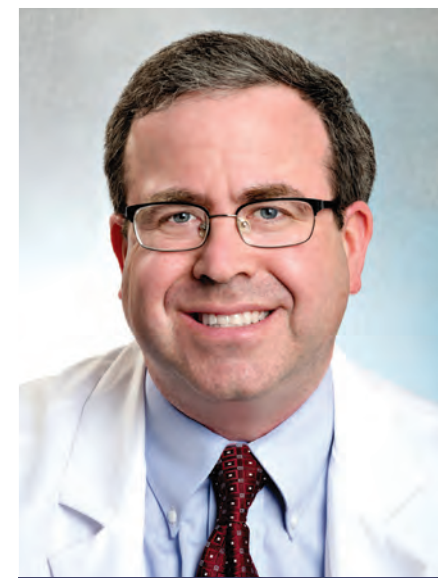
claims, general surgery and orthopedic surgery are in the top five. The extraordinary growth in the field of hospital medicine has meant a need to hire an increasing number of hospitalists, leading to less-experienced physicians entering the field.

Making hospital medicine safer

A more urgent question than what is driving the trends in hospitalist claims rates is what can be done to avoid adverse events and make hospital medicine safer. One potential answer is thoughtful collaboration arrangements with the surgical and other specialties with whom hospitalists may be co-managing patients.

Questions about who responds to what types of clinical issues that might arise and specific domains of responsibility should be defined in advance, so that a lack of role clarity does not negatively impact patient care. Given that hospitalists will be less comfortable addressing more technical surgical issues, expectations about surgeons' availability should be established. Nocturnists may be tasked with overnight cross-coverage of patients on services, such as oncology and cardiology, that subspecialty physicians have responsibility for during the day. Agreeing upon triggers for when the nocturnist should contact the daytime subspecialty attending (for example, if a rapid response is called on their patient) should be considered, so that nocturnists are not left deciding, in the moment, whether to call the daytime attending. Measures such as this ensure that everyone's expectations are aligned. In addition, new hospitalists need to be offered support, in the form of training and mentorship.

CBS malpractice data, which includes the contributing factors underlying what went wrong, illuminates potential targets for programs designed to enhance patient safety. In the recent hospitalist malpractice study, the two contributing factors that were the best predictors of a hospitalist malpractice claim closing with payment to the claimant were clinical judgment errors and communication breakdowns. Identifying measures that are effective in promoting patient safety by refining the clinical judgment of clinicians is a challenge, and there are limited data demonstrating what programs are effective in this area.



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Data Bank, which is a repository of all paid malpractice claims against individual physicians, found that malpractice claims rates decreased by 55.7% from 1992 to 2014 among all specialties, and by 46.1% for internal medicine physicians.⁴ The data used in this analysis did not separate hospitalists from other internal medicine physicians. An older study of malpractice claims against hospitalists found that hospitalists had significantly lower claims rates than nonhospitalist internal medicine physicians.⁵

Current malpractice environment for hospitalists

Seeking to shed light on the current malpractice environment faced by

claims per 100 physician-years for 2014-2018. The overall claims rate for hospitalists was significantly higher than that for internal medicine subspecialists (though roughly the same as the claims rate for nonhospitalist general internal medicine physicians). These sobering findings raise the important question of why hospitalists claims rates are heading in the wrong direction.

One possible answer relates the ever-broadening scope of hospitalist practice. Hospitalists are being asked to care for surgical patients and other patient populations that they may have less familiarity with, increasing the risk of medical errors. Among the other specialties most commonly also named in hospitalist

Clinical decision support (CDS) systems have shown promise in promoting guideline-concordant care.⁷ However, the role of CDS in aiding the higher-stakes clinical decisions that may be called into question after an adverse outcome is not well defined. Alerts that a patient may be developing sepsis is one type of CDS that has been extensively studied and has been shown to be of some benefit.⁸ The importance of clinical judgment to whether payment is made on a malpractice claim can inform risk management strategies. Hospitalists should document the thought process behind their decision-making in the chart, especially for important clinical decisions. A note showing that the clinician was thoughtfully weighing the risks and benefits using the data available at the time will help make a case defensible if an adverse outcome occurs.

The effect of communication breakdowns on hospitalist case outcomes highlights the importance of measures to improve and systematize communication among clinicians, particularly at vulnerable junctures – such as handoffs from

the day team to the night team, and transitions from one care setting to another. An example of an intervention to improve handoffs with cogent evidence to support it is I-PASS, which is an approach to handoffs between teams in which information about the patient's illness severity, clinical background, and contingencies is conveyed and synthesized in a structured manner. A study of the effect of implementation of I-PASS among nine pediatric residency programs demonstrated a 30% reduction in preventable adverse events.⁹

Applying insights from malpractice claims analysis to clinical practice

The systematic review of malpractice cases to determine the contributing factors and other case attributes is an important source of patient safety insights. The process breakdowns described by the contributing factors can inform the design of patient safety initiatives. In addition, malpractice data provide information on which specialties and what types of clinicians are being named together in malpractice claims.

In the hospitalist malpractice

study, in addition to general surgery and orthopedic surgery, the other clinical services most commonly subject to claims along with hospitalists were nursing, emergency medicine, and cardiology. Another observation was that physician assistants and nurse practitioners are increasingly being named in hospitalist claims. This information is crucial to guiding who needs to be in the room with hospitalists when efforts are undertaken to enhance patient safety within hospital medicine.

An understandable response to the finding that hospitalist claims rates are not decreasing is for hospitalists to seek ways to lower their risk of being named in a malpractice claim. Of course, avoiding adverse events by providing the safest possible care is paramount. Even when patients do suffer adverse events due to a physician negligence, only rarely, less than 5% of the time, does this result in a malpractice claim.¹⁰ Important lessons in risk management can be learned from examining why patients decide to sue when mistakes lead to bad outcomes.

An analysis of plaintiffs' depositions found that the key reasons that patients decided to file a

malpractice claim include a poor relationship with the physician – specifically, a lack of empathy from the physician, feeling deserted by the physician, and feeling devalued by the physician.¹¹ These findings support the use of programs that assist physicians in compassionately disclosing adverse events to patients. Among inpatient physicians, patient satisfaction survey questions about the time the physician spent with the patient and the physician's concern for the patient are better predictors of the physicians' risk management performance than is the question about the skill of the physician.¹² In the aftermath of an adverse event, focusing on maintaining a strong patient-physician relationship is not only the right thing to do, the data tell us that it is also a sensible approach to reducing medicolegal risk.

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Microlearning during the pandemic

How to become a hospitalist

By Jose R. Mercado, MD;
J. Henry Feng, MD

The vast amounts of information generated this past year related to the COVID-19 pandemic was a feat of wonder – recommendations and guidelines on the hospital level and on the national level came in a flurry, more often overwhelming and confusing than clarifying for the frontline provider. In addition, “routine” hospital care for noninfected patients and improvement processes had to continue as we all dealt with the whirlwind of increasing COVID cases, torrents of new guidelines, and educating our trainees.

Thus, the individual-level question: How does a clinician stay engaged and distill the relentless stream of new information?

In Spring 2020, when the first patients with COVID were admitted, our hospital medicine section was tasked to create a surge plan. This included organizing, orienting, and educating off-service providers on how to become hospitalists. Undoubtedly, the call to arms for our center was heard, and many responded. However, backgrounds were diverse in specialty – clinicians and trainees from psychiatry, general surgery, and various fellowships all answered. It was an exhausting and inefficient effort to produce the material, hold webinars, and schedule training, especially for those who were more removed from a hospital medicine experience. We knew we had to come up with an alternative plan moving forward.

Thus, the systems-level question: How does a health care system educate its clinicians, or any other health care providers, when reallocation of their talents and skills is both necessary and time-sensitive, and occurring during a period where new information is constantly being produced and changing?

To reach the most clinicians as possible, with the most succinct and distilled information, we had to come up with a method to do so. Ultimately, in considering the situation at hand, we had to understand who we were as the provider of the information, and who the recipient would be. We would like to share the initiatives and processes by which we constructed our solution to the two questions – microlearning through hospital podcasting.

Learning from our colleagues

With the initial webinars and training sessions for our staff, we assessed our learners’ motivations and background in managing in a hospital medicine capacity. Overall, we discovered that our trainees and clinicians have an innate drive to learn; all of them recognized the importance of keeping up with evidence-based information. However, the difficulty highlighted was the individual time available to dedicate to acquiring new information and awareness of new information being available to the health care sector during the chaotic times of the pandemic.

From our section’s perspective, we had a difficulty with coordinating among multiple professional development groups within our hospital, cost, and resources to execute training. These difficulties between

“Podcasting is a well-received medium of information transfer that is convenient for both the learner and the content creator.”

providing knowledge and receiving knowledge have already been expertly analyzed.¹

Parallel to this, the pedagogic paradigm shifts as we progress through our careers – the methods and skills we used in school contrast in many ways with those we use on a daily basis when it comes to learning. Instead of dedicating hours at a time to new challenges in our workflow or our interests, we watch videos, search retailers for product solutions, check our email correspondence, and peruse social media accounts several times a day. Information comes at us very quickly, but in small pieces.

One such innovation in pedagogy is the practice of microlearning. This refers to the use of small lesson modules and short-term activities intended to teach and reinforce concepts.² It is the opposite of “macrolearning,” which is the principle of dedicating reading material, structured coursework, and traditional knowledge evaluation in the form of exams to reinforce learning. Certainly, microlearning has other names as well – “just-in-time,” “just-enough,” and “micro-courses” are a few synonyms seen in the current literature. Though a highly relevant concept for our situation, translating it to an

endproduct for our trainees and clinicians required more thought.

From theory to application

Microlearning allows for faster delivery of information – fewer things to write means shorter course distribution times, allowing the learner to respond faster to changing educational goals and training demands. Microlearning is flexible – “micro-courses” can give a broad overview of a subject or cover complex topics broken down into simple parts. In addition, micro-learning promotes retention of key concepts – given the length of each lesson, repetition of the topic by the learner is possible at any point in time. The whole experience is similar to checking your favorite social media application on your smartphone.

Certainly, many examples of the

application of microlearning are available in the health care sector – pharmaceutical and nursing training both have utilized the theory extensively.^{3,4} However, in many instances, individuals were still required to sit at a workstation to complete modules and lessons. We envisioned our application of microlearning to be “on-the-go,” without necessarily requiring a computer workstation or laptop to complete.

In thinking about how social media attracts and influences clinicians, many content creators on social media come to mind. In addition, most, if not all, have branched into various social media platforms – podcasting, blogging, YouTube, for example. In thinking about our colleagues and trainees, we wanted a platform that they could take on the go, without the need to focus their visual attention (such as while driving or running). Ultimately, we believe the podcast would be the best platform to disseminate our information.

Podcasting is not foreign to medicine. A variety of medical podcasts exist, whether produced by major medical journals or by various independent health care practitioners. Both, however, have their drawbacks – the podcasts created by major

medical journals are typically a summary of the publication’s content and are less engaging. Alternatively, podcasts produced by independent creators are certainly engaging and entertaining, and have a wealth of information, but the line is often blurred between just that: education and entertainment. In both instances, there is no follow-up or feedback offered to the learner in the form of surveys, or other types of feedback, which is arguably an important piece in any form of pedagogy. Thus, we sought to strike a balance between the two forms for our purposes.

Process of two podcasts

Our section was aware of the two aims during the pandemic – (1) disseminate new information regarding COVID-19 to the rest of our staff members and trainees as quickly as possible, and (2) maintain and improve the current quality of care of our patients. Thus, we sought to apply the reach and efficiency of the podcasting medium to provide ongoing education and feedback with respect to these two aims.

“The Cure” podcast: We recognized the constant flow of new COVID-19 information and updates, and we wanted to find a readily accessible platform to reach staff with timely updates. Our marketing and communications team later helped us realize that the content we wanted to share was relevant to our patients and the community, so we formatted the material to be practical and easily digestible – something that may help an individual make decisions at the bedside as well as have conversations at the dinner table. Most recently, we engaged with our human resources department to use our platform in orienting new hires with the goal of helping staff familiarize with the institutions policies, procedures, and job aids that keep staff and patients safe.

