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The Hospitalist

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Paradigm shifts in palliative care

Better engagement with patients essential

By Thomas R. Collins

A 57-year-old man is admitted to the hospital with new back pain, which has been getting worse over the past 6 days. He had been diagnosed with stage 4 lung cancer in mid-2017 and underwent treatment with a platinum-based double therapy.

The man also has a history of heroin use – as recently as 2 years earlier – and he was divorced not long ago. He has been using an old prescription for Vicodin to treat himself, taking as many as 10-12 tablets a day.

This man is an example of the kind of complicated patient hospitalists are called on to treat – complex pain in an era when opioid abuse is considered a public scourge. How is a hospitalist to handle a case like this?

Pain cases are far from the only types of increasingly complex, often palliative, cases in which hospitalists are being asked to provide help. Care for the elderly is also becoming increasingly difficult as the U.S. population ages and as hospitalists step in to provide care in the absence of geriatricians.

Pain management in the opioid era and the need for new approaches in elderly care were highlighted at the Hospital Medicine 2018 annual conference, with experts drawing attention to subtleties that are often overlooked in these sometimes desperate cases.

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DAN BURKE PHOTOGRAPHY

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Plan now for outpatient diabetes tech in the hospital

By M. Alexander Otto
MDedge News

FROM ADA 2018 / ORLANDO / It's inevitable that hospitalists will soon be caring for patients who come in on insulin pumps, continuous glucose monitors, and even closed loop systems, if they haven't done so already.

A third or more of patients with type 1 diabetes mellitus and growing numbers of patients with insulin-dependent type 2 diabetes mellitus patients are using pumps and sensor technology.


Dr. Davis

The American Diabetes Association advocates allowing patients who are physically and mentally able to continue to use their pumps when hospitalized, and there's general consensus that continuous glucose monitors (CGM) can be used in the hospital.

All in all, it's a good thing, according to Guillermo E. Umpierrez, MD, professor of endocrinology at Emory University and chief of endocrinology at Grady Memorial Hospital, both in Atlanta.

In a talk at the annual scientific sessions of the American Diabetes Association, Dr. Umpierrez reviewed a number of studies showing that glycemic control with the new technology is no worse in the hospital – and sometimes even better – than with traditional point-of-care glucose testing and insulin administration. There is a lack of randomized, controlled trials to prove the point definitively, but what evidence does exist is promising.

"This technology is rapidly advancing, and I am very optimistic that we are going to see more and more of these devices in the hospital. If patients can manage themselves, allow them to use CGM, allow them to use their pumps," he said.

As for closed loop systems – automated glucose sensing and insulin administration – emerging evidence suggests they "allow you to have very good glucose control and less glycemic variability," both inside and outside of the ICU, he said. "I am very hopeful before I retire that there will be management of a significant number of patients with closed loop systems."

To keep up, training for hospital providers on the new technology is now "mandatory at all levels," Dr. Umpierrez said, and if they haven't done so already, hospitals need to put policies and procedures in place for when, and when not, to allow patients to use their diabetes equipment, and how to integrate it into care.

> *"We are going to see more and more of these devices in the hospital."*

Among many things to consider, patients must be well enough to use their pumps and monitors, be able to demonstrate their functions, and also want to participate in their own care.

Contraindications to inpatient pump use include impaired consciousness, critical illness, and hyperglycemic crises because insulin requirements change too rapidly and dramatically for pumps. Lack of trained providers and supplies is another hurdle. Pumps also need to come off for MRIs.

CGM, meanwhile, has been shown to improve glycemic control, detecting both hyperglycemia and hypoglycemia more readily than point-of-care testing. It's good at picking up trends in glucose levels, and Dr. Umpierrez anticipates a time when readings will be transmitted to nurses' stations automatically to track blood glucose trends. "I think that's the future," he said.

But, as with insulin pumps, there are caveats. Among them, it's unclear how well CGM works during hypoxia, hypothermia, and hypotension. Thrombus formation and infections have been reported with intravascular monitors, and a number of agents can throw off some CGM devices, including acetaminophen, heparin, and dopamine.

Dr. Umpierrez disclosed relationships with AstraZeneca, Merck, Novo Nordisk, Sanofi, and other companies.

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'You have a pending query'

Specificity is essential in documentation and coding

By Geetanjali Rajda, MD; Lida Fatemi, MD; and Maria Reyna, MD

Throughout medical training, you learn to write complete and detailed notes to communicate with other physicians. As a student and resident, you are praised when you succinctly analyze and address all patient problems while justifying your orders for the day. But notes do not exist just to document patient care; they are the template by which our actual quality of care is judged and our patients' severity of illness is captured.

Like it or not, ICD-10 coding, documentation, denials, calls, and emails from administrators are integral parts of a hospitalist's day-to-day job. Why? The specificity and comprehensiveness of diagnoses affect such metrics as hospital length of stay, mortality, and Case Mix Index documentation.

Good documentation can lead to better severity of illness (SOI) and risk of mortality (ROM) scores, better patient safety indicator (PSI) scores, better Healthgrades scores, better University Hospital Consortium (UHC) scores, and decreased Recovery Audit Contractor (RAC) denials as well as appropriate reimbursement. Good documentation can even lead to improved patient care and better perceived treatment outcomes.

It is no surprise that many hospital administrators invest time and money in staff to support the proper usage of language in your notes. Of course, sometimes these well-meaning "queries" can throw you into emotional turmoil as you try to understand what was not clear in your excellent note about your patient's heart failure exacerbation. In this article, we will try to help you take your specificity and comprehensiveness of diagnoses to the next level.

Dr. Rajda

Dr. Fatemi

Dr. Reyna

Dr. Rajda is medical director of clinical documentation and quality improvement for Mount Sinai Hospital in New York, and medical director for DRG appeals for the Mount Sinai Health System. She serves as assistant professor of medicine at Icahn School of Medicine at Mount Sinai. Dr. Fatemi is an assistant professor at the University of New Mexico, Albuquerque. She is director of documentation, coding, and billing for the division of hospital medicine at UNM. Dr. Reyna is assistant professor in the division of hospital medicine and medical director for clinical documentation and quality improvement at Mount Sinai Medical Center.

Table 1. Specificity in coding

Hx: 98 y/o W with HX of HTN, advanced Alzheimer's Dementia, dysphagia, Sacral DU Stage 3, is admitted with cough, fever, vomiting due to PNA.			
Dx: PNA			
Indicators: Progress Notes: Patient with PNA, advanced Alzheimer's Dementia, dysphagia, vomiting. Speech and Swallow Consult pending. Patient placed on Aspiration Precautions. Diet: NPO. On Vanco and azithromycin.			
Query: Please clarify type of PNA treated			
Response: Patient with Aspiration Pneumonia			
DRG:	193 Simple Pneumonia and Pleurisy with MCC	**DRG:**	177 Respiratory Infections and Inflammations with MCC
RW:	1.4550	**RW:**	1.9934
SOI:	2	**SOI:**	3
ROM:	2	**ROM:**	3

Table 2. Secondary diagnoses

Hx: 75 y/o W with Hx of CREST, PVD s/p bilateral BKA also with HTN, HL, presenting to ED with 5 days of watery diarrhea and 7 days of abdominal bloating and discomfort. Noted to have *C-diff*.			
Dx: Intestinal infection due to *Clostridium difficile*			
Indicators: BMI 16, albumin 1.8, total protein 4, on TPN, noted cachexia and anorexia			
Query: Type and acuity of malnutrition			
Response: Patient with *C-diff* and anorexia/cachexia with protein calorie malnutrition, severe			
DRG:	373 Major Gastrointestinal disorders & Peritoneal infections W/O CC/MCC	**DRG:**	371 Major Gastrointestinal disorders & Peritoneal infections W MCC
RW:	0.8401	**RW:**	2.022
SOI:	2	**SOI:**	3
ROM:	1	**ROM:**	3

Basics of billing

Physicians do not need to become coders but it is helpful to have some understanding of what happens behind the scenes. Not everyone realizes that physician billing is completely different from hospital billing. Physician billing pertains to the care provided by the clinician, whereas hospital billing pertains to the overall care the patient received.

Below is an example of a case of pneumonia, (see Table 1) which shows the importance of specificity. Just by specifying 'Aspiration' for the type of pneumonia, we increased the SOI and the expected ROM appropriately. Also see a change in relative weight (RW): Each diagnosis-related group (DRG) is assigned a relative weight = estimated use of resources, and payment per case is based on estimated resource consumption = relative weight x "blended rate for each hospital."

In addition to specificity, it is important to include all secondary diagnosis (know as cc/MCC – complication or comorbidity or a major complication or comorbidity – in the coding world). Table 2 is an example of using the correct terms and documenting secondary diagnosis. By documenting the type and severity of malnutrition, we again increase the expected risk of mortality and the severity of illness.

Physicians often do a lot more than what we record in the chart. Learning to document accurately to show the true clinical picture is an important skill set. Here are some tips to help understand and even avoid calls for better documentation.

- **Use the terms "probable," "possible," "suspected," or "likely" in documenting uncertain diagnoses** (i.e., conditions for which physicians find clinical evidence that leads to a suspicion but not a definitive diagnosis). If conditions are ruled out or confirmed, clearly state so. If it remains uncertain, remember to carry this "possible" or "probable" diagnosis all the way through to the discharge summary or final progress note.
- **Use linking of diagnoses when appropriate.** For example, if the patient's neuropathy, nephropathy, and retinopathy are related to their uncontrolled insulin-dependent diabetes, state "uncontrolled insulin-dependent DMII with A_{1c} of 11 complicated with nephropathy, neuropathy, and retinopathy." The coders cannot link these diagnoses, and when you link them, you show a higher complexity of your patient. Remember to link the diagnoses only when they are truly related – this is where your medical knowledge and expertise come into play.
- **Use the highest specificity of evidence that supports your medical decision making.** You don't need to be too verbose, all you need is evidence supporting your medical de-

Continued on following page

Continued from previous page

cision making and treatment plan. Think of it as demonstrating the logic of your diagnosis to another physician.

- **Use acuity (acute, chronic, acute on chronic, mild, moderate, severe, etc.) per diagnosis.** For example, if you say heart failure exacerbation, it makes perfect sense to your medical colleagues, but in the coding world, it means nothing. Specify if it is acute, or acute on chronic, heart failure.
- **Use status of each diagnosis.** Is the condition improving, worsening, or resolved? Status does not have to be mentioned in all progress notes. Try to include this descriptor in the discharge summary and the day of the event.
- **Always document the clinical significance of any abnormal laboratory, radiology reports, or pathology finding.** Coders cannot use test results as a basis for coding unless a clinician has reviewed, interpreted, and documented the significance of the results in the progress note. Simply copying and pasting a report in the notes is not considered clinical acknowledgment. Shorthand notes like "Na=150, start hydration with 0.45% saline" is not acceptable. The actual diagnosis has to be written (i.e. "hypernatremia"). In addition, coders cannot code from nursing, dietitian, respiratory, and physical therapy notes. For example, if nursing documents that a patient has a pressure ulcer the clinician must still document the diagnosis of pressure ulcer, location, and stage. Although dietitian notes may state a body mass index greater than 40, coders cannot assume that patient is morbidly obese. Physician documentation is needed to support the obesity code assignment.
- **Document all conditions that affect the patient's stay, including complications and chronic conditions for which medications have been ordered.** These secondary diagnoses paint the most accurate clinical picture and provide information needed to calculate important data, such as complexity and severity of patient illness and mortality risk. A patient with community-acquired pneumonia without other comorbidities requires fewer resources and has a greater chance of a good outcome than does the same patient with complications, such as acute heart failure.
- **Realize downcoding brings losses, upcoding brings fines.** Exaggerating the severity of patient conditions can lead to payer audits, reimbursement take backs, and charges of abuse and fraudulent billing. Never stretch the truth. Make sure you can support every diagnosis in the patient's chart using clinical criteria.

