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Following the path of leadership

VA Hospitalist Matthew Tuck

By Larry Beresford

For Matthew Tuck, MD, MEd, FACP, associate section chief for hospital medicine at the Veterans Affairs Medical Center (VAMC) in Washington, leadership is something that hospitalists can and should be learning at every opportunity.

Some of the best insights about effective leadership, teamwork, and process improvement come from the business world and have been slower to infiltrate into hospital settings and hospitalist groups, he says. But Dr. Tuck has tried to take advantage of numerous opportunities for leadership development in his own career.

He has been a hospitalist since 2010 and is part of a group of 13 physicians, all of whom carry clinical, teaching, and research responsibilities while pursuing a variety of education, quality improvement, and performance improvement topics.

"My chair has been generous about giving me time to do teaching and research and to pursue opportunities for career development," he said. The Washington VAMC works with four affiliate medical schools in the area, and its six daily hospital medicine services are all 100% teaching services with assigned residents and interns.

Dr. Tuck divides his professional time roughly one-third each among clinical

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Dr. Matthew Tuck
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Focus on science, not format

How JHM is improving the author experience

By Samir S. Shah, MD, MSCE, MHM

Many authors have experienced the frustration of formatting a manuscript for submission to a medical journal. The process is time consuming and each journal has different requirements. This means that, if you decide to submit your manuscript to one journal and later decide that another journal is a better fit, you may spend an hour (or several hours) reformatting to meet the new journal's unique requirements.

Dr. Shah

To allow authors to spend more time on what matters to them, we're pleased to introduce our "No Hassle" process for initial original research and brief report manuscript submissions to the *Journal of Hospital Medicine*. Our goal is to eliminate unnecessary and burdensome steps in the submission process. Thus, we have relaxed formatting requirements for initial manuscript submissions. Any conventional and readable manuscript format and reference style is acceptable.

Tables and figures can be embedded in the main document file or uploaded individually, depending on your preference. Funding and disclosures should be included on the title page but there is no need to submit completed disclosure or copyright forms unless we request a manuscript revision.

We have all experienced the agony of waiting months on end for a journal to make a decision about our manuscript. The review process itself can take many months (or even longer). Furthermore, a manuscript may not be published for many more months (or even longer) following acceptance. At *JHM*, we commit to making timely decisions and publishing your accepted manuscript as fast as we can.

We currently reject approximately half of all original research and brief report manuscript submissions without formal peer review. We do this for two reasons. First, we want to ensure that we're not overburdening our peer reviewers so we ask them to review only manuscripts that we are seriously considering for publication. Second, we want to ensure that we're being respectful of our authors' time. If we are unlikely to publish a manuscript based on lower priority scores assigned by me, as editor-in-chief, or other journal editors, we don't want to subject your manuscript to a lengthy peer review, but would rather return the manuscript to you quickly for timely submission elsewhere.

Here are data that support our timely decision making:

- 1.3 days = our average time from manuscript submission to rejection without formal peer review (median, less than 1 day).
- 23 days = our average time from manuscript submission to first decision for manuscripts sent for peer review.

We also are working to improve our time to publication. Our goal is to publish accepted manuscripts within 120 days from initial submission to publication, and within 60 days from acceptance to publication.

Finally, little public knowledge is gleaned from medical research unless the study is published and widely read. *JHM* is at the leading edge of helping authors disseminate their work to a broader audience. We produce press releases and distribute those to media outlets in partnership with SHM. We also leverage social media to promote your article through tweets, visual abstracts, and comics or graphic medicine abstracts. Some articles are even discussed on #JHMChat, our twitter-based journal club. This work is led by our exceptional Digital Media Editors, Vineet Arora, MD, Charlie Wray, DO, and Grace Farris, MD.

In summary, we are committed to making *JHM* even more author friendly. To that end, we're making it easy for authors to submit their work, making timely disposition decisions, and facilitating dissemination of the work we publish.

Dr. Shah is chief metrics officer and director of the division of hospital medicine at Cincinnati Children's Hospital Medical Center. He is the current editor-in-chief of the Journal of Hospital Medicine.

THE Hospitalist®

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Survey Insights

Are hospitalists being more highly valued?

An uptrend in financial support

By Khuong Vuong, MD, FHM

Since the inception of hospital medicine more than 2 decades ago, the total number of hospitalists has rapidly increased to more than 60,000. The Society of Hospital Medicine's *State of Hospital Medicine Report* (*SoHM*), published biennially, captures new changes in our growing field and sheds light on current practice trends.

Among its findings, the 2018 *SoHM Report* reassuringly reveals that financial support from hospitals to hospital medicine groups (HMGs) continues to climb, even in the setting of rising health care costs and ongoing budget pressure.

"Hospitalists have a responsibility to prove that they are the right group chosen to do the work and help achieve their hospital's mission and goals."

The median amount of financial support per full-time equivalent (FTE) physician for HMGs serving adults was $176,658, according to the 2018 *SoHM Report*, which is up 12% from the 2016 median of $157,535. While there is no correlation between group sizes and the amount of financial support per FTE physician, there are significant differences across regions, with HMGs in the Midwest garnering the highest median support, at $193,121 per FTE physician.

The report also reveals big differences by employment model. For example, private multispecialty and primary care medical groups receive much less financial support ($58,396 per FTE physician) than HMGs employed by hospitals. This likely signifies that their main source of revenue is from professional service fees. Regardless of the types of employment models, past surveys have reported more than 95% of HMGs receive support from their hospitals to help cover expenses.

The median amount of financial support per FTE provider (including nurse practitioners, physician assistants, and locum tenens) was $134,300, which represents a 3.3% decrease, compared with the 2016 *SoHM Report*. For the first time, the 2018 *SoHM* also collected data on financial support per "work relative value unit" (wRVU) in addition to support per FTE physician and support per FTE provider. HMGs and their hospitals can use support per wRVU data to evaluate the support per unit of work, regardless of who (whether it is a physician, an advanced practice provider, and/or others) performed that work.

The median amount of financial support per wRVU for HMGs serving adults in 2018 was $41.92, with academic HMGs reporting a higher amount ($45.81) than nonacademic HMGs ($41.28). It will be interesting to track these numbers over time.

One of the most intriguing findings from the SHM's 2018 *SoHM Report* is that financial support has risen despite relatively flat professional fee productivity (see Figure 1). Productivity, calculated as work relative value units (wRVUs) per physician declined slightly from 4,252 in 2016 to 4,147 in 2018.

There may be a few reasons why wRVUs per physician has remained relatively unchanged over the years. Many hospitals emphasize quality of care above provider productivity. The volume-to-value shift in theory serves as a means to reduce hospital-associated complications, length of stay, and readmission rates, thereby avoiding penalties and saving the overall costs for the hospitals in the long run.

Hospitalists involved in quality improvement projects and other essential nonclinical work perform tasks that are rarely captured in the wRVU metric. Improving patient experience, one of the Triple Aim components, necessitates extra time and effort, which also are nonbillable. In addition, increasing productivity can be challenging, a double-edged sword that may further escalate burnout and turnover rates. The static productivity may portend that it has leveled off or hit the ceiling in spite of ongoing efforts to improve efficacy.

In my view, the decision to invest in hospitalists for their contributions and dedications should not be determined based on a single metric such as wRVUs per physician. Hospitalist work on quality improvements; patient safety; efficiency, from direct bedside patient care to nonclinical efforts; teaching; research; involvements in various committees; administrative tasks; and leadership roles in improving health care systems are immeasurable. These are the reasons that most hospitals chose to adopt the hospitalist model and continue to support it. In fact, demand for hospitalists still outstrips supply, as evidenced by more than half of the hospital medicine groups with unfilled positions and an overall high turnover rate per 2018 *SoHM* data.

Although hospitalists are needed for the value that they provide, they should not take the status quo for granted. Instead, in return for the favorable financial support and in appreciation of being valued, hospitalists have a responsibility to prove that they are the right group chosen to do the work and help achieve their hospital's mission and goals.

Dr. Vuong is a hospitalist at HealthPartners Medical Group in St Paul, Minn., and an assistant professor of medicine at the University of Minnesota. He is a member of SHM's Practice Analysis Committee.

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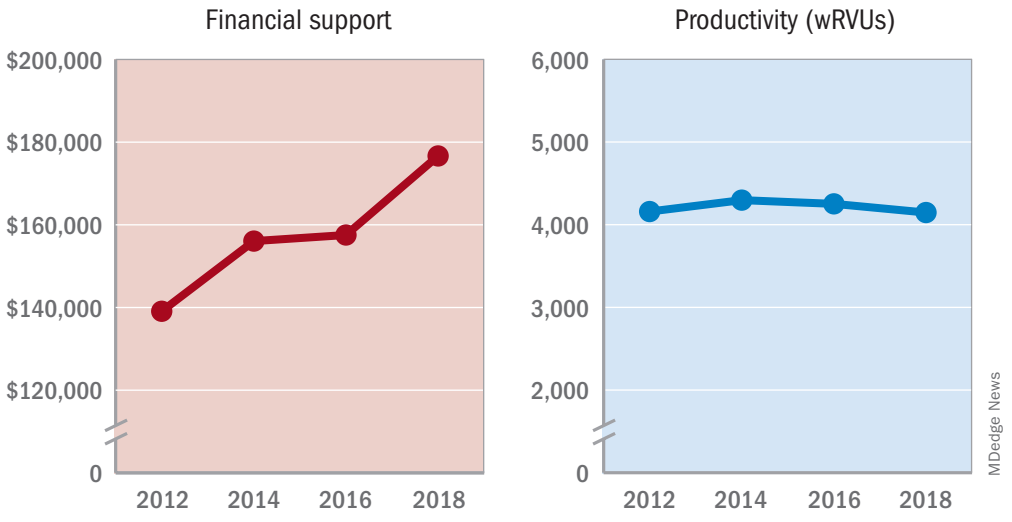
Figure 1. Trends in financial support and productivity, 2012-2018



Source: Society of Hospital Medicine's 2018 *State of Hospital Medicine Report*

The Hospital Leader

Why you should re-credential with Medicare as a hospitalist

CMS needs a better database of hospitalist information

By Leslie Flores, MHA, SFHM

In April 2017, the Centers for Medicare & Medicaid Services implemented the new physician specialty code C6, specifically for hospitalists. There has been a lot of confusion about what this means and some uncertainty about why clinicians should bother to use it.

Some folks thought initially that it was a new CPT code they could use to bill hospitalist services, which might recognize the increased intensity of services hospitalists often provide to their hospitalized patients compared to many traditional internal medicine and family medicine primary care physicians. Others thought it was a code that was added to the Health Care Financing Administration 1500 billing form somewhere to designate that the service was provided by a hospitalist.

Neither is true. The C6 physician specialty code is one of a large number of such codes used by physicians to designate their primary physician specialty when they enroll with Medicare via the Provider Enrollment, Chain, and Ownership System (PECOS) online enrollment system. It describes the unique type of medicine practiced by the enrolling physician and is used by the CMS both for claims processing purposes and for "programmatic" purposes (whatever that means).

It doesn't change how your claim is processed or how much you get paid. So why bother going through the laborious process of re-credentialing with CMS via PECOS just to change your specialty code? Well, I believe there are several ways in which the C6 specialty code provides value – both to you and to the specialty of hospital medicine.

