

The hospitalist-led High Value Care team at Mount Sinai Hospital, New York, won the 2019 SHM Teamwork in QI award. (Shared on Twitter by Harry Cho, MD.)



National Hospitalist Day in Pictures

The inaugural National Hospitalist Day was celebrated on Thursday, March 7, 2019. Occurring the first Thursday in March annually, National Hospitalist Day will serve to acknowledge the fastest-growing specialty in modern medicine and hospitalists' enduring contributions to the evolving health care landscape.

National Hospitalist Day was approved by the National Day Calendar and was 1 of approximately 30 national days to be approved for 2019 out of an applicant pool of more than 18,000.

In addition to celebrating hospitalists' contributions to patient care on this date every year, the Society of Hospital Medicine plans to highlight the varied career paths of hospital medicine professionals, from frontline hospitalist physicians, nurse practitioners, and physician assistants to

practice administrators, C-suite executives, and academic hospitalists.

In 2019, SHM also launched the first #HowWeHospitalist social media contest. Nearly 1,000 submissions across all social media platforms exuded pride and passion for hospital medicine. Hospitalists described the contributions they and their colleagues make to improving patient care, what makes them proud to be hospitalists, and how they make a difference in their hospitals and in the lives of their patients.

We have collected a selection of these images shared on a variety of social media platforms. Find more by searching the hashtag #HowWeHospitalist.

Save the date for next year's National Hospitalist Day: March 5, 2020!

For more images of National Hospitalist Day, see p. 16

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HOSPITALIST INSIGHTS

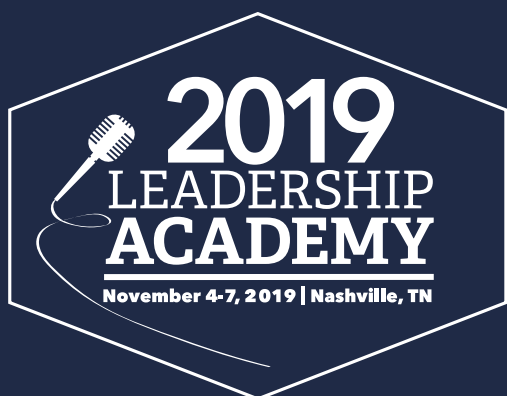
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**The
Hospitalist**

July: An important month for pediatric hospital medicine

National conferences and grassroots initiatives

By **Kris Rehm, MD, SFHM**

Each July, the largest gathering of pediatric hospitalists occurs, and 2019 is no different! This year, hospitalists who care for children will gather at Pediatric Hospital Medicine (PHM) in Seattle from July 25 to 28, with the goal of enhancing participants' knowledge and competence in the areas of innovation, clinical medicine, education, health services, practice management, quality improvement, and research.

Having an opportunity to sit on the board of SHM has allowed me a chance to really appreciate the efforts that this organization invests in all who care for patients in the hospital.

But what makes this year particularly special is the launch of the subspecialty exam for certification in pediatric hospital medicine coming later this fall, solidifying its growth and importance within hospital medicine and the entire health care landscape. The American Board of Pediatrics (ABP) has approved PHM as the newest board subspecialty with a 2-year fellowship accredited by the Accreditation Council for Graduate Medical Education (ACGME). This conference will be a great opportunity to join with others to review competencies for board review, as well as to network with those who

are also navigating the road ahead.

During 2019, the Pediatric Hospitalist Special Interest Group (SIG) of SHM has been working tirelessly on several initiatives, including a revision of the Pediatric Hospital Medicine Core Competencies as well as additional work to develop Choosing Wisely 2.0 recommendations. These will help us ensure we are developing the best curricula for the next generation of pediatric hospitalists, while cutting back on unnecessary tests and procedures for those practicing today. Each of

these initiatives, as well as the July conference, highlights the opportunities that we have within SHM to work with other like-minded providers who care for children. While we partner with all professionals across many organizations, like the American Academy of Pediatrics and the Academic Pediatric Association to name a few, I wanted to share my reflections on SHM and my appreciation for the "big tent" philosophy that has served us so well thus far.

Having an opportunity to sit on the board of SHM has allowed me a chance to really appreciate the efforts that this organization invests

in all who care for patients in the hospital; we have an active group of advanced-practice providers, practice administrators, residents, students, and academic hospitalists, and the list goes on and on. We collaborate with a number of spectacular societies dedicated to medical specialties, and we are always open to new ways of improving the methods of delivering care to patients, in hospitals, post-acute care facilities, homes – you name it! As health care delivery models continue to evolve, I believe we are well positioned to be leaders in the delivery of acute care medicine in the hospital and beyond.

I have also learned of happenings at the grassroots level by attending SHM chapter meetings across the United States. For example, the Hampton Roads Chapter led a great Point-of-Care Ultrasound (POCUS) workshop, and influenced by that, I shared an idea at home in Nashville – borrowing my son as a model to demonstrate ultrasound techniques that hospitalists can use to assist in clinical care. I hope you, as pediatric hospitalists, will see if you have a local chapter and attend a meeting; whether you are a member of SHM or not, you can mingle with those who provide acute care treatments to all your communities and share best practices. If you don't see an SHM chapter close by, let's get one going! SHM is here to help launch a chapter that can help bring your community together and



Dr. Rehm is associate professor, pediatrics, and director, division of pediatric outreach medicine at Vanderbilt University and Monroe Carell Jr. Children's Hospital at Vanderbilt, both in Nashville, Tenn. She is also a member of the SHM board of directors.

provide education and networking closer to home.

If you can't attend PHM in Seattle this year, I hope you will make every effort to be at PHM 2020, where our own SIG leader, Jeffrey Grill, MD, from Louisville, Ky., will be chairing the next rendition of this amazing conference. The SHM Meetings team led by Michelle Kann will be working tirelessly to make it a great event with continued growth in content and attendance.

Hospitalist Movers and Shakers

By **Matt Pesyna**

Christopher Moriates, MD, has been named executive director of the nonprofit health care organization Costs of Care (Boston). He replaces Neel Shah, MD, who was tabbed chairperson of the board.

Dr. Moriates serves a number of roles at the University of Texas at Austin. He is the assistant dean for health care value; associate chair for quality, safety and value; and associate professor of internal medicine.

In his role at Costs of Care, Dr. Moriates will direct an organization that uses feedback and stories from frontline physicians to help health systems provide high-quality care at lower costs.

Kai Mebust, MD, was recently named the new associate chief of medicine at Bassett Hospital (Cooperstown, N.Y.), where he has worked the past 15 years as a hospitalist and internist, serving as chief of hospitalists for the last decade. Dr. Mebust also completed his internship and residency at Bassett, and he is a fellow with the Society of Hospital Medicine.

Dr. Mebust will work closely with Charles Hyman, MD, the center's physician in chief, who is leaving the role at the end of the calendar year. Dr. Mebust will oversee inpatient services and be part of the transition process when Dr. Hyman departs.

Ronak Bhimani, MD, has been appointed chief medical officer at Lower Bucks Hospital (Bristol,

Pa.). Dr. Bhimani moves over from Suburban Community Hospital (Norristown, Pa.), where he served as an academic hospitalist the past 2 years.

Previously, Dr. Bhimani was medical director of Kindred/Avalon Hospice and a core faculty member in the internal medicine program for residents at Suburban Community.

Danielle Prince, MD, was recently named associate medical director at St. Luke's Siouxland PACE (Sioux City, Iowa), an affiliate of UnityPoint Health. Dr. Prince is a practicing hospitalist at UnityPoint Health St. Luke's and served previously in



Dr. Prince

Survey Insights

Dealing with staffing shortfalls

Five options for covering unfilled positions

By Tierza Stephan, MD

Being in stressful situations is part of being a hospitalist. During a hospitalist's work shift, one of the key determinants of stress is adequate staffing. With use of survey data from 569 hospital medicine groups (HMGs) across the nation, one of the topics examined in the 2018 *State of Hospital Medicine Report* is how HMGs cope with unfilled hospitalist physician positions.

The survey presented five options for covering unfilled hospitalist physician positions: using locum tenens, use of moonlighters, having the HMG's existing hospitalists volunteer for extra shifts, requiring extra shifts, and leaving some shifts uncovered. Recipients were instructed to select all options that applied, so totals exceeded 100%. The data are organized according to HMGs that serve adults only, children only, and both adults and children.

For all three types of HMGs, the most common tactic to fill coverage gaps is through voluntary extra shifts by existing clinicians, reportedly used by 70.3% of HMGs that cover adults only, 66.7% by those that cover children only, and 76.9% by those that cover both adults and children. Data for adults-only HMGs were further broken down by geographic region, academic status, teaching status, group size, and employment model. Among adults-only HMGs, there is a direct correlation between group size and having

members voluntarily work extra shifts, with 91.1% of groups with 30 or more full-time equivalent positions employing this tactic.

For HMGs that cover adults only and those that cover children only, the second most common tactic is to use moonlighters (57.4% and 53.3%,



I work with a large HMG that has more than 70 members, and when it has been short-staffed, it tries to ensure a full complement of evening and night staff as the top priority because these shifts are typically more stressful.

respectively), while use of moonlighters is the third most commonly employed surveyed tactic for HMGs that cover both adults and children (53.8%).

HMGs that serve both adults and children were much more likely to utilize locum tenens to cover unfilled positions (69.2%) than were groups that serve adults only (44.0%) or children only (26.7%). The variability in the use of locum ten-

ens is likely because of the willingness and/or ability of the respective groups to afford this option because it is generally the most expensive option of those surveyed.

Requiring that members of the group work extra shifts is the least popular staffing method among adults-only HMGs (10.0%) and HMGs serving both children and adults (7.7%). This strategy is unpopular, especially when there is little advance warning. Surprisingly, 40.0% of HMGs that see children only require members to work extra shifts to cover unfilled slots. This could be because pediatric HMGs are often smaller, and it would be more difficult to absorb the work if the shift is left uncovered. In fact, many pediatric HMGs staff with only one clinician at a time, so there may be no option besides requiring someone else in the group to come in and work.

Of the options surveyed, perhaps the most uncomfortable for those hospitalist physicians on duty is to leave some shifts uncovered. The rapid growth and development of the specialty of hospital medicine has made it difficult for HMGs to continuously hire qualified hospitalists fast enough to meet demand. The survey found 46.2% of HMGs that serve both adults and children and 31.4% of groups that serve adults only have employed the staff-



Dr. Stephan is a hospitalist at Allina Health's Abbott Northwestern Hospital in Minneapolis and is a member of the SHM Practice Analysis Committee.

ing model of going short-staffed for at least some shifts. HMGs serving children only are much less likely to go short-staffed (20.0%).

I work with a large HMG that has more than 70 members, and when it has been short-staffed, it tries to ensure a full complement of evening and night staff as the top priority because these shifts are typically more stressful. Since we have more hospitalist capacity during the day to absorb the loss of a physician, we pull staff from their daytime rounding schedules to execute this strategy. While going short-staffed is not ideal, this option has worked for many groups out of sheer necessity.

as a family physician while working as chief medical informatics officer at Mercy Medical Center (Sioux City).