You may be frustrated by the need to choose specific words about diagnoses that seem obvious to you without these descriptors. But accurate documentation can make a huge difference in your hospital's bottom line and published metrics. Understanding the relative impact of changing your terminology can help you make these changes, until the language becomes second nature (see Table 3). Your hospital administrators will be grateful – and you just might cut down your queries!

Table 3. Documentation pearls

To capture complexity and severity of illness, instead of documenting ...	Think about documenting
Altered mental status	Metabolic encephalopathy
Urosepsis	Sepsis secondary to UTI
Respiratory distress	Respiratory failure (specify acute/chronic) with or without hypoxia/hypercapnea
Renal insufficiency	Acute kidney injury Chronic kidney disease with stage
Congestive heart failure	Acute/chronic, systolic/diastolic heart failure
Pneumonia	Type of pneumonia (e.g., aspiration PNA) Known or suspected organism
Weight loss, muscle wasting	Malnutrition (specify mild, moderate, severe)
Diabetes, hyperglycemia	Poorly controlled diabetes
Anemia due to gastrointestinal bleed, trauma, or surgery	Acute blood loss anemia
Shock	Specify type (septic, hemorrhagic, cardiogenic, hypovolemic)

MDEDGE NEWS

Reducing alarm fatigue

Monitoring from a centralized location

Hospitalists hearing the constant noise from cardiac telemetry monitoring systems can experience alarm fatigue – a nationwide phenomenon that can lead to an increase in patient deaths.

The American Heart Association reports that fewer than one in four adults survived an in-hospital cardiac arrest in 2013; other studies showed that up to 44% of inpatient cardiac arrests were not detected appropriately, according to the Cleveland Clinic.

Clinicians at the Cleveland Clinic have tried centralized monitoring to address the problem. They've established a "mission control" center, where off-site personnel monitor sensors and high-definition cameras and vital signs such as blood pressure, heart rate, and respiration. On-site action is requested when appropriate; unimportant alarms are dismissed.

In August 2016, results from the first 13 months of the Cleveland Clinic program were published in JAMA. They revealed that the monitoring system could help reduce rates of unimportant alarms with no increase in cardiopulmonary arrest events. The centralized unit monitored 99,048 patient orders, and ultimately detected serious problems and accurately notified on-site staff for 79% of 3,243 events, which included a rhythm and/or rate change within 1 hour or less of the event. Accurate notification to on-site hospital staff was more than 84%.

Since then, improvements to the system have continued, according to Cleveland Clinic, and include doubling the number of monitored patients per technician and improved clinical outcomes.

Reference

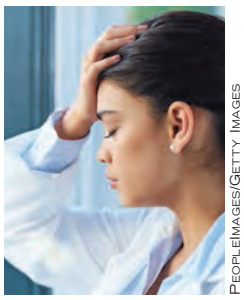
Cleveland Clinic: Consult QD – An update on the centralized cardiac telemetry monitoring unit.

Helping alleviate hospitalist burnout

Focusing on systemic factors

For hospitalists, burnout is a widespread and ongoing problem. In 2011, a Mayo Clinic study found that 45% of U.S. physicians had at least one symptom of professional burnout; by 2014, that number had risen to 54%.

"Burnout among physicians has been shown to be linked to quality of care, impacting medical errors, mortality ratios in hospitalized patients, and lower patient satisfaction," said Ingrid T. Katz, MD, MHS, assistant professor of medicine at Harvard Medical School, Boston, and coauthor of a recent column on the subject published in the New England Journal of Medicine.



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Widespread burnout is caused by systemic factors, not individual failures.

"These systemic factors range from excessive clerical burden to 'work beyond work,' where people end up taking work home at night and are often found interfacing with the EHR well after their normal work day," Dr. Katz said. "Many also express their disdain for the model of practice that no longer values autonomy, which was seen as inherent in the profession prior to the current model of care."

Moving toward a better framework would require an inherent trust in physicians, limiting unnecessary intrusions into a physician's practice that do not impact medical care.

"It would remove the burden of excessive documentation and allow for physicians to get reinspired by the practice of medicine, an inherently altruistic profession," Dr. Katz said.

Changes might include eliminating excessive clerical demands and improving EHRs to allow physicians to return to the bedside. Workloads would be geared toward quality in care and not focused on improving the bottom line of a health care system.

One health system Dr. Katz wrote about instituted a team-based model; under this system medical assistants gather data and reconcile medications, allowing physicians to focus on performing physical exams and making medical decisions.

"Burnout will diminish when physicians are empowered to be part of the solution and hospital systems make changes that recognize the totality of the challenges that physicians face," Dr. Katz said, adding that hospitalists are in a unique position to promote such changes on a systemic level. "Leadership needs to be willing to inform and engage their physicians, monitor well-being of physicians as closely as they monitor quality in care, and implement changes when needed."

Reference

1. Katz IT et al. Beyond burnout – Redesigning care to restore meaning and sanity for physicians. N Engl J Med. 2018 Jan 25. doi: 10.1056/NEJMp1716845.

Launching a surgical comanagement project

Improving quality, patient satisfaction

When hospital medicine and surgical departments (usually orthopedics or neurosurgery) have joined in comanagement programs, improvements in quality metrics and patient satisfaction have often resulted.

MEGAFLOPP/THINKSTOCK

At the Level 1 regional trauma center in which he works, Charles L. Kast, MD, and his colleagues wanted to try a comanagement agreement between hospital medicine and trauma surgery.

"The surgical team identified a need within their own department, which was to improve patient mortality and satisfaction in the inpatient setting," said Dr. Kast, who is based at North Shore University Hospital, Manhasset, N.Y. "Their leadership sought out our hospital medicine leadership team, who then worked together to synthesize their metrics. We were able to identify other quality indicators, such as readmission rates and hospital-acquired conditions, which we felt could also benefit from our services in order to help them improve."

Five hospitalists became members of the comanagement team. A single hospitalist rotated for 2 weeks at a time, during which they were relieved of routine hospital medicine rounding responsibilities. The hospitalist attended daily interdisciplinary rounds with the trauma surgery team, during which he/she identified patients that could benefit from hospital medicine comanagement: Patients who were over age 65 years, had multiple chronic medical conditions, or were on high-risk medications were preferentially selected. Approximately 10 patients were seen daily.

The comanagement program was well received by trauma surgeons, who talked about improved patient communication and a fostered sense of collegiality. Preliminary quality and patient satisfaction metrics were also positive.

A top takeaway is that the benefits of surgical comanagement can be demonstrated in "atypical" collaborations, depending on the needs of the department and the hospital's vision.

"The gains in improved patient quality metrics are only half of the story," Dr. Kast said. "Collaborating in surgical comanagement improves the satisfaction of the hospitalists and surgeons involved and can lead to future quality improvement projects or original research, both of which we are currently pursuing."

Reference

Kast C et al. The successful development of a hospital medicine-trauma surgery co-management program (abstract). J Hosp Med. 2017;12(suppl 2). Accessed Feb. 2, 2018.

Focus on patient experience to cut readmission rates

Incorporate patient-reported quality measures

Hospitalists have focused much attention on reducing 30-day readmission rates, at a time when 15%-20% of health care dollars spent on those readmissions is considered potentially preventable.

But until very recently, no study has explored patient perceptions of the likelihood of readmission during index admission. Now, that's changed.

"Our objective was to examine associations between patient perceptions of care during index hospital admission and 30-day readmission," says Jocelyn Carter, MD, of Massachusetts General Hospital, Boston, and lead author of November 2017 study in BMJ Quality & Safety.

Enrolled in the study were 846 patients at two inpatient adult medicine units at Massachusetts General, Boston; 201 (23.8%) of these patients were readmitted within 30 days. In multivariable models adjusting for baseline differences, respondents who reported being "very satisfied" with the care received during the index hospitalization were less likely to be readmitted; participants reporting that doctors "always listened to them carefully" also were less likely to be readmitted.

"These findings are important since they suggest that engaging patients in an assessment of communication quality, unmet needs, concerns, and overall experience during admission may help to identify issues that might not be captured in standard postdischarge surveys when the appropriate time for quality improvement interventions has passed," Dr. Carter said. "Incorporating patient-reported measures during index hospitalizations may improve readmission rates and help predict which patients are more likely to be readmitted."

Reference

Carter J et al. The association between patient experience factors and likelihood of 30-day readmission: A prospective cohort study. BMJ Qual Saf. 2017 Nov 16. Accessed Feb 2, 2018.

Quick Byte: Palliative care

Rapid adoption of a key program

THOMAS NORTHCUT/THINKSTOCK

In 2015, 75% of U.S. hospitals with more than 50 beds had palliative care programs – a sharp increase from the 25% that had palliative care in 2000.

"The rapid adoption of this high-value program, which is voluntary and runs counter to the dominant culture in U.S. hospitals, was catalyzed by tens of millions of dollars in philanthropic support for innovation, dissemination, and professionalization in the palliative care field," according to research published in Health Affairs.

Reference

Cassel JB et al. Palliative care leadership centers are key to the diffusion of palliative care innovation. Health Aff. 2018 Feb. doi: 10.1377/hlthaff.2017.1122.

Practice Management

The new SoHM report is here, and it's the best yet!

Survey content more wide ranging than ever

By Leslie Flores, MHA, SFHM

On behalf of SHM's Practice Analysis Committee, I'm thrilled to introduce the 2018 State of Hospital Medicine Report (SoHM) and the resumption of this monthly Survey Insights column written by committee members.

Ms. Flores

It's a bit like giving birth. A 9-month–long process that started last January with the excitement of launching the survey and encouraging hospital medicine groups (HMGs) to participate. Then the long, drawn-out process of validating and analyzing data, and organizing it into tables and charts, watching our baby grow and take shape before our eyes, with a few small hiccups along the way. Then graphic design and the agonizing process of copy editing – over and over until our eyes crossed – and printing.

Like all expectant parents, by August we were saying, "Enough already; when will this ever end?"