“Antibiotry” podcast: Prior to the COVID-19 pandemic, our antibiotic stewardship group noticed an increase in antibiotic use on our medical floors. This is monitored not only through internal metrics by our pharmacy department, but also via the SAAR (standardized antibiotic administration ratio). Both sources demonstrated an increase in antibiotic use, greater than expected. An initiative was formed between our hospital medicine and infectious dis-

ease sections, and our pharmacy department to raise awareness of this increase in use, provide education to our trainees, and create systems solutions for clinicians.

Initially, we sought to hold in-person sessions once a month for our trainees. This was led by a senior resident at the time. Topics of discussion were geared toward clinical decision-making regarding empiric antibiotic use on the hospital medicine service. At the same time, our team published empiric antibiotic use guidelines, accessible through our electronic medical record. In addition, the resident leader gave a voluntary survey at the end of the session to assess not only confidence of antibiotic use, but also baseline knowledge regarding antibiotics in various clinical scenarios. This survey was repeated at the end of the resident group's month-long rotation. Altogether, each in-person session was no longer than 10 minutes.

Unfortunately, the initiative was just gaining momentum when the pandemic was declared. However, we sought to take this challenge and translate it into an opportunity.

We directed our focus toward stewardship during pandemic times. Initially, our resident leader sent out email primers, approximately 3- to 5-minute reads, as a substitute for the in-person sessions. Our primers' uniqueness was in its incorporation of prescription pattern data that were developed by our resident leader and our initiative's data analyst. In doing so, we provided professional feedback regarding our antibiotic use based on the clinical indication. This was a powerful tool to not only engage our learners and staff clinicians, but also benchmark continued quality improvement.

But email primers are not engaging, and despite the ubiquity of teleconferencing, it was difficult to ask our housestaff to break from their morning rounds for a 10-minute tele-meeting. Thus, we devised a podcast method of education – 5- to 10-minute audio clips with conversation regarding a topic of discussion. This way, our trainees and learners can access episodes of education on their own time throughout the pandemic without disrupting their workflow. Given the brevity of, but high-yield content in, each episode, it would be convenient not only for listeners to access and repeat, but also for the podcaster (our resident leader) to create, as recording of the audio portion takes anywhere between 10 and 20 minutes for each episode, with postprocessing similarly fast.

The interdisciplinary nature of continued medical education cannot be stressed enough. With the help of our professional development team and their educators, we were able to centralize our podcast and attach surveys and additional graphics for each episode, if appropriate. This additional detail allowed for engagement with our learners and the chance to provide additional educational points, if the learner was interested. Given the integrated nature of this platform, quality metrics could easily be recorded and various other more conventional metrics, such as listener counts and the duration of each podcast played.

Future initiatives

Thus far, we have had great success in the reception and use of both podcasts within our institution as an application of microlearning. "The Cure" has been widely listened to by all hospital staff from various services; it has caught the attention of state-wide radio programs, and plans to expand it into the community are being discussed.

As for "Antibiotry" podcast, the concept has been lauded by our medical educators. Given its centralization within our institution, we are able to publish institution-based data as a form of professional and educational feedback to our trainees and staff physicians. This is currently coupled with the development of a provider dashboard, visualizing

"One of the key measures we would like to investigate is whether our microlearning platform translates to improved patient outcomes."

antibiotic prescriptions and narrowing patterns of practice within our medicine department. We plan to expand "Antibiotry" to other services at the hospital.

For both podcasts, the steps it took to achieve the final product from the microlearning concept were possible through a combination of institutional need and a motivated team. We are fortunate to have highly energetic individuals, making the coordination and planning with our hospitalists, various sub-specialists, and professional development teams straightforward. As the team grows with more individuals interested in the initiatives, keen insight into interests, individ-



Dr. Mercado



Dr. Feng

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ual clinical expertise, presentation skills, and technical skills ought to be carefully weighed to sustain our podcasts most efficiently, and perhaps expand them through different social media platforms.

Our objective for sustainability is through the continued outreach to and recruitment of residents and medical students, who can play key roles in the development of future projects related to these educational innovations. Both podcasts were developed through planning, trial, error, and execution by two resident leaders. Their initiative and motivation to educate our institution through these platforms were highly unique; their pathfinding set the foundation for sustainability and expansion to other services.

Of course, one of the key measures we would like to investigate is whether our microlearning platform translates to improved patient outcomes. Regarding "Antibiotry," we hope to see a decrease in unnecessary broad-spectrum antibiotic use by drawing attention to clinician practice patterns. Quality and outcome metrics will continue to be developed and measured. In addition to patient care metrics, further investigation of pedagogical metrics will be conducted, especially in the evolving realm of graduate and continuing medical education.

Measuring educational quality is neither a new ethical nor philosophical debate – neither does it carry a definitive answer. Further help from education experts may be needed to assess the quality of the information provided and its impact on our learners.

Conclusion

Medicine is ever-changing – the guidelines and criteria for patient care and pathology that we learned in medical school have likely changed. There is no single "best" method of learning new information in medicine, simply because of the breadth and volume of such information generated on a daily basis. This poses both a challenge for present-day clinicians and trainees, and a stimulus for change in the methods of acquiring, absorbing, and applying new information to clinical decision-making and practice.

We have found that podcasting is a well-received medium of information transfer that is convenient for both the learner and the content creator. Through the podcast format, we were able to distill non-engaging pieces of education and information and transform them into short-duration lessons that the learner can listen to at their own convenience. This proved to be especially handy during the chaos of the pandemic, not only for dissemination of information regarding the management of COVID-19, but also for sustaining quality improvement goals within our institution.

Further investigation on patient outcomes and information quality are the planned next steps. In addition, expansion of other microlearning media, such as group SMS texting, YouTube videos, and Twitter, ought to be considered. Though many publications discuss the theory, potential benefits, and predicted pitfalls of microlearning, few assess

Continued on following page

Major musculoskeletal surgery in children with medically complex conditions

A review of the International Committee's guide

By Ann-Marie Tantoco, MD, FAAP, FHM; and Ajay Bhasin, MD

The International Committee on Perioperative Care for Children with Medical Complexity developed an online guide, "Deciding on and Preparing for Major Musculoskeletal Surgery in Children With Cerebral Palsy, Neurodevelopmental Disorders, and Other Medically Complex Conditions," published on Dec. 20, 2020, detailing how to prepare pediatric patients with medical complexity prior to musculoskeletal surgery. The guide was developed from a dearth of information regarding optimal care practices for these patients.

The multidisciplinary committee included members from orthopedic surgery, general pediatrics, pediatric hospital medicine, anesthesiology, critical care medicine, pain medicine, physiotherapy, developmental and behavioral pediatrics, and families of children with cerebral palsy. Mirna Giordano, MD, FAAP, FHM, associate professor of pediatrics at Columbia University, New York, and International Committee member, helped develop these recommendations to "improve quality of care in the perioperative period for children with medical complexities and neurodisabilities all over the world."

The guide meticulously details the steps required to successfully prepare for an operation and postoperative recovery. It includes an algorithm and comprehensive assessment plan that can be implemented to assess and optimize the child's health and well-being prior to surgery. It encourages shared decision-making and highlights the

need for ongoing, open communication between providers, patients, and families to set goals and expectations, discuss potential complications, and describe outcomes and the recovery process.

The module elaborates on several key factors that must be evaluated and addressed long before surgery to ensure success. Baseline nutrition is critical and must be evaluated with body composition and anthropometric measurements. Respiratory health must be assessed with consideration of pulmonology consultation, specific testing, and ventilator or assistive-device

"Family and social assessments must not be neglected prior to surgery, as these areas may also affect surgical outcomes."

optimization. Moreover, children with innate muscular weakness or restrictive lung disease should have baseline physiology evaluated in anticipation of potential postoperative complications, including atelectasis, hypoventilation, and pneumonia. Coexisting chronic medical conditions must also be optimized in anticipation of expected deviations from baseline.

In anticipation of peri- and postoperative care, the medical team should be aware of details surrounding patients' indwelling medical devices, such as cardiac implantable devices and tracheostomies. Particular attention should be paid to baclofen pumps, as malfunction or mistitration can lead to periprocedural hypotension or withdrawal.

Of paramount importance is un-

derstanding how the child appears and responds when in pain or discomfort, especially for a child with limited verbal communication. The module provides pain assessment tools, tailored to verbal and nonverbal patients in both the inpatient and outpatient settings. The module also shares guidance on establishing communication and goals with the family and within the care team on how the child appears when in distress and how he/she/they respond to pain medications. The pain plan should encompass both pharmacologic and nonpharmacologic therapeutics. Furthermore, as pain and discomfort may present from multiple sources, not limited to the regions involved in the procedure, understanding how the child responds to urinary retention, constipation, dyspnea, and uncomfortable positions is important to care. Postoperative immobilization must also be addressed as it may lead to pressure injury, manifesting as behavioral changes.

The module also presents laboratory testing as part of the preoperative health assessment. It details the utility or lack thereof of several common practices and provides recommendations on components that should be part of each patient's assessment. It also contains videos showcased from the Courage Parents Network on family and provider perceptions of spinal fusion.

Family and social assessments must not be neglected prior to surgery, as these areas may also affect surgical outcomes. The module shares several screening tools that care team members can use to screen for family and social issues. Challenges to discharge planning are also discussed, including how to



Dr. Tantoco

Dr. Bhasin

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approach transportation, medical equipment, and school transitions.

The module is available for review in OPEN Pediatrics (www.openpediatrics.org), an online community for pediatric health professionals who share peer-reviewed best practices. "Our aim is to disseminate the recommendations as widely as possible to bring about the maximum good to the most," Dr. Giordano said. The International Committee on Perioperative Care for Children With Medical Complexity is planning further guides regarding perioperative care, particularly for intraoperative and postoperative considerations.

Continued from previous page

the real-world application of microlearning to the clinical setting for medical education.

So what did we learn? We should think of microlearning as moments when you turn to your smartphone or tablet in order to discover something, answer a question, or complete a task. These are moments when decisions are made and knowledge is reinforced. The goal is to capture

these moments and fill them with essential pieces of information.

We offer these suggestions as a place to start. The microlearning platform allows for the collection of data on the interaction between user and course content. The data collected can be used for continuous quality improvement of the curriculum. Microlearning is a dynamic platform where creative ideas are encouraged and a multidisciplinary

approach is valuable to keeping an audience engaged. In the future, we hope to be able to correlate microlearning courses to provider performance and measurable patient outcomes.

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Weathering this storm and the next

Perspectives on disaster preparedness amid COVID-19

By Teena Hadvani, MD, FAAP; Vicki Uremovich, DO, FAAP; Ricardo Quinonez, MD, FHM, FAAP; Michelle A. Lopez, MD, MPH, FAAP; Brent Mothner, MD, FAAP

The COVID-19 pandemic has tested disaster preparedness in hospitals across the nation. The pandemic brought

many unique disaster planning challenges not commonly seen with other emergencies disasters. These included an uncertain and prolonged time frame, the implementation of physical distancing, and the challenges of preserving the health care work force.

But how do we prepare for the next disaster when the health care system and staff are already stretched thin? Here, we discuss the concept of maintaining a state of preparedness through and beyond COVID-19, using a disaster preparedness cycle – including continuous assessments of vulnerabilities, dynamic staffing adjustments to support patient and hospital needs, and broadening of the pandemic response to incorporate planning for the next disaster.