At Siouxland PACE, Dr. Prince will assist in managing the full-service care of elderly patients, including home health, specialty care, medications, transportation, and other therapies.

Alex Rankin, MD, has been named the new associate chief medical officer for the University of New Mexico Health Transfer Center and Patient Throughput in Albuquerque. A hospitalist with UNMH's Family and Community Medicine department, Dr. Rankin was previously the medical director at the system's 3 North facility since 2014.



Dr. Rankin

Dr. Rankin came to UNMH after working for hospitals in Colorado and Nebraska and is a founding member of the UNMH patient flow committee, striving to improve patient care processes throughout the institution.

Tom Guirkin, MD, has been appointed vice president of medical affairs for Virginia Commonwealth University Community Memorial Hospital (South Hill, Va.). Dr. Guirkin, a Virginia native, returns to his home state after most recently overseeing the hospitalist group at Saint Francis Health System (Tulsa, Okla.).

Dr. Guirkin will have the opportunity to continue practicing medicine at CMH while helping to manage the quality management side of the business. He received his MBA from Virginia Commonwealth, working for James River Hospitalist Group in Richmond at the same time.

Alteon Health (Germantown, Md.) has become the manager of hospitalist services for three facilities in Maryland and Ohio, including Carroll Hospital (Westminster, Md.), Washington Adventist Hospital (Takoma Park, Md.), and University Hospitals Cleveland Medical Center.

At Carroll, Alteon physicians will provide critical care services in addition to hospitalist duties. Alteon has been Carroll's emergency medicine provider for more than two decades.

At Washington Adventist, Alteon will take over the hospitalist program, adding to the emergency medicine services it has provided since 1991 and critical care services it has managed since 1996.

At UH Cleveland, Alteon will assume hospitalist management at its third University Hospitals facility. Alteon controls emergency medicine at 14 UH locations as well. UH Cleveland is an affiliate of Case Western Reserve University.

The Future Hospitalist

Becoming a high-value care physician

‘Culture shift’ comes from collective efforts

By Mary Lacy, MD, and Celine Goetz, MD

It's Monday morning, and Mrs. Jones still has abdominal pain. Your ward team decides to order a CT. On chart review you notice she's had three other abdominal CTs for the same indication this year. How did this happen? What should you do?

High-value care has been defined by the Institute of Medicine as “the best care for the patient, with the optimal result for the circumstances, delivered at the right price.”¹ With an estimated \$700 billion dollars – 30% of medical expenditures – spent on wasted care, there are rising calls for a transformational shift.²

You are now asked to consider not just everything you can do for a patient, but also the benefits, harms, and costs associated with those choices. But where to start? We recommend that trainees integrate these tips for high-value care into their routine practice.

1 Use evidence-based resources that highlight value

A great place to begin is the “Six Things Medical Students and Trainees Should Question,” originally published in *Academic Medicine* and created by Choosing Wisely Canada™. Recommendations range from avoiding tests or treatments that will not change a patient's clinical course to holding off on ordering tests solely based on what you assume your preceptor will want (see the full list in Table 1).³

Table 1

Six Things Medical Students and Trainees Should Question

1. Don't suggest ordering the most invasive test or treatment before considering other less invasive options.
2. Don't suggest a test, treatment, or procedure that will not change the patient's clinical course.
3. Don't miss the opportunity to initiate conversations with patients about whether a test, treatment or procedure is necessary.
4. Don't hesitate to ask for clarification on tests, treatments, or procedures that you believe are unnecessary.
5. Don't suggest ordering tests or performing procedures for the sole purpose of gaining personal clinical experience.
6. Don't suggest ordering tests or treatments pre-emptively for the sole purpose of anticipating what your supervisor would want.

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Other ways to avoid low-value care include following the United States Choosing Wisely™ campaign, which has collected more than 500 specialty society recommendations. Likewise, the American College of Radiology Appropriateness Criteria are designed to assist providers with ordering the appropriate imaging tests (for a more extensive list see Table 2).

2 Express your clinical reasoning

One driver of health care expenditures that is especially prevalent in academia is the pressure to demonstrate knowledge by recommending extensive testing. While these tests may rule out obscure diagnoses, they often do not change management.

You can still demonstrate a mastery of your patients' care by expressing your thought process overtly. For instance, “I considered secondary causes of the patient's severe hypertension but felt it was most reasonable to first treat her pain and restart her home medications before pursuing a larger work-up. If the patient's blood pressure remains elevated and she is hypokalemic, we could consider testing for hyperaldosteronism.” If you explain why you think a diagnosis is less likely and order tests accordingly, others will be encouraged to consider value in their own medical decision making.

3 Hone your communication skills

One of the most cited reasons for providing unnecessary care is the

time required to discuss treatment plans with patients – it's much faster to just order the test than to explain why it isn't needed. Research, however, shows that these cost conversations take 68 seconds on average.⁴ Costs of Care (see Table 2) has an excellent video series that highlights how effective communication allows for shared decision making, which both promotes patient engagement and helps avoid wasteful care.

Physicians' first instincts are often defensive when a patient asks for care we perceive as unnecessary. However, exploring what the patient hopes to gain from said test or treatment frequently reveals concern for a specific, missed diagnosis or complication. Addressing this underlying fear, rather than defending your ordering patterns, can create improved rapport and may serve to provide more reassurance than a test ever could.⁵

As a physician-in-training, try to observe others having these conversations and take every opportunity to practice. By focusing on this key skill set, you will increase your comfort with in-depth discussions on the value of care.

4 Get involved in a project related to high-value care

While you are developing your own practice patterns, you may be inspired to tackle areas of overuse and underuse at a more systemwide level. If your hospital does not have a committee for high-value care, perhaps a quality improvement leader can support your ideas to launch a project or participate in an ongoing initiative. Physicians-in-training have been identified as crucial to these projects' success – your front-line insight can highlight potential problems and the nuances of workflow that are key to effective solutions.⁶

5 Embrace lifelong learning and reflection

The process of becoming a physician and of practicing high-value care is not a sprint but a marathon. Multiple barriers to high-value care exist, and you may feel these pressures differently at various points in your career. These include malpractice concerns, addressing patient expect-



Dr. Lacy is assistant professor and associate clerkship director at the University of New Mexico, Albuquerque, as well as division director of high-value care for the division of hospital medicine. Dr. Goetz is assistant professor at Rush University Medical Center, Chicago. They met as 2015 Coppello Fellows at the National Physician Alliance. Both have been involved in numerous high-value care initiatives, curricular development, and medical education at their respective institutions.

tations, and the desire to take action “just to be safe.”⁶

Interestingly, fear of malpractice does not seem to dissipate in areas where tort reform has provided stronger provider protections.⁷ Practitioners may also inaccurately assume a patient's desire for additional work-up or treatment.⁸ Furthermore, be aware of the role of “commission bias” by which a provider regrets not doing something that could have helped a previous patient. This regret can prove to be a stronger motivator than the po-

tential harm related to unnecessary diagnostic tests or treatments.⁹

While these barriers cannot be removed easily, learners and providers can practice active reflection by examining their own fears, biases, and motivations before and after they order additional testing or treatment.

As a physician-in-training, you may feel that your decisions do not have a major impact on the health care system as a whole. However, the culture shift needed to “bend the cost curve” will come from the collective efforts of individuals like you. Practicing high-value care is not just a matter of ordering fewer tests – appropriate ordering of an expensive test that expedites a diagnosis may be more cost effective and enhance the quality of care provided. Increasing your own awareness of both necessary and unnecessary practices is a major step toward realizing system change. Your efforts to resist and reform the medical culture that propagates low-value care will encourage your colleagues to follow suit.

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Table 2

| High Value Care Resources | |
|---|---|
| Resource: | What it offers: |
| Choosing Wisely™ and Choosing Wisely Canada™ | Highlights low value care identified by various professional societies. All recommendations are best on the best available evidence and many of them also have patient pamphlets to help guide discussions with patients. |
| American College of Radiology Appropriateness Criteria® | Evidence-based guidelines intended to assist ordering providers on the most appropriate imaging for a specific clinical scenario (i.e. early acute pancreatitis). Also includes relative radiation level of given imaging options. |
| ACP/AAIM High Value Care Curriculum | Six-hour curriculum with robust facilitator toolkits targeted towards education of internal medicine residents |
| Dell Medical School Interactive Learning Modules (www.vbhc.dellmed.utexas.edu) | Three freely available interactive online learning modules designed to help introduce learners to value-based health care. |
| Journal of Hospital Medicine series: <i>Choosing Wisely: Things We Do for No Reason</i> | Based on a series of talks by Dr. Leonard Feldman delivered at the Society of Hospital Medicine annual meetings. This series appears in the print issues of the Journal of Hospital Medicine and covers various low value practices. |
| JAMA Internal Medicine series: Teachable Moment | Trainee-written series to bring attention to harms that can result from overuse and underuse based on real patient encounters. |
| Healthcare Bluebook™ | Resource to find price estimates for procedures or testing based on geographic location. The Fair Price listing is the out-of-pocket reasonable price you should expect your patients to pay based on geographic trends, not necessarily the the price your patient will pay. |
| The NNT www.thennt.com | This website provides a quick review of some statistics that can help you make high value treatment options: Likelihood Ratios (LRs) and Number Needed to Treat (NNT). They also review various articles to extract the LR or NNT of a given exam maneuver, test, or treatment. |
| Costs of Care (www.costsofcare.org) | Various resources for advocacy and education about high value care. Of particular use is the Value Conversations Modules where there are recommendations and examples to help you lead conversations with patients and other clinicians. |

Rivaroxaban tied to higher GI bleeding than other NOACs

Real-world studies have been limited

By Doug Brunk

MDedge News

REPORTING FROM DDW 2019 / SAN DIEGO / Patients on rivaroxaban had significantly higher rates of GI bleeding, compared with those taking apixaban or dabigatran, results from a large population-based study showed.

“This may be due to the fact that rivaroxaban is administered as a single daily dose as opposed to the other two non-vitamin K anticoagulants, which are given twice daily,” lead study author Arnar B. Ingason said at the annual Digestive Disease Week. “This may lead to a greater variance in plasma drug concentration, making these patients more susceptible to bleeding.”

Mr. Ingason, a medical student at the University of Iceland, Reykjavik, said that, although several studies have compared warfarin with novel oral anticoagulants (NOACs), it remains unclear which NOAC has the most favorable GI profile. In an effort to improve the research in this area, he and his associates performed a nationwide, population-based study during March 2014–January 2018 to compare the GI bleeding risk of patients receiving rivaroxaban to that of a combined pool of patients receiving either apixaban or dabigatran. They drew from the Icelandic Medicine Registry, which contains all outpatient drug prescriptions in the country. Next, the researchers linked the personal identification numbers of patients to the Landspítali University diagnoses registry, which includes more than 90% of all patients

hospitalized for GI bleeding. They used 1:1 nearest neighbor propensity score for matching and Kaplan-Meier survival estimates and Cox regression to compare rates of GI bleeding. The study outcome of interest was any clinically relevant GI bleeding.