But we finally have a baby, and what proud parents we are! Here are a couple of key things you should know about the 2018 SoHM:

- **The total number of HMGs participating in this year's survey was marginally lower than in 2016 (569 this year vs. 595 in 2016), but the respondent groups are much more diverse.** While more than half of respondent HMGs (52%) are employed by hospitals or health systems, multistate management companies employ 25%, and universities or their affiliates employ 12%. More pediatric hospitalist groups (38) and HMGs that serve both adults and children (31) participated this year, compared with 2016, and almost twice as many academic HMGs participated as in the previous survey (96 this year vs. 59 in 2016).
- **The survey content is more wide ranging than ever.** As usual, SHM licensed hospitalist compensation and productivity data from the Medical Group Management Association for inclusion in this report, and the SoHM also covers just about every other aspect of hospitalist group structure and operations imaginable. In addition to traditional questions regarding scope of services, staffing and scheduling models, leadership configuration, and financial support, this year's report includes new information on:
  1. Hospitalist comanagement roles with surgical and medical subspecialties.
  2. Information about unfilled positions and how they are covered (including locum tenens use).
  3. Utilization of dedicated daytime admitters.
  4. Prevalence of geographic or unit-based assignment models.
  5. Responsibility for CPT code selection.
  6. Amount of financial support per wRVU.

The report has retained its colorful, easy-to-read report layout and the user-friendly interface of the digital version. And because we have more diversity this year with regard to HMG employment models, we have been able to reintroduce findings by employment model.

The 2018 SoHM report is now available for purchase at www.hospitalmedicine.org/sohm. I encourage you to obtain the SoHM report for yourself; you'll almost certainly find more than one interesting and useful tidbit of information. Use the report to assess how your practice compares to your peers, but always keep in mind that surveys don't tell you what *should be* – they tell you only what currently *is*.

New best practices not reflected in survey data are emerging all the time, and the ways others do things won't always be right for your group's unique situation and needs. Whether you are partners or employees, you and your colleagues "own" the success of your practice and are the best judges of what is right for you.

Leslie Flores, MHA, SFHM, is a partner with Nelson Flores Hospital Medicine Consultants, and a member of the SHM Practice Analysis Committee.

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Palliative care

Continued from page 1

James Risser, MD, medical director of palliative care at Regions Hospital in Minneapolis, said the complex problems of the 57-year-old man with back pain amounted to an example of "pain's greatest hits."

That particular case underscores the need to identify individual types of pain, he said, because they all need to be handled differently. If hospitalists don't consider all the different aspects of pain, a patient might endure more suffering than necessary.

"All of this pain is swirling around in a very complicated patient," Dr. Risser said, noting that it is important to "tease out the individual parts" of a complex patient's history.

"Pain is a very complicated construct, from the physical to the neurological to the emotional," Dr. Risser said. "Pain is a subjective experience, and the way people interact with their pain really depends not just on physical pain but also their psychological state, their social state, and even their spiritual state."

Understanding this array of causes has led Dr. Risser to approach the problem of pain from different angles – including perspectives that might not be traditional, he said.

"One of the things that I've gotten better at is taking a spiritual history," he said. "I don't know if that's part of everybody's armamentarium. But if you're dealing with people who are very, very sick, sometimes that's the fundamental fabric of how they live and how they die. If there are unresolved issues along those lines, it's possible they could be experiencing their pain in a different or more severe way."

Varieties of pain

Treatment depends on the pain type, Dr. Risser said. Somatic pain often responds to nonsteroidal anti-inflammatories or steroids.

Neuropathic pain usually responds poorly to anti-inflammatories and to opioids. There is some research suggesting methadone could be helpful, but the data are not very strong. The most common medications prescribed are antiseizure medications and antidepressants, such as gabapentin and serotonin, and norepinephrine reuptake inhibitors.

The question of cancer pain versus noncancer pain can be tricky, Dr. Risser said. If a person's life expectancy is limited, there can be a reason, or even a requirement, to use higher-risk medications. But, he said, that doesn't mean the patient still won't have problems with overuse of pain medication.

"We have a lot of patients now living post cancer who have been put on methadone or have been put on Oxycontin, and now we're trying to figure out what to do with them," he said. "I don't think it's that clear anymore that there's a massive difference between cancer and noncancer pain, especially for those survivors."

Clinicians, he said, should "fix what can be fixed" – and with the right tools. "If you have a patient who's got severe lower abdominal pain because they have a bladder full of urine, really the treatment would probably not be ... opioids. It probably would be a Foley catheter," he said.

Hospitalists should treat patients based on sound principles of pain management, Dr. Risser said, but "while you try to create a diagnostic framework, know that people continually defy the boxes we put them in."

Indeed, in an era of pain-medication addiction, it might be a good idea to worry about prescribing opioids, but clinicians have to remember that their goal is to help patients get relief – and that they themselves bring biases to the table, said Amy Davis, DO, MS, of Drexel University, Philadelphia.

In a presentation at HM18, Dr. Davis displayed images of a variety of patients on a large screen – different races and genders, some in business attire, some rougher around the edges.

"Would pain decisions change based on what people look like?" she asked. "Can you really spot who the drug traffickers are? We need to remember that our biases play a huge role not only in the treatment of our patients but in their outcomes. I'm challenging everybody to start thinking about these folks not as drug-seekers but as comfort-seekers."

When it comes right down to it, she said, patients want a better life, not their drug of choice.

"That is the nature of the disease. [The illegal drug] is not what they're looking for in reality because that does not provide a good quality of life," Dr. Davis said. "The [practice of medicine] is supposed to be about helping people live their lives, not just checking off boxes."

People with an opioid use disorder are physically different, she said. The processing of pain stimuli by their brain and spinal cord is physically altered – they have an increased perception of pain and lower pain tolerance.

"This is not a character flaw," Dr. Davis affirmed. The increased sensitivity to pain does not resolve with opioid cessation; it can last for decades. Clinicians may need to spend more time interacting with certain patients to get a sense of the physical and nonphysical pain from which they suffer.

"Consistent, open, nonjudgmental communication improves not only the information we gather from patients and families, but it actually changes the adherence," Dr. Davis said. "Ultimately the treatment outcomes are what all of this is about."

Paradigm shift

Another palliative care role that hospitalists often find themselves in is "comforter" of elderly patients.

Ryan Greysen, MD, MHS, chief of hospital medicine at the University of Pennsylvania, Philadelphia, said hospitals must respond to a shift in the paradigm of elderly care. To explain the nature of this change, he referenced the "paradigm shift" model devised by the philosopher of science Thomas Kuhn, PhD. According to Kuhn, science proceeds in a settled pattern for many years, but on the rare occasions, when there is a fundamental drift in thinking, new problems present themselves and put the old model in a crisis mode, which prompts an intellectual revolution and a shift in the paradigm itself.

"This is a way of thinking about changes in scientific paradigms, but I think it works in clinical practice as well," Dr. Greysen said.

The need for a paradigm shift in the care of elderly inpatients has largely to do with demographics. By 2050, the number of people aged 65 years and older is expected to be about 80 million, roughly double what it was in 2000. The number of people aged 85 years and up is expected to be about 20 million, or about four times the total in 2000.

In 2010, 40% of the hospitalized population was over 65 years. In 2030, that will flip: Only 40% of inpatients will be under 65 years. This will mean that hospitalists must care for more patients who are older, and the patients themselves will have more complicated medical issues.

"To be ready for the aging century, we must be better able to adapt and address those things that affect seniors," Dr. Greysen said. With the number of geriatricians falling, much more of this care will fall to hospitalists, he said.

More attention must be paid to the potential harms of hospital-based care to older patients: decreased muscle strength and aerobic capacity, vasomotor instability, lower bone density, poor ventilation, altered thirst and nutrition, and fragile skin, among others, Dr. Greysen said.

In a study published in 2015, Dr. Greysen assessed outcomes for elderly patients who were assessed before hospitalization for functional impairment. The more impaired they were, the more likely they were to be readmitted within 30 days of discharge – from a 13.5% readmission rate for those with no impairment up to 18.2% for those considered to have "dependency" in three or more activities of daily living.[1]

In another analysis, severe functional impairment – dependency in at least two activities of daily living – was associated with more post-acute care Medicare costs than neurologic disorders or renal failure.[2]

Acute care for the elderly (ACE) programs, which have care specifically tailored to the needs of older patients, have been found to be associated with less functional decline, shorter lengths of stay, fewer adverse events, and lower costs and readmission rates, Dr. Greysen said.

These programs are becoming more common, but they are not spreading as quickly as perhaps they should, he said. In part, this is because of the "know-do" gap, in which practical steps that have been shown to work are not actually implemented because of assumptions that they are already in place or the mistaken belief that simple steps could not possibly make a difference.

Part of the paradigm shift that's needed, Dr. Greysen said, is an appreciation of the concept of "post-hospitalization syndrome," which is composed of several domains: sleep, function, nutrition, symptom burden such as pain and discomfort, cognition, level of engagement, psychosocial status including emotional stress, and treatment burden including the adverse effects of medications.

Better patient engagement in discharge planning – including asking patients about whether they've had help reading hospital discharge–related documents, their level of education, and how often they are getting out of bed – is one necessary step toward change. Surveys of satisfaction

Continued on following page

Challenging Dogma

The banana bag

Necessary, or just another pretty fluid?

By Raj Sehgal, MD, FHM, and Joshua Hanson, MD, MPH

The dogma

Patients with alcohol use disorders (AUD) are at risk for nutritional and vitamin deficiencies and may suffer from linked disease states, including Wernicke's encephalopathy. These conditions may be underrecognized; for instance, an autopsy study suggests that Wernicke's encephalopathy may have a prevalence rate of 12.5% among alcoholics.[1]

When patients with AUD are hospitalized, they have often already received a standard IV solution (100 mg of thiamine, 1 mg of folate, 1-2 g of magnesium, and a multivitamin dissolved in saline or dextrose). The practice is common enough that the solution is informally referred to as a "banana bag," because of the yellow hue imparted by thiamine and multivitamin. These fluids might then be readministered daily during the inpatient stay. But what is the evidence supporting this widespread practice?

The evidence

While the banana bag (or "rally pack," as it's also colloquially known) hanging at the patient's side may look cool, it may not be helping her. Let's break down the ingredients:

- **Folate.** Patients with alcohol use disorder are at higher risk for folate deficiency (attributable to poor intake and decreased absorption), but overall rates of folate deficiency are still quite low.[2] In addition, most oral and parenteral multivitamins already contain at least 400 mcg folate – the benefit of adding further intravenous folate is not clear.
- **Magnesium.** Patients with AUD are also at higher risk for magnesium deficiency attributable to increased excretion. While decreased magnesium levels could theoretically increase the risk of alcohol withdrawal symptoms, a Cochrane review found no evidence to support routine supplementation.[3]
- **Multivitamin.** Despite theoretical advantages in these (often) malnourished patients, there are no published studies on the benefit or harm of administering a "pan-vitamin" injection. The standard IV formulation is slightly different than an oral vitamin (the IV contains vitamin K, for instance, and lacks calcium), but the bioavailability should be roughly the same, except in rare patients with intestinal malabsorption.[4]
- **IV fluids.** Pharmacies typically mix these ingredients in a liter of normal saline or 5% dextrose. Once again, though, individual patients will have different needs. A dehydrated patient would benefit more from normal saline, a patient with alcoholic ketoacidosis would benefit more from dextrose, and a patient with alcohol-related cardiomyopathy likely shouldn't be getting large volume IV fluids at all.
- **Thiamine.** Thiamine deficiency is likely the most common and most concerning vitamin deficiency in this patient population. The typical banana bag contains 100 mg of thiamine, which has been the traditional recommended daily amount for Wernicke's treatment. This dosage, however, was apparently chosen arbitrarily in the 1950s (based on what the authors considered to be a high dose) and current recommendations suggest higher doses given more frequently because of the relatively short half-life of parenteral thiamine.[5]

The takeaway

The banana bag is a "one-size-fits-all" approach that offers too much of some of its ingredients and not enough of others. It's better to individualize treatment based on a patient's needs and consider high-dose thiamine (500 mg one to three times daily) for those at risk for, or showing signs of, Wernicke's encephalopathy.