Disaster preparedness and assessing ongoing needs

Disaster preparedness cycle and Hazard Vulnerability Assessment
The disaster preparedness cycle illustrates that disaster preparedness is continuous (see graphic). Disaster preparedness is achieved with the nonstop cycle of planning, coordinating, and recognizing vulnerable areas.¹⁻⁵ Hazard vulnerability analysis (HVA) can play a critical role in recognizing areas in which a hospital system has strengths and weaknesses for different disaster scenarios. There are several tools available, but the overarching goal is to provide an objective and systematic approach to evaluate the potential damage and impact a disaster could have on the health care system and surrounding community.

The HVA can also be utilized to reassess system or personnel vulnerabilities that may have been exposed or highlighted during the pandemic.^{6,7} These vulnerabilities must be addressed during preparations for the next disaster while concurrently “assuming the incident happens at the worst possible time.”⁷



Dr. Hadvani



Dr. Uremovich



Dr. Quinonez



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Disaster preparedness staffing considerations

Management, communication, and staffing issues are critical to disaster response. Key leadership responses during COVID-19 included providing frequent and transparent communication, down-staffing for physical distancing during low census, and prioritizing staff well-being. These measures serve as a strong foundation moving into preparations for the next disaster.⁸

To ensure adequate staffing during an unexpected natural disaster, we recommend creating “ride-out” and “relief teams” as part of disaster staffing preparedness.^{9,10} The ride-out team provides the initial care, and these providers are expected to stay in the hospital during the primary impact of the event. Once the initial threat of disaster is over and it is deemed safe to travel, the relief team is activated and offers reprieve to the ride-out team. Leaders and backup leaders within these teams should be identified in the event teams are activated. These assignments should be made at the start of the year and updated yearly or more frequently, if needed.

While the COVID-19 pandemic did not significantly affect children, our ride-out and relief teams would have played a significant role in case a surge of pediatric cases had occurred.

Other considerations for disaster staffing include expanding backup coverage and for multisite groups, identifying site leads to help field specific questions or concerns. Lastly, understanding the staffing needs of the hospital during a disaster is

vital – bidirectional communication between physicians and hospital leadership optimizes preparedness plans. These measures will help staff feel supported before, during, and after a disaster.

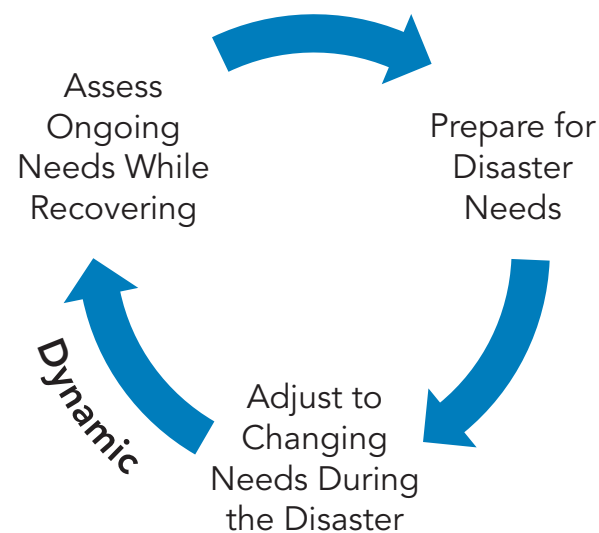
Dynamic disaster response

Supporting patient and hospital needs
The next step in the disaster preparedness cycle is adjusting to changing needs during the disaster. The pediatric inpatient population was less affected initially by COVID-19, allowing hospitalists to support the unpredicted needs of the pandemic. A dynamic and flexible physician response is important to disaster preparedness.

As there has been a continued shift to telehealth during the pandemic, our group has engaged in telehealth calls related to COVID-19. Seizing these new opportunities not only provided additional services to our patients, but also strengthened community support, physician worth, and the hospital’s financial state. This is also an opportunity for higher-risk clinicians or quarantined faculty to offer patient care during the pandemic.

Cram et al. describe the importance of “unspecializing” during the COVID-19 pandemic.¹¹ Starting discussions early with adult and pediatric critical care colleagues is vital. Hospitalists take care of a broad

Disaster Preparedness Cycle



patient population, and therefore, can adapt to where the clinical need may be. Optimizing and expanding our skill sets can bring value to the hospital system during uncertain times.

Hospitalists are also instrumental for patient flow during the pandemic. To address this, our group partnered with hospital leadership from many different areas including administration, nursing, emergency medicine, critical care, and ancillary services. By collaborating as one cohesive hospital unit, we were able to efficiently develop, implement, and update best clinical care guidelines and algorithms for COVID-19-related topics such as testing indications, admission criteria, infection control, and proper personal protective equipment use. Lastly, working with specialists to consolidate teams during a pandemic presents an opportunity for hospitalists to high-

light expertise while bringing value to the hospital.

Unique staffing situations related to COVID-19

Different from other disasters, the COVID-19 pandemic affected older or immunocompromised staff in a unique way. Buerhaus et al. note that 20% of the physician workforce in the United States is between 55 and 64 years of age, and 9% are 65 years and older.¹² Hospitalist groups should focus on how to optimize and preserve their workforce, specifically those that are higher risk due to age or other health conditions.

We used a tiered guide to safely accommodate our physicians that were determined to be at higher risk for complications of COVID-19; these recommendations included limiting exposure to patients with acute respiratory illnesses and shifting some providers to a different clinical environments with a lower exposure risk, such as telemedicine visits.

Other COVID-19 preparedness considerations that affected our group in particular include the changes in learner staffing. Similar to attending down-staffing to encourage physical distancing during low census, learners (residents, medical students, and physician assistant students) also experienced decreased hours or suspension of rotations. For optimal patient care, adjusting to changing disaster needs may include assessing attendings' capacity to assume responsibilities typically supported by learners.

Because of the ongoing nature of the pandemic, we have had to maintain a dynamic response while adjusting to changing and ongoing needs during recovery. Creating a measured and staggered approach helps facilitate a smooth transition back to nonemergent activities. The education of learners, academic and scholarly work, and administrative duties will resume, but likely in a different steady state. Also, awareness of physician burnout and fatigue is critical as an institution enters a phase of recovery.

Preparing for the next disaster during the pandemic

This brings us back to the beginning of the disaster preparedness cycle and the need to plan for the next disaster. Current disaster preparedness plans among physician groups and hospitals are likely focused on an individual disaster scenario, but adjusting current disaster plans

to account for the uncertain time frame of an event like the COVID-19 pandemic is critical. Several articles in the national news posed similar questions, although these publica-

“How do we adequately plan, maintain a dynamic response, and continue to efficiently move through the disaster staffing cycle during an event like the COVID-19 pandemic? Being aware of current vulnerabilities and addressing gaps at the department and hospital level are vital to disaster preparedness.”

tions focused mainly on the Federal Emergency Management Agency and the governmental response to prepare for the next disaster when resources are already stretched.¹³⁻¹⁵

How do we adequately plan, maintain a dynamic response, and continue to efficiently move through the disaster staffing cycle during an event like the COVID-19 pandemic? Being aware of current vulnerabilities and addressing gaps at the department and hospital level are vital to disaster preparedness. For example, we reassessed disaster (ride-out/relief) teams and the minimum number of staff needed to maintain safe and quality care, and what in-house arrangements would be needed (food, supplies, sleeping arrangements) while having to maintain physical distance.

Newman and Gallion explain “in disaster planning, having as many physicians as possible on hand may seem like an advantage, but being overstaffed in tight quarters was almost as bad as being understaffed.”⁹ This has been particularly true during the COVID-19 pandemic. It is crucial to have backup plans for faculty that are unable to serve ride-out duties from unexpected issues – such as availability, illnesses/quarantines, childcare/dependents. Also, it is important to be aware that some supply chains are already strained because of the pandemic and how this may play a role in the availability of certain supplies. Being aware and proactive about specific constraints allows for a better level of preparedness. Continued collaboration and communication with other services to provide care should be ongoing throughout the disaster preparedness cycle.

Conclusion


Providing and maintaining optimal and safe patient care should be the overarching goal throughout disaster preparedness. Being aware of group and institutional vulnera-

bilities, collaboration with hospital leadership, and remaining flexible as hospitalists are critical components for successful preparedness amid disasters. A dynamic and responsive

disaster plan has been vital amid COVID-19, and for the next disasters we will certainly encounter.

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Disaster

Continued from page 1

But then along came the COVID pandemic – which in many locales around the world was unprecedented in scope. Dr. Persoff said his hospital was fairly well prepared, after a decade of engagement with emergency planning. It drew on experience with H1N1 and the Ebola virus, which killed 11,323 people, primarily in West Africa, from 2013 to 2016, as models. In a matter of days, the CU division of hospital medicine was able to modify and deploy its existing disaster plans to quickly respond to an influx of COVID patients.



Dr. Persoff

“Basically, what we set out to do was to treat COVID patients as if they were Ebola patients, cordoning them off in a small area of the hospital. That was naive of us,” he said. “We weren’t able to grasp the scale at the outset. It does defy the imagination – how the hospital could fill up with just one type of patient.”

What is disaster planning?

Emergency preparation for hos-

pitals emerged as a recognized medical specialization in the 1970s. Initially it was largely considered the realm of emergency physicians, trauma services, or critical care doctors. Resources such as the World Health Organization, the Federal Emergency Management Agency, and similar groups recommend an all-hazards approach, a broad and flexible strategy for managing emergencies that could include natural disasters – earthquakes, storms, tornadoes, or wildfires – or human-caused events, such as mass shootings or terrorist attacks. The Joint Commission requires accredited hospitals to conduct several disaster drills annually.

The U.S. Hospital Preparedness Program was created in 2002 to enhance the ability of hospitals and health systems to prepare for and respond to bioterrorism attacks on civilians and other public health emergencies, including natural disasters and pandemics. It offers a foundation for national preparedness and a primary source of federal funding for health care system preparedness. The hospital, at the heart of the health care system, is expected to receive the injured and infect-

ed, because patients know they can obtain care there.

One of the fundamental tools for crisis response is the incident command system (ICS), which spells out how to quickly establish a command structure and assign responsibility for key tasks as well as overall leadership. The National Incident Management System organizes emergency management across all government levels and the private sector to ensure that the most



Dr. Khouli

pressing needs are met and precious resources are used without duplication. ICS is a standardized approach to command, control, and coordination of emergency response using a common hierarchy recognized across organizations, with advance training in how it should be deployed.

A crisis like never before

Nearly every hospital or health system goes through drills for an emergency, said Hassan Khouli, MD, chair

of the department of critical care medicine at the Cleveland Clinic, and coauthor of an article in the journal *Chest* last year outlining 10 principles of emergency preparedness derived from its experience with the COVID pandemic. Some of these include: don’t wait; engage a variety of stakeholders; identify sources of truth; and prioritize hospital employees’ safety and well-being.

Part of the preparation is doing table-top exercises, with case scenarios or actual situations presented, working with clinicians on brainstorming and identifying opportunities for improvement, Dr. Khouli said. “These drills are so important, regardless of what the disaster turns out to be. We’ve done that over the years. We are a large health system, very process and detail oriented. Our emergency incident command structure was activated before we saw our first COVID patient,” he said.

“This was a crisis like never before, with huge amounts of uncertainty,” he noted. “But I believe the Cleveland Clinic system did very well, measured by outcomes such as surveys of health care teams across the system, which gave us reassuring results, and

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clinical outcomes with lower ICU and hospital mortality rates.”

Christopher Whinney, MD, SFHM, department chair of hospital medicine at Cleveland Clinic, said hospitalists worked hand in hand with the health system’s incident command structure and took responsibility for managing non-ICU COVID patients at six hospitals in the system.



Dr. Whinney

“Hospitalists had a place at the table, and we collaborated well with incident command, enterprise redeployment committees, and emergency and critical care colleagues,” he

noted. Hospitalists were on the leadership team for a number of planning meetings, and key stakeholders for bringing information back to their groups.

“First thing we did was to look at our workforce. The challenge was how to respond to up to a hundred COVID admissions per day – how to mobilize providers and build surge teams that incorporated primary care providers and medical trainees. We onboarded 200 providers to do hospital care within 60 days,” he said.