Mr. Ingason reported that the baseline characteristics were similar between the rivaroxaban group and the apixaban/dabigatran group. They matched for several variables, including age, sex, Charlson score, the proportion being anticoagulant naive, moderate to severe renal disease, moderate to severe liver disease, any prior bleeding, and any prior thrombotic events.

During the study period, 3,473 patients received rivaroxaban, 1,901 received apixaban, and 1,086 received dabigatran. After propensity score matching, the researchers compared 2,635 patients who received rivaroxaban with 2,365 patients who received either apixaban or dabigatran. They found that patients in the rivaroxaban group had significantly higher rates of GI bleeding, compared with in the apixaban/dabigatran group (1.2 and 0.6 events per 100 patient-years, respectively). This yielded a hazard ratio of 2.02, “which means that patients receiving rivaroxaban are twice as likely to get GI bleeding compared to patients on apixaban or dabigatran,” Mr. Ingason said. When the researchers examined the entire unmatched cohort of patients, the rivaroxaban group also had significantly higher rates of GI bleeding, compared with the apixaban/dabigatran group (1.0 and 0.6 events per 100 patient-years; HR, 1.75).

Mr. Ingason and his colleagues observed that



Mr. Ingason

patients in the rivaroxaban group had higher rates of GI bleeding, compared with the apixaban/dabigatran group, during the entire follow-up period. At the end of year 4, the rivaroxaban group had a 4% cumulative event rate of GI bleeding, compared with 1.8% for the apixaban/dabigatran group, a highly significant difference at $P = .0057$.

When a meeting attendee asked Mr. Ingason why patients taking apixaban or dabigatran were combined into one group, he said that it was done to increase the power of their study. “Our theory was that rivaroxaban was different because it is administered as a single daily dose, while the others are given twice daily,” he said. The researchers reported having no financial disclosures.

Recertification: The FPHM option

ABIM now offers increased flexibility

By Darlene Tad-y, MD

Everyone always told me that my time in residency would fly by, and the 3 years of internal medicine training really did seem to pass in just a few moments. Before I knew it, I had passed my internal medicine boards and practiced hospital medicine at an academic medical center.

One day last fall, I received notice from the American Board of Internal Medicine that it was time to recertify. I was surprised – had it already been 10 years? What did I have to do to maintain my certification?

As I investigated what it would take to maintain certification, I discovered that the recertification process provided more flexibility, compared with original board certification. I now had the option to recertify in internal medicine with a Focused Practice in Hospital Medicine (FPHM). Beginning in 2014, ABIM offered hospitalists, or internists whose clinical practice is mainly in the inpatient setting, the

option to recertify in internal medicine, but with the designation that highlighted their clinical practice in the inpatient setting.

The first step in recertification for me was deciding to recertify with the focus in hospital medicine or maintain the traditional internal medicine certification. I talked with several colleagues who are also practicing hospitalists and weighed their reasons for opting for FPHM. Ultimately, my decision to pursue a recertification with a focus in hospital medicine relied on three factors: First, my clinical practice since completing residency was exclusively in the inpatient setting. Day in and day out, I care for patients who are acutely ill and require inpatient medical care. Second, I wanted my board certification to reflect what I consider to be my area of clinical expertise, which is inpatient adult medicine. Pursuing the FPHM would provide that recognition. Finally, I wanted to study and be tested on topics that I could utilize in my day-to-day practice. Because I exclusively practiced



Dr. Tad-y

hospital medicine since graduation, areas of clinical internal medicine that I did not frequently encounter in my daily practice became less accessible in my knowledge base.

The next step then was to enter the FPHM Maintenance of Certification (MOC) program.

The ABIM requires two attestations to verify that I met the requirements to be a hospitalist. First was a self-attestation confirming at least 3 years of unsupervised inpatient care practice experience, and meeting patient encounter thresholds in the inpatient setting. The second attestation was from a “Senior Hospital Officer” confirming the information in the self-attestation was accurate.

Once entered into the program with an unrestricted medical license to practice, I had to complete the remaining requirements of earning MOC points, and passing a knowledge-based assessment. I had to accumulate 100 MOC points in the past 5 years, which I did through participating in QI projects, recording CME credits, studying for the exam, and even taking the exam. I tracked my point totals through the ABIM Physician Portal, which updated my tally automatically for activities that counted toward MOC, such as attending SHM’s Annual Conference.

The final component was to pass the knowledge assessment, the dreaded exam. In 2018, I had the option to take the 10-year FPHM exam or do a general internal medicine Knowledge Check-In. Beginning in 2020, candidates will be able to sit for either the 10-year FPHM exam or begin the Hospital Medicine Knowledge Check-In pathway. I had already decided to pursue FPHM and began to prepare to sit for an exam.

I scheduled my exam through the ABIM portal at a local testing center.

The full-day exam consists of four sections broken up by lunch and section breaks. Specifically, the 220 single best answer, multiple-choice exam covered diagnosis, testing, treatment decisions, epidemiology, and basic science content through patient scenarios that reflected the scope of practice of a hospitalist.

The ABIM provided an exam blueprint that detailed the specific clinical topics and the likelihood that a question pertaining to that topic would show up on the exam. Content was described as high, medium, or low importance and the number of questions related to the content was 75% for high importance, no more than 25% for medium importance, and no questions for low-importance content. In addition, content was distributed in a way that was reflective of my clinical practice as a hospitalist: 63.5% inpatient and traditional care; 6.5% palliative care; 15% consultative comanagement; and 15% quality, safety, and clinical reasoning.

Beginning 6 months prior to my scheduled exam, I purchased two critical resources to guide my studying efforts: the SHM Spark Self-Assessment Tool and the American College of Physicians Medical Knowledge Self-Assessment Program to review subject matter content and also do practice questions.

The latest version of SHM’s program, Spark Edition 2, provides updated questions and resources tailored to the hospital medicine exams. I appreciated the ability to answer questions online, as well as on my phone. Moreover, I was able to track which content areas were stronger or weaker for me, and focus attention on areas that needed more work. Importantly, the questions I answered using the Spark self-assessment tool closely aligned with the subject matter I encountered in the exam, as well as the clinical cases I encounter every day in my practice.

While the day-long exam was challenging, I was gratified to receive notice that I had successfully recertified in internal medicine with a Focused Practice in Hospital Medicine!

Dr. Tad-y is a hospitalist at the University of Colorado at Denver, Aurora, and associate vice chair of quality in the department of medicine at the University of Colorado.

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When do I stop the code?

A hospitalist's dilemma

By **Bibhusan Basnet, MD**

I had just received my sign-out for the day. My pager beeped, and I heard it overhead “Code Blue Room X.” Hospitalist physicians lead the code team in our hospital; I quickly headed to the room.

A young man in his forties was found to be unconscious on the floor. One of the nurses had started cardiopulmonary resuscitation (CPR) as the patient was unconscious and had no palpable pulse. It was a long, drawn-out battle: CPR, cracking bones, shouting, lots of needles – an extreme roller coaster-style situation. The patient had recently had a hip surgery and our suspicion was a massive pulmonary embolism. We ran the exhaustive code for more than an hour and then I started to debrief with my code team; discussed that treatment was getting futile and asked for opinions. Finally, I asked the team to stop and pronounced the patient dead. I felt terrible. Later that day I returned to my house, tossed my bag in the corner, and sympathized with myself – “Hello Dr. B, It was a tough one.”

Stopping resuscitation was one of the toughest decisions I had ever made, and I wondered if I would be able to make such a decision the next day. What if I had carried on? I had led code teams during my residency training and as an attending physician; but there was something different that day. This patient was a young man with no history of medical problems. Every physician knows how to initiate resuscitation for cardiopulmonary arrest (CPA); only a few know when to stop it. Did I miss this learning during my internal medicine training? I checked my red pocket leaflet with advanced cardiac life support (ACLS) algorithms, and it had no mention of it. I searched Google Scholar, PubMed, and UpToDate and surprisingly, I found no predetermined rule but only a few recommendations on when CPR should be stopped. The American Heart Association is clear that the decision to terminate resuscitative efforts rests with the treating physician in the hospital.

In my experience, the length of time to continue a code can vary widely and is mostly dependent on the physician running the code. I have seen it last 15 minutes (which

is reasonable) and I have seen it last for 50 minutes when the initial rhythm was ventricular fibrillation. And if perhaps the patient regains a pulse temporarily, only to lose it again, we restart the clock. One needs to take into account various factors including time to CPR, time to defibrillation, comorbid disease, prearrest state, and initial arrest rhythm in making these decisions. It's well understood that none of these factors alone or in combination is clearly predictive of outcome.¹

Some selected patients potentially have good outcomes with prolonged, aggressive resuscitation. So when should we stop, and when should we continue resuscitation? This is always challenging. Physicians hate to stop CPR even when they know it's time. We are guided by the Hippocratic Oath to save lives. Sometimes, even if we want to stop, we tend to continue to avoid being criticized for stopping; we are systematically biased against stopping CPR. We routinely run long codes, in part because we are not sure which patients we can bring back.

A 2012 Lancet study highlighted that the median duration of resuscitation was 12 minutes for patients achieving the return of spontaneous circulation and 20 minutes for non-survivors.² The ethical guidelines issued by AHA in 2018 highlight that, in the absence of mitigating factors, prolonged resuscitative efforts for adults and children are unlikely to be successful and can be discontinued if there is no return of spontaneous circulation at any time during 30 minutes of cumulative ACLS. If the return of spontaneous circulation of any duration occurs at any time, however, it may be appropriate to consider extending the resuscitative effort.³

I believe a careful balance of the patient's prognosis for both length of life and quality of life will determine whether continued CPR is appropriate. The responsible clinician should stop the resuscitative effort when he or she determines with a high degree of certainty that the arrest victim will not respond to further efforts. But what will help me guide my decisions next time if I ever come across this situation again?

I discussed my dilemma with one of our intensivists; he

expressed that in a similar scenario he would ask for opinions from other members of the code team. The role of good communication among code team members is necessary to exchange relevant knowledge in real time in a collaborative, nonhierarchical environment. The code team can provide the team leader with quick, accurate information about the patient's clinical history that is critical to good decision making.

Family support is also an essential part of any resuscitation. Health care providers need to offer the opportunity to be present to family members during the resuscitation attempts whenever possible. One team member should be assigned to the family to answer questions, clarify information, and offer comfort, but physicians should not be asking family members to decide to stop the code. It is important to note that the decision should be made by the team leader and not the patient's family members. Regardless of the age or condition of the patient, the loss of a loved one is difficult to deal with, even if expected. The issue becomes more difficult with changes in legal, cultural, or personal perspectives.

The AHA in 2018 stated that the treating physician is expected to understand the patient and the arrest features, and the system factors that have prognostic importance for resuscitation.³ For clinicians who work in critical care settings, the framework presented by AHA is intuitive. As a code leader, I can always give more epinephrine, try a clot-busting drug, or deliver another shock. Situations vary greatly during a code, and the amount of time spent resuscitating a patient before terminating efforts is not set in stone. In many cases, it is a judgment call. The process of CPR is almost as disheartening as its bleak outcomes.