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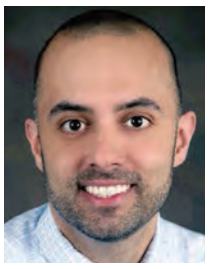

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using tablets and patient portals is another option, Dr. Greysen said.

The patients of the future will likely prompt their own change, he said, quoting from a 2013 publication.

"Possibly the most promising predictor for change in delivery of care is change in the patients themselves," the authors wrote. "Baby boomers have redefined the norms at every stage of their lives. ... They will expect providers to engage them in shared decision making, elicit their health care goals and treatment preferences, communicate with providers across sites, and provide needed social supports."[3]

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Analysis

Is respiratory compromise the new 'sepsis'?

Hospitalists can play a key role in prevention

By Jeffrey S. Vender, MD

Clinicians and even the general public are aware of the dangers of sepsis, the life-threatening illness caused by a body's response to an infection. Irrespective of one's perception of pharmaceutical marketing materials or the evidence-based medicine used, awareness about sepsis has led to earlier diagnosis and interventions that have likely saved countless patients' lives.

Moreover, hospitalists have played a key role in sepsis prevention. In their research, "Improving Survival From Sepsis in Noncritical Units: Role of Hospitalists and Sepsis Team in Early Detection and Initial Treatment of Septic Patients," Adriana Ducci, MD, and her colleagues showed that a hospitalist-managed sepsis protocol improved sepsis case notifications and patient outcomes.

Although sepsis and respiratory compromise are clearly very different conditions, I believe that greater awareness about respiratory compromise will lead to earlier diagnosis and interventions, which will theoretically improve patient outcomes. Moreover, as with the sepsis awareness campaign, hospitalists can play a key role in recognizing respiratory compromise and in implementing appropriate interventions.

As defined by the Respiratory Compromise Institute, "respiratory compromise" is defined as a state in which there is a high likelihood of decompensation into respiratory failure and/or death, but, in which specific interventions – be it therapeutic and/or monitoring – might prevent or mitigate this decompensation.

A significant segment of patients who may be at risk for respiratory compromise are those receiving opioids. The cost of opioid-related adverse events, in terms of both human life and hospital expenses, remains at the forefront of the public eye. It has been estimated that yearly costs in the United States associated with opioid-related postoperative respiratory failure were estimated at $2 billion.

Thomas W. Frederickson MD, FACP, SFHM, MBA, the lead author of the Society of Hospital Medicine guide for Reducing Adverse Drug Events Related to Opioids (RADEO), emphasized in a podcast with the Physician-Patient Alliance for Health & Safety the need to identify patient conditions that pose a greater risk of respiratory compromise.

More and more clinicians are beginning to utilize capnography, or CO_2 monitoring, in the expired gas to earlier detect depressed respiratory rate and/or apnea, as well as signs of hypoventilation or inadequate ventilation.

In particular, Dr. Frederickson pointed out the need to screen for obstructive sleep apnea (OSA): "Patients with obstructive sleep apnea are dependent upon their arousal mechanism in order to avoid respiratory depression and eventual respiratory failure. When these patients receive opioid medication, it decreases this ability for arousal. That puts them at risk for a sudden spiral that includes respiratory insufficiency and respiratory arrest. This can happen very quickly and part of the risk is that the traditional monitoring for sedation that we use in the hospital – that is on a periodic basis and depends upon nursing interventions and questioning – really becomes much less effective in this patient population that can have a respiratory arrest, because of failure to arouse, very quickly. So, a monitoring regimen that takes place every 60 minutes is likely to be ineffective."

Patient conditions such as OSA should be considered, along with other comorbidities. As the RADEO Guide states: "Before starting opioid therapy, either in surgical or non-surgical settings, it is important to identify any real or potential risks of respiratory depression or other opioid-related adverse effects. Patient comorbidities such as OSA, neurologic disorders, organ impairment, substance abuse history, and other medication use are important aspects to consider."

Although we have clearly recognized a significant increase in respiratory complications associated with opioid administration, there are other areas, which are non–opioid related, that can create respiratory compromise. We view many patients with stable or underlying respiratory conditions, whether it be chronic obstructive pumlmonary disease, sleep apnea, or preexisting pathophysiology, where either due to sedative agents, or an acute illness – like pneumonia – they can go from a stable condition to respiratory compromise and become at risk for respiratory failure.

A classic example of that in my world of anesthesia has been the well-recognized area of non–operating room anesthesia – in particular, in endoscopy suites where numerous endoscopy procedures are performed under the administration of propofol or other anxiolytic-like drugs. There has been a well-recognized incidence of sentinel events related to oxygenation and ventilation, including death.

Many clinicians see sedation as a benign introduction of relatively limited-effect drugs, which isn't always true. So, therefore, it is essential that clinicians understand three things:

1. The drugs we employ as sedative agents can have variable effects on individuals depending on their tolerance and their underlying medical condition.

2. The dosages and particular combination of drugs employed may cause an adverse event – for example, the combination of opioids and benzodiazepines.

3. There are factors that can distract from the clinical assessment of routine vital signs, such as respiratory rate, heart rate, and blood pressure. For example, when pulse oximetry is administered with oxygen therapy, there can often be a delay in the recognition of hypoventilation. Consequently, that's why more and more clinicians are beginning to utilize capnography, or CO_2 monitoring, in the expired gas to earlier detect depressed respiratory rate and/or apnea, as well as signs of hypoventilation or inadequate ventilation.

Dr. Vender is the emeritus Harris Family Foundation chairman of the department of anesthesiology at NorthShore University Health System in Evanston, Ill. He is clinical professor at the University of Chicago Pritzker School of Medicine and chairman, Clinical Advisory Committee, Respiratory Compromise Institute. Dr. Vender has consulted with Medtronic.

There clearly are obstacles to continuous patient monitoring, such as the associated cost, the familiarity with the utilization, and the benefit, as well as the limitations of specific monitors in different clinical situations, which mandates an educational process to employ these. However, currently, patient monitoring provides the best early indicator of a patient's deterioration and the possibility of respiratory compromise.

In my field, we have become very comfortable with capnography and patient monitoring, because for decades it's been a standard of care for monitoring in the operating room. The role for utilization of capnography for patients who are receiving an opioid or sedative agent outside of the operating room needs to be further assessed. However, technology is not a silver bullet and should be used as an adjunct to clinical judgment in at-risk populations.

Simple recognition and greater awareness of respiratory compromise, just as with sepsis awareness campaigns, will mean more patients are diagnosed earlier, more appropriate interventions are made, and hopefully more adverse events and patient deaths are averted.

Key Clinical Question

How do you evaluate and treat a patient with *C. difficile*–associated disease?

Metronidazole is no longer recommended

By Michael A. Roberts, MD; William Hillman, MD; and Farrin A. Manian, MD, MPH

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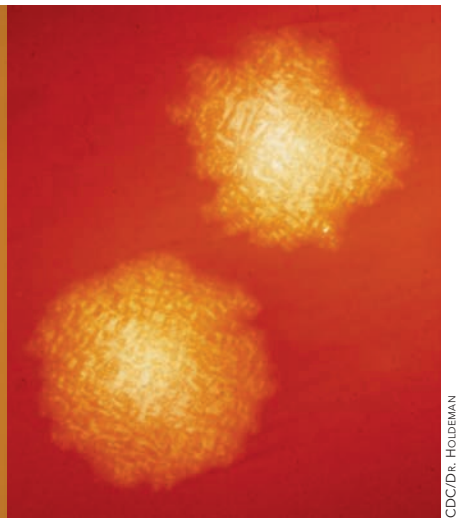
Clinical Case

A 45-year-old woman on omeprazole for gastroesophageal reflux disease and recent treatment with ciprofloxacin for a urinary tract infection, who also has had several days of frequent watery stools, is admitted. She does not appear ill, and her abdominal exam is benign. She has normal renal function and white blood cell count. How should she be evaluated and treated for *Clostridium difficile*–associated disease (CDAD)?



CDC/Dr. Holdeman

Brief overview

C. difficile, a gram-positive anaerobic bacillus that exists in vegetative and spore forms, is a leading cause of hospital-associated diarrhea. *C. difficile* has a variety of presentations, ranging from asymptomatic colonization to CDAD, including severe diarrhea, ileus, and megacolon, and may be associated with a fatal outcome on rare occasions. The incidence of CDAD has been rising since the emergence of a hypervirulent strain (NAP1/BI/027) in the early 2000s, and not surprisingly, the number of deaths attributed to CDAD has also increased.[1]

CDAD requires acquisition of *C. difficile* as well as alteration in the colonic microbiota, often precipitated by antibiotics. The vegetative form of *C. difficile* can produce up to three toxins that are responsible for a cascade of reactions beginning with intestinal epithelial cell death followed by a significant inflammatory response and migration of neutrophils that eventually lead to the formation of the characteristic pseudomembranes.[2]

Until recently, the mainstay treatment for CDAD consisted of metronidazole and oral preparations of vancomycin. Recent results from randomized controlled trials and the increasing popularity of fecal microbiota transplant, however, have changed the therapeutic landscape of CDAD dramatically. Not surprisingly, the 2017 Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America joint guidelines for CDAD represent a significant change to the treatment of CDAD, compared with previous guidelines.[3]

Key Points

- Metronidazole is inferior to oral vancomycin and fidaxomicin for clinical cure of CDAD. The IDSA/SHEA guidelines now recommend a 10-day course of oral vancomycin or fidaxomicin for nonfulminant cases of CDAD.
- For fulminant CDAD, the IDSA/SHEA guidelines suggest an increased dose of vancomycin and the addition of IV metronidazole. In such cases, surgical consultation should also be obtained.
- After the second recurrence of *Clostridium difficile* infection, hospitalists should consider referral for FMT where available.

Overview of data

The hallmark of CDAD is a watery, nonbloody diarrhea. Given many other causes of diarrhea in hospitalized patients (e.g., direct effect of antibiotics, laxative use, tube feeding, etc.), hospitalists should focus on testing those patients who have three or more episodes of diarrhea in 24 hours and risk factors for CDAD (see Table 1).

Exposure to antibiotics remains the greatest risk factor. It's important to note that, while most patients develop CDAD within the first month after receiving systemic antibiotics, many patients remain at risk for up to 3 months.[4] Although exposure to antibiotics, particularly in health care settings, is a significant risk factor for CDAD, up to 30%-40% of community-associated cases may not have a substantial antibiotic or health care facility exposure.[5]

Hospitalists should also not overlook the association between proton pump inhibitor (PPI) use and the development of CDAD.[3] Although the IDSA/SHEA guidelines do not recommend discontinuation of PPIs solely for treatment or prevention of CDAD, at the minimum, the indication for their continued use in patients with CDAD should be revisited.