Reduce concurrent care denials

First, it distinguishes you from a general internal medicine or general family medicine practitioner by recognizing "hospitalist" as a distinct specialty. This can be valuable from a financial perspective because it may reduce the risk that claims for your services might be denied because of "concurrent care" by another provider in the same specialty on the same calendar day.

And it's not just a general internist or family medicine physician that you might run into concurrent care trouble with. I've seen situations where doctors completed critical care or cardiology fellowships but never got around to re-credentialing with Medicare in their new specialty, so their claims still showed up with an "internal medicine" physician specialty code, resulting in denied "concurrent care" claims for either the hospitalist or the specialist.

While Medicare may still see unnecessary overlap between services provided by you and an internal medicine or family physician to the same patient on the same calendar day, you can make a better argument that your services were unique and complementary to (not duplicative of) the services of others if you are credentialed as a hospitalist.

Ensure "apples to apples" comparisons

A second reason to re-credential as a hospitalist is to ensure that, when the CMS looks at the services you are providing and the CPT codes you are selecting, it is comparing you to an appropriate peer group for compliance purposes.

The mix of CPT codes reported by hospitalists in the SHM *State of Hospital Medicine Survey* has historically tilted toward higher-level care than has the mix of CPT codes reported by the CMS for internal medicine or family medicine physicians. But last year when Medicare released the utilization of evaluation and management services by specialty for calendar year 2017, CPT utilization was shown separately for hospitalists for the first time!

The volume of services reported for physicians credentialed as hospitalists was very small relative to the volume of inpatient services provided by internal medicine and family medicine physicians, but the distribution of inpatient admission, subsequent visit, and discharge codes for hospitalists closely mirrored those reported by SHM in its 2018 *State of Hospital Medicine Report* (see graphic). If you're going to be targeted in a RAC audit for the high proportion of 99233s you bill, you want to be sure the CMS is looking at your performance compared to those who are truly your peers, caring for patients of the same type and complexity.

Improve CMS data used for research purposes

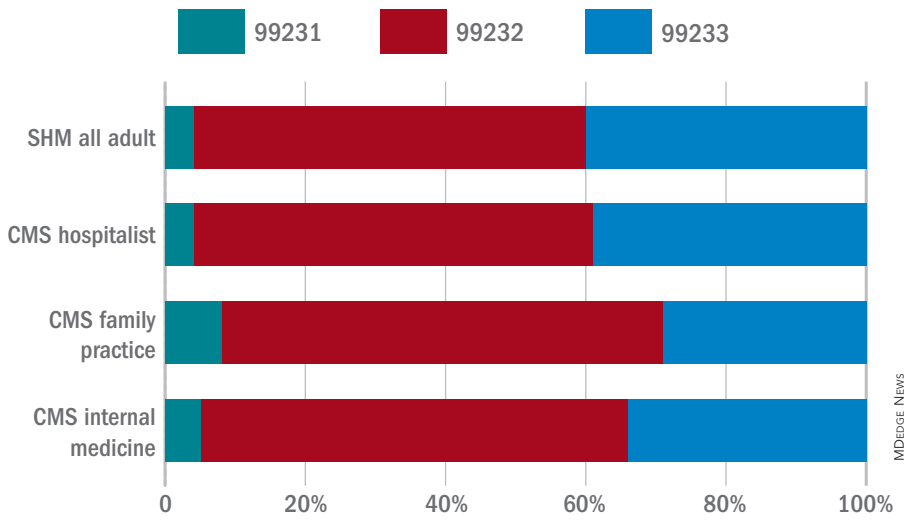
Finally, the ability of academic hospitalists and other health services researchers to utilize Medicare claims data to better understand the care provided by hospitalists and its impact on the overall health care system will be significantly enhanced by a more robust presence of physicians who have identified themselves as hospitalists in the PECOS credentialing system.

We care for the majority of patients in most hospitals these days, yet "hospitalists" billed only 2,009,869 inpatient subsequent visits (CPT codes 99231, 99232, and 99233) in 2017 compared to 25,903,829 billed by internal medicine physicians and 4,678,111 billed by family medicine physicians. And regardless of what you think about using claims data as a proxy for health care services and quality, it's undeniably the best data set we currently have.

So, let's work together to build a bigger, better database of hospitalist information at the CMS. I urge you to go to your credentialing folks today and find out how you can work with them to get yourself re-credentialed in PECOS using the C6 "hospitalist" physician specialty.

Ms. Flores is a partner at Nelson Flores Hospital Medicine Consultants, La Quinta, Calif. She serves on SHM's Practice Analysis and Annual Meeting Committees, and helps to coordinate SHM's bi-annual State of Hospital Medicine Survey.

Distribution of inpatient subsequent-visit CPT codes, 2017



Source: 2018 *State of Hospital Medicine Report*

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Pediatric clinical conundrums

Atypical symptoms and diagnoses

By Sarah Marsicek, MD, and Catherine Wysocka, MD

Presenters: Yemisi Jones, MD; Mirna Giordano, MD
Session title: Pediatric Clinical Conundrums

Session summary: Dr. Giordano of Columbia University Irving Medical Center, New York, and Dr. Jones of Cincinnati Children's Hospital Medical Center, moderated the Pediatric Clinical Conundrums session at HM19. After reviewing multiple submissions, they invited four trainees to present their interesting cases.

Malignancy or infection? Jeremy Brown, MD, a resident at the University of Louisville (Ky.), presented a case of a 15-year-old male with right upper-quadrant abdominal pain with associated weight loss and intermittent fevers, over the course of several weeks. CT revealed multiple liver lesions, providing concern for possible malignancy, although liver biopsy proved otherwise, with mostly liquefactive tissue and benign liver parenchyma. After a large infectious work-up ensued, the patient was diagnosed with disseminated *Bartonella*. He was treated with a 10-day course of azithromycin, and his symptoms resolved.

Leg blisters as an uncommon manifestation of a common childhood disease. Stefan Mammele, MD, a resident at Kapi'olani Medical Center in Honolulu, and the University of Hawaii, presented a case of an 11-year-old boy with a painful and pruritic rash associated with multiple 5- to 10-mm tense bullae located on the patient's bilateral lower extremities with extension to the trunk. The patient was also found to have hematuria and proteinuria. The bullae drained both serosanguinous and purulent material. Fluid culture grew group A *Streptococcus* and skin biopsy confirmed IgA vasculitis. Bullae are a rare characteristic of Henoch Schönlein pupura in children, but are more commonly seen as a disease manifestation in adults. The patient was treated with cefazolin, and his lesions improved over the course of several weeks with resolution of his hematuria by 6 months.


Dr. Marsicek

Is she crying blood? Joshua Price, MD, a resident at Baystate Children's Hospital in Springfield, Mass., described a 12-year-old female who presented with 7 days of left-sided hemolacria with acute vision loss and unilateral eye pain. This patient did not respond to outpatient topical steroids and antibiotics, as prescribed by ophthalmology. For this reason, she underwent further work-up and imaging. MRI of the head and orbits revealed left maxillary sinus disease. She was treated with antibiotics for acute left maxillary sinusitis and her hemolacria resolved within 24 hours. While the differential diagnosis for hemolacria is broad, rarely acute sinusitis has been reported as a cause.


Dr. Wysocka

Recurrent bronchiolitis or something more? Moira Black, MD, a resident at Children's Memorial Hermann in Houston, presented a case of a 7-month-old female with a history of recurrent admissions for increased work of breathing believed to be secondary to viral bronchiolitis. Her first hospitalization occurred at 7 weeks of age and was complicated by spontaneous pneumothorax requiring chest tube placement. She was again hospitalized at 5 months of age with resolution of her increased work of breathing with high-flow nasal cannula. She presented again at 7 months of age with presumed bronchiolitis; however, she decompensated and required intubation on the 5th day of hospitalization. A bronchoscopy was performed and revealed a significantly narrowed left bronchus at the carina and a blind pouch on the right with notable pulsation of the walls. She underwent further imaging and was ultimately diagnosed with a left pulmonary artery sling – a rare, but potentially fatal anomaly that can present with wheezing, stridor, and recurrent respiratory infections. Patient underwent correction by cardiovascular surgery and has since been doing well.

Key takeaways for HM

- *Bartonella* is a common cause of fever of unknown origin, and should be considered in unusual presentations of febrile illnesses.
- Bullae in IgA vasculitis are rare in children and do not have prognostic value, but streptococcal infection may be a trigger for IgA vasculitis.
- Hemolacria is an atypical presentation of rare and common diagnoses that should prompt further work-up.
- Acute respiratory distress can be caused by underlying cardiac or vascular anomalies and can be mistaken for common viral illnesses.

Dr. Marsicek is a pediatric hospital medicine fellow at Johns Hopkins All Children's Hospital, St. Petersburg, Fla. Dr. Wysocka is a pediatric resident at Johns Hopkins All Children's Hospital.

Pediatric sepsis

By Ngozi Eboh, MD, and Amber Wright, MD

Presenters: Elise van der Jagt, MD, MPH
Session title: What you need to know about pediatric sepsis

Session summary: Dr. van der Jagt of the University of Rochester (N.Y.) Medical Center, noted that the definition and management of sepsis in pediatrics is complex, and forms a spectrum of disease from sepsis to severe sepsis, and septic shock. She advised not to use the adult sepsis definition in children. Sepsis is systemic inflammatory response syndrome in association with suspected or proven infection. Severe sepsis is sepsis with cardiovascular dysfunction, respiratory dysfunction, or dysfunction of two other systems. Septic shock is sepsis with cardiovascular dysfunction that persists despite 40 mL/kg of fluid bolus in 1 hour.

Early recognition and management of sepsis decreases mortality, and can be improved by initiating a recognition bundle. Multiple trigger tools are available, but must be combined with physician evaluation within 15 minutes for any patient who screens positive.

Resuscitation bundles also decrease mortality. A good goal is establishing IV or intraosseous access within 5 minutes, fluid administration within 30 minutes, and antibiotics and inotrope administration in 60 minutes. Resuscitation bundles could include a sepsis clock, rapid response team, check list, protocol, and order set. Studies show that mortality increases with delays in initiating fluids and less fluids given. However, giving too much fluid also increases morbidity. It is imperative to reassess after fluid boluses. Use of lactate measurement can be problematic in pediatrics, as normal lactate can be seen with florid sepsis.

Stabilization bundles are more common in the ICU setting. They include an arterial line, central venous pressure, cardiopulmonary monitor, urinary catheter, and pulse oximeter. A performance bundle is important to assess adherence to the other bundles.

Key takeaways for HM

- Patients with severe sepsis/septic shock should be rapidly identified with the 2014/2017 American College of Critical Care Medicine consensus criteria.
- Efficient, time-based care should be provided during the 1st hour after recognizing pediatric severe sepsis/septic shock.
- Overcoming systems barriers to rapid sepsis recognition and treatment requires sepsis champions in each area, continuous data collection and feedback, persistence, and patience.

Dr. Eboh is a pediatric hospitalist at Covenant Children's Hospital in Lubbock, Tex. Dr. Wright is a pediatric hospitalist at Texas Tech University.

Interprofessional rounds

By Nageshwar Jonnalagadda, MD, MPH, FHM, and Venkatrao Medarametla, MD, SFHM, FACP

Presenters: Surekha Bhamidipati, MD, FACP; Preetham Talari, MD, FACP, SFHM; Mark V. Williams, MD, FACP, MHM
Session title: Interprofessional rounds: What's the right way?