“We realized that communication with patients and families was a big part of the challenge, so we assigned people with good communication skills to fill this role. While we were fortunate not to get the terrible surges they had in other places, we felt we were prepared for the worst.”

Challenges of surge capacity

Every disaster is different, said Srikant Polepalli, MD, associate hospitalist medical director for Staten Island University Hospital in New York, part of the Northwell Health system. He brought the experience of being part of the response to Superstorm Sandy in October 2012 to the COVID pandemic.

“Specifically for hospitalists, the biggest challenge is working on surge capacity for a sudden influx of patients,” he said. “But with Northwell as our umbrella, we can triage and load-balance to move patients from hospital to hospital as needed. With the pandemic, we started with one COVID unit and then expanded to fill the entire hospital.”

Dr. Polepalli was appointed medical director for a temporary field hospital installed at South Beach Psychiatric Center, also in Staten Island. “We were able to acquire help and bring in people ranging from

hospitalists to ER physicians, travel nurses, operation managers, and the National Guard. Our command center did a phenomenal job of allocating and obtaining resources. It helped to have a structure that was already established and to rely on the resources of the health system,” Dr. Polepalli said. Not every hospital has a structure like Northwell’s.

“We’re not out of the pandemic yet, but we’ll continue with disaster drills and planning,” he said. “We must continue to adapt and have converted our temporary facilities to COVID testing centers, antibody infusion centers, and vaccination centers.”

For Alfred Burger, MD, SFHM, a hospitalist at Mount Sinai’s Beth Israel campus in New York, hospital medicine is still feeling its way through hospital and health care system transformation.

“My group is an academic, multi-campus hospitalist group employed by the hospital system. When I meet other hospitalists at SHM conferences, whether they come from privately owned, corporately owned, or contracted models, they vary widely in terms of how involved the hospitalists are in crisis planning and their ability to respond to crises. At large academic medical centers like ours, one or more doctors is tasked with being involved in preparing for the next disaster,” he said.

“I think we responded the best we could, although it was difficult as we lost many patients to COVID. We were trying to save lives using the tools we knew from treating pneumonias and other forms of acute inflammatory lung injuries. We used every bit of our training in situations where no one had the right answers. But disasters teach us how to be flexible and pivot on the fly, and what to do when things don’t go our way.”

What is disaster response?

Medical response to a disaster essentially boils down to three main things: stuff, staff, and space, Dr. Persoff said. Those are the cornerstones of an emergency plan.

“There is not a hazard that exists that you can’t take an all-hazards approach to dealing with fundamental realities on the ground. No plan can be comprehensive enough to deal with all the intricacies of an emergency. But many plans can have the bones of a response that

will allow you to face adverse circumstances,” he said.

“We actually became quite efficient early on in the pandemic, able to adapt in the moment. We were able to build an effective bridge between workers on the ground and our incident command structure, which seemed to reduce a lot of stress and create situational awareness. We implemented ICS as soon as we heard that China was building a COVID hospital, back in February of 2020.”

When one thinks about mass trauma, such as a 747 crash, Dr. Persoff said, the need is to treat burn victims and trauma victims in large numbers. At that point, the ED downstairs is filled with medical patients. Hospital medicine can rapidly admit those patients to clear out room in the ED. Surgeons are also dedicated to rapidly treating those patients, but what about patients who are on the floor following their surgeries? Hospitalists can offer consultations or primary management so the surgeons can stay in the OR, and the same in the ICU, while safely discharging hospitalized patients in a timely manner to make room for incoming patients.

“The lessons of COVID have been hard-taught and hard-earned. No good plan survives contact with the enemy,” he said. “But I think we’ll be better prepared for the next pandemic.”

Maria Frank, MD, FACP, SFHM, a hospitalist at Denver Health who chairs SHM’s Disaster Management Special Interest Group, says she got the bug for disaster preparation during postresidency training as an internist in emergency medicine. “I’m also the medical director for our biocontainment unit, created for infections like Ebola.” SHM’s SIG, which has 150 members, is now writing a review article on disaster planning for the field.

“I got a call on Dec. 27, 2019, about this new pneumonia, and they said, ‘We don’t know what it is, but it’s a coronavirus,’” she recalled. “When I got off the phone, I said, ‘Let’s make sure our response plan works and we have enough of everything on hand.’” Dr. Frank said she was expecting something more like SARS (severe acute respiratory syndrome). “When they called the public health emergency of international concern for COVID, I was at a Centers for Disease Control and Prevention meeting in Atlanta. It really wasn’t a surprise for us.”

All hospitals plan for disasters, although they use different names and have different levels of com-

mitment, Dr. Frank said. What’s not consistent is the participation of hospitalists. “Even when a disaster is 100% trauma related, consider a hospital like mine that has at least four times as many hospitalists as surgeons at any given time. The hospitalists need to take overall management for the patients who aren’t actually in the operating room.”

Time to debrief

Dr. Frank recommends debriefing on the hospital’s and the hospitalist group’s experience with COVID. “Look at the biggest challenges your group faced. Was it staffing, or time off, or the need for day care? Was it burnout, lack of knowledge, lack of [personal protective equipment]?” Each hospital could use its own COVID experience to work on identifying the challenges and the problems, she said. “I’d encourage each department and division to do this exercise individually. Then come together to find common ground with other departments in the hospital.”

This debriefing exercise isn’t just for doctors – it’s also for nurses, environmental services, security, and many other departments, she said. “COVID showed us how crisis response is a group effort. What will bring us together is to learn the challenges each of us faced. It was amazing to see hospitalists doing what they do best.” Post pandemic, hospitalists should also consider publishing research, in order to share their lessons.

“One of the things we learned is that hospitalists are very versatile,” Dr. Frank added. But it’s also good for the group to have members specialize, for example, in biocontainment. “We are experts in discharging patients, in patient flow and operations, in coordinating complex medical care. We would naturally take the lead in opening a geographic unit or collaborating with other specialists to create innovative models. That’s our job. It’s essential that we’re involved well in advance.”

COVID may be a once-in-a-lifetime experience, but there will be other disasters to come, she said. “If your hospital doesn’t have a disaster plan for hospitalists, get involved in establishing one. Each hospitalist group should have its own response plan. Talk to your peers at other hospitals, and get involved at the institutional level. I’m happy to share our plan; just contact me.” Readers can contact Dr. Frank at maria.frank@dhha.org.

For a complete list of references, see the online version of this article at www.the-hospitalist.org.

Clinician reviews of HM-centric research

By Chadi Cortas, MD; Herrick "Cricket" Fisher, MD, MPhil; Esteban Gershanik, MD, MPH, MMSc, FHM; Danielle Halpern, MD; Marina Kishlyansky, DO; Elizabeth Petersen, MD; Myrna Katalina Serna, MD; Laura Smith, MD; Shela Sridhar, MD; Qian Ye, MD

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By Chadi Cortas, MD

1 Switching from vancomycin to daptomycin in MRSA bloodstream infections

CLINICAL QUESTION: In patients with methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infection (BSI), does switching from vancomycin to daptomycin have a mortality benefit compared with continued vancomycin?

BACKGROUND: MRSA BSIs are typically initially treated with vancomycin, but patients may be switched to daptomycin, particularly in the setting of increased vancomycin minimum inhibitory concentration, treatment failure (e.g., persistent bacteremia), or toxicity.

STUDY DESIGN: Retrospective cohort study.

SETTING: 124 Department of Veterans Affairs hospitals between 2007 and 2014.

SYNOPSIS: Out of 7,411 patients with MRSA BSI, 8% switched from vancomycin to daptomycin; 1.5% switched within 3 days of starting vancomycin (i.e., early switching). Factors more common among patients who switched included vancomycin minimum inhibitory concentration 2 mg/L or more,

acute kidney injury, osteomyelitis, and endovascular infections. A statistically significant association was seen between early switching to daptomycin and lower 30-day mortality (hazard ratio, 0.48; 95% confidence interval, 0.25-0.92 using multivariable Cox regression models). No benefit was seen with later switching.

Retrospective cohort studies are subject to selection bias and unable to control for unmeasured confounders. Because exclusion criteria included death in the first 3 days of antibiotic therapy (when many MRSA BSI-related deaths occur) and daptomycin switch was defined as receiving 3 doses or more within 3-5 consecutive days, bias favoring daptomycin is possible. Methodologic concerns with prior observational studies comparing daptomycin and vancomycin include different timelines and definitions of clinical failure. The authors note the lack of a universal consensus among infectious disease clinicians on whether switching to daptomycin improves outcomes.

BOTTOM LINE: Further studies are needed to assess the benefit and optimal timing of switching antibiotics in patients with MRSA BSI.

CITATION: Schweizer ML et al. Comparative effectiveness of switching to daptomycin versus remaining on vancomycin among patients with methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections. *Clin Infect Dis*. 2021;72(S1):S68-73. doi: 10.1093/cid/ciaa1572.

2 Preop glucose but not HbA1c levels associated with MI after noncardiac surgery

CLINICAL QUESTION: Is MI after noncardiac surgery (MINS) associated with both preoperative hyperglycemia and hemoglobin A1c (HbA1c) levels?

BACKGROUND: Although preoperative hyperglycemia, which is associated with poor postoperative outcomes, is common, there are limited data to guide preoperative glucose management or to evaluate the association between short-term vs. chronic glucose control and clinical outcomes.

STUDY DESIGN: Observational cohort study.

SETTING: A total of 12,304 patients from a larger SMC-TINCO (Samsung Medical Center Troponin in Noncardiac Operation) deidentified registry of 43,019 patients at a single center in Seoul, South Korea, who had troponin levels measured before or within 30 days after noncardiac surgery between January 2010 and June 2019.

SYNOPSIS: Out of 12,304 patients, the 3,980 with hyperglycemia (fasting greater than 140 mg/dL; random greater than 180 mg/dL) had higher MINS incidence (27.6% vs. 18.7%; odds ratio, 1.29; *P* less than .001 after inverse probability weighting [IPW]) and 30-day mortality (5.1% vs. 2%; HR, 1.77; *P* less than .001 after IPW) compared with other patients. No association was seen based on HbA1c greater than 6.5% among 4,373 patients with HbA1c results. IPW led to a balancing of covariates. Patients with hyperglycemia tended to have higher age, diabetes, hypertension, stroke, and preoperative ICU treatment; those with

HbA1c results had higher incidence of underlying diseases. Optimal cutoff points of fasting and random blood glucose levels for MINS were 141 and 174 mg/dL (sensitivity vs. specificity, 45.6% vs. 67.2% and 23.6% vs. 84%), respectively. Possible explanations include acute hyperglycemia-induced coronary microvascular dysfunction and oxidative stress. HbA1c results may reflect selective HbA1c measurements, more clinical monitoring (given poorly controlled chronic hyperglycemia), and relatively short-term follow-up. Other limitations include the single site (limited generalizability) observational study (unknown confounders) design.

BOTTOM LINE: Control of acute hyperglycemia may help prevent MINS and improve 30-day mortality regardless of HbA1c levels.

CITATION: Park J et al. Associations between preoperative glucose and hemoglobin A1c level and myocardial injury after noncardiac surgery. *J Am Heart Assoc*. 2021;10(7):e019216. doi: 10.1161/JAHA.120.019216.

Dr. Cortas is a hospitalist at Brigham and Women's Hospital and instructor of medicine at Harvard Medical School, both in Boston.

By Herrick "Cricket" Fisher, MD, MPhil

3 AHRQ Safety Program focusing on self-stewardship reduces antibiotic use in hospitals

CLINICAL QUESTION: Is participation in the Agency for Healthcare Research and Quality Safety Program for Improving Antibiotic Use (AHRQ Safety Program), which emphasizes education and empowerment of antibiotic stewardship teams and frontline clinicians, associated with lower rates of antibiotic use?

BACKGROUND: Top-down antibiotic stewardship programs (ASPs) are common across the United States but are limited in their potential impact because there are finite resources to provide real-time assistance with all antibiotic prescribing

and durability of stewardship practices is unclear.