Testing for CDAD ranges from immunoassays that detect an enzyme common to all strains of *C. difficile*, glutamate dehydrogenase antigen (GDH), or toxins to nucleic acid amplification tests (NAATs), such as polymerase chain reaction).[1,6] GDH tests have high sensitivity but poor specificity, while testing for the toxin has high specificity but lower sensitivity (40%-80%) for CDAD.[1] Although NAATs are highly sensitive and specific, they often have a poor positive predictive value in low-risk populations (e.g., those who do not have true diarrhea or whose diarrhea resolves before test results return). In these patients, a positive NAAT test may reflect colonization with toxigenic *C. difficile*, not necessarily CDAD. Except in rare instances, laboratories should accept only unformed stools for testing. Since the choice of testing for *C. difficile* varies by institution, hospitalists should understand the algorithm used by their respective hospitals and familiarize themselves with the sensitivity and specificity of each test.

Table 1. Risk factors for CDAD

Antibiotic use
Advanced age
Recent or prolonged hospitalization
Proton pump inhibitor use
Chemotherapy exposure
Chronic kidney disease
Feeding tubes or GI surgery
Inflammatory bowel disease
Low serum vitamin D levels

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Once a patient is diagnosed with CDAD, the hospitalist should assess the severity of the disease. The IDSA/SHEA guidelines still use leukocytosis and creatinine to separate mild from severe cases; the presence of fever and hypoalbuminemia also points to a more complicated course.[3]

The treatment of CDAD involves a strategy of withdrawing the putative culprit antibiotic(s) whenever possible and initiating of antibiotics effective against *C. difficile*. Following the publication of two randomized controlled trials demonstrating the inferiority of metronidazole to vancomycin in clinical cure of CDAD,[2,7] the IDSA/SHEA guidelines no longer recommend metronidazole for the treatment of CDAD. Instead, a 10-day course of oral vancomycin or fidaxomicin has been recommended.[2] Although fidaxomicin is associated with lower rates of recurrence of CDAD, it is also substantially more expensive than oral vancomycin, with a 10-day course often costing over $3,000.[8] When choosing oral vancomycin for completion of therapy following discharge, hospitalists should also consider whether the dispensing outpatient pharmacy can provide the less-expensive liquid preparation of vancomycin. In resource-poor settings, consideration can still be given to metronidazole, an inexpensive drug, compared with both oral vancomycin and fidaxomicin. "Test of cure" with follow-up stool testing is not recommended.

For patients who require systemic antibiotics that precipitated their CDAD, it is common practice to ex-

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tend CDAD treatment by providing a "tail" coverage with an agent effective against CDAD for 7-10 days following the completion of the inciting antibiotic. A common clinical question relates to the management of patients with prior history of CDAD but in need of a new round of systemic antibiotic therapy. In these patients, concurrent prophylactic doses of oral vancomycin have been found to be effective in preventing recurrence.[9] The IDSA/SHEA guidelines conclude that "it may be prudent to administer low doses of vancomycin or fidaxomicin (e.g., 125 mg or 200 mg, respectively, once daily) while systemic antibiotics are administered."[3]

For patients whose presentation extends beyond diarrhea, the IDSA/SHEA guidelines have changed the nomenclature for CDAD from "severe, complicated" to "fulminant." Although there are no strict definitions, the IDSA/SHEA guidelines suggest that fulminant CDAD is characterized by "hypotension or shock, ileus, or megacolon." In these patients, surgical intervention can be life saving, though mortality rates may remain over 50%.[10] Hospitalists whose patients with CDAD are experiencing an acute abdomen or concern for colonic perforation, megacolon, shock, or organ system failure should obtain prompt surgical consultation. Antibiotic treatment should consist of a combination of higher doses of oral vancomycin and intravenous metronidazole (see Table 2).

In addition to occasional treatment failures, a vexing characteristic of CDAD is its frequent recurrence rate, which may range from 15% to 30% or higher.[11] The approach to recurrences is twofold: treatment of the *C. difficile* itself, and attempts to restore the colonic microbiome. The antibiotic treatment of the first recurrence of CDAD consists of either a 10-day course of fidaxomicin or a tapered, pulsed dose of vancomycin, which may be more effective than a repeat 10-day course of oral vancomycin.[12] Although the treatment is unchanged for subsequent recurrences, the guidelines suggest consideration of rifaximin after a course of vancomycin (see Table 2).

Probiotics have been investigated as a means of restoring the colonic microbiome. Use of probiotics for both primary and secondary prevention of CDAD has resulted in conflicting data, with pooled analyses showing some benefit, while randomized controlled trials demonstrate less benefit.[13] In addition, reports of bloodstream infections with *Lactobacillus* in frail patients and *Saccharomyces* in immunocompromised patients and those with central venous catheters raise doubts regarding their safety in certain patient populations.[13] The IDSA/SHEA guidelines make no recommendations about the use of probiotics for the prevention of CDAD at this time.

Fecal microbiota transplant (FMT), how-

Table 2. Recommended CDAD treatment regimens by severity or recurrence

Severity/recurrence	Treatment regimen
Nonfulminant	Oral vancomycin 125 mg four times daily for 10 days OR fidaxomicin 200 mg two times daily for 10 days
Fulminant*	Oral (or nasogastric) vancomycin 500 mg four times daily (consider rectal vancomycin in the presence of ileus) PLUS intravenous metronidazole PLUS surgical consultation
Initial recurrence	Oral vancomycin 125 mg four times daily for 10 days if metronidazole was used for treatment of the initial episode OR prolonged, tapered, and pulsed oral vancomycin regimen (e.g., 125 mg four times daily for 10-14 days, two times daily for 1 week, once daily for 1 week, and every 2 or 3 days for 2-8 weeks) OR fidoxamicin 200 mg two times daily for 10 days if vancomycin was used for treatment of the initial episode
Subsequent recurrences	Oral vancomycin in a tapered and pulsed regimen OR oral vancomycin 125 mg four times daily for 10 days followed by rifaximin 400 mg three times daily for 20 days OR fidaxomicin 200 mg two times daily for 10 days OR fecal microbiota transplantation (third or subsequent recurrences)

*Complicated by hypotension, shock, ileus, or megacolon

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Table 3. Potential indications for fecal microbiota transplant[12]

1.	Recurrent or relapsing CDAD A. At least three episodes of mild to moderate CDAD and failure of a 6- to 8-week taper with oral vancomycin with or without an alternative antibiotic (e.g., rifaximin) B. At least two episodes of severe CDAD resulting in hospitalization and associated with significant morbidity
2.	Moderate CDAD not responding to standard oral vancomycin therapy for at least 1 week
3.	Severe (and perhaps even fulminant *C. difficile* colitis) not responding to standard therapy after 48 hours

ever, does appear to be effective, especially in comparison with antibiotics alone in patients with multiple recurrences of CDAD.[13] The IDSA/SHEA guidelines recommend consideration for FMT after the second recurrence of CDAD. The Fecal Microbiota Transplantation Workgroup has also proposed a set of guidelines for consideration of FMT when available (see Table 3).

Application of data

The recent IDSA/SHEA guidelines have revised the treatment paradigm for CDAD. Most notably, metronidazole is no longer recommended for treatment of either initial or subsequent episodes of mild to severe CDAD, except when the cost of treatment may preclude the use of more effective therapies.

Initial episodes of mild to severe infection should be treated with either oral vancomycin or fidaxomicin. Recurrent episodes of CDAD should be treated with an agent different from that used for the initial episode, or with a pulsed, tapered regimen of oral vancomycin. FMT, where available, should be considered with multiple recurrences, or with moderate to severe infection not responding to standard therapy.

Fulminant CDAD, characterized by hypotension, shock, severe ileus, or megacolon, is a life-threatening medical emergency with a high mortality rate. Treatment should include high-dose oral vancomycin and intravenous metronidazole, with consideration of rectal vancomycin in patients with ileus. Immediate surgical consultation should be obtained to weigh the benefits of colectomy.

Back to our case

Our patient was treated with a 10-day course of vancomycin because this was uncomplicated CDAD and was her initial episode. Were she to develop a recurrence, she could be treated with a pulsed, tapered vancomycin regimen or fidaxomicin.

Bottom line

Vancomycin and fidaxomicin are recommended for the initial episode as well as recurrent CDAD. FMT should be considered for patients with multiple episodes of CDAD or treatment failures.

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Dr. Roberts

Dr. Hillman

Dr. Roberts, Dr. Hillman, and Dr. Manian are hospitalists at Massachusetts General Hospital in Boston.

Dr. Manian

Quiz

The recent IDSA/SHEA guidelines no longer recommend metronidazole in the treatment of CDAD, except for which of the following scenarios (best answer)?

A. Treatment of a first episode of nonfulminant CDAD.

B. Treatment of recurrent CDAD following an initial course of oral vancomycin.

C. Treatment of fulminant infection with IV metronidazole in addition to oral or rectal vancomycin.

D. For prophylaxis following fecal microbiota transplant.

Answer: C. In fulminant infection, concurrent ileus may interfere with appropriate delivery of oral vancomycin to the colon. Adding intravenous metronidazole can allow this antibiotic to reach the bowel. Adding intravenous metronidazole to oral vancomycin is also recommended by IDSA/SHEA guidelines in cases of fulminant CDAD. Evidence from high-quality randomized controlled trials has shown that vancomycin is superior to oral metronidazole for treatment of initial and recurrent episodes of CDAD. There is no evidence to support the use of metronidazole for recurrent CDAD following an initial course of oral vancomycin or for prophylaxis following FMT.

In the Literature

Clinician reviews of HM-centric research

By Joshua Marr, MD, MPH; Nathan Wanner, MD; Stephen Jenkins, MD; Claire Ciarkowski, MD; Amanda Breviu, MD; Joshua LaBrin, MD, FACP, SFHM

University of Utah School of Medicine, Salt Lake City

IN THIS ISSUE

By Joshua Marr, MD, MPH

1 VTE prophylaxis often overused in low-risk patients

CLINICAL QUESTION: Is venous thromboembolism (VTE) prophylaxis being appropriately prescribed in hospitalized patients?

BACKGROUND: Per Chest guidelines, VTE prophylaxis is recommended for hospitalized patients at increased risk for VTE but is not recommended for low-risk patients. Risk stratification can be guided by the Padua Prediction Score to categorize patients.

STUDY DESIGN: Multicenter observational study.

SETTING: A total of 52 U.S. hospitals (Michigan Hospital Medicine Safety Consortium database).

SYNOPSIS: Patients admitted during Jan. 1, 2015–Dec. 21, 2016, to 52 non–intensive care medical units for 2 or more days were analyzed and stratified as high or low risk for VTE using the Padua Prediction Score. Excessive VTE prophylaxis was defined as low-risk patients prescribed pharmacologic or mechanical prophylaxis, high-risk patients receiving therapy despite a contraindication to prophylaxis, or any patient who received both mechanical and pharmacologic therapy. Underuse of VTE prophylaxis included high-risk patients who did not receive pharmacologic or mechanical prophylaxis. Of the 44,775 patients included in the study, 32,549 were low risk, and 77.9% (25,369 patients) received excessive VTE prophylaxis. Overtreatment also was present in high-risk patients with and without a contraindication to VTE prophylaxis (26.9% and 32.3%, respectively). Underuse of VTE prophylaxis occurred in 2,693 high-risk patients (22%).