In-hospital CPAs are inevitably gruesome. Each day as an attending physician, we are faced with difficult decisions, but experiencing these incredibly difficult and life-changing events can make for good learning. A CPA situation in action is very difficult for all concerned, particularly when there is almost no chance of success. But an unsuccessful or aborted resuscitation is also a huge loss for both the family and the code team. One of the critical functions of the code



Dr. Basnet is a hospitalist physician in the department of internal medicine at Eastern New Mexico Medical Center, Roswell.

Regardless of the age or condition of the patient, the loss of a loved one is difficult to deal with, even if expected. The issue becomes more difficult with changes in legal, cultural, or personal perspectives.

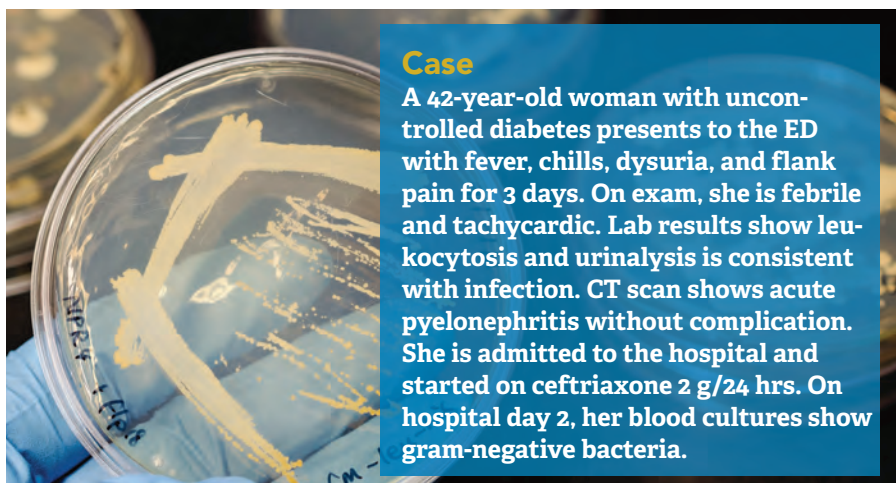
team leader is to review the events of a code and exercise judgment while evaluating the length of a code. This can be an intense and emotional experience, but with these principles in mind, we can feel reassured that we are making the best decision possible, for the patient, the family, and our team.

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Gram-negative bacteremia: Are we doing it right?

By Jacob G. Imber, MD; Sarah J. Burns, MD; Krystal Chan, MD



Case

A 42-year-old woman with uncontrolled diabetes presents to the ED with fever, chills, dysuria, and flank pain for 3 days. On exam, she is febrile and tachycardic. Lab results show leukocytosis and urinalysis is consistent with infection. CT scan shows acute pyelonephritis without complication. She is admitted to the hospital and started on ceftriaxone 2 g/24 hrs. On hospital day 2, her blood cultures show gram-negative bacteria.



Dr. Imber is an assistant professor in the division of hospital medicine at the University of New Mexico, Albuquerque, and director of the Internal Medicine Simulation Education and Hospitalist Procedural Certification. Dr. Burns is an assistant professor in the division of hospital medicine at the University of New Mexico. Dr. Chan is currently a chief resident in the department of internal medicine at the University of New Mexico.

Brief overview

Management of gram-negative (GN) bacteremia remains a challenging clinical situation for inpatient providers. With the push for high-value care and reductions in length of stay, recent literature has focused on reviewing current practices and attempting to standardize care. Despite this, no overarching guidelines exist to direct practice and clinicians are left to make decisions based on prior experience and expert opinion. Three key clinical questions exist when caring for a hospitalized patient with GN bacteremia: Should blood cultures be repeated? When is transition to oral antibiotics appropriate? And for what duration should antibiotics be given?

Overview of the data

When considering repeating blood cultures, it is important to understand that current literature does not support the practice for all GN bacteremias.

Canzoneri et al. retrospectively studied GN bacteremia and found that it took 17 repeat blood cultures being drawn to yield 1 positive result, which suggests that they are not necessary in all cases.¹ Furthermore, repeat blood cultures increase cost of hospitalization, length of stay, and inconvenience to patients.²

However, Mushtaq et al. noted that repeating blood cultures can provide valuable information to confirm the response to treatment in patients with endovascular infection. Furthermore, they found that repeated blood cultures are also reasonable when the following scenarios are suspected: endocarditis or central line-associated infection, concern for multidrug resistant GN bacilli, and ongoing evidence of sepsis or patient decompensation.³

Consideration of a transition from intravenous to oral antibiotics is a key decision point in the care of GN bacteremia. Without guidelines, clinicians are left to evaluate patients on a case-by-case basis.⁴ Studies have suggested that the transition should be guided by the condition of the patient, the type of infection, and the culture-derived sensitivities.⁵ Additionally, bioavailability of antibiotics (see Table 1) is an important consideration and a recent examination of oral antibiotic failure rates demonstrated that lower

bioavailability antibiotics have an increased risk of failure (2% vs. 16%).⁶

In their study, Kutob et al. highlighted the importance of choosing not only an antibiotic of high bioavailability, but also an antibiotic dose which will support a high concentration of the antibiotic in the bloodstream.⁶ For example, they identify ciprofloxacin as a moderate bioavailability medication, but note that most cases they examined utilized 500 mg b.i.d., where the concentration-dependent killing and dose-dependent bioavailability would advocate for the use of 750 mg b.i.d. or 500 mg every 8 hours.

The heterogeneity of GN bloodstream infections also creates difficulty in standardization of care. The literature suggests that infection source plays a significant role in the type of GN bacteria isolated.^{6,7} The best data for the transition to oral antibiotics exists with urologic sources and it remains unclear whether bacteria from other sources have higher risks of oral antibiotic failure.⁸

One recent study of 66 patients examined bacteremia in the setting of cholangitis and found that, once patients had stabilized, a switch from intravenous to oral antibiotics was noninferior, but randomized, prospective trials have not been performed. Notably, patients were transitioned to orals only after they were found to have a fluoroquinolone-sensitive infection, allowing the study authors to use higher-bioavailability agents for the transition to orals.⁹ Multiple studies have highlighted the unique care required for certain infections, such as pseudomonal infections, which most experts agree requires a more conservative approach.^{5,6}

Fluoroquinolones are the bedrock of therapy for GN bacteremia because of historic in vivo experience and in vitro findings about bioavailability and dose-dependent killing, but they are also the antibiotic class associated with the highest hospitalization rates for antibiotic-associated adverse events.⁸ A recent noninferiority trial comparing the use of beta-lactams with fluoroquinolones found that beta-lactams were noninferior, though the study was flawed by the limited number of beta-lactam-using patients identified.⁸ It is clear that more investigation is needed before recommendations can be made regarding ideal oral antibiotics for GN bacteremia.

The transition to oral is reasonable given the following criteria: the patient has improved on intravenous antibiotics and source control has been achieved; the culture data have demonstrated sensitivity to the oral antibiotic of choice, with special care given to higher-risk bacteria such as *Pseudomonas*; the patient is able to take the oral antibiotic; and the oral antibiotic of choice has the highest bioavailability possible and is given at an appropriate dose to reach its highest killing and bioavailability concentrations.⁷

After evaluating the appropriateness of transition to oral antibiotics, the final decision is about duration of antibiotic therapy. Current Infectious Disease Society of America guidelines are based on expert opinion and recommend 7-14 days of therapy. As with many common infections, recent studies have focused on evaluating reduction in antibiotic durations.

Chotiprasitsakul et al. demonstrated no difference in mortality or morbidity in 385 propensity-matched pairs with treatment of *Enterobacteriaceae* bacteremia for 8 versus 15 days.¹⁰ A mixed meta-analysis performed in 2011 evaluated 24 randomized, controlled trials and found shorter durations (5-7 days) had similar outcomes to prolonged durations (7-21 days).¹¹ Recently, Yahav et al. performed a randomized control trial comparing 7- and 14-day regimens for uncomplicated GN bacteremia and found a 7-day course to be noninferior if patients were clinically stable by day 5 and had source control.¹²

It should be noted that not all studies have found that reduced durations are without harm. Nelson et al. performed a retrospective cohort analysis and found that reduced durations of antibiotics (7-10 days) increased mortality and recurrent infection when compared with a longer course (greater than 10 days).¹³ These contrary findings highlight the need for provider discretion in selecting a course of antibiotics as well as the need for further studies about optimal duration of antibiotics.

Application of the data

Returning to our case, on day 3, the patient's fever had resolved and leukocytosis improved. In the absence of concern for persistent infection,

TABLE 1. Penetration of Select Oral Antimicrobials to Tissue Sites

| Antimicrobial | Bloodstream Bioavailability | Lung | Liver | Urinary Tract | Prostate | Bone | GI | Skin | Bile | CSF | Synovial |
|-------------------------------|-----------------------------|------|-------|---------------|----------|------|-----|------|------|-----|----------|
| Ciprofloxacin | 70% | ++ | +++ | +++ | +++ | +++ | +++ | +++ | +++ | + | +++ |
| Levofloxacin | 99% | +++ | +++ | +++ | +++ | +++ | +++ | +++ | +++ | + | +++ |
| Moxifloxacin | 90% | +++ | +++ | +++ | +++ | +++ | +++ | +++ | +++ | + | +++ |
| Trimethoprim-Sulfamethoxazole | 90% | ++ | ++ | +++ | ++ | ++ | ++ | +++ | ++ | + | ++ |
| Doxycycline | 95% | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | + | ++ |
| Minocycline | 95% | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | + | ++ |
| Linezolid | 99% | +++ | ++ | +++ | ++ | ++ | ++ | +++ | ++ | ++ | ++ |
| Metronidazole | 90% | ++ | +++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| Clindamycin | 90% | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | + | ++ |
| Ampicillin | 50% | + | ++ | ++ | + | ++ | ++ | ++ | ++ | ++ | + |
| Penicillin V | 50% | ++ | ++ | ++ | + | ++ | ++ | ++ | ++ | ++ | + |
| Amoxicillin | 85% | + | ++ | ++ | + | ++ | ++ | ++ | ++ | ++ | + |
| Cephalexin | 60% | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | + | ++ |

+++ Tissue concentrations equal to or higher than serum concentrations

++ Tissue concentrations at least 50% of the serum concentrations

+ Tissue concentrations less than 50% of the serum concentrations

Bioavailability represents the percentage of the dose that reaches systemic circulation. Tissue penetration reflects the drug movement from the vascular to the interstitial and intracellular compartments of a particular body site. Drugs passively diffuse through fenestrated capillaries into the interstitial compartment of most tissues. However, some tissue sites (eg, the brain and prostate) contain nonfenestrated capillaries and/or active transport pumps that prevent entry or remove the drug. Tissue concentrations are methodologically dependent on the various techniques used in their quantification, and, in some body sites, are influenced by the presence or absence of inflammation (eg, brain tissue). Thus, the values presented here are best approximations.

repeat blood cultures were not performed. On day 4 initial blood cultures showed pan-sensitive *Escherichia coli*. The patient was transitioned to 750 mg oral ciprofloxacin b.i.d. to complete a 10-day course from first dose of ceftriaxone and was discharged from the hospital.