STUDY DESIGN: Qualitative improvement program over 1 year.

SETTING: U.S. hospitals.

SYNOPSIS: Including many with limited resources, 402 hospitals completed the intervention: 42% were community hospitals, 21% critical access hospitals, 35% rural location, and 43% without infectious disease specialists. The intervention included support establishing local ASPs and educational content for clinicians on antibiotic stewardship (webinars and educational materials). Data were analyzed using a linear mixed model with random hospital unit effects.

When comparing January and February with November and December 2018, antibiotic use decreased from 900.7 to 870.4 days of therapy (DOT) per 1,000 patient-days (−30.3 DOTs; 95% CI, −52.6 to −8.0 DOT; $P = .008$). The largest decrease was in the first months after the initiative began and was sustained during following months. In subgroup and secondary analyses, there were significant reductions in fluoroquinolone use (−20.4 DOT; $P = .009$) and hospital-onset *Clostridioides difficile* infections (−19.5%; $P = .03$). Hospitals more actively engaged in the program were more likely to demonstrate an effect.

Limitations include the lack of control group, although there were not significant reductions in antibiotic use in the Premier Healthcare Database cohort during the same period, and potential inaccuracies with data collection.

BOTTOM LINE: Participation in the AHRQ Safety Program was associated with durable improvements in clinician self-stewardship with decreased rates of antibiotic use, including in lower-resource hospitals across the United States.

CITATION: Tamma PD et al. Association of a safety program for improving antibiotic use with antibiotic use and hospital-onset *Clostridioides difficile* infection rates among U.S. hospitals. *JAMA Netw Open*. 2021;4(2):e210235. doi: 10.1001/jama-networkopen.2021.0235.

Dr. Fisher is an attending hospitalist and director of the Integrated Teaching Unit, Brigham and Women's Hospital.

By Esteban Gershanik, MD, MPH, MMSc, FHM

4 IL-6 receptor antagonists efficacious in critically ill patients with COVID-19

CLINICAL QUESTION: Do interleukin-6 (IL-6) receptor antagonists (“monoclonal antibodies”) – specifically, tocilizumab and sarilumab – improve outcomes and survival in critically ill patients with coronavirus disease 2019 (COVID-19)?

BACKGROUND: The use of monoclonal antibodies has been clinically described for use in COVID-19 patients and presumed to potentially be beneficial because of their inhibition of IL-6, which serves as part of the acute-phase response to infection. However, randomized controlled trials to date evaluating their clinical use in these settings have largely been negative. This trial focused on their effectiveness, in addition to standard of care, on survival and organ support in the severely, critically ill patients with COVID-19 not currently receiving respiratory support.

STUDY DESIGN: Randomized, prospective, cohort, international, adaptive platform trial with multiple interventions across various domains [Part of the Randomized, Embedded, Multifactorial Adaptive Platform Trial for Community Acquired Pneumonia (REMAP-CAP)].

SETTING: Intensive care units at 113 sites across six countries.

SYNOPSIS: As a domain of REMAP-CAP (which previously demonstrated glucocorticoids improving outcomes in patients with COVID-19), 895 patients, 18 years of age or older with COVID-19 within 24 hours after starting organ support in the intensive care unit, were randomly assigned to receive standard-of-care treatment with or without IL-6 receptor antagonists, tocilizumab or sarilumab. Statistical analysis incorporating a Bayesian statistical model demonstrated IL-6 receptor antagonists with an OR greater than 1 representing improved survival and more organ support-free days compared with standard care. Findings showed a median adjusted cumulative OR of 1.64 (95% CI, 1.24-2.14) for tocilizumab and 1.76 (95% CI, 1.17-2.91) for sarilumab compared with control. Analysis of 90-day survival showed an HR

of 1.61 (95% CI, 1.25-2.08) comparing pooled IL-6 receptor antagonist with the control group. Limitations include patient selection: Patients are primarily men (73%), average age of 61.4, White (72%) or Asian (17%) who must be enrolled within 24 hours after starting organ support (compared with prior studies) and potential evolving ICUs standards of care.

BOTTOM LINE: In the most severely, critically ill adult patients with COVID-19 who receive organ support in ICUs, treatment within 24 hours with IL-6 receptor antagonist, in addition to standard of care, improves outcomes including survival.

CITATION: The REMAP-CAP Investigators. Interleukin-6 receptor antagonists in critically ill patients with Covid-19. *N Engl J Med*. 2021;384(16):1491-502. doi: 10.1056/NEJMoa2100433.

Dr. Gershanik is medical director of quality, safety, and equity at Brigham and Women's Hospital.

By Danielle Halpern, MD

5 Aldosterone antagonists for people with chronic kidney disease requiring dialysis

CLINICAL QUESTION: Are aldo-

sterone antagonists beneficial to people with chronic kidney disease (CKD) requiring hemodialysis or peritoneal dialysis compared with placebo?

BACKGROUND: There are several studies to suggest that aldosterone antagonists would provide a helpful treatment option for people with

CKD on dialysis. This population is at very high risk of cardiovascular disease, morbidity, and mortality, all of which these agents have shown to be helpful against in other populations. There has not yet been a comprehensive study evaluating the efficacy and potential harms of aldosterone antagonists in the dialysis population.

STUDY DESIGN: Meta-analysis.

SETTING: A total of 16 parallel randomized controlled studies, crossover randomized controlled trials, and quasi-randomized controlled trials comparing aldosterone antagonists with placebo or standard care in people with CKD on dialysis

Continued on following page



Dr. Fisher



Dr. Gershanik



Dr. Halpern

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entered in the Cochrane Kidney and Transplant Register of Studies up to Aug. 5, 2020. A total of 1,446 participants were involved.

SYNOPSIS: The included studies compared spironolactone with placebo or standard care (13 studies) or eplerenone with placebo (1 study). Based on these studies, aldosterone antagonists were seen to probably reduce the risk of death from any cause for people with CKD requiring dialysis with a moderate certainty of evidence (9 studies, 1,119 participants; risk ratio, 0.45; 95% CI, 0.30-0.67; $I^2 = 0\%$). When broken down by specific causes, aldosterone antagonists decreased the risk of cardiovascular death, as well as cardiovascular and cerebral morbidity, with a moderate certainty of evidence (former outcome: 6 studies, 908 participants; RR, 0.37; 95% CI, 0.22-0.64; $I^2 = 0\%$; latter outcomes: 3 studies, 328 participants; RR, 0.38; 95% CI, 0.18-0.76; $I^2 = 0\%$). Notably, there was an increased risk of gynecomastia in multiple studies. However, there was no increased risk of hyperkalemia in study participants (9 studies, 981 participants; RR, 1.41; 95% CI, 0.72-2.78; $I^2 = 47\%$; low certainty of evidence). All told, in people with CKD requiring dialysis who received aldosterone antagonists there were 72 fewer deaths from all causes per 1,000 participants (95% CI, 47-98) with number needed to treat for an additional benefit of 14 (95% CI, 10-21). There were 26 events of gynecomastia per 1,000 participants (95% CI, 15-39) with a number needed to harm of 38 (95% CI, 26-68).

BOTTOM LINE: Aldosterone antagonists probably reduce the risk of all-cause death and morbidity resulting from cardiovascular and cerebrovascular disease in people with CKD requiring dialysis but with an increased risk of gynecomastia.

CITATION: Hasegawa T et al. Aldosterone antagonists for people with chronic kidney disease requiring dialysis. *Cochrane Database Syst Rev.* 2021 Feb 15;2:CD013109. doi: 10.1002/14651858.CD013109.pub2.

Dr. Halpern is an attending hospitalist at Brigham and Women's Hospital.

By Marina Kishlyansky, DO

6 CPR in patients with COVID-19 who suffer from in-hospital cardiac arrest appears futile

CLINICAL QUESTION: What are

the outcomes after in-hospital cardiac arrest among patients with COVID-19?

BACKGROUND: The COVID-19 pandemic, which is caused by SARS CoV-2 virus, has accounted for al-



Dr. Kishlyansky

most 200,000 deaths in the United States as of Sept. 1, 2020. While knowledge about the disease is evolving, there is paucity of data on the characteristics and outcomes of COVID-19-related in-hospital cardiac arrests in the United States.

STUDY DESIGN: Retrospective cohort study.

SYNOPSIS: Single-center, multihospital, rural Southwest Georgia. Synopsis: Of patients with a diagnosis of COVID-19, 63 were included in this study. All patients experienced an in-hospital cardiac arrest with attempted resuscitation; 90.5% of the patients were African Americans, the median age was 66 years, and 49.2% were males.

Additionally, 84% of cardiac arrests occurred in the ICU. The initiation of advanced cardiovascular life support was less than 1 minute for 100% of cardiac arrests in the ICU and less than 2 minutes for the remaining patients. Mortality was 100%. This study has several limitations, including lack of data on quality of chest compressions. In addition, the study was conducted in a single-center setting, and a majority of patients were African American, suggesting that the results may not be generalizable to other settings and patient demographics.

This study raises important questions about the futility of advanced cardiovascular life support measures in COVID-19 patients who suffer from in-hospital cardiac arrest.

BOTTOM LINE: In this study, patients with COVID-19 who suffered from in-hospital cardiac arrest and received cardiopulmonary resuscitation had 100% mortality.

CITATION: Shah P et al. Is cardiopulmonary resuscitation futile in coronavirus disease 2019 patients experiencing in-hospital cardiac arrest? *Crit Care Med.* 2021 Feb 1;49(2):201-8. doi: 10.1097/CCM.0000000000004736.

Dr. Kishlyansky is an attending hospitalist at Brigham and Women's Hospital.

SHORT TAKES

Admission patterns between ED physicians and advanced practice providers

Observational cohort study showed little variation in diagnostic testing and hospitalization rates between physicians and advanced practice providers seeing patients for chest pain and abdominal pain in the ED. Standardized protocols for chest and

abdominal pain may limit generalizability of these results to different chief complaints and practice settings.

CITATION: Pines J et al. Emergency physician and advanced practice provider diagnostic testing and admission decisions in chest pain and abdominal pain. *Acad Emerg Med.* 2021;28(1):36-45. doi: 10.1111/acem.14161.

By Elizabeth Petersen, MD

7 Rifaximin prevents hepatic encephalopathy after TIPS

CLINICAL QUESTION: Does rifaximin prevent overt hepatic encephalopathy (HE) after transjugular intrahepatic portosystemic shunt (TIPS)?

BACKGROUND: Rifaximin is efficacious and widely used for the secondary prevention of HE in patients with cirrhosis. Up to half



Dr. Petersen

of patients who undergo TIPS experience post-procedure HE, but no prophylactic interventions have been shown to be effective in preventing HE after TIPS.

STUDY DESIGN:

Randomized controlled trial.

SETTING: Tertiary care hospitals in France.

SYNOPSIS: Of patients with cirrhosis undergoing TIPS, 186 were randomized to receive either rifaximin or placebo starting 2 weeks preprocedure and continuing for 6 months.

The majority of patients (86%) had alcohol-induced cirrhosis. Overt HE, defined as grade 2 or higher by West Haven modified criteria or isolated asterixis, occurred in 34% (95% CI, 25%-44%) of patients in the rifaximin group vs. 53% (95% CI, 43%-63%) of patients in the placebo group. There was no significant difference in adverse events or transplant-free survival between groups. Given the prolonged duration of treatment and high cost of rifaximin, further study is needed to determine the cost-effectiveness of this approach.

BOTTOM LINE: Rifaximin should be considered for prophylaxis of post-TIPS hepatic encephalopathy in patients with alcoholic cirrhosis.

CITATION: Bureau CB et al. The use of rifaximin in the prevention

of overt hepatic encephalopathy after transjugular intrahepatic portosystemic shunt: A randomized controlled trial. *Ann Intern Med.* 2021 May;174(5):633-40. doi: 10.7326/M20-0202.