Dr. Marr

BOTTOM LINE: Patients who are at low risk for VTE by Padua Prediction Score often are prescribed pharmacologic or mechanical prophylaxis that may be unnecessary. Overuse of VTE prophylaxis was more common than is underuse.

CITATION: Grant PJ et al. Use of venous thromboembolism prophylaxis in hospitalized patients. JAMA Intern Med. 2018 Aug 1;178(8):1122-4. Published online May 21, 2018.

2 Lower grip strength associated with worse health outcomes

CLINICAL QUESTION: Does measurement of patient grip strength enhance prediction of all-cause and disease-specific morbidity and mortality?

BACKGROUND: Previous studies have shown that lower muscle function is associated with increased mortality; however, studies have not been able to fully examine associations with age and disease-specific mortality.

STUDY DESIGN: Prospective, population-based study.

SETTING: Large population cohort in the United Kingdom (UK Biobank).

SYNOPSIS: The UK Biobank population included 502,293 individuals, aged 40-69 years, recruited during April 2007–December 2010, with grip strength data available. Mean follow-up was 7.1 years for all-cause and disease-specific mortality. Cox proportional hazard models were used to report hazard ratios (HR) per 5-kg decrease in grip strength and were controlled for multiple sociodemographic and lifestyle factors. A lower grip strength was found to correlate with all-cause mortality (HR, 1.16 in women; HR, 1.20 in men) as well as incidence of and mortality from cardiovascular disease, respiratory disease, and cancer. Hazard ratios were higher among younger age groups with similar lower grip strength. The use of grip strength also improved the prediction of an office-based mortality risk score from cardiovascular disease.

BOTTOM LINE: Grip strength is a useful and easy-to-obtain measurement that is associated with all-cause and disease-specific morbidity and can be used to improve the prediction of an office-based risk score.

CITATION: Celis-Morales CA et al. Associations of grip strength with cardiovascular, respiratory, and cancer outcomes and all-cause mortality: Prospective cohort study of half a million UK Biobank participants. BMJ. 2018;361:k1651.

Dr. Marr is assistant professor of medicine and an academic hospitalist, University of Utah, Salt Lake City.

By Nathan Wanner, MD

3 Prioritize oral route for inpatient opioids with subcutaneous route as alternative

CLINICAL QUESTION: Can adoption of a local opioid standard of practice for hospitalized patients reduce intravenous and overall opioid exposure while providing effective pain control?

BACKGROUND: Inpatient use of intravenous opioids may be excessive, considering that oral opioids may provide more consistent pain control with less risk of adverse effects. If oral treatment is not possible, subcutaneous administration of opioids is an effective and possibly less addictive alternative to the intravenous route.

Dr. Wanner

STUDY DESIGN: Historical control pilot study.

SETTING: Single adult general medicine unit in an urban academic medical center.

SYNOPSIS: A 6-month historical period with 287 patients was compared with a 3-month intervention period with 127 patients. The intervention consisted of a clinical practice standard that was presented to medical and nursing staff via didactic sessions and email. The standard recommended the oral route for opioids in patients tolerating oral intake and endorsed subcutaneous over intravenous administration.

Intravenous doses decreased by 84% (0.06 vs. 0.39 doses/patient-day; *P* less than .001), the daily rate of patients receiving any parenteral opioid decreased by 57% (6% vs.

Continued on page 20

Short Takes

A second medical emergency team (MET) activation more likely in patients with recent MET activation

A prospective cohort study examined 471 MET activations where the patient was not transferred to a higher level of care found that 18% had a second MET event. These second events were more likely to occur in the first 8-12 hours and to occur in patients recently discharged from the ICU.

CITATION: Still MD et al. Predictors of second medical emergency team activation within 24 hours of index event. J Nurs Care Qual. 2018;33(2):157-65.

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Continued from page 18

14%; *P* less than .001), and the mean daily overall morphine-milligram equivalents decreased by 31% (6.30 vs. 9.11). Pain scores were unchanged for hospital days 1 through 3 but were significantly improved on day 4 (*P* = .004) and day 5 (*P* = .009).

Limitations of this study include the small number of patients on one unit, in one institution, with one clinician group. Attractive features of the intervention include its scalability and potential for augmentation via additional processes such as EHR changes, prescribing restrictions, and pharmacy monitoring.

BOTTOM LINE: A standard of practice intervention with peer-to-peer education was associated with decreased intravenous opioid exposure, decreased total opioid exposure, and effective pain control.

CITATION: Ackerman AL et al. Association of an opioid standard of practice intervention with intravenous opioid exposure in hospitalized patients. JAMA Int Med. 2018;178(6):759-63.

4 Metformin associated with acidosis only in patients with eGFR 30 mL/min per 1.73 m²

CLINICAL QUESTION: Does metformin increase the risk of lactic acidosis in chronic kidney disease (CKD)?

BACKGROUND: Metformin is first-line therapy for type 2 diabetes mellitus (DM) because of its low cost, safety, and potential cardiovascular benefit, but fear of lactic acidosis has limited its use in CKD. The risk of acidosis in CKD patients with varying levels of renal function has not been clearly defined.

STUDY DESIGN: Retrospective community-based cohort study.

SETTING: Geisinger Health System in Pennsylvania.

SYNOPSIS: A total of 75,413 patients were identified with diagnostic codes or medication prescriptions indicating DM. Forty-five percent of patients were taking metformin at enrollment, increasing by 18% over the 5.7 years of median follow-up. The primary outcome was inpatient acidosis, defined by an ICD-9-CM code capturing multiple forms of acidosis but excluding diabetic ketoacidosis.

When metformin users and nonusers were compared, risk of acidosis was similar for the entire cohort and for subgroups of patients with an estimated glomerular filtration rate (eGFR) greater than 90, 60-89, 45-59, and 30-44. Conversely, metformin use was associated with a higher risk of acidosis in patients with eGFR less than 30 (adjusted hazard ratio, 2.07; 95% confidence interval, 1.33-3.22). Metformin not increasing the risk of acidosis at eGFR greater than 30 also was noted in an additional analysis using sulfonylurea medications as an active comparator and was replicated in a separate database with 82,000 patients from 350 private health systems. As with all observational studies, this study is limited by the potential for residual confounding.

BOTTOM LINE: Metformin appears to be safe in CKD patients with eGFR above 30 mL/min per 1.73 m².

CITATION: Lazarus B et al. Association of metformin use with risk of lactic acidosis across the range of kidney function: A community-based cohort study. JAMA Int Med. 2018;178(7):903-10.

Dr. Wanner is director, hospital medicine section, and associate chief, division of general internal medicine, University of Utah, Salt Lake City.

Short Takes

Risk of CV events in patients with TIA or minor stroke decreases significantly after first year

A prospective cohort study following TIA or minor stroke patients from the TIAregistry.org project shows that the risk of additional events (death from cardiovascular cause, nonfatal stroke, or nonfatal acute coronary syndrome) in the following 5 years is 12.9%, with half of those events occurring in the first year.

CITATION: Amarenco P et al. Five-year risk of stroke after TIA or minor ischemic stroke. N Engl J Med. 2018;378:2182-90.

By Stephen Jenkins, MD

5 Intramuscular midazolam superior in sedating acutely agitated adults

CLINICAL QUESTION: How effective are intramuscular midazolam, olanzapine, ziprasidone, and haloperidol at sedating acutely agitated adults in the emergency department?

BACKGROUND: Acute agitation is commonly seen in the ED and sometimes requires parenteral medications to keep patients and staff safe. Although many medications, including benzodiazepines and antipsychotics, are used, there is no consensus regarding which medications are most effective and safe for acute agitation.

STUDY DESIGN: Prospective observational study.

SETTING: Emergency department of an inner-city Level 1 adult and pediatric trauma center.

SYNOPSIS: This study enrolled 737 adults in the ED who presented with acute agitation and treated them with either haloperidol 5 mg, ziprasidone 20 mg, olanzapine 10 mg, midazolam 5 mg, or haloperidol 10 mg intramuscularly, based on predetermined 3-week blocks.

Dr. Jenkins

The main outcome was the proportion of patients adequately sedated at 15 minutes, based on Altered Mental Status Scale score less than 1. A total of 650 patients (88%) were agitated from alcohol intoxication.

Midazolam resulted in a statistically higher proportion of patients adequately sedated, compared with ziprasidone (difference, 18%; 95% confidence interval, 6%-29%), haloperidol 5 mg (difference, 30%; 95% CI, 19%-41%), and haloperidol 10 mg (difference, 28%; 95% CI,17%-39%). Midazolam resulted in a higher proportion of patients adequately sedated, compared with olanzapine (difference 9%), but this difference was not statistically significant because the confidence interval crossed 1 (95% CI, –1%-20%). Olanzapine resulted in a statistically higher proportion of patients adequately sedated, compared with haloperidol 5 mg (difference 20%; 95% CI, 10%-31%) and 10 mg (difference 18%; 95% CI, 7%-29%). Adverse effects were rare.

BOTTOM LINE: Intramuscular midazolam is safe and may be more effective for treating acute agitation in the emergency department than standard antipsychotics.

CITATION: Klein LR et al. Intramuscular midazolam, olanzapine, ziprasidone, or haloperidol for treating acute agitation in the emergency department. Ann Emerg Med. 2018 Jun 6. doi: https://doi.org/10.1016/j.annemergmed.2018.04.027.

6 CTPA may not rule out VTE in high-risk patients

CLINICAL QUESTION: Does a negative computed tomography pulmonary angiography rule out venous thromboembolism (VTE)?

BACKGROUND: Computed tomography pulmonary angiography (CTPA) is the most common diagnostic modality used to diagnose pulmonary embolism (PE) and has a high negative predictive value in patients with a low 3-month risk of VTE. In patients with higher pretest probability of PE, it is unknown whether CTPA is sufficient to rule out VTE.

STUDY DESIGN: Meta-analysis.

SETTING: Published prospective outcome studies of patients with suspected PE using CTPA as a diagnostic strategy.

SYNOPSIS: The authors reviewed 3,143 publications from MEDLINE, EMBASE, and the Cochrane Library and identified 22 prospective outcome studies to include in their meta-analysis. A VTE was diagnosed in 3,923 out of 11,872 participants (33%) using CTPA. Of the 7,863 patients with a negative CTPA, 148 patients had an acute VTE confirmed by venous ultrasound, ventilation/perfusion scan, or angiography, and 74 patients experienced VTE during a 3-month follow-up period, yielding an overall proportion of 2.4% of patients (95% confidence interval, 1.3%-3.8%).

Subgroup analysis showed that cumulative occurrence of VTE was related to pretest prevalence. In the subgroup of patients with a VTE prevalence greater than 40%, VTE was observed in 8.1% of patients with a negative CTPA (95% CI, 3.4%-14.5%).

BOTTOM LINE: CTPA may be insufficient to rule out VTE in patients with a high pretest probability of PE.

CITATION: Belzile D et al. Outcomes following a negative computed tomography pulmonary angiography according to pulmonary embolism prevalence: a meta-analysis of the management outcome studies. J Thromb Haemost. 2018 Jun;16(6):1107-20.