Bottom line

Management of GN bacteremia requires individualized care based on clinical presentation, but the data presented above can be used as broad guidelines to help reduce excess blood cultures, avoid prolonged use of intravenous antibiotics, and limit the duration of antibiotic exposure.

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The University of Mississippi Medical Center, Jackson, celebrated its hospitalists on National Hospitalist Day, including our board member Raman Palabindala, MD, SFHM, "for their achievements in research, education, quality improvement & patient care."



John B. Romond, MD, hospitalist and assistant professor at the University of Kentucky, Lexington, celebrated National Hospitalist Day with his colleagues.



Nina Lum, MD, a hospitalist and chief quality officer at CHI Saint Joseph London (Ky.) said that "Being a hospitalist facilitated my transition into becoming the Chief Quality Officer. Hospital medicine allowed me to grow into this hospital/physician leader."



The team of onco-hospitalists at the University of Texas MD Anderson Cancer Center in Houston celebrating National Hospitalist Day. (Shared on Twitter by Josiah K. Halm, MD, MS, FACP, FHM, CMQ, section chief, Hospital Medicine, at MD Anderson.)




Vinny Arora, MD, MAPP, MHM, shared images on Twitter of some of her University of Chicago hospitalist colleagues acknowledging National Hospitalist Day.

I love being a hospitalist at U-M because I can be there for the most complex patients at their greatest time of need.

- Vineet Chopra, MD, MSc,
Chief, Division of Hospital Medicine

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#HowWeHospitalist



Michigan Medicine celebrated its hospitalists in a series of social media posts, like this one: "Twenty years ago, we hired our first #hospitalist. Today, we have 112 of them."



Rush Hospital Medicine in Chicago tweeted "Celebrating the 1st ever national #hospitalist day at Journal Club today. Thank you to all of our fabulous hospitalists for your hard work and dedication! #HowWeHospitalist"



In celebration of National Hospitalist Day, the Division of Hospital Medicine at Cincinnati Children's Hospital brought a coffee bar to their weekly division meeting.



Sarah Marsicek, MD, a pediatric hospitalist at Johns Hopkins All Childrens Hospital in St. Petersburg, Fla., tweeted "Happy National Hospitalist Day! Honored to be training with some of the best."



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Clinician reviews of HM-centric research

By Rami Abdo, MD; Aparna Kamath, MD, MS, SFHM; Yasmin Marcantonio, MD, MPH; Shree Menon, DO, MPH; Danielle Richardson, MD, MPH; Poonam Sharma, MD, SFHM; Neil Stafford, MD; Adam Wachter, MD

Division of Hospital Medicine, Duke University Health System, Durham, N.C.

IN THIS ISSUE

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8. Aspirin and warfarin together leads to increased bleeding without reducing thrombotic events

By Rami Abdo, MD

1 Early or delayed cardioversion in recent-onset atrial fibrillation

CLINICAL QUESTION: Is immediate restoration of sinus rhythm necessary in early-onset symptomatic atrial fibrillation (AFib)?

BACKGROUND: Often atrial fibrillation terminates spontaneously and occasionally recurs; therefore, the advantage of immediate electric or pharmacologic cardioversion over watchful waiting and subsequent delayed cardioversion is not clear.

STUDY DESIGN: Multicenter, randomized, open-label, noninferiority trial.

SETTING: 15 hospitals in the Netherlands (3 academic, 8 nonacademic teaching, and 4 nonteaching).

SYNOPSIS: Randomizing 437 patients with early-onset (less than 36 hours) symptomatic AFib presenting to 15 hospitals, the authors showed that, at 4 weeks' follow-up, a similar number of patients remained in sinus rhythm whether they were assigned to an immediate cardioversion strategy or to a delayed one where rate control was attempted first and cardioversion was done if patients remained in fibrillation after 48 hours. Specifically the presence of sinus rhythm occurred in 94% in the early cardioversion group and in 91% of the delayed one (95% confidence interval, -8.2 to 2.2; $P = .005$ for noninferiority). Both groups received anticoagulation per current standards.

This was a noninferiority, open-la-

bel study that was not powered enough to study harm between the two strategies. It showed a 30% incidence of recurrence of AFib regardless of study assignment. Hospitalists should not feel pressured to initiate early cardioversion for new-onset AFib. Rate control, anticoagulation (if applicable), prompt follow-up, and early discharge (even from the ED) seem to be a safe and practical approach.



Dr. Abdo

BOTTOM LINE:

In patients presenting with symptomatic recent-onset AFib, delayed cardioversion in a wait-and-see approach was noninferior to early cardioversion in achieving sinus rhythm at 4 weeks' follow-up.

CITATION: Pluymaekers NA et al. Early or delayed cardioversion in recent-onset atrial fibrillation. *N Engl J Med.* 2019 Apr 18;380(16):1499-508.

Dr. Abdo is a hospitalist at Duke University Health System.

By Aparna Kamath, MD, MS, SFHM

2 Short medication regimen noninferior to long regimen for rifampin-resistant TB

CLINICAL QUESTION: Can a randomized trial reproduce results of observational cohort studies for treating rifampin-resistant tuberculosis (TB) with a shorter medication regimen compared to the WHO-

recommended traditional long regimen?

BACKGROUND: Multidrug-resistant TB is more difficult to treat than is drug-susceptible TB. The 2011 World Health Organization (WHO) recommendations for the treatment of multidrug-resistant TB, based on very-low-quality and conditional evidence, consists of an intensive treatment phase of 8 months and total treatment duration of 20 months. Although cohort studies have shown promising cure rates among patients with multidrug-resistant TB who received existing drugs in regimens shorter than that recommended by the WHO, data from phase 3 randomized trials were lacking.

STUDY DESIGN: Randomized phase 3 noninferior trial.

SETTING: Multisite, international; countries were selected based on background disease burden of TB, multidrug-resistant TB, and TB-HIV coinfection (Ethiopia, Mongolia, South Africa, Vietnam).

SYNOPSIS: 424 patients were randomized to the short and long medication regimen groups with 369 included in the modified intention-to-treat analysis and 310 included in the final per protocol efficacy analysis. The short regimen included IV moxifloxacin, clofazimine, ethambutol, and pyrazinamide administered over a 40-week period, supplemented by kanamycin, isoniazid, and prothionamide in the first 16 weeks, compared with 8 months of intense treatment and total 20 months of treatment in the long regimen. At 132 weeks after randomization, cultures were negative for *Mycobacterium tuberculosis* in more than 78% patients in both long- and short-regimen group. Unfavorable bacteriologic outcome (10.6%), cardiac conduction defects (9.9%), and hepatobiliary problems (8.9%) were more common in the short-regimen group whereas patients in long-regimen group were lost to follow-up more frequently (2.4%) and had more metabolic disorders (7.1%). More deaths were reported in the short-regimen group, especially in those with HIV coinfections (17.5%). Although the

results of this trial are encouraging, further studies will be needed to find a short, simple regimen for multidrug-resistant tuberculosis

with improved safety outcomes.

BOTTOM LINE: Short medication regimen (9-11 months) is noninferior to the traditional WHO-recommended long regimen (20 months) for treat-



Dr. Kamath

ing rifampin-resistant tuberculosis.

CITATION: Nunn AJ et al. A trial of a shorter regimen for rifampin-resistant tuberculosis. *N Engl J Med.* 2019 Mar 28; 380:1201-13.

Dr. Kamath is an assistant professor of medicine at Duke University.

By Yasmin Marcantonio, MD, MPH

3 Evaluating complications of midline catheters

CLINICAL QUESTION: What are the rates of major and minor complications associated with placement of midline catheters?

BACKGROUND: Midline catheters have gained popularity in inpatient medical settings as a convenient alternative to PICC lines. This is primarily because of the ability to avoid central line-associated bloodstream infections (CLABSI) since these catheters terminate in the peripheral veins and cannot be reported as such. Additionally, they are potentially able to dwell longer than are traditional peripheral intravenous catheters. However, insufficient data exist to accurately describe the rate of complications in these catheters, as prior studies are based on single-center experiences.

STUDY DESIGN: Multicenter prospective cohort study.

SETTING: Hospital medicine ward or medical ICU.



Dr. Marcantonio

SYNOPSIS: With use of a large database of adult patients from a quality initiative supported by Blue Cross Blue Shield of Michigan and Blue Care Network, this study identified 1,161 patients who had midline catheters placed and showed a 10.3% complication rate, of which 66.7% were minor (dislodgment, leaking, infiltration, or superficial thrombophlebitis) rather than major complications (occlusion, symptomatic upper-extremity deep venous thrombosis, or bloodstream infection). However, a similar rate of removal of the catheters was reported for major and minor complications (53.8% vs. 52.5%; $P = .90$). Across sites, there was substantial variation in utilization rates (0.97%-12.92%; P less than .001), dwell time and indication for use, and complication rates (3.4%-16.7%; $P = .07$).

The article does not provide guidance on when and how midline catheters should be used in order to minimize risk; nor does it include a comparison with traditional peripheral intravenous catheters or with PICC lines. Further studies are needed to guide indications and practices for catheter placement in order to minimize risk. Providers should continue to carefully consider the risks

and benefits of midline catheter placement in individual cases.

BOTTOM LINE: Midline catheter placement more commonly leads to minor rather than major complications, though patterns of use and outcomes vary substantially across sites.

CITATION: Chopra V et al. Variation in use and outcomes related to midline catheters: results from a multicentre pilot study. *BMJ Qual Saf.* 2019 Mar 18. doi: 10.1136/bmjqs-2018-008554.

Dr. Marcantonio is a Med-Peds hospitalist at Duke University Health System.

By Shree Menon, DO, MPH

4 Reducing low-value preop care for cataract surgery patients

CLINICAL QUESTION: Can a quality improvement project decrease low-value, preoperative testing for cataract patients?

BACKGROUND: Although multiple randomized, controlled trials have shown that routine preoperative testing prior to cataract surgery has low yield, most Medicare beneficiaries continue to undergo this testing. The American Board of Internal

Medicine started the Choosing Wisely campaign to help educate patients and providers about a crisis of unnecessary testing and procedures. This prompted multiple centers to create quality improvement (QI) projects to decrease low-value care.

STUDY DESIGN: Observational study of a health system quality improvement initiative.

SETTING: Two academic, safety-net hospitals in Los Angeles.

SYNOPSIS: The intervention hospital's QI nurse

underwent an extensive formal QI training program, followed by educating all health care team members involved in preoperative care for cataract patients. New guidelines were created and circulated, with a stated goal of eliminating routine preoperative visits and testing. The control hospital continued their usual preoperative care.

Preoperative visits decreased from 93% to 24% in the intervention group and increased from 89% to 91% in the control group (between-group difference, -71%;

95% confidence interval, -80% to -62%). Chest x-rays, laboratory tests, and electrocardiograms also had a similar decrease in the intervention group.

The intervention hospital lost \$42,241 the first year because of training costs but 3-year projections estimated \$67,241 in savings. The authors estimated \$217,322 savings in 3 years from a societal perspective. Interestingly, the decrease in utilization would lead to financial loss in fee-for-service payment (\$88,151 loss in 3 years).