Dr. Petersen is an attending hospitalist at Boston Children's and Brigham and Women's Hospitals and an instructor at Harvard Medical School.

By Myrna Katalina Serna, MD

8 Semaglutide with lifestyle intervention for weight loss in patients without diabetes

CLINICAL QUESTION: Does once-weekly semaglutide 2.4 mg with lifestyle intervention help adults with overweight or obesity and without diabetes achieve weight loss?

BACKGROUND: Chronic obesity is a public health challenge linked to multiple complications, with limited pharmacologic options. Semaglutide, a GLP-1 analogue, is approved for the treatment of type 2 diabetes and



Dr. Serna

was noted to induce weight loss.

STUDY DESIGN: Randomized, double-blind, placebo-controlled trial.

SETTING: 129 sites in 16 countries.

SYNOPSIS: Of participants with obesity (body mass index 30 or more) or overweight (BMI 27 or more) with one or more weight-related coexisting conditions, 1,961 were randomly assigned to receive semaglutide (1,306 participants) or placebo (655 participants) as an adjunct to lifestyle intervention for 68 weeks. Exclusion criteria included diabetes. The mean change in body weight from baseline to week 68 was -14.9% in the semaglutide group, compared with -2.4% in the placebo group, a statistically significant dif-

ference. Nausea and diarrhea were the most common adverse events observed with semaglutide and resulted in 4.5% of participants in this group discontinuing treatment.

BOTTOM LINE: Once-weekly semaglutide 2.4 mg plus lifestyle intervention is associated with sustained weight loss in patients with overweight or obesity and without diabetes.

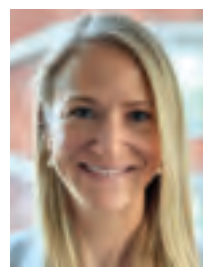
CITATION: Wilding JPH et al. Once-weekly semaglutide in adults with overweight or obesity. *N Engl J Med.* 2021 Mar 18;384(11):989. doi: 10.1056/NEJMoa2032183.

Dr. Serna is a hospitalist at Brigham and Women's Hospital.

By Laura Smith, MD

9 Diastolic blood pressure targets in adults treated for hypertension

CLINICAL QUESTION: What is the ideal diastolic blood pressure range for patients who have systolic blood pressures less than 130 mm Hg when taking antihypertensives?



Dr. Smith

BACKGROUND: Historically, optimal management of hypertension has focused on management of systolic blood pressure (SBP), and 2017 American Heart Association guidelines

list goal values for SBP but do not provide recommendations for the ideal diastolic blood pressure (DBP) range. The safe and optimal DBP in treated hypertension is not known. Prior studies have suggested that DBPs less than 60 mm Hg are associated with increased adverse cardiovascular risks, such as death from myocardial infarction. However, it is unclear whether a J-shape phenomenon of negative outcomes exists for DBPs in treated hypertension.

STUDY DESIGN: Retrospective cohort study.

SETTING: Researchers conducted a posthoc analysis of the outcomes of the SPRINT and ACCORD-BP trials to determine whether there is a J-shaped phenomenon for cardiovascular outcomes related to DBP ranges for patients and establish possible optimal goals for diastolic blood pressure. Patients who achieved an SBP of less than 130 mm Hg were retrospectively reviewed, and their mean treated SBP, DBP, and pulse pressure were computed.

Patients were divided into subgroups of treated DBP at intervals of less than 60, 60-70, 70-80, and 80+ mm Hg.

SYNOPSIS: A total of 7,515 patients were analyzed. A mean treated DBP of less than 60 mm Hg was associated with a significantly increased risk of the primary outcome – a composite of all-cause death, nonfatal myocardial infarction, and nonfatal stroke (HR, 1.45; 95% CI, 1.13-1.9; $P = .004$). Patients with a DBP of greater than 80 mm Hg did not have a significantly increased risk of the primary outcome. However, a nonlinear association between treated DBP and the primary outcome was observed ($P = .003$), which may support a J-shaped phenomenon for DPB.

The nominally lowest risk was observed for patients who achieved a DBP of between 70 and 80 mm Hg. This study is limited as a post hoc analysis of two previously randomized trials and does not reveal a mechanism of the association of low-treated DBP and increased risk. Also, only 6.3% of patients had a DBP of 80 mm Hg or greater, which may be underpowered to demonstrate a significant difference in outcomes. These findings do support that further prospective studies are needed to determine safe and optimal DBP.

BOTTOM LINE: A DBP of less than 60 mm Hg is significantly associated with negative outcomes in patients with elevated cardiovascular risk who achieve a treated SBP of less than 130 mm Hg. Further investigation is needed to determine if DBP 70-80 mm Hg is the ideal range.

CITATION: Li J et al. Evaluation of optimal diastolic blood pressure range among adults with treated systolic blood pressure less than 130 mm Hg. *JAMA Netw Open.* 2021; 4(2):e2037554. doi: 10.1001/jamanetworkopen.2020.37554.

Dr. Smith is hospitalist and instructor of medicine at Brigham and Women's Hospital and Harvard Medical School.

By Shela Sridhar, MD

10 Consequences at 6 months of COVID-19 in patients discharged from hospital

CLINICAL QUESTION: What is the duration of symptoms in patients with COVID-19, and are there any residual pulmonary effects of COVID-19?

BACKGROUND: There are few data that define the long-term

effects of patients hospitalized with COVID-19. Some data have suggested persistence of symptoms up to 3 months; however, little has been defined beyond that period. The study aimed to describe the long-term consequence of COVID-19 stratified by disease severity, as well as potential risk factors during hospitalization, for any long-term consequences.

STUDY DESIGN: Ambidirectional cohort study.

SETTING: Jin Yin-tan Hospital in Wuhan, Hubei, China.

SYNOPSIS: Of patients from Jin-Yin-tan hospital with COVID-19, 2,469 aged 47-65 years old were followed over 6 months. Follow-up included symptom questionnaires, 6-minute physical walk tests, blood samples, and CT. At 6 months, 76% of patients reported at least one symptom at follow-up. Of patients who required high-flow nasal cannula, noninvasive ventilation, or intubation, 56% were noted to have lung diffusion impairment. Ground-glass opacities and irregular lines were found 6 months after acute disease, as well.

Serology obtained indicated much lower rates of neutralizing antibodies at 6 months, compared with the acute phase, which raises concern for severe disease with reinfection. These results suggest a high suspicion necessary for hospitalists evaluating patients with prior COVID-19 infection.

BOTTOM LINE: Symptoms of COVID-19 persisted at least 6 months after hospitalization for acute disease. The most common symptoms were fatigue and muscle weakness. New anxiety and depression were also common. Finally, severe disease was associated with impaired pulmonary diffusion.

CITATION: Huang C et al. 6-Month consequences of COVID-19 in patients discharged from hospital: A cohort study. *Lancet.* 2021;397(10270):220-32. doi: 10.1016/S0140-6736(20)32656-8.

Dr. Sridhar is a pediatric hospitalist at Brigham and Women's Hospital and Boston Children's Hospital and an instructor at Harvard Medical School.

By Qian Ye, MD

11 Catheter ablation improves survival and quality of life in AFib patients with heart failure

CLINICAL QUESTION: Does catheter ablation (CA) improve survival and quality of life in patients with atrial fibrillation (AFib) and heart

failure (HF), compared with drug therapy (rate or rhythm control drugs)?

BACKGROUND: Studies have shown that CA improves all-cause mortality, quality of life, and freedom from AFib recurrence in



Dr. Ye

patients with AFib and HF with reduced ejection fraction. There have been no randomized controlled trials comparing CA with drug therapy in patients with HF with

preserved ejection fraction (HF-pEF).

STUDY DESIGN: Open label, multicenter, randomized controlled trial.

SETTING: International, multicenter trial.

SYNOPSIS: Using a prespecified subgroup analysis of 778 of the 2,204 patients randomized in the CABANA trial who had HF defined as New York Heart Association class II or greater, this study showed that CA produced clinically significant reductions in all-cause mortality (43% relative reduction; HR, 0.57; 95% CI, 0.33-0.96) and AFib recurrence (HR, 0.56; 95% CI, 0.42-0.74). Ablation patients also had significant improvement in quality of life. Median follow-up was 48.5 months. Although this study was not designed to evaluate patients with HFpEF, 79% of patients in whom baseline ejection fraction (EF) was available had an EF greater than 50%.

The study results are concordant with prior observational data that suggested similar efficacy of AFib ablation in HF patients regardless of their EF. However, a major limitation of this study is that HFpEF was defined phenotypically by the enrolling clinicians based on their clinical judgment. It is challenging to tease out how much of the patient's functional impairment is attributable to HFpEF vs. AFib itself. The study findings need to be confirmed in adequately sized replication trials.

BOTTOM LINE: In patients with AFib and clinically defined HF, CA significantly reduces mortality and recurrent AFib and improves quality of life relative to drug therapy.

CITATION: Packer D et al. Ablation versus drug therapy for atrial fibrillation in heart failure. *Circulation.* 2021;143:1377-90. doi: 10.1161/CIRCULATIONAHA.120.050991.

Dr. Ye is a hospitalist at Brigham and Women's Hospital.

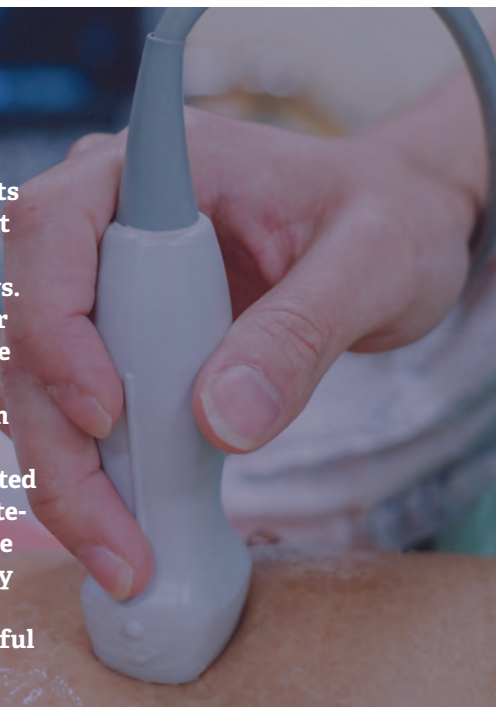
Interpreting Diagnostic Tests

Use of point-of-care ultrasound (POCUS) for heart failure

By Faye Farber, MD; Yasmin Marcantonio, MD; Neil Stafford, MD; Megan Brooks, MD, MPH, FHM; Adam Wachter, MD; Shree Menon, MD; Poonam Sharma, MD, SFHM;

Case

A 65-year-old woman presents to the emergency department with a chief complaint of shortness of breath for 3 days. Medical history is notable for moderate chronic obstructive pulmonary disorder, systolic heart failure with last known ejection fraction (EF) of 35%, and type 2 diabetes complicated by hyperglycemia when on steroids. You are talking the case over with colleagues and they suggest point-of-care ultrasound (POCUS) would be useful in her case.



PITCHAYANAN KONGKEW/GETTY IMAGES

Brief overview of the issue

Once mainly used by ED and critical care physicians, POCUS is now a tool that many hospitalists are using at the bedside. POCUS differs from traditional comprehensive ultrasounds in the following ways: POCUS is designed to answer a specific clinical question (as opposed to evaluating all organs in a specific region), POCUS exams are performed by the clinician who is formulating the clinical question (as opposed to by a consultative service such as cardiology and radiology), and POCUS can evaluate multiple organ systems (such as by evaluating a patient's heart, lungs, and inferior vena cava to determine the etiology of hypoxia).

Hospitalist use of POCUS may include guiding procedures, aiding in diagnosis, and assessing effectiveness of treatment. Many high-quality studies have been published that support the use of POCUS and have proven that POCUS can decrease medical errors, help reach diagnoses in a more expedited fashion, and complement or replace more advanced imaging.