Dr. Jenkins is assistant professor of medicine and an academic hospitalist, University of Utah, Salt Lake City.

By Claire Ciarkowski, MD

7 Increasing inpatient attending supervision does not decrease medical errors

CLINICAL QUESTION: What is the effect of increasing attending physician supervision on a resident inpatient team for both patient safety and education?

BACKGROUND: Residents need autonomy to help develop their clinical skills and to gain compe-

tence to practice independently; however, there is rising concern that increased supervision is needed for patient safety.
STUDY DESIGN: Randomized, crossover clinical trial.
SETTING: 1,100-bed academic medical center at Massachusetts General Hospital, Boston.
SYNOPSIS: Twenty-two attending physicians participated in the study over 44 2-week teaching blocks with a total of 1,259 patient hospitalizations on the general medicine teaching service. In the intervention arm, attendings were present during work rounds; in the control arm, attendings discussed established patients with the resident via card flip. New patients were discussed at the bedside in both arms. There was no statistically significant difference in the number of medical errors or patient safety events between the two groups. Residents in the intervention group, however, felt less efficient and autonomous and were less able to make independent decisions. Limitations include this being a single-center study at a program emphasizing resident autonomy and therefore may limit generalizability. Current literature on supervision and patient safety has variable results. This study suggests that increasing attending supervision may not increase patient safety, but may negatively affect resident education and autonomy.


Dr. Ciarkowski

BOTTOM LINE: Attending physician presence on work rounds does not improve patient safety and may have deleterious effects on resident education.
CITATION: Finn KM et al. Effect of increased inpatient attending physician supervision on medical errors, patient safety, and resident education. JAMA Intern Med. 2018;178(7):925-59

8 Copeptin enhances risk stratification tools in normotensive patients with PE

CLINICAL QUESTION: Does the use of copeptin, either alone or with stratification tools, help identify high-risk patients with pulmonary embolism?
BACKGROUND: The 2014 guidelines from the European Society of Cardiology (ESC) offers a risk stratification tool to help influence treatment decisions for patients with pulmonary embolism (PE). Patients who are normotensive, however, are often difficult to risk stratify. Copeptin is a surrogate marker for vasopressin, which is released during stress and hypotension and may help identify patients at higher risk of adverse clinical outcomes.
STUDY DESIGN: Post hoc analysis of prospective multicenter study.
SETTING: Three European cohorts, including 12 sites.
SYNOPSIS: A total of 843 normotensive patients with symptomatic PE were included, and the 2014 ESC algorithm was used to identify low-risk patients, with intermediate-risk patients further stratified using a copeptin level cut off of greater than 24 pmol-L^{-1}. Elevated copeptin levels were associated with a 12.9% rate of adverse outcome (95% confidence interval, 6.6-22.0) and an 8.2% risk of PE-related death (95% CI, 3.4-16.2), compared with only a 5.6% rate of adverse outcome when using the ESC algorithm alone. The use of copeptin helped identify patients with increased risk of adverse events and death, but implementation of copeptin-based assessments may be limited by laboratory access and may not be a cost-effective tool in many hospitals.
BOTTOM LINE: Risk stratification of normotensive PE patients with intermediate risk can be optimized by the use of copeptin in addition to the 2014 ESC algorithm.
CITATION: Hellenkamp K et al. Prognostic impact of copeptin in pulmonary embolism: a multicenter validation study. Eur Respir J. 2018;51(4): 2017-37.

Dr. Ciarkowski is clinical instructor of medicine and an academic hospitalist, University of Utah, Salt Lake City.

By Amanda Breviu, MD

9 Mortality risk remains high for survivors of opioid overdose

CLINICAL QUESTION: What are the causes and risks of mortality in the first year after nonfatal opioid overdose?
BACKGROUND: The current opioid epidemic has led to increasing hospitalizations and ED presentations for nonfatal opioid overdose. Despite this, little is known about the subsequent causes of mortality in these patients. Additional information could suggest potential interventions to decrease subsequent risk of death.
STUDY DESIGN: Retrospective cohort study.
SETTING: U.S. national cohort of Medicaid beneficiaries, aged 18-64 years, during 2001-2007.
SYNOPSIS: This cohort included 76,325 adults with nonfatal opioid overdose with 66,736 person-years of follow-up. In the first year after overdose, there were 5,194 deaths, and the crude death rate was 778.3 per 10,000 person-years. Compared with a demographically matched general population, the standardized mortality rate ratios (SMRs) for this cohort were 24.2 times higher for all-cause mortality and 132.1 times higher for drug use–associated disease. The SMRs also were elevated for conditions including HIV (45.9), chronic respiratory disease (41.1), viral hepatitis (30.6), and suicide (25.9). Though limited to billing data from Medicaid beneficiaries during 2001-2007, this study is important in identifying a relatively young population at high risk of preventable death and suggests that additional resources and interventions may be important in this population.


Dr. Breviu

BOTTOM LINE: Adults surviving opioid overdose remain at high risk of death over the following year and may benefit from multidisciplinary interventions targeted at coordinating medical care and treatment of mental health and substance use disorders following hospitalization and emergency department presentations.
CITATION: Olfson M et al. Causes of death after nonfatal opioid overdose. JAMA Psychiatry. 2018 Aug 1;75(8):820-7. Published online June 20, 2018.

10 Tamsulosin not effective in promoting stone expulsion in symptomatic patients

CLINICAL QUESTION: Does tamsulosin provide benefit in ureteral stone expulsion for patients who present with a symptomatic stone less than 9 mm?
BACKGROUND: Treatment of urinary stone disease often includes the use of alpha-blockers such as tamsulosin to promote stone passage, and between 15% and 55% of patients presenting to EDs for renal colic are prescribed alpha-blockers. Current treatment guidelines support the use of tamsulosin, with recent evidence suggesting that this treatment is more effective for larger stones (5-10 mm). However, other prospective trials have called these guidelines into question.
STUDY DESIGN: Double-blind, placebo-controlled study.
SETTING: Six emergency departments at U.S. tertiary-care hospitals.
SYNOPSIS: 512 participants with symptomatic ureteral stones were randomized to either tamsulosin or placebo. At the end of a 28-day treatment period, the rate of urinary stone passage was 49.6% in the tamsulosin group vs. 47.3% in the placebo group (95.8% confidence interval, 0.87-1.27; P = .60). The time to stone passage also was not different between treatment groups (P = .92). A second phase of the trial also evaluated stone passage by CT scan at 28 days, with stone passage rates of 83.6% in the tamsulosin group and 77.6% in the placebo group (95% CI, 0.95-1.22; P = .24). This study is the largest of its kind in the United States, with findings similar to those of two recent international multisite trials, increasing the evidence that tamsulosin is not beneficial for larger stone passage.
BOTTOM LINE: For patients presenting to the ED for renal colic from ureteral stones smaller than 9 mm, tamsulosin does not appear to promote stone passage.
CITATION: Meltzer AC et al. Effect of tamsulosin on passage of symptomatic ureteral stones: A randomized clinical trial. JAMA Intern Med. 2018;178(8):1051-7. Published online June 18, 2018.

Dr. Breviu is assistant professor of medicine and an academic hospitalist, University of Utah, Salt Lake City.

Short Takes

Maintenance of certification associated with better physician performance scores
Physicians who still participated in Maintenance of Certification (MOC) programs 20 years after their initial certification scored higher on a variety of physician performance scores on Medicare patients.
CITATION: Gray BG et al. Associations between American Board of Internal Medicine Maintenance of Certificate status and performance on a set of healthcare effectiveness data and information set (HEDIS) process measures. Ann Intern Med. 2018;169(2):97-105.

A new, simple, inexpensive DVT diagnostic aid

By Bruce Jancin
MDedge News

FROM ACP INTERNAL MEDICINE / NEW ORLEANS / Both the neutrophil-to-lymphocyte ratio (NLR) and the platelet-to-lymphocyte ratio (PLR) proved to be better predictors of the presence or absence of deep vein thrombosis than the ubiquitous D-dimer test in a retrospective study, Jason Mouabbi, MD, reported at the annual meeting of the American College of Physicians.

What's more, both the NLR and the PLR can be readily calculated from the readout of a complete blood count with differential. A CBC costs an average of $16, and everybody that comes through a hospital emergency department gets one. In contrast, the average charge for a D-dimer test is about $231 nationwide, and depending upon the specific test used the results can take up to a couple of hours to come back, noted Dr. Mouabbi of St. John Hospital and Medical Center in Detroit.

"The NLR and PLR ratios offer a new, powerful, affordable, simple, and readily available tool in the hands of clinicians to help them in the diagnosis of DVT," he said. "The NLR can be useful to rule out DVT when it's negative, whereas PLR can be useful in ruling DVT when positive."

Investigators in a variety of fields are looking at the NLR and PLR as emerging practical, easily obtainable biomarkers for systemic inflammation. And DVT is thought to be an inflammatory process, he explained.

Dr. Mouabbi presented a single-center retrospective study of 102 matched patients who presented with lower extremity swelling and had a CBC drawn, as well as a D-dimer test, on the same day they underwent a lower extremity Doppler ultrasound evaluation. In 51 patients, the ultrasound revealed the presence of DVT and anticoagulation was started. In the other 51 patients, the ultrasound exam was negative, and they weren't anticoagulated. Since the study purpose was to assess the implications of a primary elevation of NLR and/or PLR, patients with rheumatic diseases, inflammatory bowel disease, recent surgery, chronic renal or liver disease, inherited thrombophilia, infection, or other possible secondary causes of altered ratios were excluded from the study.

A positive NLR was considered 3.4 or higher, a positive PLR was a ratio of 230 or more, and a positive D-dimer level was 500 ng/mL or greater. The NLR and PLR collectively outperformed the D-dimer test in terms of sensitivity, specificity, positive predictive value, and negative predictive value.

In addition, 89% of the DVT group were classified as "double-positive," meaning they were both NLR and PLR positive. That combination provided the best diagnostic value of all, since none of the controls were double-positive and only 2% were PLR positive.

While the results are encouraging, before NLR and PLR can supplant D-dimer in patients with suspected DVT in clinical practice a confirmatory prospective study should be carried out, Dr. Mouabbi said. Ideally it should include the use of the Wells score, which is part of most diagnostic algorithms as a preliminary means of categorizing DVT probability as low, moderate, or high. However, the popularity of the Wells score has fallen off in the face of reports that the results are subjective and variable.

DVT diagnosis showdown: CBC vs. D-dimer

	Sensitivity	Specificity	Positive predictive value	Negative predictive value
NLR	90.2%	80.4%	82.1%	89.1%
PLR	62.7%	89%	97%	72.5%
Double-ratio positive	88.6%	100%	100%	90.9%
D-dimer	88.2%	35.3%	57.7%	75%

MDEDGE NEWS

Notes: Based on data from a single-center retrospective study involving 102 patients. Positive NLR = 3.4 or higher, positive PLR = 230 or more, positive D-dimer = 500 ng/mL or greater.