No causal relationship can be established since this was an observational study. Several assumptions were made for the cost analysis. Results are less generalizable since the study was at hospitals in a single city and health system. It is unclear which component of the QI initiative was most effective.

BOTTOM LINE: A multidisciplinary, multicomponent initiative can be successful in decreasing low-value preoperative testing of patients undergoing cataract surgery. Although this results in cost savings overall and for capitated payment systems, it would actually cause revenue loss in fee-for-service systems. This em-

Continued on following page



Dr. Menon



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Continued from previous page

phasizes a potential barrier to eradicate low-value care.

CITATION: Mafi JN et al. Evaluation of an intervention to reduce low-value preoperative care for patients undergoing cataract surgery at a safety-net health system. *JAMA Intern Med.* Published online 2019 Mar 25. doi: 10.1001/jamainternmed.2018.8358.

Dr. Menon is a hospitalist at Duke University Health System.

By Danielle Richardson, MD, MPH

5 Patients' perceptions and high hospital use

CLINICAL QUESTION: What are patients' perspectives of factors associated with the onset and continuation of high hospital use?

BACKGROUND: A small proportion of patients accounts for a large proportion of hospital use and readmissions. As hospitals and hospitalists focus efforts to improve transitions of care, there is a paucity of data



Dr. Richardson

that incorporates patients' perspectives into the design of these programs.

STUDY DESIGN: Qualitative research study.

SETTING: Northwestern Memorial Hospital, a single

urban academic medical center in Chicago.

SYNOPSIS: Eligible patients had two unplanned 30-day readmissions within the prior 12 months in addition to one or more of the following: at least one readmission in the last 6 months; a referral from a patient's medical provider; or at least three observation visits.

A research coordinator conducted one-on-one semistructured interviews. Each interview was recorded, transcribed, and then coded using a team-based approach; 26 patients completed the interview process.

From the analysis, four major themes emerged: Major medical problems were universal but high hospital use onset varied; participants noted that fluctuations in their course were often related to social, economic, and psychological stressors; onset and progression of episodes seemed uncontrollable and unpredictable; participants preferred to avoid hospitalization and sought care when attempts at self-management failed. The major limitation of this study was the

small sample size located at one medical center, creating a data pool that is potentially not generalizable to other medical centers. These findings, however, are an important reminder to focus our interventions with patients' needs and perceptions in mind.

BOTTOM LINE: Frequently hospitalized patients have insights into factors contributing to their high hospital use. Engaging patients in this discussion can enable us to create sustainable patient-centered programs that avoid rehospitalization.

CITATION: O'Leary KJ et al. Frequently hospitalized patients' perceptions of factors contributing to high hospital use. *J Hosp Med.* 2019 Mar 20;14:e1-6.

Dr. Richardson is a hospitalist at Duke University Health System.

By Poonam Sharma, MD, SFHM

6 QI initiative can decrease unnecessary IV treatment of asymptomatic hypertension

CLINICAL QUESTION: How common is treatment of asymptomatic hypertension in the hospital with IV medications and what is the impact of a quality improvement initiative to reduce use?

BACKGROUND: Limited research suggests IV treatment of asymptomatic hypertension may be widespread and unhelpful. There is potential for unnecessary treatment to have adverse outcomes, such as hypotension.

STUDY DESIGN: Retrospective cohort study.

SETTING: A single academic hospital.

SYNOPSIS: Of 2,306 inpatients with asymptomatic hypertension, 11% were treated with IV medications to lower their blood pressure. Patients with indications for stricter blood pressure control (such as stroke, intracranial hemorrhage, aortic dissection) were excluded from the study. Following the baseline period, an education intervention was employed that included presentations, handouts, and posters. A second phase of quality improvement intervention included adjustment of the electronic medical record blood pressure alert parameters from more than 160/90 to more than 180/90. After these interventions, a lower percentage of patients received IV blood pressure medications for asymptomatic hypertension without a significant change in the number of rapid re-

sponse calls, ICU transfers, or code blues. Limitations include that this is a single-center study and it is unclear if the performance improvement seen will be maintained over time.



Dr. Sharma

BOTTOM LINE: IV antihypertensive use for asymptomatic hypertension is common despite lack of data to support its use, and re-

duced use is possible using quality improvement interventions.

CITATION: Jacobs Z et al. Reducing unnecessary treatment of asymptomatic elevated blood pressure with intravenous medications on the general internal medicine wards: a quality improvement initiative. *J Hosp Med.* 2019 Mar;14(3):144-50.

Dr. Sharma is associate medical director for clinical education in hospital medicine at Duke Regional Hospital and an assistant professor of medicine at Duke University.

By Neil Stafford, MD

7 Catheter ablation of AFib improves quality of life more than medications do

CLINICAL QUESTION: Does catheter ablation of atrial fibrillation (AFib) improve quality of life (QOL) compared to medication therapy?

BACKGROUND: Catheter ablation of AFib (primarily pulmonary vein isolation) has been shown to result in better maintenance of sinus rhythm than medications. Small studies of QOL have shown mixed results.

Larger trials were needed.

STUDY DESIGN: Open-label randomized multisite clinical trial of catheter ablation (pulmonary vein isolation with additional ablation procedure at the treating physician discretion) versus standard rate and/or rhythm control medications (chosen by clinician discretion). Patients were included for paroxysmal or persistent AFib and either age 65 years or older or age younger than 65 years with one additional stroke risk factor. Quality of life surveys – the Atrial Fibrillation Effect on Quality of Life (AFEQT) questionnaire and the Mayo AF-Specific Symptom Inventory (MAFSI) – were completed at baseline, and at 3, 12, 24,



Dr. Stafford

Short Takes

Vitamin K not recommended for reversal of excessive vitamin K antagonist in nonbleeding patients with INR 4.5-10

Systematic review and meta-analysis involving 1,074 participants provided low- to moderate-quality evidence in favor of placebo over vitamin K for reversal of excessive vitamin K antagonist in nonbleeding patients with an international normalized ratio (INR) of 4.5-10 for outcomes of all-cause mortality (pooled relative risk, 1.42; 95% confidence interval, 0.62-2.47), major bleeding (pooled RR, 2.43; 95% CI, 0.81-7.27), and thromboembolism (pooled RR 1.29; 95% CI, 0.35-4.78) and for proportion of patients who reached goal INR within 1 day of vitamin K administration (pooled RR, 1.95; 95% CI, 0.88-4.33).

CITATION: Khatib R et al. Vitamin K for reversal of excessive vitamin K antagonist anticoagulation: A systematic review and meta-analysis. *Blood Adv.* 2019 Mar 12;3(5):789-96.

ED visits attributable to cannabis most commonly associated with inhaled use

Observational study shows that at a single urban academic hospital, visits to the emergency department attributable at least in part to cannabis were more frequently associated with the inhaled form (90.7%) rather than the edible form (9.3%), though the latter accounted for more visits than expected and a higher proportion of acute psychiatric symptoms and intoxication.

CITATION: Monte AA et al. Acute illness associated with cannabis use, by route of exposure: An observational study. *Ann Intern Med.* 2019 Apr 16;170(8):531-7.

36, 48, and 60 months.

SETTING: 126 centers in 10 countries.

SYNOPSIS: The study included 2,204 patients with median age of 68 years, diagnosed with AFib a median of 1.1 years prior, who were followed for a median of 48 months. The median CHA₂DS₂-VASc score was 3.0.

Self-reported AFib dropped from 86.0% to 21.1% in the ablation group and from 83.7% to 39.8% in the medication group at 12 months. The AFEQT score (range 0-100, higher score indicating better QOL) in-

Short Takes

TAVR for severe aortic stenosis in low-risk surgical patients

Multicenter randomized trial demonstrates that, in patients with severe aortic stenosis who were at low surgical risk, the rate of the composite of death, stroke, or rehospitalization at 1 year was significantly lower with transcatheter aortic valve replacement (TAVR) than with surgery. While TAVR shows promise in the low-risk surgical patient, the authors do comment that one major limitation of this study is the short duration of follow-up, and caution that conclusions on the advantages and disadvantages of TAVR compared to surgery will depend on long-term follow-up.

CITATION: Mack MJ et al. Transcatheter aortic-valve replacement with a balloon-expandable valve in low-risk patients. *N Engl J Med.* 2019 May 2;380(18):1695-705.

creased from 62.9 to 86.4 in the ablation group and increased from 63.1 to 80.9 in the medication group (for a mean difference of 5.3 points [95% confidence interval, 3.7-6.9; *P* less than .001] favoring ablation). MAF-SI symptom frequency score and symptom severity score also showed improvement in symptoms favoring ablation. Post hoc subgroup analysis showed that those with the most severe symptoms had the largest benefit from ablation.

The primary limitation is the lack of patient blinding (may bias self-reported symptoms).

While the CABANA trial efficacy study (published separately) showed that catheter ablation results in no significant difference in the combined outcome of death, disabling stroke, serious bleeding, or cardiac arrest, the CABANA QOL study, reviewed here, shows that ablation does result in improved QOL and reduced symptoms, compared with medical therapy.

BOTTOM LINE: Catheter ablation of AFib can be done safely and successfully at experienced centers. In patients with AFib-related symptoms, ablation reduces symptoms and improves QOL somewhat more than medications do. The most severely symptomatic patients appear to obtain the most benefit.

CITATION: Packer DL et al. Effect of catheter ablation vs. antiarrhythmic drug therapy on mortality, stroke, bleeding, and cardiac arrest among patients with atrial fibrillation: The CABANA Randomized Clinical Trial. *JAMA.* 2019 Mar 15. doi: 10.1001/jama.2019.0693.

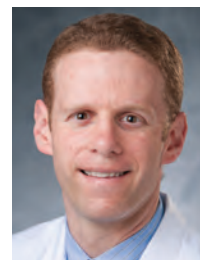
Dr. Stafford is a hospitalist at Duke University Health System.

By Adam Wachter, MD**Aspirin and warfarin together leads to increased bleeding without reducing thrombotic events**

CLINICAL QUESTION: In patients taking warfarin for atrial fibrillation (AFib) or venous thromboembolism (VTE), how often is aspirin used without a clear indication, and what are the clinical outcomes for these patients?

BACKGROUND: Current guidelines recommend against using aspirin in combination with warfarin for patients with AFib, unless the pa-

tient has another indication for aspirin such as recent percutaneous coronary intervention (PCI) or a mechanical heart valve. These recommendations are based on limited clinical trial data that showed an increased risk of adverse events with combination therapy without clinical benefit. Despite these recommendations, recent studies have shown that aspirin use without a clinical indication remains common



Dr. Wachter

cohort study.

SETTING: Six anticoagulation clinics in Michigan.