Session summary: Interprofessional or multidisciplinary rounds involve all members of the care delivery team, including physicians, nurses, case managers, social workers, pharmacists, nurse facilitators, and of course, patients. The primary goal for these rounds is patient-centered care, and to improve communication among the health care team members, as well as with patients and their families.

At HM19, Dr. Talari and Dr. Williams of the University of Kentucky, and Dr. Bhamidipati of Christiana Care Health System in Newark, Del., discussed their system-based efforts to try to implement interprofessional rounds, and the role of these rounds in improving patient outcome measures.

The presenters noted that the purpose of these rounds is effective communication and efficient patient care. As shown by multiple studies, there is significant impact in team member satisfaction, decrease in length of stay, reduction in adverse events, and improvement in patient experience. They emphasized the importance of implementing these rounds at the bedside, so that patients and families can be engaged in the patient's care, thereby improving closed communication among the team and the patient. These rounds always offer an opportunity for the patient to ask questions of multiple health care team members as they are gathered together at the same time.


Dr. Jonnalagadda


Dr. Medarametla

The University of Kentucky named these rounds the "Interprofessional Teamwork Innovation Model (ITIM)," to promote communication and patient-centered coordinated care. Their model showed a significant reduction in readmission rates, and no increase in costs despite adding pharmacy and case managers to the rounds.

Dr. Bhamidipati described how Christiana Care Health System designed multidisciplinary rounds based on the application of Team STEPPS 2.0, a teamwork system developed by the Department of Defense and the Agency for Healthcare Research and Quality to improve the institutional collaboration and communication relating to patient safety.

The Christiana Care model is based on a few principles of team structure, communication, leadership, situation monitoring, and mutual support. The interprofessional team was trained and observed, and a short video recording was made. This video was used as an educational tool in coaching the rest of the team. Dr. Bhamidipati described the importance of interprofessional leaders as coaches to train other team members, and highlighted the engagement of unit leaders in successfully implementing these rounds. The Christiana Care team used its informational technology system to collect real-time data, which were then used for team review.

In summary, the presenters from both the University of Kentucky and Christiana Care highlighted the importance of interprofessional rounds, as well as the need for continued measurement of process and outcome metrics.

Dr. Jonnalagadda is a physician adviser, and Dr. Medarametla is medical director, Hospital Medicine, at Baystate Medical Center, Springfield, Mass.

Things we do for no reason

By Weijen Chang, MD, SFHM, FAAP

Presenters: Amit K. Pahwa, MD, FAAP; Nicola Orlov, MD, MPH, FAAP
Session title: Things we do for no reason (pediatrics)

Session summary: As he began by stating the Institute of Medicine definition of high-value care (HVC), Dr. Pahwa, of Johns Hopkins Medicine, Baltimore, described HVC as the best care for the patient, with the optimal result for the circumstances, at the right price. But few pediatric residency programs provide education regarding HVC, with only 11% providing a formal HVC curriculum.

Dr. Pahwa then provided examples of cases in which HVC could be optimized, including reducing rebound bilirubin levels in neonatal hyperbilirubinemia, giving nasogastric feeds instead of IV hydration in bronchiolitis, reducing unnecessary vital sign checks, and providing apple juice supplemented with liquids of choice instead of more expensive oral electrolyte solutions.

Dr. Orlov, of the University of Chicago, presented another illustrative case which highlighted the need to reduce vital sign frequency when appropriate. This was linked to her work on reducing nighttime sleep disruptions in hospitalized children, as part of the SIESTA (Sleep for Inpatients: Empowering Staff to Act) study. This led to a significant reduction in nurse/physician interruptions during the study period.


Dr. Chang

Key takeaways for HM

- High-value care is a key focus of systems improvement in the field of pediatric hospital medicine.
- Educational efforts for all levels of learners is inadequate currently.
- QI projects to promote HVC can lead to reduced costs, and improve quality and patient experience.

Dr. Chang is a pediatric hospitalist at Baystate Children's Hospital in Springfield, Mass., and is the pediatric editor of The Hospitalist.

Practice management tips for pediatric HMGs

By Anika Kumar, MD, FAAP

Presenter: H. Barrett Fromme, MD, MHPE, FAAP
Session title: Practice management tips for long-term success in your Pediatric Hospital Medicine Group

Session summary: Dr. Fromme of the University of Chicago presented and facilitated a dialogue of sustainability. The audience was guided through a discussion of how efficiency and resources, workload and job demands, work-life integration and social support, and community at work can either lead to burnout or engagement within a Pediatric Hospital Medicine Group.

For each of the four topics, Dr. Fromme presented how individuals and leaders can leverage these areas to counteract burnout and promote engagement, leading to vitality within the practice group.

She closed her discussion stating that sustainability is a "process that maintains change in a balanced environment of resources, technology, and institutional change [that] are in harmony, and enhances current and future potential to meet human aspirations and needs."


Dr. Kumar

Key takeaways for HM

- Advocate with hospital leadership to optimize individual workload and job demands.
- Improve care process and clinical work flow to optimize efficiency and resources.
- Build high-functioning teams and cultivate communities of practice.
- Develop goals to optimize work-life integration.
- Support values, autonomy, and growth to create an environment where individuals actively value and support their colleagues.

Dr. Kumar is a pediatric hospitalist at Cleveland Clinic Children's Hospital.

A "Ray of light"

Finding inspiration in our patients

By Leif Hass, MD

I rush into the room at 4:30 p.m., hoping for a quick visit and maybe an early exit from the hospital; I had been asked to see Mr. Bryant in room 6765 with sigmoid volvulus.

"Hey, Dr. Hass, my brother!" he says with a huge smile. Somehow, he must have gotten a glimpse of me before I could see him. I peek over the nurse's shoulder, and then I see that unforgettable smile with only a few teeth and big bright eyes. Immediately I recognize him and think, "How could I have forgotten his name? Ray – like a beam of light." He certainly had not forgotten me.

"It's been more than a year since I was last here," he says proudly.

When we met during his last hospitalization, I was struck by a thought that implanted itself deep in my brain: This guy is the happiest person I have ever met. And after what must have been 18 hard months for him, he is still smiling – and more than that, he is radiating love.

The fact that he is the "happiest person" is made more remarkable by all the hardship he has endured. Ray was born with cerebral palsy and didn't walk until he was 10. The continuous spasms in his muscles led to severe cervical disc disease. His worsening pain and weakness were missed by his health care providers until he had lost significant strength in his hands and legs. When he finally got an MRI and then emergency surgery, it was too late. He never regained the dexterity of his hands or the ability to walk. He can climb onto his scooter chair only with the help of a lift.

"Wow! How you been, Ray?"

He replies with a phrase that jumped back out from my memory as he was saying it: "I just wake up every day and think about what I can do to make people happy."

The goosebumps rise on my arms; I remember feeling this same sense of awe the last time we met – a feeling of real spiritual love for this guy.

"Today I feel so much better, too. I want to thank y'all who helped my stomach go down. Man, it got so huge, I thought I might blow up." One of the consequences of the nerve damage he sustained is a very slow gut that has led to a stretched-out colon. The other day, his big, floppy colon got twisted, and neither our gastroenterologist nor radiologist was able to untwist it. He still has a tube in his rectum to help decompress his bowel.

Ray fills me in on the details in the slightly strained and slurred speech that sometimes comes with cerebral palsy. As he relays his story, my mind goes to work trying to diagnosis this mysterious case of happiness. How can I not try to get to the origins of this wellspring of love? I can't help but thinking: Was it Ray's joy and his speech impediment that made him seem childlike, or was it some brain injury that blessedly knocked out his self-pity? I would be wallowing in self-pity if I were as gravely disabled as he.

After a moment's reflection, I recall the research on the amazing stability of our happiness set point: Good things and bad move our happiness only for a while before we return to our innate level of happiness. I see I had likely fallen prey to a stereotype of the disabled as heroic for just being themselves. Ray's happiness is largely because of his lack of self-absorption and his focus on service and love.

Finishing our conversation and leaving the room feeling enlivened, I realize that Ray's generous spirit is a gift.

That night, my heart aches. I think about the inadequate care that led to Ray's profound loss of function, leading to a surge of anger toward our flawed health care system – one that routinely lets down the most vulnerable among us.

The next day, two sisters and an aunt join Ray in his room. They ask for hugs, and I happily supply them. "Ray told us about you," says Sheila, one of his sisters.

"Well, we have been talking about him here at the hospital, because he brightens everyone's day. He is truly amazing. Has Ray always been so full of love?" I say, hoping to get some insight into his remarkable spirit.

Tonya, his aunt, responds first. "We were raised that way – to look for the good and keep love in our hearts. But Ray has always been the best. He never, ever complains. He brings joy to so many people. You should see him every day out on his scooter. That's how he got that big sore on his butt."

Ray indeed had developed a pressure sore, one that was going to need some thoughtful, ongoing care.

"But I finally got the right kind of cushion, before it was real hard," he says.

I move from hospitalist mode to primary care mode and ask about his home equipment and his dental care. But they all want to keep talking about love.

"If doctors showed more love and their human side, they could bring more healing," his sister says.

After 20 minutes of chatting, I pause. It is my last day on service, I had run out of medical reason to stay and I have others to see. So, I reluctantly give my goodbye hugs and leave. At the door, I turn back around. "Hey, Ray, can I get a picture with you?"

"Yeah, I want one with you, too!"

So, not surprisingly, Ray never complains. Maybe his spinal cord injury wasn't from negligent care. Maybe he was so accustomed to looking past discomfort and too busy with his ministry of love, it didn't occur to him to seek care.

Still, such a tragedy that he lost so much of the little mobility he did have. But maybe not so bad. His injury brought him back in contact with me and our staff. He is still waking up trying to make people happy and I can see his efforts are working. "He made my day!" I hear from a nurse. There is a healthy buzz at the nurses' station after visits to his room.

Before I walk out the door, he gives me an awkward fist bump from the bed and says, "I want to thank y'all again for everything. And I want you to know I love you."

I find myself tearing up. "I love you too, my brother. And I am the one who should be grateful, Ray." Saying it, I feel myself playing a part in the cycle of gratitude. Even small gifts put us under an obligation to give back. With great gifts, the desire to give is inescapable.

There is only one Ray, but he has given me something to aspire toward and what feels like urgency to do it. I want to "wake up every day and think about what I can do to make people happy."

And understanding the potency of the gift from him has alerted me to the value of looking for other gifts and other inspirations from those I care for – something those of us who tend to be in the "doing" part of the provider-patient relationship can easily miss.

I will never be the beacon of light and love that Ray is, but being compelled to be my most authentic caring self with him, I see that for years I have held back – in the name of professionalism – the positive emotions that naturally arise from the work I do. I will try to shine and try to connect with that "Ray of light" residing in all my patients. I hope, too, that the cycle of giving that Ray started will continue spreading to all those I care for.

Dr. Hass is a hospitalist at Sutter Health in Oakland, Calif.

There is only one Ray, but he has given me something to aspire toward and what feels like urgency to do it. I want to "wake up every day and think about what I can do to make people happy."

N.Y. hospitals report near-universal CMV screening when newborns fail hearing tests

By M. Alexander Otto
MDedge News
REPORTING FROM PAS 2019

BALTIMORE – Over the past 2 years, Northwell Health, a large medical system in the metropolitan New York area, increased cytomegalovirus screening for infants who fail hearing tests from 6.6% to 95% at five of its birth hospitals, according to a presentation at the Pediatric Academic Societies annual meeting.