Source: Dr. Mouabbi

Q&A

Hospital medicine and palliative care: Wearing both hats

Dr. Barbara Egan leads SHM's Palliative Care Work Group

By Felicia Steele

Editor's note: *Each month, the Society of Hospitalist Medicine puts the spotlight on some of our most active members who are making substantial contributions to hospital medicine. Visit* www.hospitalmedicine.org *for more information on how you can lend your expertise to help improve the care of hospitalized patients.*

This month, The Hospitalist *spotlights Barbara Egan, MD, FACP, SFHM, chief of the hospital medicine service in the department of medicine at Memorial Sloan Kettering Cancer Center in New York. Barbara has been a member of SHM since 2005, is dual certified in hospital medicine and palliative care, and is the chair of SHM's Palliative Care Work Group.*

Dr. Barbara Egan

When did you first hear about SHM, and why did you decide to become a member?

I first learned about SHM when I was an internal medicine resident at Brigham and Women's Hospital, Boston, in the early 2000s. BWH had an extremely strong hospitalist group; the staff I worked with served as powerful role models for me and inspired my interest in becoming a hospitalist. One of my attendings suggested that I join SHM, which I did right after I graduated from residency. I attended my first SHM Annual Conference in 2005. By then, I was working as a hospitalist at Memorial Sloan Kettering Cancer Center. SHM and the field of hospital medicine have exploded since my career first began, and I am happy to have grown alongside them. Similarly, our hospital medicine group here at MSKCC has dramatically grown, from 1 hospitalist (me) to more than 30!

How did you get involved with SHM's Palliative Care Work Group, and what has the work group accomplished since you joined?

I was honored to be invited to join SHM's Palliative Care Work Group in 2017 by Wendy Anderson, MD, a colleague and now a friend from University of California, San Francisco. Wendy is a visionary leader who practices and researches at the intersection of palliative care and hospital medicine. She and I met during 2015, when we were both invited to join a collaboration between SHM and the Hastings Center in Garrison, N.Y., which was aimed at improving hospitalists' ability to provide outstanding care to hospitalized patients with life-limiting illnesses. That collaboration resulted in the Improving Communication about Serious Illness–Implementation Guide, a compilation of resources and best practices.

Wendy was chairing the SHM Palliative Care Work Group and invited me to join, which I did with great enthusiasm. This group consists of several passionate and brilliant hospitalists whose practices, in a variety of ways, involve both hospital medicine and palliative medicine. I was so honored when Wendy passed the baton to me last spring and invited me to chair the Work Group. I am lucky to have the opportunity to collaborate with this group of dynamic individuals, and we are well supported by an outstanding SHM staff member, Nick Marzano.

Are there any new projects that the work group is currently focusing on?

The primary focus of SHM's Palliative Care Work Group is educational. That is, we aim to assess and help meet the educational needs of hospitalists, thereby helping to empower them to be outstanding providers of primary palliative care to seriously ill, hospitalized patients. To that end, we were very proud to orchestrate a palliative care mini-track for the first time at HM18. To our group's delight, the attendance and reviews of that track were great. Thus, we were invited to further expand the palliative care offerings at HM19. We are busy planning for HM19: a full-day pre-course in palliative medicine; several podium presentations which will touch on ethical challenges, symptom management, prognostication, and other important topics; and a workshop in communication skills.

What led to your dual certification and how do your two specialties overlap?

I am board certified in internal medicine with Focused Practice in Hospital Medicine by virtue of my clinical training and my primary clinical practice as a hospitalist. As a hospitalist in a cancer center, I spend most of my time caring for patients with late- and end-stage malignancy. As such, early in my career, I had to develop a broad base of palliative medical skills, such as pain and symptom management and communication skills. I find this work extremely rewarding, albeit emotionally taxing. I have learned to redefine what clinical "success" looks like – my patients often have unfixable medical problems, but I can always strive to improve their lives in some way, even if that means helping to provide them with a painless, dignified death as opposed to curing them.

When the American Board of Medical Specialties established a board certification in Hospice and Palliative Medicine, there briefly existed a pathway to be "grandfathered" in; i.e., to qualify for board certification through an examination and clinical experience, as opposed to a fellowship. I jumped at the chance to formalize my palliative care skills and experience, and I attained board certification in 2012. This allowed me to further diversify my clinical practice here at MSKCC.

Hospital medicine is still my first love, and I spend most of my time practicing as a hospitalist on our solid tumor services. But now I also spend several weeks each year attending as a consultant on our inpatient supportive care service. In that role, I am able to collaborate with a fantastic multidisciplinary team consisting of MDs, NPs, a chaplain, a pharmacist, a social worker, and integrative medicine practitioners. I also love the opportunity to teach and mentor our palliative medicine fellows.

To me, the opportunity to marry hospital medicine and palliative medicine in my career was a natural fit. Hospitalists, particularly those caring exclusively for cancer patients like I do, need to provide excellent palliative care to our patients every day. The opportunity to further my training and to obtain board certification was a golden one, and I love being able to wear both hats here at MSKCC.

Ms. Steele is a marketing communications specialist at the Society of Hospital Medicine.

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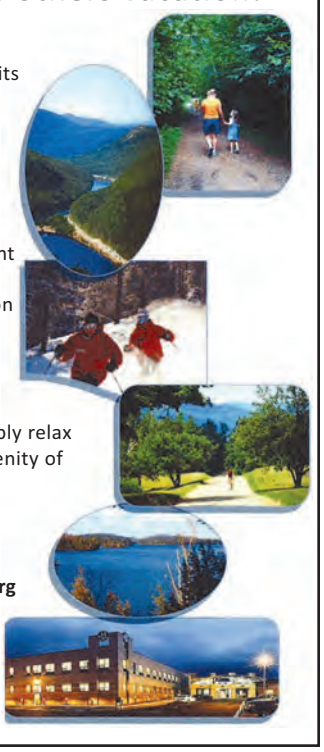

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NAIP to SHM: The importance of a name

Defining the hospitalist 'brand'

By Jeffrey R. Dichter, MD, SFHM

The National Association of Inpatient Physicians (NAIP) "opened its doors" in the spring of 1998, welcoming the first 300 hospitalists. The term "hospitalist" was first coined in Bob Wachter's 1996 New England Journal of Medicine article,[1] although hospitalists were relatively few at that time, and the term not infrequently evoked controversy.

Having full-time hospital-based physicians was highly disruptive to the traditional culture of medicine, where hospital rounds were an integral part of a primary care physicians' practice, professional identity, and referral patterns. Additionally, many hospital-based specialists were beginning to fill the hospitalist role.

The decision to include "inpatient physician" rather than "hospitalist" in the name was carefully considered and was intended to be inclusive, without alienating potential allies. Virtually any doctor working in a hospital could identify themselves as an inpatient physician, and all who wanted to participate were welcomed. It also was evident early on that this young specialty was going to comprise many different disciplines, including internal medicine, family practice, and pediatrics to name a few, and reaching out to all potential stakeholders was an urgent priority.

During its first 5 years, the field of hospital medicine grew rapidly, with NAIP membership nearing 2,000 members. The bimonthly newsletter *The Hospitalist* provided a vehicle to reach out to members and other stakeholders, and the annual meeting gave hospitalists a forum to gather, learn from each other, and enjoy camaraderie. Early research efforts focused on patient safety and, just as importantly, in 2002, the publication of the first Productivity and Compensation Survey (which is now known as SHM's State of Hospital Medicine Report) and the initial development of The Hospitalist Core Competencies (first published in 2006, and now in its 2017 revision) all helped define the young specialty and gain acceptance.[2,3]

The term hospitalist became mainstream and accepted, and the name of our field, hospital medicine, has now become widely recognized.

Though the term "inpatient physician" had focused on physicians as a primary constituency, the successful growth of hospital medicine now increasingly depended upon other important constituencies and their understanding of the hospital medicine specialty and the role of hospitalists. These stakeholders included virtually all health care professionals and administrators; government officials at the federal, state, and local levels; patients; and the American public.

> *"It was our belief ... that having a name that accurately portrayed hospitalists and hospital medicine would define our 'brand' in an understandable way."*

As NAIP leadership, it was our belief and intent that having a name that accurately portrayed hospitalists and hospital medicine would define our "brand" in an understandable way. This was especially important given the breadth and depth of the responsibilities that NAIP and its' members were increasingly taking on in a rapidly changing health care system. Additionally, it was a top priority to find a name that would inspire confidence and passion among our members, stir a sense of loyalty and pride, and continue to be inclusive.

With this in mind, the NAIP board undertook a process to search for a new name in the spring of 2002. As NAIP President-Elect, stewarding the name-change process was my responsibility.

In approaching this challenge, we initially evaluated the components of other professional organizations' names, including academy, college, and society among others, and whether the specialist name or professional field was included. We then held focus groups among regional hospitalists, invited feedback from all NAIP members, and solicited leadership feedback from other professional organizations. All of these data were taken into our fall 2002 board meeting in St. Louis.

Prior to the meeting, it was agreed that making a name change would require a supermajority of two-thirds of the 11 voting board members (though only 10 ultimately attended the meeting). Also participating in the discussion were the nonvoting four ex-officio board members and the NAIP CEO. The initial discussion included presentations arguing for Hospital Medicine versus Hospitalist as part of the name. We then discussed and voted on the primary professional component of the name, with "Society" finally being chosen. After further discussion and a series of ballots, we arrived at the name "Society of Hospital Medicine." In the final ballot, 7 out of 10 cast their votes in favor of this finalist, and our organization became The Society of Hospital Medicine. Our abbreviation SHM was to become our logo, which was developed in advance of our 2003 annual meeting.

In the 15 years since, the Society of Hospital Medicine has become well known to our constituents and stakeholders. SHM is recognized for its staunch advocacy, particularly at the federal level, with recent establishment of a Medicare specialty code designation for hospitalists, and support for endeavors such as Project Boost, which focused on patient transitions from hospital discharge to home.[4-6] Hospitalists throughout the United States routinely manage hospitalized patients, and now have their specialty expertise recognized via Focused Practice in Hospital Medicine (Internal Medicine and Family Practice), and future specialty training and certification for pediatric hospitalists.[7,8,9]

The Journal of Hospital Medicine now highlights accomplishments in hospital medicine research and knowledge.[10] Hospitalist leaders frequently are developed through the SHM Leadership Academy,[11] and hospitalists increasingly fill diverse health care responsibilities in education, research, informatics, palliative care, performance improvement, and administration, among many others.

Dr. Dichter is an intensivist and associate professor of medicine at the University of Minnesota Medical Center, Minneapolis.

Of note, SHM membership currently exceeds 17,000 members and now offers membership that includes nurse practitioners, physician assistants, fellows, residents, students, and practice administrators, among others.[12]

These achievements and many more have been driven by the efforts of past and present SHM members and staff, and like-minded professionals and organizations. The name "Society of Hospital Medicine" is highly familiar and well regarded by virtually all our stakeholders and is recognized for its proven leadership in continuing to define our brand, hospital medicine.

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Our interdisciplinary teams feature daily physician oversight, ICU/CCU-level staffing and specially-trained caregivers striving to improve outcomes, reduce costly readmissions and help patients reach their potential.

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Daily Physician Oversight • ICU/CCU-Level Staffing • Reducing Readmissions

Kindred Hospitals
Intensive Caring.