A challenge of POCUS is that it is user dependent and there are no established standards for hospitalists in POCUS training. As the Society of Hospital Medicine position statement on POCUS points out, there is a significant difference between skill levels required to obtain a certificate of completion for POCUS training and a certificate of competency in POCUS. Therefore, it is recommended hospitalists work with local credentialing committees to delineate the requirements for POCUS use.

Overview of the data

POCUS for initial assessment and diagnosis of heart failure (HF)

Use of POCUS in cases of suspected HF includes examination of the heart, lungs, and inferior vena cava (IVC). Cardiac ultrasound provides an estimated ejection fraction. Lung ultrasound (LUS) functions to examine for B lines and pleural effusions. The presence of more than three B

Key points

- Studies have found POCUS improves the diagnosis of acute decompensated heart failure in patients presenting with dyspnea.
- Daily evaluation with POCUS has decreased length of stay in acute decompensated heart failure.
- Credentialing requirements for hospitalists to use POCUS for clinical care vary by hospital.

lines per thoracic zone bilaterally suggests cardiogenic pulmonary edema. Scanning the IVC provides a noninvasive way to assess volume status and is especially helpful when body habitus prevents accurate assessment of jugular venous pressure.

Several studies have addressed the utility of bedside ultrasound in the initial assessment or diagnosis of acute decompensated heart failure (ADHF) in patients presenting with dyspnea in emergency or inpatient settings. Positive B lines are a useful finding, with high sensitivities, high specificities, and positive likelihood ratios. One large multicenter prospective study found LUS to have a sensitivity of 90.5%, specificity of 93.5%, and positive and negative LRs of 14.0 and 0.10, respectively.¹ Another large multicenter prospective cohort study showed that LUS was more sensitive and more specific than chest x-ray (CXR) and brain natriuretic peptide in detecting ADHF.² Additional POCUS findings that have shown relatively high sensitivities and specificities in the initial diagnosis of ADHF include pleural effusion, reduced left ventricular ejection fraction (LVEF), increased left ventricular end-diastolic dimension, and jugular venous distention.

Data also exist on assessments of ADHF using combinations of POCUS findings; for example, lung and cardiac ultrasound (LuCUS) protocols include an evaluation for B lines, assessment of IVC size and



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collapsibility, and determination of LVEF, although this has mainly been examined in ED patients. For patients who presented to the ED with undifferentiated dyspnea, one such study showed a specificity of 100% when a LuCUS protocol was used to diagnose ADHF while another study showed that the use of a LuCUS protocol changed management in 47% of patients.^{3,4} Of note, although each LuCUS protocol integrated the use of lung findings, IVC collapsibility, and LVEF, the exact protocols varied by institution. Finally, it has been established in multiple studies that LUS used in addition to standard workup including history and physical, labs, and electrocardiogram has been shown to increase diagnostic accuracy.^{2,5}

Using POCUS to guide diuretic therapy in HF

To date, there have been multiple small studies published on the utility of daily POCUS in hospitalized patients with ADHF to help assess response to treatment and guide diuresis by looking for reduction in B lines on LUS or a change in IVC size or collapsibility. Volpicelli and colleagues showed that daily LUS was at least as good as daily CXR in monitoring response to therapy.⁶ Similarly, Mozzini and colleagues performed a randomized controlled trial of 120 patients admitted for ADHF who were randomized to a CXR group (who had a CXR performed on admission and discharge) and a LUS group (which was performed at admission, 24 hours, 48 hours, 72 hours, and discharge).⁷ This study found that the LUS group underwent a significantly higher number of diuretic dose adjustments as compared with the CXR group ($P < .001$) and had a modest improvement in LOS, compared

with the CXR group. Specifically, median LOS was 8 days in CXR group (range, 4-17 days) and 7 days in the LUS group (range, 3-10 days; $P < .001$).

The impact of POCUS on length of stay (LOS) and readmissions

There are increasing data that POCUS can have meaningful impacts on patient-centered outcomes (morbidity, mortality, and readmission) while exposing patients to minimal discomfort, no venipuncture, and no radiation exposure. First, multiple studies looked at whether performing focused cardiac US of the IVC as a marker of volume status could predict readmission in patients hospitalized for ADHF.^{8,9} Both of these trials showed that plethoric, non-collapsible IVC at discharge were statistically significant predictors of readmission. In fact, Goonewardena and colleagues demonstrated that patients who required readmission had an enlarged IVC at discharge nearly 3 times more frequently (21% vs. 61%, $P < .001$) and abnormal IVC collapsibility 1.5 times more frequently (41% vs. 71%, $P = .01$) as compared with patients who remained out of the hospital.⁹

Similarly, a subsequent trial looked at whether IVC size on admission was of prognostic importance in patients hospitalized for ADHF and showed that admission IVC diameter was an independent predictor of both 90-day mortality (hazard ratio, 5.88; 95% confidence interval, 1.21-28.10; $P = .025$) and 90-day readmission (HR, 3.20; 95% CI, 1.24-8.21; $P = .016$).¹⁰ Additionally, LUS heart failure assessment for pulmonary congestion by counting B lines also showed that having more than 15 B lines prior to discharge was an independent predictor of readmission for ADHF at 6 months (HR, 11.74; 95% CI, 1.30-106.16).¹¹

Additional reading

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A challenge of POCUS: Obtaining competency

As previously noted, there are not yet any established standards for training and assessing hospitalists in POCUS. The SHM Position Statement on POCUS recommends the following criteria for training⁵: The training environment should be similar to the location in which the trainee will practice, training and feedback should occur in real time, the trainee should be taught specific applications of POCUS (such as cardiac US, LUS, and IVC US) as each application comes with unique skills and knowledge, clinical competence

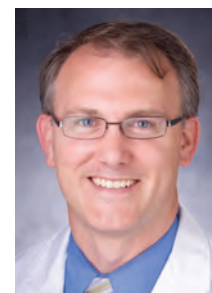
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Dr. Farber



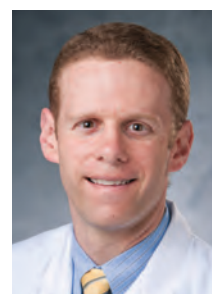
Dr. Marcantonio



Dr. Stafford



Dr. Brooks



Dr. Wachter



Dr. Menon



Dr. Sharma

Dr. Farber is a medical instructor at Duke University and hospitalist at Duke Regional Hospital, both in Durham, N.C. Dr. Marcantonio is a medical instructor in the department of internal medicine and department of pediatrics at Duke University and hospitalist at Duke University Hospital and Duke Regional Hospital. Dr. Stafford and Dr. Brooks are assistant professors of medicine and hospitalists at Duke Regional Hospital. Dr. Wachter is associate medical director at Duke Regional Hospital and assistant professor at Duke University. Dr. Menon is a hospitalist at Duke University. Dr. Sharma is associate medical director for clinical education at Duke Regional Hospital and associate professor of medicine at Duke University.

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must be achieved and demonstrated, and continued education and feedback are necessary once competence is obtained.¹² SHM recommends residency-based training pathways, training through a local or national program such as the SHM POCUS certificate program, or training through other medical societies for hospitalists already in practice.

Application of the data to our original case

Targeted POCUS using the LuCUS protocol is performed and reveals three B lines in two lung zones bilaterally, moderate bilateral pleural effusions, EF 20%, and a noncollapsible IVC leading to a diagnosis of ADHF. Her ADHF is treated with intravenous diuresis. She is continued on her chronic maintenance chronic obstructive pulmonary disorder regimen but does not receive steroids, avoiding hyperglycemia that has complicated prior admissions. Over the next few days her respiratory and cardiac status is monitored using POCUS to assess her response to therapy and titrate her diuretics to her true dry weight, which was several pounds lower than her previously assumed dry weight. At discharge she is instructed to use the new dry weight which may avoid readmissions for HF.

Bottom line

POCUS improves diagnostic accu-

racy and facilitates volume assessment and management in acute decompensated heart failure.

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Quiz



Testing your POCUS knowledge

POCUS is increasingly prevalent in hospital medicine, but use varies among different disease processes. Which organ system ultrasound or lab test would be most helpful in the following scenario?

An acutely dyspneic patient with no past medical history presents to the ED. Chest x-ray is equivocal. Of the following, which study best confirms a diagnosis of acute decompensated heart failure?

- A. Brain natriuretic peptide
- B. Point-of-care cardiac ultrasound
- C. Point-of-care lung ultrasound
- D. Point-of-care inferior vena cava ultrasound

Answer

C. Point-of-care lung ultrasound

Multiple studies, including three systematic reviews, have shown that point-of-care lung ultrasound has high sensitivity and specificity to evaluate for B lines as a marker for cardiogenic pulmonary edema. Point-of-care ultrasound of ejection fraction and inferior vena cava have not been evaluated by systematic review although one randomized, controlled trial showed that an EF less than 45% had 74% specificity and 77% sensitivity and IVC collapsibility index less than 20% had an 86% specificity and 52% sensitivity for detection of acute decompensated heart failure. This same study showed that the combination of cardiac, lung, and IVC point-of-care ultrasound had 100% specificity for diagnosing acute decompensated heart failure. In the future, health care providers could rely on this multiorgan evaluation with point-of-care ultrasound to confirm a diagnosis of acute decompensated heart failure in a dyspneic patient.

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'COVID toes' lesions not related to COVID-19

By Megan Brooks

Chilblain-like lesions seen in adolescents during the COVID-19 pandemic are non-ischemic and not related to systemic or localized SARS-CoV-2 infection, suggests a case series from Italy.

These lesions are “most likely are benign” and resolve on their own after 2-6 weeks, Valentina Discepolo, MD, PhD, University of Naples Federico II, said.

“They do not seem to be the manifestation of systemic inflammatory or autoimmune phenomena. According to our experience, they should not require a SARS-CoV-2-specific molecular or serological test since in all cases in our series they were negative,” said Dr. Discepolo.

The study was published online in *JAMA Network Open* (doi: 10.1001/jamanetworkopen.2021.11369).

The temporal association between



Cyanotic lesions and swelling shown here in one patient in the case series.

the COVID-19 pandemic and the increasing number of chilblain-like lesions has led some in the media to call it “COVID toes.” However, data on the association with SARS-CoV-2 are controversial.

For this report, Dr. Discepolo and colleagues evaluated 17 adolescents who presented with chilblain-like lesions of the toes during the first wave of the pandemic in Italy.

None had evidence of current, past, or local SARS-CoV-2 infection.

“In our experience, chilblain-like lesions are not a manifestation of COVID-19, as shown by negative serological and molecular specific for SARS-CoV2,” Dr. Discepolo said.

The lesions were bilaterally distributed in 16 adolescents (94.1%) and heel skin was involved in 7 (41.2%). Ulceration complicated one patient during the active phase of the disease, and desquamation developed over time in three patients (17.6%). Only two patients had concurrent involvement of the fingers.

Therapies included topical antibiotics and corticosteroids, disinfectants, and antifungal agents; systemic antibiotics or corticosteroids were used rarely.

None of the therapies substantially changed the course of the lesions. Duration was “extremely variable,” ranging from 49 to 145 days; howev-

er, at follow-up, all patients had full resolution.

Almost invariably, the lesions were characterized by a triad of red dots, white rosettes, and white streaks on an erythematous background.

In more than half the patients (56%), red dots often appeared as dotted and comma-shaped congested vessels that surrounded the rosettes in the early stage of the lesions. In later stages, red dots were still present, but the rosettes had disappeared.

Chilblain-like lesions have been one of the most commonly described cutaneous manifestations during the COVID-19 pandemic, but their etiopathogenesis, including the role of SARS-CoV-2, has remained elusive, the investigators wrote.

The findings in this case series do not support the association of the lesions with SARS-CoV-2 infection, they concluded.



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Hospital medicine and the future of smart care

By Sareer Zia, MD, MBA

People often overestimate what will happen in the next 2 years and underestimate what will happen in 10. – Bill Gates

The COVID-19 pandemic set in motion a series of innovations catalyzing the digital transformation of the health care landscape.