SYNOPSIS: Of the 6,539 patients included in the study, 2,453 patients (37.5%) were taking both warfarin and aspirin without an indication for aspirin therapy; 3,688 propensity score-matched patients (1,844 in each group) were compared to assess rates of bleeding and rates of observed thrombosis at 1 year in patients taking warfarin alone versus warfarin plus aspirin. Patients treated with warfarin plus aspirin experienced more bleeding events than did patients on warfarin monotherapy (95% confidence interval, 23.8%-28.3% vs. 95% CI, 18.3%-22.3%; *P* less than .001). Rates of observed thrombosis were similar between the two groups (95% CI, 1.6%-3.1% vs. 95% CI, 2.0%-3.6%; *P* = .40). This study demonstrates that aspirin use without a clinical indication

Short Takes

Shock index could be used to predict inpatient hospital admission and mortality

Retrospective study of more than 500 million ED visits showed that a shock index (heart rate divided by systolic blood pressure) greater than 1.3 corresponded to a significant increase in the likelihood ratios of hospital admission and inpatient mortality. This metric has traditionally been used as a prognostic tool for trauma patients but may have some utility in general internal medicine patients presenting to EDs.

CITATION: Al Jalbout N et al. Shock index as a predictor of hospital admission and inpatient mortality in a US national database of emergency departments. *Emerg Med J.* 2019;36:293-7.

remains common in patients taking warfarin for AFib or VTE, and that reducing inappropriate aspirin use in this patient population may help prevent adverse outcomes.

BOTTOM LINE: Use of aspirin without a clinical indication in patients taking warfarin is common and is associated with an increased risk of bleeding without significant clinical benefit.

CITATION: Schaefer JK et al. Association of adding aspirin to warfarin therapy without an apparent indication with bleeding and other adverse events. *JAMA Intern Med.* 2019 Mar 4;179(4):533-41.

Dr. Wachter is an associate medical director at Duke Regional Hospital and an assistant professor of medicine at Duke University.

Eosinophil-guided therapy cut corticosteroids in COPD

By Bianca Nogrady

MDedge News

FROM LANCET RESPIRATORY MEDICINE / Using eosinophil levels to guide steroid treatment in patients with chronic obstructive pulmonary disease (COPD) was noninferior to standard treatment in terms of the number of days out of hospital and alive, new research has found.

Pradeesh Sivapalan, MD, of the University of Copenhagen, and coauthors reported the outcomes of a multicenter, controlled, open-label trial comparing eosinophil-guided and standard therapy with systemic corticosteroids in 318 patients with COPD.

They wrote that eosinophilic inflammation had been seen in 20%-40% of patients with acute

exacerbations of COPD. Patients with higher eosinophilic blood counts were at increased risk of acute exacerbations but were also more likely to benefit from corticosteroid treatment.

In the eosinophil-guided therapy arm of the study, 159 patients received 80 mg of intravenous methylprednisolone on day 1, then from the second day were treated with 37.5 mg of prednisolone oral tablet daily – up to 4 days – only on days when their blood eosinophil count was at least 0.3×10^9 cells/L.

In the control arm, 159 patients also received 80 mg of intravenous methylprednisolone on day 1, followed by 37.5 mg of prednisolone tablets daily for 4 days.

After 14 days, there were no significant differences between the two groups for mean days

alive and out of hospital.

There were 12 more cases of readmission with COPD, including three fatalities, in the eosinophil-guided group within the first month. However the authors said these differences were not statistically significant, but “because the study was not powered to detect differences in this absolute risk range, we cannot rule out that this was an actual harm effect from the interventional strategy.”

The eosinophil-guided therapy group did show more than a 50% reduction in the median duration of systemic corticosteroid therapy, which was 2 days in the eosinophil-guided group, compared with 5 days in the control group (*P* less than .0001), and the differences between the two groups remained significant at days 30 and 90.



HM19: One chapter's experience

By Amith Skandhan, MD, SFHM

The Society of Hospital Medicine is an organization vested in improving the quality of inpatient medicine by empowering its members with education and providing venues for professional development including networking, advocacy, and leadership advancement. Every year, SHM holds a national conference which is a focused meeting point for over 5,000 hospitalists.

SHM hosts more than 50 local chapters nationwide to increase networking, education, and collaboration within the hospital medicine community. The Wiregrass chapter of SHM is based in the southeast corner of Alabama, covering the counties of lower Alabama and the panhandle of Florida. This year we were recognized as a platinum status chapter, which is the highest status, based on our work and participation to improve the quality of inpatient medicine.

As part of winning the platinum ribbon, we were awarded three complimentary registration scholarships to the SHM Annual Conference in 2019. The chapter leadership met and selected three individuals who have been involved with the chapter actively but have never had an opportunity to experience SHM's Annual Conference. We selected a first-year resident, Avani Parrek, MD; a hospital medicine nurse practitioner, Madison Rivenbark, NP; and a fourth-year medical student who is about to start his internal medicine residency, William Bancroft, MS IV.

After the meeting we interviewed them to better understand their experience. Below are their thoughts.

Avani Parekh, MD

First year, Internal Medicine Residency
Southeast Health Medical Center
Dothan, Ala.

I am so thankful for the opportunity that was given to me by the Wiregrass chapter by sponsoring my attendance at the 2019 SHM Annual Conference in Washington. This was my first SHM conference, and it was truly a rewarding experience.



Dr. Parekh

I thoroughly enjoyed attending the lectures. They were very informative and engaging. Every presenter was so passionate and inspiring. Coming

from an "all-female class" of PGY-1 at my program, I especially enjoyed the "Fe(male) in Medicine" talk, as well as Quick Talks on women in medicine. The "Updates in Hospital Medicine" session on various topics such as heart failure, pneumonia, and sepsis was outstanding. I was excited to apply the knowledge I gained from this event into my patient care.

Overall, it was a well-organized and up-to-date event. I am looking forward to attending more SHM conferences in the future.

Madison Rivenbark, NP

Department of Hospital Medicine
Southeast Health Medical Center
Dothan, Ala.

I was extremely fortunate to be selected to receive a scholarship that covered the conference fee for the 2019 SHM Annual Conference. This was my first SHM conference, and it was quite the learning experience.

I enjoyed each educational session that I attended. I felt like I was able to bring something home with me that I can incorporate into my practice to better care for the patients that I see each day.

As mentioned above, I learned from each session, but my personal favorite was the "Updates in Hospital Medicine" session. I was very impressed by the enthusiasm of the two speakers. The information provided was presented so that it engaged each attendee.

Not only did I learn a wealth of valuable information that will help me in my career, I gained affirmation concerning my future educational endeavors. I was inspired to pursue a higher level of learning regarding my career. I witnessed this awesome organization that is filled with encouraging and motivating people, and I realized I wanted to be more involved on a local level, and maybe one day, on a larger level. In addition, this conference inspired me to continue to be a lifetime learner and to always crave more knowledge. I am blessed to be a part of hospital medicine. I look forward to the future of this specialty.

William Bancroft, MS IV

Alabama College of Osteopathic
Medicine
Dothan, Ala.

I was honored to have been chosen by the Wiregrass chapter as the medical student representative for



Ms. Rivenbark

the SHM Annual Conference. I have been serving in the local chapter during both my 3rd and 4th years in different roles, from helping as a student liaison for our medical students to executive planning coordinator for events. It was a surprise when I got asked by the chapter to be their student representative, but one that I was very excited to accept.

This was my first medical conference. I had heard about what different conferences were like from many of my attendings, so I had some expectations, but this experience was so much better. I



Mr. Bancroft

enjoyed meeting and networking with people. I also found myself eagerly waiting to get to the next lecture because I was getting an opportunity to hear about different

case studies, new research outcomes, and new standards of care.

It was a real treat to learn about all the new changes to treatment, but even more encouraging to know that most of it was just reinforcing everything my attendings have been teaching us as medical students. I enjoyed my time at the SHM Annual Conference so much that I emailed all my new coresidents and encouraged them to join the Society.

Dr. Skandhan is a hospitalist at Southeast Health Medical Center in Dothan, Ala., as well as president and founder of the Wiregrass chapter of SHM.

The impact of HM19 on my practice

By Krystle D. Apodaca, DNP, FHM

As an academic nurse practitioner hospitalist with faculty and leadership roles, I found that HM19 had many important and helpful topics that apply directly to my practice.

The "Onboarding Best Practices" session provided specific examples and tips for clinical ramp up, enculturation, and orienting staff to an academic career. As a result of this talk, I began the process of establishing a formal enculturation activity for new hires that includes a panel of senior ad-

vanced practice provider (APP) hospitalists to give career path advice.

The "Adaptive Leadership for Hospitalists" workshop provided the opportunity to practice emotional intelligence and effective communication in managing routine and difficult leadership interactions. The "Practice Models/Models of Care for Optimal Integration of NPs and PAs" presentation provided

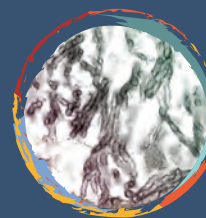


Dr. Apodaca

insight into variable team structures at other institutions that could be considered for improved efficiency in my group. The "Academic NP/PA" session provided ideas for how to apply for faculty positions in academic institutions. It also gave APPs who have faculty appointment specific illustrations of using current educational, quality improvement, and research projects to promote. I particularly found the "What Mentorship Has Meant to Me" talk significant. It gave practical essential advice on making sure there is chemis-

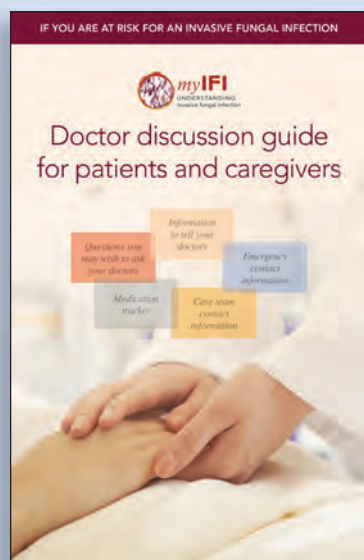
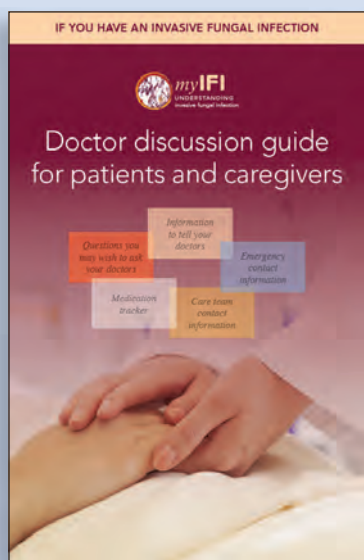
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HM19: Sepsis care update

By **Shyam Odeti, MD, MS, FAAFP, FHM**

Presenter

Patricia Kritek MD, EdM

Session Title

Sepsis update: From screening to refractory shock

Background

Each year 1.7 million adults in America develop sepsis, and 270,000 Americans die from sepsis annually. Sepsis costs U.S. health care over \$27 billion dollars each year. Because of the wide range of etiologies and variation in presentation and intensity, it is a challenge to establish homogeneous evidence-based guidelines.¹

The definition of sepsis based on the “SIRS” criterion was developed initially in 1992, later revised as Sepsis-2 in 2001. The latest Sepsis-3 definition – “life-threatening organ dysfunction due to a dysregulated host response to infection” – was developed in 2016 by the Third International Consensus Definitions for Sepsis and Septic Shock. This newest definition has renounced the SIRS criterion and adopted the Sequential Organ Failure Assessment (SOFA) score. Treatment guidelines in sepsis were developed by the Surviving Sepsis Campaign starting with the Barcelona Declaration in 2002 and revised multiple times, with the development of 3-hour and 6-hour care bundles in 2012. The latest revision, in 2018, consolidated to a 1-hour bundle.²

Sepsis is a continuum of every severe infection, and with the combined efforts of the Society of Critical Care Medicine and the European Society of Intensive Care Medicine, evidence-based guidelines have been developed over the past 2 decades, with the latest iteration in 2018. The Centers for Medicare & Medicaid Services still uses Sepsis-2 for diagnosis, and the 3-hr/6-hr bundle com-

pliance (2016) for expected care.³

Session summary

Dr. Kritek, of the division of pulmonary, critical care, and sleep medicine at the University of Washington, Seattle, presented to a room of over 1,000 enthusiastic hospitalists. She was able to capture everyone’s attention with a great presentation. As sepsis is one of the most common and serious conditions we encounter, most hospitalists are fairly well versed in evidence-based practices, and Dr. Kritek was able to keep us engaged, describing in detail the evolving definition, pathophysiology, and screening procedures for sepsis. She also spoke about important studies and the latest evidence that will positively impact each hospitalist’s practice in treating sepsis.