Three cases of congenital cytomegalovirus (CMV) have been picked up so far. The plan is to roll the program out to all 10 of the system's birth hospitals, where over 40,000 children are born each year.

"We feel very satisfied and proud" of the progress that's been made at Northwell in such a short time, said Alia Chauhan, MD, a Northwell pediatrician who presented the findings.

Northwell launched its "Hearing Plus" program in 2017 to catch the infection before infants leave the hospital. Several other health systems around the country have launched similar programs, and a handful of states – including New York – now require CMV screening for infants who fail mandated hearing tests.

The issue is gaining traction because hearing loss is often the only sign of congenital CMV, so it's a bellwether for infection. Screening children with hearing loss is an easy way to pick it up early, so steps can be taken to prevent problems down the road. As it is, congenital CMV is the leading nongenetic cause of hearing loss in infants, accounting for at least 10% of cases.

The Northwell program kicked off with an education campaign to build consensus among pediatricians, hospitalists, and nurses. A flyer was made about CMV screening for moms whose infants fail hearing tests, printed in both English and Spanish.

Initially, the program used urine PCR [polymerase chain reaction] to screen for CMV, but waiting for infants to produce a sample often delayed discharge, so a switch was soon made to saliva swab PCRs, which take seconds, with urine PCR held in reserve to confirm positive swabs.

To streamline the process, a standing order was added to the electronic records system so nurses could order saliva PCRs without having to get physician approval. "I think [that] was one of the biggest things that's helped us," Dr. Chauhan said.

Children who test positive must have urine confirmation within 21 days of birth; most are long gone from the hospital by then and have to be called back in. "We haven't lost anyone to follow-up, but it can be stressful trying to get someone to come back," she said.

Six of 449 infants have screened positive on saliva – three were false positives with negative urine screens. Of the three confirmed cases, two infants later turned out to have normal hearing on repeat testing and were otherwise asymptomatic.


M. Alexander Otto/MDedge News
Dr. Alia Chauhan

These days, Dr. Chauhan said, if children have a positive saliva PCR but later turn out to have normal hearing, and are otherwise free of symptoms with no CMV risk factors, "we are not confirming with urine."

Dr. Chauhan did not have any disclosures. No funding source was mentioned.

Comorbid depression worsens many pediatric hospital outcomes

By Christopher Palmer
MDedge News
FROM THE JOURNAL OF AFFECTIVE DISORDERS

Comorbid depression significantly increased hospitalization costs, length of stay, and mortality among pediatric patients, according to a study in the Journal of Affective Disorders.

The investigators led by Mayowa Olusunmade, MD, MPH, of New Jersey Medical School, Newark, found that, compared with those among nondepressed pediatric patients, hospitalization costs were $2,961 higher (*P* less than .001), length of stay was 0.89 days longer (*P* less than .001), and odds of death as an outcome while hospitalized was 1.77 times higher (*P* = .013) among depressed pediatric patients. On the other hand, depressed patients had 0.3 fewer procedures (*P* less than .001) than nondepressed patients.

This analysis is based on 17,073 pairs of patients with and without depression that were created through one-to-one propensity score matching. The investigators drew these pairs from an estimated 937,971 patients in the Kids' Inpatient Database for 2012 who were identified as being aged 6 years and older and having any of the 10 of the most common diagnoses other than affective disorders. The investigators then determined which children among those identified had comorbid depression (2.9%) and which did not (97.1%) to create the propensity score–matched pairs.

One limitation in this study is that the mean age was 17.5 years because depression diagnosis is more atypical among younger patients such that adolescents were disproportionately represented.

The study did not receive funding, and the authors declared there are no conflicts of interest.

VA hospitalist

Continued from page 1

(seeing patients 5 months a year on a consultative or inpatient basis with resident teams); administrative in a variety of roles; and research. He has academic appointments at the George Washington University (GWU) School of Medicine and at the Uniformed Services University of Health Sciences in Bethesda, Md. He developed the coursework for teaching evidence-based medicine to first- and second-year medical students at GWU.

He is also part of a large research consortium with five sites and $7.5 million in funding over 5 years from NIH's National Institute on Minority Health and Health Disparities to study how genetic information from African American patients can predict their response to cardiovascular medications. He serves as the study's site Principal Investigator at the VAMC.

Opportunities to advance his leadership skills have included the VA's Aspiring Leaders Program and Leadership Development Mentoring Program, which teach leadership skills on topical subjects such as teaching, communications skills, and finance. The Master Teacher Leadership Development Program for medical faculty at GWU, where he attended medical school and did his internship and residency, offers six intensive, classroom-based 8-week courses over a 1-year period. They cover various topical subjects with faculty from the business world teaching principles of leadership. The program includes a mentoring action plan for participants and leads to a graduate certificate in leadership development from GWU's Graduate School of Education and Human Development at the end of the year's studies.

Dr. Tuck credits completing this kind of coursework for his current position of leadership in the VA and he tries to share what he has learned with the medical students he teaches.

"When I was starting out as a physician, I never received training in how to lead a team. I found myself trying to get everything done for my patients while teaching my learners, and I really struggled for the first couple of years to manage these competing demands on my time," he said.

Now, on the first day of a new clinical rotation, he meets one-on-one with his residents to set out goals and expectations. "I say: 'This is how I want rounds to be run. What are your expectations?' That way we make sure we're collaborating as a team. I don't know that medical school prepares you for this kind of teamwork. Unless you bring a background in business, you can really struggle."

Interest in hospital medicine

"Throughout our medical training we do a variety of rotations and clerkships. I found myself falling in love with all of them – surgery, psychiatry, obstetrics, and gynecology," Dr. Tuck explained, as he reflected on how he ended up in hospital medicine. "As someone who was interested in all of these different fields of medicine, I considered myself a true medical generalist. And in hospitalized patients, who struggle with all of the different issues that bring them to the hospital, I saw a compilation of all my experiences in residency training combined in one setting."

Dr. Matthew Tuck

> *"I say: 'This is how I want rounds to be run. What are your expectations?' That way we make sure we're collaborating as a team. I don't know that medical school prepares you for this kind of teamwork. Unless you bring a background in business, you can really struggle."*

Hospital medicine was a relatively young field at that time, with few academic hospitalists, he said. "But I had good mentors who encouraged me to pursue my educational, research, and administrative interests. My affinity for the VA was also largely due to my training. We worked in multiple settings – academic, community-based, National Institutes of Health, and at the VA."

Dr. Tuck said that, of all the settings in which he practiced, he felt the VA truly trained him best to be a doctor. "The experience made me feel like a holistic practitioner," he said. "The system allowed me to take the best care of my patients, since I didn't have to worry about whether I could make needed referrals to specialists. Very early in my internship year we were seeing very sick patients with multiple comorbidities, but it was easy to get a social worker or case manager involved, compared to other settings, which can be more difficult to navigate."

While the VA is a "great health system," Dr. Tuck said, the challenge is learning how to work with its bureaucracy. "If you don't know how the system works, it can seem to get in your way." But overall, he said, the VA functions well and compares favorably with private sector hospitals and health systems. That was also the conclusion of a recent study in the Journal of General Internal Medicine, which compared the quality of outpatient and inpatient care in VA and non-VA settings using recent performance measure data.[1] The authors concluded that the VA system performed similarly or better than non-VA health care on most nationally recognized measures of inpatient and outpatient care quality, although there is wide variation between VA facilities.

Work with the team

Another major interest for Dr. Tuck is team-based learning, which also grew out of his GWU leadership certificate course work on teaching teams and team development. He is working on a draft paper for publication with coauthor Patrick Rendon, MD, associate program director for the University of New Mexico's internal medicine residency program, building on the group development stage theory – "Forming/Storming/Norming/Performing" – developed by Tuckman and Jenson.[2]

The theory offers 12 tips for optimizing inpatient ward team performance, such as getting the learners to buy in at an early stage of a project. "Everyone I talk to about our research is eager to learn how to apply these principles. I don't think we're unique at this center. We're constantly rotating learners through the program. If you apply these principles, you can get learners to be more efficient starting from the first day," he said.

The current inpatient team model at the Washington VAMC involves a broadly representative team from nursing, case management, social work, the business office, medical coding, utilization management, and administration that convenes every morning to discuss patient navigation and difficult discharges. "Everyone sits around a big table, and the six hospital medicine teams rotate through every 15 minutes to review their patients' admitting diagnoses, barriers to discharge and plans of care."

At the patient's bedside, a Focused Interdisciplinary Team (FIT) model, which Dr. Tuck helped to implement, incorporates a four-step process with clearly defined roles for the attending, nurse, pharmacist, and case manager or social worker. "Since implementation, our data show overall reductions in lengths of stay," he said.

Dr. Tuck urges other hospitalists to pursue opportunities available to them to develop their leadership skills. "Look to your professional societies such as the Society of General Internal Medicine (SGIM) or SHM." For example, SGIM's Academic Hospitalist Commission, which he cochairs, provides a voice on the national stage for academic hospitalists and cosponsors with SHM an annual Academic Hospitalist Academy to support career development for junior academic hospitalists as educational leaders. Since 2016, its Distinguished Professor of Hospital Medicine recognizes a professor of hospital medicine to give a plenary address at the SGIM national meeting.

SGIM's SCHOLAR Project, a subgroup of its Academic Hospitalist Commission, has worked to identify features of successful academic hospitalist programs, with the results published in the *Journal of Hospital Medicine*.[3]

"We learned that what sets successful programs apart is their leadership – as well as protected time for scholarly pursuits," he said. "We're all leaders in this field, whether we view ourselves that way or not."

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Discharge before noon: An appropriate metric for efficiency?

By Jennifer K. Chen, MD

I first heard the term "discharge before noon" (DCBN) as a third-year medical student starting my internal medicine rotation. The basic idea made sense: Get patients out of the hospital early so rooms can be cleaned more quickly and new patients wouldn't have to wait so long in the ED.

It quickly became apparent, however, that a lot of moving parts had to align perfectly for DCBN. Even if we prioritized rounding on dischargeable patients (starting 8-9 a.m. depending on the service/day), they still needed prescriptions filled, normal clothes to wear, and a way to get home, which wasn't easy to coordinate while we were still trying to see all the other patients.

Fast forward through 5 years of residency/fellowship experience and DCBN seems even more unrealistic in hospitalized pediatric patients. As a simple example, discharge criteria for dehydration (a common reason for pediatric hospitalization) include demonstrating the ability to drink enough liquids to stay hydrated. Who's going to force children to stay up all night sipping fluids (plus changing all those diapers or taking them to the bathroom)? If the child stays on intravenous fluids overnight, we have to monitor at least through breakfast, likely lunch, thus making DCBN nearly impossible.

In a January 2019 article in the *Journal of Hospital Medicine*, Hailey I. James, MHA (@Haileyjms on Twitter), and her colleagues demonstrated an association between DCBN and decreased length of stay (LOS) for medical but not surgical pediatric discharges.[1] This made them question if DCBN is an appropriate metric for discharge efficiency, as well as workflow differences between services. Many hospitals, however, still try to push DCBN as a goal (see Destino et al in the same January 2019 issue of *JHM*[2]), which could potentially lead to people trying to game the system.

How does your institution try to make discharge processes more efficient? Is it actually possible to do everything more quickly without sacrificing quality or trainee education? Whether your patients are kids, adults, or both, there are likely many issues in common where we could all learn from each other.