Telemedicine use exploded over the last 12 months to the point that it has almost become ubiquitous. With that, we saw a rapid proliferation of wearables and remote patient monitoring devices. Thanks to virtual care, care delivery is no longer strictly dependent on having on-site specialists, and care itself is not confined to the boundaries of hospitals or doctors' offices anymore.

We saw the formation of the digital front door and the emergence of new virtual care sites like virtual urgent care, virtual home health, virtual office visits, virtual hospital at home that allowed clinical care to be delivered safely outside the boundaries of hospitals. Nonclinical public places like gyms, schools, and community centers were being transformed into virtual health care portals that brought care closer to the people.

Inside the hospital, we saw a fusion of traditional inpatient care and virtual care. Onsite hospital teams embraced telemedicine during the pandemic for various reasons; to conserve personal protective equipment (PPE), limit exposure, boost care capacity, improve access to specialists at distant sites, and bring family memberse to "webside" who cannot be at a patient's bedside.

In clinical trials as well, virtual care is a welcome change. According to one survey,¹ most trial participants favored the use of telehealth services for clinical trials, as these helped them stay engaged, compliant, monitored, and on track while remaining at home. Furthermore, we are seeing the integration of artificial intelligence (AI) into telehealth, whether it is to aid physicians in clinical decision-making or to generate reminders to help patients with chronic disease management. However, this integration is beginning to scratch the surface only of the combination of two technologies' real potential.

What's next?

Based on these trends, it should be no surprise that digital health will become a vital sign for health care organizations.

The next 12-24 months will set new standards for digital health and play a significant role in defining the next generation of virtual care. There are projections that global health care industry revenues will exceed \$2.6 trillion by 2025, with AI and telehealth playing a prominent role in this growth.² According to estimates, telehealth itself will be a \$175 billion market by 2026 and approximately one in three patient encounters will go virtual.^{3,4} Moreover, virtual care will continue to make exciting transformations, helping to make quality care accessible to everyone in innovative ways. For example, the University of Cincinnati has recently developed a pilot project using a drone equipped with video technology, artificial intelligence, sensors, and first aid kits to go to hard-to-reach areas to deliver care via telemedicine.⁵

Smart hospitals

In coming years, we can expect the integration of AI, augmented reality (AR), and virtual reality (VR) into telemedicine at lightning speed – and at a much larger scale – that will enable surgeons from different parts of the globe to perform procedures remotely and more precisely.

AI is already gaining traction in different fields within health care – whether it's predicting length of stay in the ICU, or assisting in triage decisions, or reading radiological images, to name just a few. The Mayo Clinic is using AI and computer-aided decision-making tools to predict the risk of surgery and potential post-op complications, which could allow even better collaboration between medical and surgical teams. We hear about the "x-ray" vision offered to proceduralists using HoloLens – mixed reality smartglasses – a technology that enables them to perform procedures more precisely. Others project that there will be more sensors and voice recognition tools in the OR that will be used to gather data to develop intelligent algorithms, and to build a safety net for interventionalists that can notify them of potential hazards or accidental sterile field breaches. The insights gained will be used to create

best practices and even allow some procedures to be performed outside the traditional OR setting.

Additionally, we are seeing the development of "smart" patient rooms. For example, one health system in Florida is working on deploying Amazon Alexa in 2,500 patient rooms to allow patients to connect more easily to their care team members. In the not-so-distant future, smart hospitals with smart patient rooms and smart ORs equipped with telemedicine, AI, AR, mixed reality, and computer-aided decision-making tools will no longer be an exception.

Smart homes for smart care

Smart homes with technologies like gas detectors, movement sensors, and sleep sensors will continue to evolve. According to one estimate, the global smart home health care market was \$8.7 billion in 2019, and is expected to be \$96.2 billion by 2030.⁶

Smart technologies will have applications in fall detection and prevention, evaluation of self-administration of medicine, sleep rhythm monitoring, air quality monitoring for the detection of abnormal gas levels, and identification of things like carbon monoxide poisoning or food spoilage. In coming years, expect to see more virtual medical homes and digital health care complexes. Patients, from the convenience of their homes, might be able to connect to a suite of caregivers, all working collaboratively to provide more coordinated, effective care. The "hospital at home" model that started with 6 hospitals has already grown to over 100 hospitals across 29 states. The shift from on-site specialists to onscreen specialists will continue, providing greater access to specialized services.

With these emerging trends, it can be anticipated that much acute care will be provided to patients outside the hospital – either under the hospital at home model, via drone technology using telemedicine, through smart devices in smart homes, or via wearables and artificial intelligence. Hence, hospitals' configuration in the future will be much different and more compact than currently, and many hospitals will be reserved for trauma patients, casualties of natural disasters, higher acuity diseases requiring complex procedures, and other emergencies.

The role of hospitalists has



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evolved over the years and is still evolving. It should be no surprise if, in the future, we work alongside a digital hospitalist twin to provide better and more personalized care to our patients. Change is uncomfortable but it is inevitable. When COVID hit, we were forced to find innovative ways to deliver care to our patients. One thing is for certain: postpandemic (AD, or After Disease) we are not going back to a Before COVID (BC) state in terms of virtual care. With the new dawn of digital era, the crucial questions to address will be: What will the future role of a hospitalist look like? How can we leverage technology and embrace our flexibility to adapt to these trends? How can we apply the lessons learned during the pandemic to propel hospital medicine into the future? And is it time to rethink our role and even reclassify ourselves – from hospitalists to Acute Care Experts (ACE) or Primary Acute Care Physicians?

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Ethics in HM

An ethics challenge in hospital medicine

By Jack Chase, MD, FAAFP, FHM; Lubna Khawaja, MD, FHM

Ms. S, an 82-year-old woman with severe dementia, was initially hospitalized in the ICU with acute on chronic respiratory failure. Prior to admission, Ms. S lived with her daughter, who is her primary caregiver. Ms. S is able to say her daughter's name, and answer "yes" and "no" to simple questions. She is bed bound, incontinent of urine and feces, and dependent on her daughter for all activities of daily living.

This admission, Ms. S has been re-intubated 4 times for recurrent respiratory failure. The nursing staff are distressed that she is suffering physically. Her daughter requests to continue all intensive, life-prolonging treatment including mechanical ventilation and artificial nutrition.

During sign out, your colleague remarks that his grandmother was in a similar situation and that his family chose to pursue comfort care. He questions whether Ms. S has any quality of life and asks if you think further intensive care is futile.

On your first day caring for Ms. S, you contact her primary care provider. Her PCP reports that Ms. S and her daughter completed an advance directive (AD) 10 years ago which documents a preference for all life-prolonging treatment.

Question #1: What are the ethical challenges?

Dr. Chase: In caring for Ms. S, we face a common ethical challenge: how to respect the patient's prior preferences (**autonomy**) when the currently requested treatments have diminishing benefits (**beneficence**) and escalating harms (**non-maleficence**). Life-prolonging care can have diminishing returns at the end of life. Ms. S's loss of decision-making capacity adds a layer of complexity. Her AD was completed when she was able to consider decisions about her care, and she might make different decisions in her current state of health. Shared decision-making with a surrogate can be complicated by a surrogate's anxiety with making life-altering decisions or their desire to avoid guilt or loneliness. Health care professionals face the limits of scientific knowledge in delivering accurate prognostic estimates, probabilities of recovery, and

likelihood of benefit from interventions. In addition to the guideposts of ethical principles, some hospitals have policies which advise clinicians to avoid nonbeneficial care.

Such situations are emotionally intense and can trigger distress. Conscious and unconscious bias about a patient's perceived quality of life undermines equity and can play a role in our recommendations for patients of advanced age, with cognitive impairment, and those who live with a disability.

Question #2: How might you meet the patient's medical needs in line with her goals?

Dr. Khawaja: In order to provide care consistent with the patient's goals, the first step is to clarify these goals with Ms. S's surrogate decision-maker, her daughter. In a previously autonomous but presently incapacitated patient, the previously expressed preferences in the form of a written AD should be respected. However, the AD is only a set of preferences completed at a particular time, not medical orders. The clinician and surrogate must consider how to apply the AD to the current clinical circumstances. The clinician should verify that the clinical circumstances specified in the AD have been met and evaluate if the patient's preferences have changed since she originally completed the AD.

Surrogates are asked to use a **Substituted Judgement Standard** (i.e., what would the patient choose in this situation if known). This may differ from what the surrogate wants. If not known, surrogates are asked to use the **Best Interest Standard** (i.e., what would bring the most net benefit to the patient by weighing benefits and risks of treatment options). I often ask the surrogate, "Tell us about your loved one." Or, "Knowing your loved one, what do you think would be the most important for her right now?"

I would also caution against bias in judging quality of life in patients with dementia, and using the term "futility," as these concepts are inherently subjective. In general, when a colleague raises the issue of futility, I begin by asking, "... futile to achieve what goal?" That can help clarify some of the disagreement as some goals can be accomplished while others cannot.

Finally, I work to include other members of our team in these discussions. The distress of nurses, social workers, and others are important to acknowledge, validate, and involve in the process.

Question #3: If you were Ms. S's hospitalist, what would you do?

Dr. Khawaja: As the hospitalist caring for Ms. S, I would use the "four boxes" model as a helpful, clinically relevant and systematic approach to managing ethical concerns. It gives us a practical framework to address these ethical principles by asking questions in four domains.

Medical indications: What is the nature of her current illness, and is it reversible or not? What is the probability of success of treatment options like mechanical ventilation? Are there adverse effects of treatment?

Patient preferences: Since Ms. S lacks capacity, does her daughter understand the benefits and burdens of treatment? What are the goals of treatment? Prolonging life? Minimizing discomfort? Spending time with loved ones? What burdens would the patient be willing to endure to reach her goals?

Quality of life: What would the patient's quality of life be with and without the treatments?

Contextual features: My priorities would be building a relationship of trust with Ms. S's daughter – by educating her about her mother's clinical status, addressing her concerns and questions, and supporting her as we work through patient-centered decisions about what is best for her mother. Honest communication is a must, even if it means acknowledging uncertainties about the course of disease and prognosis.

These are not easy decisions for surrogates to make. They should be given time to process information and make what they believe are the best decisions for their loved ones. It is critical for clinicians to provide honest and complete clinical information and avoid value judgments, bias, or unreasonable time pressure.

Dr. Chase: In caring for Ms. S, I would use a structured approach to discussions with her daughter, such as the "SPIKES" protocol. Using open-ended questions, I would ask about the patient's and her daughter's goals, values, and fears and provide support about the responsibility for shared decision-making



Dr. Chase



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and the difficulty of uncertainty.

I find it helpful to emphasize my commitment to honesty and non-abandonment. With recommendations about both disease-directed and palliative, comfort-focused interventions, the patient's daughter has an opportunity to engage voluntarily in discussion. When asked about care that may have marginal benefit, I suggest time-limited trials. I do not offer nonbeneficial treatments, and if asked about such treatments, I note the underlying motive and why the treatment is not feasible, offer preferable alternatives, and leave space for questions and emotions. It is important not to force a premature resolution of the situation through unilateral or coercive decisions (i.e., going off service does not mean I have to wrap up the existential crisis which is occurring.) A broader challenge is the grief and other emotions which accompany illness and death. I can neither prevent death nor grief, but I can offer my professional guidance and provide a supportive space for the patient and family to experience this transition. By acknowledging this, I center myself with the patient and family and we can work together toward a common goal of providing compassionate and ethical care.

For a complete list of references, see the online version of this article at www.the-hospitalist.org.

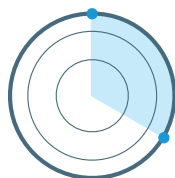
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CONSEQUENCES OF RECURRENT
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Learn why it requires aggressive action



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C. DIFFICILE INFECTION AS A
MAJOR AND URGENT THREAT.¹



IT RECURS IN UP TO 35%
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