Dr. Kritek explained clearly how the Surviving Sepsis Campaign developed a vital and nontraditional guideline that “recommends health systems have a performance improvement program for sepsis including screening for high-risk patients.” In a 1-hour session, Dr. Kritek did a commendable job untangling this bewildering health care challenge, and aligned each component to explain how to best use available resources and address sepsis in individual hospitals.

She talked about the statistics and historical aspects involved in the definition of sepsis, and the Surviving Sepsis Campaign. With three good case scenarios, Dr. Kritek explained how it was difficult to accurately diagnose sepsis using the Sepsis-2/SIRS criterion, and how the SIRS criterion led to several false



Dr. Odeti

positives. This created a need for the new Sepsis-3 definition, which used delta SOFA score of 2 indicating “organ failure.”

Key takeaways: Screening

- Sepsis-3 with delta SOFA score of at least 2 and Quick SOFA (qSOFA) of at least 2 was best at predicting in-hospital death, ICU admission, and long ICU stay in ED.
- qSOFA was not helpful in the admitted ICU population. An increase of at least 2 points in SOFA score within 24 hours of admission to the ICU was the best predictor of in-hospital mortality and long ICU stays.
- SIRS has high sensitivity and low specificity. The Early Warning Score has accuracy similar to qSOFA.
- Understanding that there is no perfect answer regarding screening, but having a process is vital for each organization. This approach led to the Surviving Sepsis Campaign guideline: “Recommend health systems have a performance improvement program for sepsis including screening for high-risk patients.”

Key takeaways: Treatment

- Meta-analysis showed that specifically targeted, early goal-directed treatment (specifically, central venous pressure 8-12 mm Hg, central venous oxygen saturation greater than 70%, packed red blood cell inotropes used) did not show any improvement in 90-day mortality, and actually generated worse outcomes, including cirrhosis, as well as higher costs of care.
- Antibiotics: Though part of the 3-hour bundle, antibiotics are recommended to be administered within 1 hour.
- Intravenous fluids: Patients with sepsis-induced hypoperfusion

need 30 mL/kg crystalloids. Normal saline and lactated ringer are preferred. Lactated ringer has the advantage over normal saline, with a reduced incidence of major adverse kidney events.

- Importance of bundle compliance: N.Y. study showed use of protocols cut mortality from 30.2% to 25.4%.

Refractory septic shock

- Adding hydrocortisone and fludrocortisone improved mortality at 28 days, helped patients get off vasopressors sooner, and ultimately resulted in less organ failure, but no difference in 90-day mortality.
- A study of vitamin C use in septic patients needs further studies to validate, as it included only 47 patients.
- Early renal replacement therapy showed no difference in mortality or length of stay.

Dr. Kritek’s presentation made a positive impact by helping to explain the reasoning behind the established and evolving best practices and guidelines for care of patients with sepsis and septic shock. Her approach will help hospitalists provide cost-effective care, by understanding which expensive interventions and practices do not make a difference in patient care.

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Dr. Odeti is hospitalist medical director at Johnston Memorial Hospital in Abingdon, Va. JMH is part of Ballad Health, a health system operating 21 hospitals in northeast Tennessee and southwest Virginia.

Continued from page 22

try and trust when seeking a mentor and staying engaged to be a successful mentee.

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Dr. Apodaca is assistant professor and nurse practitioner hospitalist at the University of New Mexico. She is one of the first APPNP/PAs to receive faculty appointment at UNM. She serves as codirector of the UNM APP Hospital Medicine Fellowship and director of the APP Hospital Medicine Team. She is also the president of the New Mexico Chapter of SHM and is the first APP at her institution to achieve designation as a Fellow in Hospital Medicine.



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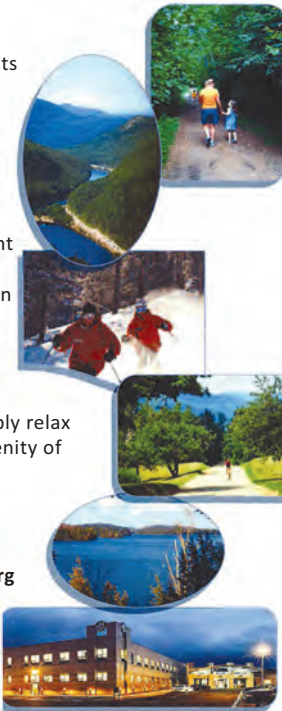
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The hospitalist role in treating opioid use disorder

Screen patients at the time of admission

By Richard Bottner, PA-C

Let's begin with a brief case. A 25-year-old patient with a history of injection heroin use is in your care. He is admitted for treatment of endocarditis and will remain in the hospital for intravenous antibiotics for several weeks. Over the first few days of hospitalization, he frequently asks for pain medicine, stating that he is in severe pain and withdrawal, with opioid cravings. On day 3, he leaves the hospital against medical advice. After 2 weeks, he presents to the ED in septic shock and spends several weeks in the ICU. Or, alternatively, he is found down in the community and pronounced dead from a heroin overdose.

These cases occur all too often, and hospitalists across the nation are actively building knowledge and programs to improve care for patients with opioid use disorder (OUD). It is evident that opioid misuse is the public health crisis of our time. In 2017, over 70,000 patients died from an overdose, and over 2 million patients in the United States have a diagnosis of OUD.^{1,2} Many of these patients interact with the hospital at some point during the course of their illness for management of overdose, withdrawal, and other complications of OUD, including endocarditis, osteomyelitis, and skin and soft tissue infections. Moreover, just 20% of the 580,000 patients hospitalized with OUD in 2015 presented as a direct sequelae of the disease.³ Patients with OUD are often admitted for unrelated reasons, but their addiction goes unaddressed.

Opioid use disorder, like many of the other conditions we see, is a chronic relapsing remitting medical disease and a risk factor for premature mortality. When a patient with diabetes is admitted with cellulitis, we might check a hemoglobin A_{1c}, provide diabetic counseling, and offer evidence-based diabetes treatment, including medications like insulin. We rarely build similar systems of care within the walls of our hospitals to treat OUD like we do for diabetes or other commonly encountered diseases like heart failure and chronic obstructive pulmonary disease.

We should be intentional about separating prevention from treatment. Significant work has gone into reducing the availability of prescription opioids and increasing utilization of prescription drug monitoring programs. As a result, the average morphine milligram equivalent per opioid prescription has decreased since 2010.⁴ An unintended consequence of restricting legal opioids is potentially pushing patients with opioid addiction toward heroin and fentanyl. Limiting opioid prescriptions alone will decrease opioid overdose mortality by only 5% through 2025.⁵ Thus, treatment of OUD is critical and something that hospitalists should be trained and engaged in.

Food and Drug Administration–approved OUD treatment includes buprenorphine, methadone, and extended-release naltrexone. Buprenorphine is a partial opioid agonist that treats withdrawal and cravings. Buprenorphine started in the hospital reduces mortality, increases time spent in outpatient treatment after discharge, and reduces opioid-related 30-day readmissions by over 50%.⁶⁻⁸

The number needed to treat with buprenorphine to prevent return to illicit opioid use is two.⁹ While physicians require an 8-hour “x-waiver” training (physician assistants and nurse practitioners require a 24-hour training) to prescribe buprenorphine for the outpatient treatment of OUD, such certification is not required to order the medication as part of an acute hospitalization.

Hospitalization represents a reachable moment and unique opportunity to start treatment for OUD. Patients are away from triggering environments and surrounded by supportive staff. Unfortunately, up to 30% of these patients leave the hospital against medical advice because of inadequately treated withdrawal, unaddressed cravings, and fear of mistreatment.¹⁰ Buprenorphine therapy may help tackle the physiological piece of hospital-based treatment, but we also must work on shifting the culture of our institutions. Importantly, OUD is a medical diagnosis. These patients must receive the same dignity, autonomy, and meaningful care afforded to patients with other medical diagnoses. Patients with OUD are not “addicts,” “abusers,” or “frequent fliers.”

Hospitalists have a clear and compelling role in treating OUD. The National Academy of Medicine recently held a workshop where they compared similarities of the HIV crisis with today's opioid epidemic. The Academy advocated for the development of hospital-based protocols that empower physicians, physician assistants, and nurse practitioners to integrate the treatment of OUD into their practice.¹¹ Some in our field may feel that treating underlying addiction is a role for behavioral health practitioners. This is akin to having said that HIV specialists should be the only providers to treat patients with HIV during its peak. There are simply not enough psychiatrists or addiction medicine specialists to treat all of the patients who need us during this time of national urgency.

There are several examples of institutions that are laying the groundwork for this important work. The University of California, San Francisco; Oregon Health & Science University, Portland; the University of Colorado at Denver, Aurora; Rush Medical College, Boston; Boston Medical Center; the Icahn School of Medicine at Mount Sinai, New York; and the University of Texas at Austin – to name a few. Offering OUD treatment in the hospital setting must be our new and only acceptable standard of care.

What is next? We can start by screening patients for OUD at the time of admission. This can be accomplished by asking two questions: Does the patient misuse prescription or nonprescription opioids? And if so, does the patient become sick if they abruptly stop? If the patient says yes to both, steps should be taken to provide direct and purposeful care related to OUD. Hospitalists should become familiar with buprenorphine therapy and work to reduce stigma by using people-first language with patients, staff, and in medical documentation.

As a society, we should balance our past focus on optimizing opioid prescribing with current efforts to bolster treatment. To that end, a group of SHM members applied to establish a Substance Use



Mr. Bottner is a hospitalist at Dell Seton Medical Center, Austin, Tex., and clinical assistant professor at the University of Texas at Austin.

Disorder Special Interest Group, which was recently approved by the SHM board of directors. Details on its rollout will be announced shortly. The intention is that this group will serve as a resource to SHM membership and leadership

As practitioners of hospital medicine, we may not have anticipated playing a direct role in treating patients' underlying addiction. By empowering hospitalists and wisely using medical hospitalization as a time to treat OUD, we can all have an incredible impact on our patients. Let's get to work.

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