We discussed this topic in #JHMChat on Twitter. New to Twitter or not familiar with #JHMChat? Since October 2015, #JHMChat has hosted discussions of articles spanning a wide variety of topics related to caring for hospitalized patients. All are welcome to join, including students, residents, nurses, practicing hospitalists, and more. It's a great opportunity to virtually meet and learn from others while earning free CME.

To participate in future chats, type #JHMChat in the search box on the top right corner of your Twitter homepage, click on the "Latest" tab at the top left to see the most recent tweets, and join the conversation (don't forget the hashtag)!

Dr. Chen is a pediatric hospital medicine fellow at Rady Children's Hospital, University of California, San Diego. She serves as a fellow district representative for the American Academy of Pediatrics, and is an active #tweetiatrician at @DrJenChen-4kids.

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CBO predicts more Medicare spending with drug rebate proposal

By Gregory Twachtman
MDedge News

Medicare spending on pharmaceuticals is projected to increase if the Centers for Medicare & Medicaid Services finalizes changes to drug rebates in the Medicare program.

The Congressional Budget Office is estimating that Medicare spending would increase by $170 billion from 2020 to 2029 if the rebate rule goes into effect, according to a report released May 2.

The proposed rule, issued Jan. 31, would make it illegal for drug manufacturers to pay rebates to health plans and pharmacy benefit managers in return for better formulary placement. Instead of rebates, manufacturers could offer discounts directly to beneficiaries by lowering list prices or making a payment to the pharmacy for the full amount of the negotiated discount – a chargeback. Under the proposal, a beneficiary's cost sharing would be based on the lower list price or the price after the chargeback.

The CBO's projected spending increases are based on the assumption that manufacturers will withhold 15% of current-law rebates, as well as increases in federal subsidies for premiums, changes in annual thresholds to beneficiary cost sharing, and the cost of implementing the chargeback system.

The agency expects premiums to rise, as many plans currently use the rebates they receive from drug companies to lower premiums across the board.

However, some beneficiaries "would pay lower prices on their prescription drugs, and for some beneficiaries, those reductions would be greater than their premium increases," the CBO stated in its report. For beneficiaries who use few drugs or who use drugs that have no significant rebates, "the premium increase would outweigh the price reduction."

Another reason federal spending would increase under this proposal is an expected increase in utilization that would come with the lowering of prices.

"In CBO's estimate, the additional Part D utilization stemming from implementing the proposed rule would increase federal spending for beneficiaries who are not enrolled in the low-income subsidy program over the 2020-2029 period by a total of about 2% or $10 billion," the report noted.

But the increase in utilization would have a net positive effect on Medicare spending for this population, as more beneficiaries followed their drug regimens resulting in lower spending for physician and hospital services under Medicare Part A and Part B by an estimated $20 billion over the same period, according to the CBO.

"On net, those effects are projected to reduce Medicare spending by $10 billion over the 2020-2029 period," according to the report.

KENSHIROTE/THINKSTOCK

CDC warns against misuse of opioid-prescribing guideline

By Alicia Gallegos
MDedge News

Officials at the Centers for Disease Control and Prevention are warning against the misapplication of the agency's 2016 guidelines on opioid prescribing, as well as clarifying dosage recommendations for patients starting or stopping pain medications.

In a perspective published in the New England Journal of Medicine, lead author Deborah Dowell, MD, chief medical officer for the CDC's National Center for Injury Prevention and Control, conveyed concern that some policies and practices derived from the 2016 CDC Guideline for Prescribing Opioids for Chronic Pain are inconsistent with the recommendations and often go beyond their scope.

Misapplication examples include inappropriately applying the guideline to patients in active cancer treatment, patients experiencing acute sickle cell crises, or patients experiencing postsurgical pain, Dr. Dowell wrote.

CDC NEWS

The guideline offers guidance to clinicians treating chronic pain in adults who are already receiving opioids long-term at high dosages, she noted. It includes advice on maximizing nonopioid treatment, reviewing risks associated with continuing high-dose opioids, and collaborating with patients who agree to taper dosage, among other guidance.

Any application of the guideline's dosage recommendation that results in hard limits or "cutting off" opioids is also an incorrect use of the recommendations, according to Dr. Dowell.

While the guideline advises clinicians to start opioids at the lowest effective dosage and avoid increasing dosage to 90 morphine–milligram equivalents per day or more,

Misapplication examples include patients experiencing acute sickle cell crises or patients experiencing postsurgical pain.

that statement does not suggest discontinuation of opioids already prescribed at high dosages, according to the CDC's clarification.

The guidance also does not apply to patients receiving or starting medication-assisted treatment for opioid use disorder.

The commentary comes after a trio of organizations raised concerns that insurers are inappropriately applying the recommendations to active cancer patients when making coverage determinations.

The American Society of Clinical Oncology, the National Comprehensive Cancer Network, and the American Society of Hematology raised the issue in a letter to the CDC in February. In response, Dr. Dowell clarified that the recommendations are not intended to deny clinically appropriate opioid therapy to any patients who suffer chronic pain, but rather to ensure that physicians and patients consider all safe and effective treatment options.

In the perspective, Dr. Dowell wrote that the CDC is evaluating the intended and unintended impact of the 2016 opioid-prescribing guideline on clinicians and patient outcomes, and that the agency is committed to updating the recommendations when new evidence is available.

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Bringing QI training to an IM residency program

Consider a formal step-wise curriculum

For current and future hospitalists, there's no doubt that knowledge of quality improvement (QI) fundamentals is an important component of a successful practice. One physician team set out to provide their trainees with that QI foundation and described the results.

"We believed that implementing a formal step-wise QI curriculum would not only meet the Accreditation Council of Graduate Medical Education (ACGME) requirements, but also increase residents' knowledge of QI fundamentals and ultimately establish a culture of continuous improvement aiming to provide high-value care to our health care consumers," said lead author J. Colt Cowdell, MD, MBA, of Mayo Clinic in Jacksonville, Fla.

Prior to any interventions, the team surveyed internal medicine residents regarding three unique patient scenarios and scored their answers. Residents were then assigned to one of five unique QI projects for the academic year in combination with a structured didactic QI curriculum.

After the structured progressive curriculum, in combination with team-based QI projects, residents were surveyed again. Results showed not only increased QI knowledge, but also improved patient safety and reduced waste.

WAVEBREAKMEDIA/THINKSTOCK

"Keys to successful implementation included a thorough explanation of the need for this curriculum to the learners and ensuring that QI teams were multidisciplinary – residents, QI experts, nurses, techs, pharmacy, administrators, etc.," said Dr. Cowdell.

For hospitalists in an academic setting, this work can provide a framework to incorporate QI into their residency programs. "I hope, if they have a passion for QI, they would seek out opportunities to mentor residents and help lead multidisciplinary team-based projects," Dr. Cowdell said.

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New help for peanut allergies

Breakthrough therapy holds potential

When it comes to anaphylaxis episodes leading to pediatric intensive care–unit stays, peanuts are the most common culprit. Now the results of a recent clinical trial may lead to approval of the first oral medication to ameliorate reactions in children with severe peanut allergies.

MATES/FOTOLIA

After 6 months of treatment and 6 months of maintenance therapy, two-thirds of the 372 children who received this treatment could ingest the equivalent of two peanuts without allergic symptoms. Just 4% of the 124 children given a placebo powder were able to consume that amount of peanut without reacting. The treatment was not effective for the small number of adults in the study.

This trial of the drug, called AR101 and developed by Aimmune Therapeutics, was published in November 2018 in the New England Journal of Medicine. The company has submitted a biologics license application to the U.S. Food and Drug Administration, and because the drug has been designated a breakthrough therapy, it will go through an accelerated approval process. It could be on the market by the end of 2019.

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Quick Byte: Cost conversations

Patients want to talk

Seventy percent of Americans would like to have conversations about the costs of care with their health care providers, but only 28% do so, according to polling conducted for the Robert Wood Johnson Foundation (RWJF) by Avalere Health.

With those polling results in hand, 2 years ago RWJF and Avalere Health launched the Cost Conversation projects to help health care providers. Practice briefs for these kinds of conversations are now available on America's Essential Hospitals' website (https://essentialhospitals.org/cost-care/practice-briefs/).

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UTAH778/THINKSTOCK

Reducing adverse drug reactions

Inpatient/outpatient transition eased

Adverse drug reactions are a problem hospitalists encounter often. An estimated 9% of hospital admissions in older adults are the result of adverse drug reactions, and up to one in five adults experience an adverse drug reaction during hospitalization.

"Many interventions have been tried to solve this problem, and certain of them have worked, but to date we don't have any great solutions that meaningfully impact the rate of these events in a way that's feasible in most health care environments, so any efforts to reduce the burden of these problems in older adults could be hugely beneficial," said Michael Steinman, MD, author of an editorial highlighting a new approach.

His editorial in BMJ Quality & Safety cites research on the Pharm-2Pharm program, implemented in six Hawaiian hospitals, in which hospital-based pharmacists identified inpatients at high risk of medication misadventures with criteria such as use of multiple medications, presence of high-risk medications such as warfarin or glucose-lowering drugs, and a history of previous acute care use resulting from medication-related problems. The hospital pharmacist would then meet with the patient to reconcile medications and facilitate a coordinated hand-off to a community pharmacist, who would meet with the patient after discharge.

In addition to a 36% reduction in the rate of medication-related hospitalizations, the intervention generated an estimated savings of $6.6 million per year in avoided hospitalizations.

There are two major takeaways, said Dr. Steinman, who is based in the division of geriatrics at the University of California, San Francisco: It's critical to focus on transitions and coordination between inpatient and outpatient care to address medication-related problems, and pharmacists can be extremely helpful in that.

CREDIT: MOODBOARD/THINKSTOCK

"Decisions about drug therapy in the hospital may seem reasonable in the short term but often won't stick in the long term unless there is a coordinated care that can help ensure appropriate follow-through once patients return home," Dr. Steinman said. "The study that the editorial references is a systems intervention that hospitalists can advocate for in their own institutions, but in the immediate day-to-day, trying to ensure solid coordination of medication management from the inpatient to outpatient setting is likely to be very helpful for their patients."

The long-term outcomes of hospitalized patients are largely influenced by getting them set up with appropriate community resources and supports once they leave the hospital, he added, and the hospital can play a critical role in putting these pieces into place.

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Creating better performance incentives

P4P programs suffer from several flaws

Many performance improvement programs try to create a higher value health system by incentivizing physicians and health systems to behave in particular ways. These have often been pay-for-performance programs that offer bonuses or impose penalties depending on how providers perform on various metrics.

"In theory, this makes sense," said Dhruv Khullar, MD, MPP, lead author of a JAMA article about the future of incentives, and assistant professor at Weill Cornell Medicine in New York. "But in practice, these programs have not been successful in consistently improving quality, and sometimes they have been counterproductive. In our article, we argued that focusing too narrowly on financial rewards is not the right strategy to improve health system performance – and is sometimes at odds with the physician professionalism and what really motivates most clinicians."

Pay-for-performance programs suffer from several fundamental flaws: They focus too narrowly on financial incentives and use centralized accountability instead of local culture, for example, Dr. Khullar said.

"A better future state would involve capitalizing on physician professionalism through nonfinancial rewards, resources for quality improvement, team-based assessments, and emphasizing continuous learning and organizational culture," he noted. Performance programs would take a more global view of clinical care by emphasizing culture, teams, trust, and learning. Such a system would allow hospitalists and other physicians to worry less about meeting specific metrics and focus more on providing high-quality care to their patients.

"I would hope physicians, payers, and administrators would reconsider some previously held beliefs about quality improvement, especially the idea that better quality requires giving people bonus payments or imposing financial penalties," Dr. Khullar said. "We believe the next wave of performance improvement programs should entertain other paths to better quality, which are more in line with human motivation and physician professionalism."

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CREATARKA/GETTY IMAGES

Long-term antibiotic use tied to heightened stroke, CHD risk

Alteration of gut microorganisms at issue

By Jake Remaly
MDedge News
FROM THE EUROPEAN HEART JOURNAL

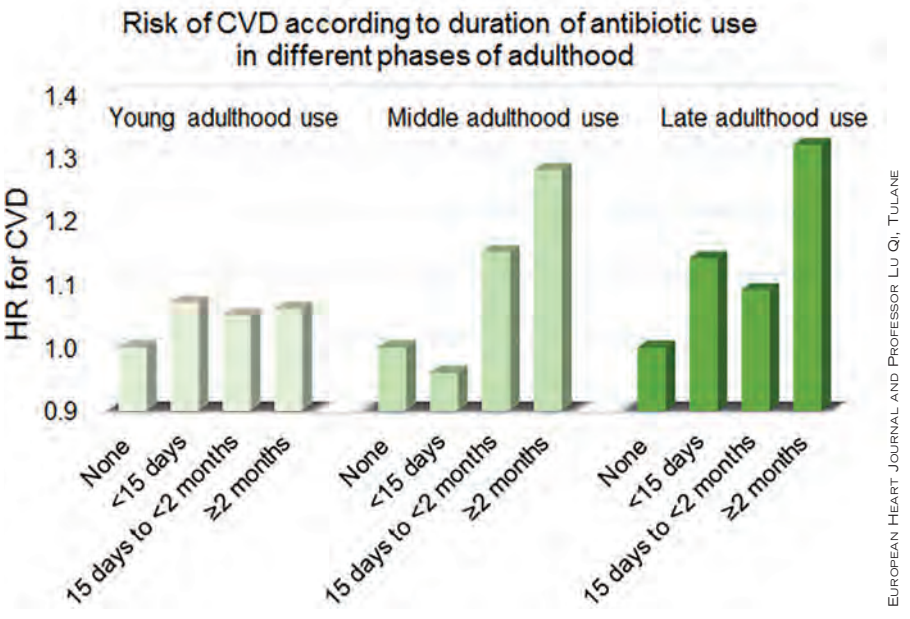
Among middle-aged and older women, 2 or more months' exposure to antibiotics is associated with an increased risk of coronary heart disease or stroke, according to a study in the European Heart Journal.

Women in the Nurses' Health Study who used antibiotics for 2 or more months between ages 40 and 59 years or at age 60 years and older had a significantly increased risk of cardiovascular disease, compared with those who did not use antibiotics. Antibiotic use between 20 and 39 years old was not significantly related to cardiovascular disease.

Prior research has found that antibiotics may have long-lasting effects on gut microbiota and relate to cardiovascular disease risk.

"Antibiotic use is the most critical factor in altering the balance of microorganisms in the gut," said lead investigator Lu Qi, MD, PhD, in a news release. "Previous studies have shown a link between alterations in the microbiotic environment of the gut and inflammation and narrowing of the blood vessels, stroke, and heart disease," said Dr. Qi, who is the director of the Tulane University Obesity Research Center in New Orleans and an adjunct professor of nutrition at Harvard T.C. Chan School of Public Health in Boston.

To evaluate associations between life stage, antibiotic exposure, and subsequent cardiovascular disease, researchers analyzed data from 36,429 participants in the Nurses' Health Study. The women were at least 60 years old and had no history of cardiovascular disease or cancer when they completed a 2004 questionnaire about antibiotic usage during young, middle, and late adulthood. The questionnaire asked participants to indicate the total time using antibiotics with eight categories ranging from none to 5 or more years.



EUROPEAN HEART JOURNAL AND PROFESSOR LU QI, TULANE

The researchers defined incident cardiovascular disease as a composite endpoint of coronary heart disease (nonfatal myocardial infarction or fatal coronary heart disease) and stroke (nonfatal or fatal). They calculated person-years of follow-up from the questionnaire return date until date of cardiovascular disease diagnosis, death, or end of follow-up in 2012.

Women with longer duration of antibiotic use were more likely to use other medications and have unfavorable cardiovascular risk profiles, including family history of myocardial infarction and higher body mass index. Antibiotics most often were used to treat respiratory infections. During an average follow-up of 7.6 years, 1,056 participants developed cardiovascular disease.

In a multivariable model that adjusted for demographics, diet, lifestyle, reason for antibiotic use, medications, overweight status, and other factors, long-term antibiotic use – 2 months or more – in late adulthood was associated with significantly increased risk of cardiovascular disease (hazard ratio, 1.32), as was long-term antibiotic use in middle adulthood (HR, 1.28).

Although antibiotic use was self-reported, which could lead to misclassification, the participants were health professionals, which may mitigate this limitation, the authors noted. Whether these findings apply to men and other populations requires further study, they said.

Because of the study's observational design, the results "cannot show that antibiotics cause heart disease and stroke, only that there is a link between them," Dr. Qi said. "It's possible that women who reported more antibiotic use might be sicker in other ways that we were unable to measure, or there may be other factors that could affect the results that we have not been able take account of."

> *"Our study suggests that antibiotics should be used only when they are absolutely needed. ... The shorter time of antibiotic use the better."*

"Our study suggests that antibiotics should be used only when they are absolutely needed," he concluded. "Considering the potentially cumulative adverse effects, the shorter time of antibiotic use the better."

The study was supported by National Institutes of Health grants, the Boston Obesity Nutrition Research Center, and the United States–Israel Binational Science Foundation. One author received support from the Japan Society for the Promotion of Science. The authors had no conflicts of interest.

Biomarker-based score predicts poor outcomes after acute ischemic stroke

Diagnostic accuracy was 82 percent

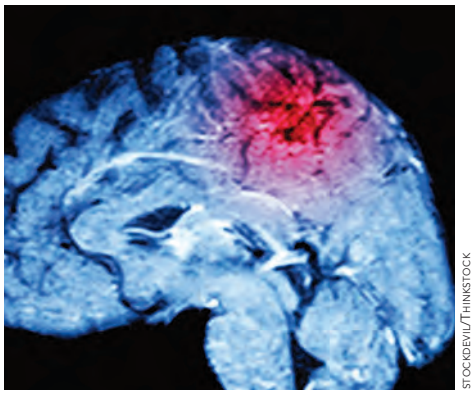
By Andrew D. Bowser
MDedge News
REPORTING FROM AAN 2019

PHILADELPHIA – A prognostic score for acute ischemic stroke that incorporates copeptin levels, age, recanalization, and National Institutes of Health Stroke Scale score has been externally validated and accurately predicts unfavorable outcome, according to research presented at the annual meeting of the American Academy of Neurology.

Although the four-item score could not be validated for mortality prediction, it had reasonable accuracy for predicting unfavorable functional outcome, defined as disability or mortality 3 months after ischemic stroke, Gian Marco De Marchis, MD, of the department of neurology and the stroke center at University Hospital Basel (Switzerland), said in a presentation.

"The use of a biomarker increases prognostic accuracy, allowing us to personalize prognosis in the frame of individualized, precision medicine," Dr. De Marchis said.

Copeptin has been linked to disability and mortality at 3 months in two independent, large cohort studies of patients with ischemic stroke, he said.


STOCKDEVIL/THINKSTOCK

"The use of a biomarker increases prognostic accuracy, allowing us to personalize prognosis in the frame of individualized, precision medicine. ... The observed outcomes matched well with the expected outcomes."

The four-item prognostic score devised by Dr. De Marchis and his coinvestigators, which they call the CoRisk score, was developed based on a derivation cohort of 319 acute ischemic stroke patients and a validation cohort including another 783 patients in the Copeptin for Risk Stratification in Acute Stroke Patients (CoRisk) Study.

Diagnostic accuracy was 82% for the endpoint of unfavorable functional outcome at 3 months, according to Dr. De Marchis.

"The observed outcomes matched well with the expected outcomes," he said in his presentation.

Further analyses demonstrated that the addition of copeptin indeed contributed to the diagnostic accuracy of the score, improving the classification for 46%; in other words, about half of the patients were reclassified based on addition of the biomarker data.

By contrast, the score is not well suited to predict mortality alone at 3 months, the results of the analyses showed.

The algorithm used to calculate the score based on its four variables is somewhat complex, but available as a free app and online calculator, Dr. De Marchis said.

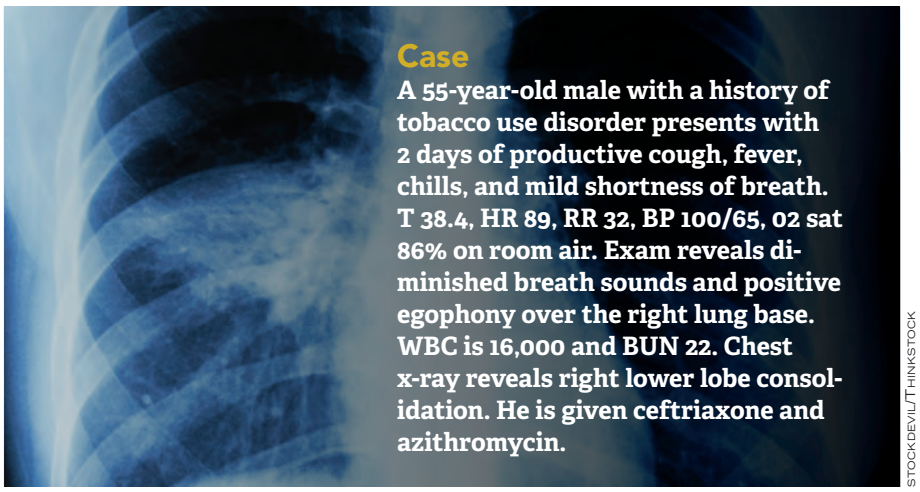
Dr. De Marchis and his coauthors had nothing to disclose related to their study. A full report on the study was published ahead of print on March 1 in Neurology.

Key Clinical Question

Adjuvant corticosteroids in hospitalized patients with CAP

When is it appropriate to treat?

By Andrew S. Parsons, MD, MPH; Bahnsen Miller, MD; and George Hoke, MD



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Case

A 55-year-old male with a history of tobacco use disorder presents with 2 days of productive cough, fever, chills, and mild shortness of breath. T 38.4, HR 89, RR 32, BP 100/65, 02 sat 86% on room air. Exam reveals diminished breath sounds and positive egophony over the right lung base. WBC is 16,000 and BUN 22. Chest x-ray reveals right lower lobe consolidation. He is given ceftriaxone and azithromycin.

Dr. Parsons is an assistant professor at the University of Virginia and a hospitalist at the University of Virginia Medical Center in Charlottesville. Dr. Miller is an assistant professor at the University of Virginia and a hospitalist at the University of Virginia Medical Center. Dr. Hoke is Associate Director of Hospital Medicine and Faculty Development at the University of Virginia.

Brief overview of the issue

Community-acquired pneumonia (CAP) is the leading cause of infectious disease–related death in the United States. Mortality associated with CAP is estimated at 57,000 deaths annually and occurs largely in patients requiring hospitalization.[1] The 30-day mortality rate in patients who are hospitalized for CAP is approximately 10%-12%.[2] After discharge from the hospital, about 18% of patients are readmitted within 30 days.[3] An excessive inflammatory cytokine response may be a major contributor to the high mortality rate in CAP and systemic corticosteroids may reduce the inflammatory response from the infection by down-regulating this proinflammatory cytokine production.

Almost all of the major decisions regarding management of CAP, including diagnostic and treatment issues, revolve around the initial assessment of severity of illness. Between 40% and 60% of patients who present to the emergency department with CAP are admitted[4] and approximately 10% of hospitalized patients with CAP require ICU admission.[5] Validated instruments such as CURB-65, the pneumonia severity index (PSI), and guidelines from the Infectious Diseases Society of America (IDSA)/American Thoracic Society (ATS) may predict severity of illness but should always be supplemented with physician determination of subjective factors when determining treatment.[5] Although there is no concensus definition of severe pneumonia, studies generally define the condition in the following order of preference: PSI score of IV or V followed by CURB-65 score of two or greater. If these scoring modalities were not available, the IDSA/ATS criteria was used (1 major or 3 minor). Others define severe CAP as pneumonia requiring supportive therapy within a critical care environment.

Table 1. Pneumonia severity index (PSI) scoring

Patient Characteristics	Points
Demographics	
Age(years): Male: age	—
Female: age	—
Nursing home resident	+10
Co-morbidities	
Neoplastic disease	+30
Liver disease	+20
Congestive heart failure	+10
Cerebrovascular disease	+10
Renal disease	+10
Examination findings	
Altered mental status	+20
Respiratory rate ³30/minute	+20
Systolic blood pressure <90 mmHg	+20
Temperature <35°C or ³40°C	+15
Pulse ³125/minute	+10
Laboratory findings	
pH <7.35 (do ABG only if hypoxic or COPD)	+30
BUN >10.7 mmol/ L	+20
Sodium <130 mEq/L	+20
Glucose ³13.9 mmol/L	+10
Hematocrit <0.30	+10
PaO_2 <60mmHg or oxygen saturation <90%	+10
Pleural effusion	+30

Risk	Class	Score
Low	I	<51
Low	II	51 - 70
Low	III	71 - 90
Medium	IV	90 - 130
High	V	>130

Overview of the data

The use of corticosteroids in addition to antibiotics in the treatment of CAP was proposed as early as the 1950s and yet only in the last decade has the body of evidence grown significantly.[5] There is evidence that corticosteroids suppress inflammation without acutely impairing the immune response as evidenced by a rapid and sustained decrease in circulating inflammatory markers such as C-reactive protein and interleukin 6 and no effect on the anti-inflammatory interleukin 10.[6] Within the last year, three meta-analyses, one by the Cochrane Library, one by the IDSA, and a third in the American Journal of Emergency Medicine, addressed the role of routine low-dose (20-60 mg of prednisone or equivalent), short-course (3-7 days) systemic corticosteroids in hospitalized patients with CAP of varying severities.

The Cochrane meta-analysis, the largest and most recent dataset, included 13 trials with a combined 1,954 adult patients and found that corticosteroids significantly lowered mortality in hospitalized patients with severe CAP with a number needed to treat of 19.[7] In this group with severe CAP, mortality was lowered from 13% to 8% and there were significantly fewer episodes of respiratory failure and shock with the addition of corticosteroids. No effect was seen on mortality in patients with less severe CAP. In those patients who received adjuvant corticosteroids, length of hospital stay decreased by 3 days, regardless of CAP severity.[7]

The IDSA meta-analysis was similar and included 1,506 patients from six trials.[8] In contrast with the Cochrane study, this analysis found corticosteroids did not significantly lower mortality in patients with severe CAP but did reduce time to clinical stability and length of hospital stay by over 1 day. This study also found significantly more CAP-related, 30-day rehospitalizations (5% vs. 3%; defined as recurrent pneumonia, other infection, pleuritic pain, adverse cardiovascular

Key Points

- For patients hospitalized with severe CAP, recent evidence supports the use of low-dose, short-course, systemic corticosteroids in addition to standard therapy.
- Among hospitalized patients with nonsevere CAP, the benefit is not well defined. Studies suggest these patients may benefit from reduced time to clinical stability and reduced length of hospital stay. However, they may be at risk for significantly more CAP-related, 30-day rehospitalizations and hyperglycemia.
- Further prospective, randomized controlled studies are needed to further delineate the patient population who will most benefit from adjunctive corticosteroids use, including dose and duration of treatment.

Additional Readings

- Blum CA et al. Adjunct prednisone therapy for patients with community-acquired pneumonia: A multicentre, double-blind, randomised, placebo-controlled trial. Lancet. 2015 Jan 18; [e-pub ahead of print] (http://dx.doi.org/10.1016/S0140-6736(14)62447-8).
- Briel M et al. Corticosteroids in patients hospitalized with community-acquired pneumonia: Systematic review and individual patient data meta-analysis. Clin Infect Dis. 2018 Feb 1; 66:346 (https://doi.org/10.1093/cid/cix801).
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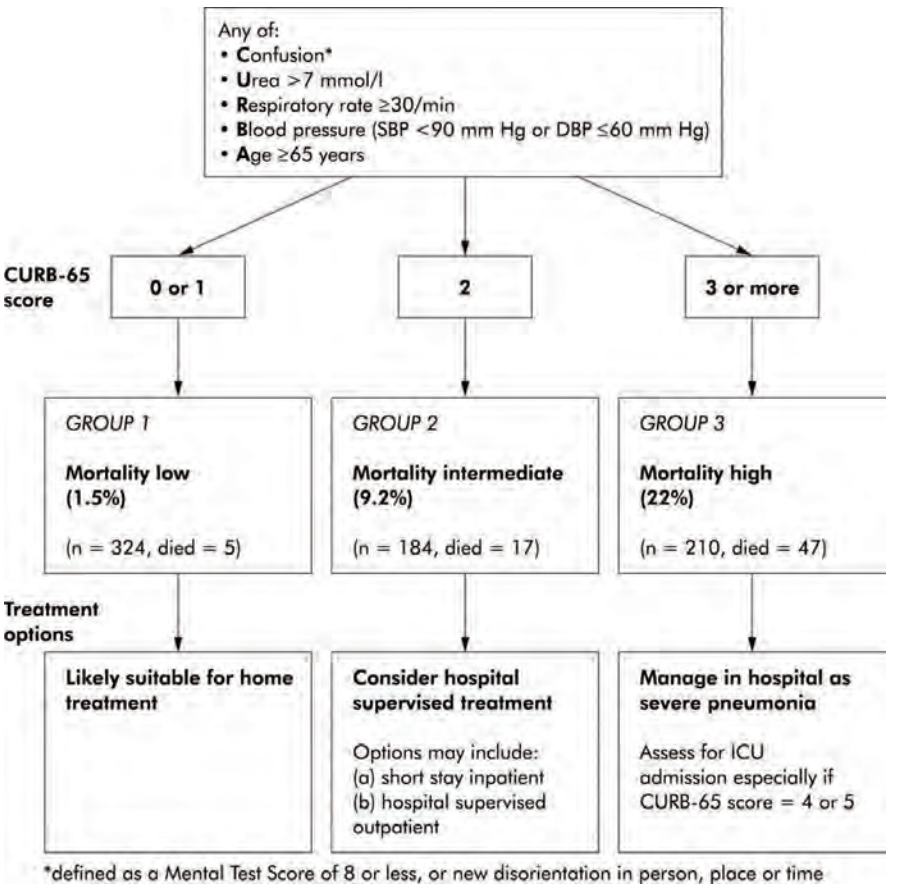
Figure



event, or diarrhea) in patient with nonsevere CAP treated with corticosteroids.

The study in the American Journal of Emergency Medicine involved 10 trials involving more than 700 patients admitted with severe CAP and found in-hospital mortality was cut in half (relative risk, 0.49) and length of hospital stay was reduced when patients were treated with corticosteroids in addition to standard antibiotic therapy.[9]

In 2015, two randomized clinical trials, one in the Lancet and the other in JAMA, and a meta-analysis in Annals of Internal Medicine assessed the impact of adjuvant corticosteroids in the treatment of hospitalized patients with CAP. The Lancet study of 785 patients hospitalized with CAP of any severity found shortened time to clinical stability (3.0 vs. 4.4 days) as defined by stable vital signs, improved oral intake, and normalized mental status for greater than 24 hours when oral prednisone 50 mg for 7 days was added to standard therapy.[10] Patients in the treatment group were also discharged 1 day earlier compared with the placebo control group.

The study in JAMA was small, with only 100 patients at three teaching hospitals in Spain, but found that patients hospitalized with severe CAP and high inflammatory response based on elevated C-reactive protein were less likely to experience a treatment failure, defined as shock, mechanical ventilation, death, or radiographic progression, when intravenous methylprednisolone 0.5 mg/kg was added to standard antibiotic therapy.[11]

Finally, the meta-analysis in Annals of Internal Medicine assessed 13 randomized controlled placebo trials of 1,974 patients and found that adjuvant corticosteroids in a dose of 20-60 mg of prednisone or equivalent total daily dose significantly lowered mortality in patients with severe CAP and incidence of respiratory distress syndrome, and need for mechanical ventilation in all patients hospitalized with CAP.[12]

Importantly, nearly all of the described studies showed a significantly higher incidence of hyperglycemia in patients who received corticosteroids.

Application of the data to our patients

The benefit of adjuvant corticosteroids is most clear in hospitalized patients with severe CAP. Recent, strong evidence supports decreased mortality, decreased time to clinical stability, and decreased length of stay in our patient, with severe CAP, if treated with 20-60 mg of prednisone or equivalent total daily dose for 3-7 days. For patients with nonsevere CAP, we suggest taking a risk-benefit approach based on other comorbidities, as the risk for CAP-related rehospitalizations may be higher.

For patients with underlying lung disease, specifically chronic obstructive pulmonary disease (COPD) or reactive airway disease, we suggest a low threshold for adding corticosteroids. This approach is more anecdotal than data driven, though corticosteroids are a mainstay of treatment for COPD exacerbations and a retrospective analysis of more than 20,000 hospitalized children with CAP and wheezing revealed decreased length of stay with corticosteroid treatment.[13] Furthermore, a number of the studies described above included patients with COPD. Our threshold rises significantly in patients with poorly controlled diabetes mellitus.

Bottom line

For patients hospitalized with severe community-acquired pneumonia, recent evidence supports the use of low-dose, short-course, systemic corticosteroids in addition to standard therapy.

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Quiz

Which of the following is FALSE regarding community-acquired pneumonia?

A. CAP is the leading cause of infectious disease–related death in the United States.
B. An excessive inflammatory cytokine response may contribute to the high mortality rate in CAP.
C. Adjunctive steroid therapy has been shown to decrease mortality in all patients with CAP.
D. Hyperglycemia occurs more frequently in patients receiving steroid therapy.
E. Reasons to avoid adjunctive steroid therapy in CAP include low risk for mortality, poorly controlled diabetes, suspected viral or fungal etiology, and elevated risk for gastrointestinal bleeding.

ANSWER: C. The patient population that may benefit most from the use of adjuvant corticosteroids is poorly defined. However, in patients with severe pneumonia, the use of adjuvant steroids has been shown to decrease mortality, time to clinical stability, and length of stay.

In the Literature

Clinician reviews of HM-centric research

By Gene Lambert, MD, MBA, FACP; Farrin A. Manian, MD, MPH; Adith Sekaran, MD; Hugo Torres, MD, MPH; and Amar Vedamurthy, MBBS, MS

Division of Hospital Medicine, Massachusetts General Hospital, Boston

IN THIS ISSUE

By Gene Lambert, MD, MBA, FACP

1 Compounded analgesic topical creams offer no benefit in treatment of localized chronic pain

CLINICAL QUESTION: Are compounded topical creams effective analgesia for localized chronic pain?
BACKGROUND: Federal health system programs, including TRICARE for military personnel, spent $259 million in 2013 and $746 million in 2014 for compounded analgesic medications despite a dearth of efficacy data. The purpose of this trial was to evaluate the efficacy and functional impact of this class of medications for chronic localized pain.
STUDY DESIGN: Randomized, double-blind, parallel trial.
SETTING: Walter Reed National Military Medical Center.
SYNOPSIS: A total of 339 patients with at least mild, chronic localized pain were allocated to three subgroups of 133 patients based on pain type; neuropathic, nociceptive, or mixed pain. The patients in the neuropathic pain arm received a compounded formulation containing 10% ketamine, 6% gabapentin, 0.2% clonidine, and 2% lidocaine; in the nociceptive pain arm, a formulation containing 10% ketoprofen, 2% baclofen, 2% cyclobenzaprine, and 2% lidocaine; and in the mixed pain arm, a formulation containing 10% ketamine, 6% gabapentin, 3% diclofenac, 2% baclofen, 2% cyclobenzaprine, and 2% lidocaine. Half of the patients in each subgroup received the compounded formulation and the other half received placebo.


Dr. Lambert

The primary outcome was the average pain score at 1 month follow-up, based on self-recorded arithmetic mean pain scores in the preceding week. Secondary outcomes included mean worst pain over the past week, functional improvement (assessed by validated Short-Form 36 Health Survey scores), and satisfaction (measured on a 1 to 5 Likert scale) with the individual treatment regimen.

Patients had small improvements in average pain scores at 1 month in the compounded formulation and placebo subgroups in all pain type categories. No significant differences were noted in the average pain scores compared to baseline, functional improvement or satisfaction in the compounded formulation and placebo groups of the total cohort or in any of the subgroups.
BOTTOM LINE: Compounded topical analgesics are costly and ineffective in the treatment of all types of chronic localized pain.
CITATION: Brutcher RE et al. Compounded topical pain creams to treat localized chronic pain. Ann Intern Med. 2019;170(5):309-18.

2 Acetaminophen plus ibuprofen cut patient-controlled morphine after total hip arthroplasty

CLINICAL QUESTION: Is the perioperative/early postoperative use of acetaminophen-ibuprofen associated with less patient-controlled morphine administration after total hip arthroplasty?
BACKGROUND: The use of multimodal non-opioid analgesics is a common practice to minimize postoperative pain and opioid analgesic use. There is limited high-quality evidence to confirm the synergistic effect and safety of acetaminophen and ibuprofen in the peripostoperative setting. The Paracetamol and NSAID in combination (PANSAID) trial investigated the analgesic efficacy and safety of four multimodal analgesic regimens after total hip arthroplasty.
STUDY DESIGN: Multicenter, randomized, blinded trial.
SETTING: A total of six hospitals in Denmark, which represented regional and large university settings.
SYNOPSIS: A total of 559 patients who underwent total hip arthroplasty were randomized to receive one of the following oral regimens: acetaminophen (1,000 mg) and ibuprofen (400 mg), acetaminophen (1,000 mg) and placebo, ibuprofen (400 mg) and placebo, and half-strength acetaminophen (500 mg) and ibuprofen (200 mg). One of the regimens was initiated 1 hour before surgery and continued every 6 hours for a total of 4 doses on the first postoperative day. The mean age was 67 years, and half of the patients were women.

The median morphine consumption in the 24 hours after surgery was significantly lower with full-strength acetaminophen-ibuprofen compared with acetaminophen monotherapy (20 mg vs. 36 mg, 99.6% confidence interval, 6.5-24; $P < .001$), which exceeded the prespecified 10-mg threshold for a minimal clinically important difference (MCID). The difference between acetaminophen-ibuprofen and ibuprofen monotherapy (20 mg vs. 26 mg) did not exceed the MCID, and was not clinically meaningful. The differences in morphine consumption with full-strength acetaminophen-ibuprofen compared to half-strength acetaminophen-ibuprofen (28 mg) and ibuprofen compared to acetaminophen monotherapy were not statistically significant.

Serious adverse events, the other primary outcome, within 90 days after surgery (15% in the ibuprofen group and 11% in the acetaminophen group, relative risk, 1.44; 97.5% CI, 0.79-2.64; $P = .18$) did not differ between acetaminophen monotherapy and ibuprofen monotherapy. Secondary outcomes included statistically significant analgesia (lower pain scores) at rest and with mobilization at 24 hours in the acetaminophen-ibuprofen group compared to the other groups.

An interesting observation was that acetaminophen-ibuprofen did not exceed the MCID compared to ibuprofen, which suggests that ibuprofen monotherapy may be a reasonable option for early postoperative analgesia.
BOTTOM LINE: Acetaminophen-ibuprofen reduced postoperative morphine use and had improved analgesia 24 hours after total hip arthroplasty, and was not associated with an increased 3-month risk of serious adverse events.
CITATION: Thybo KH et al. Effect of combination of paracetamol (acetaminophen) and ibuprofen vs. either alone on patient-controlled morphine consumption in the first 24 hours after total hip arthroplasty. The PANSAID randomized clinical trial. JAMA. 2019;321(6):562-71.

Dr. Lambert is a hospital medicine clinician and addiction medicine specialist in the division of hospital medicine at Massachusetts General Hospital.

By Farrin A. Manian, MD, MPH

3 New tetracycline antibiotic effective in community-acquired bacterial pneumonia

CLINICAL QUESTION: Is omadacycline, a new tetracycline-class antibiotic, as effective as moxifloxacin in the treatment of community-acquired bacterial pneumonia?
BACKGROUND: Community-acquired pneumonia (CAP) is a leading cause of hospitalization and death, particularly in the elderly. Omadacycline is a new once-daily tetracycline with in vitro activity against a wide range of CAP pathogens, including *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae*, and atypical organisms, such as *Mycoplasma pneumoniae*, *Legionella pneumophila*, and *Chlamydia pneumoniae*.


Dr. Manian

STUDY DESIGN: Phase 3 randomized, double-blind, double-dummy, placebo-controlled trial.
SETTING: Hospitalized patients (98.8%) in non-ICU settings at 86 sites in Europe, North America, South America, the Middle East, Africa, and Asia.
SYNOPSIS: The trial recruited 774 adults with three or more CAP symptoms (cough, purulent sputum production, dyspnea, or pleuritic chest pain) and at least two abnormal vital signs, one or more clinical signs or laboratory findings associated with CAP, radiologically confirmed pneumonia, and a Pneumonia Severity Index (PSI) of II, III, or IV (with higher class numbers indicating a greater risk of death). Exclusion criteria included having clinically significant liver or renal insufficiency or having an immunocompromised state. The patients were randomized to receive either omadacycline or moxifloxacin intravenously with the option to switch to the oral preparation of the respective drugs after at least 3 days of therapy. Atypical organisms were implicated in 67% of CAPS with known cause, while *Streptococcus pneumoniae* and *Haemophilus influenzae* were implicated in 20% and 12%, respectively. Omadacycline was noninferior to moxifloxacin with respect to early clinical response (81.1% vs 82.7%, respectively) and posttreatment clinical response rates (87.6% vs. 85.1%). Mean duration of IV therapy was 5.7 days, and the mean total duration of therapy was 9.6 days in both groups. The frequency of adverse events (primarily gastrointestinal) was similar between the two groups.

Exclusion of the most severe CAP and immunocompromised patients limits generalizability of these results.
BOTTOM LINE: Omadacycline provides similar clinical benefit as moxifloxacin in the treatment of selected patients with CAP.
CITATION: Stets R et al. Omadacycline for community-acquired bacterial pneumonia. N Eng J Med. 2019;380:517-27.

4 New tetracycline antibiotic effective in acute bacterial skin and skin-structure infections

CLINICAL QUESTION: Is omadacycline, a new tetracycline-class antibiotic, as effective as linezolid in the treatment of acute bacterial skin and skin-structure infections?
BACKGROUND: Acute bacterial skin and skin-structure infections (ABSSSIs) continue to account for substantial morbidity and health care burden, with the emergence of drug-resistant pathogens further complicating their management. Omadacycline is a new once-daily tetracycline with in vitro activity against a wide range of causative agents of ABSSSI, including *Streptococcus pyogenes*, *Staphylococcus aureus* (including methicillin-resistant strains, or MRSA), and *Enterococcus spp.*
STUDY DESIGN: Phase 3, randomized, double-blind, double-dummy, placebo-controlled trial.
SETTING: A total of 55 sites in the United States, Peru, South Africa, and Europe.
SYNOPSIS: The trial recruited 645 adults with a qualifying ABSSSI (such as wound infection, cellulitis or erysipelas, or major abscess) with evidence of an inflammatory response (white blood cell count at least 10,000 cells/mm^3 or 4,000 cells/mm^3 and below, immature neutrophils at least 15%, lymphatic involvement, or oral or rectal temperature greater than 38.0˚ C or less than 36.0˚ C). Exclusion criteria included infections associated with chronic skin lesions and clinically significant liver or renal insufficiency or immunocompromised state. All patients received either omadacycline or linezolid IV with the option to switch to the oral preparation of the respective drugs after at least 3 days of therapy.

Omadacycline was noninferior to moxifloxacin with respect to early clinical response (84.8% vs. 85.5%, respectively) and posttreatment clinical response rates (86.1% vs. 83.6%). Efficacy was similar for methicillin-susceptible or methicillin-resistant *Staphylococcus aureus*, the most common isolated pathogens. Frequency of adverse events (primarily gastrointestinal) was also similar in the two groups. Mean duration of IV therapy was 4.4 days, and mean duration of oral therapy was 5.5 days in the omadacycline group.
BOTTOM LINE: Omadacycline provides similar clinical benefit as linezolid in the treatment of ABSSSIs.
CITATION: O'Riordan W et al. Omadacycline for acute bacterial skin and skin-structure infections. N Eng J Med. 2019;380:528-38.

Dr. Manian is a core educator faculty member in the department of medicine at Massachusetts General Hospital and an associate professor of medicine at Harvard Medical School, Boston.

By Adith Sekaran, MD

5 Adding mechanical to pharma prophylaxis does not cut DVT incidence

CLINICAL QUESTION: Does adding mechanical prophylaxis to pharmacological prophylaxis lower the incidence of deep-vein thrombosis (DVT)?
BACKGROUND: Critically ill patients have a high risk of venous thromboembolism (VTE) during their hospitalizations, and it is standard of care to prophylax against this complication by either pharmacological or mechanical means.


Dr. Sekaran

STUDY DESIGN: Prospective, randomized, controlled trial (Pneumatic Compression for Preventing Venous Thromboembolism [PREVENT]).
SETTING: Multicenter study involving 20 ICUs in Saudi Arabia, Canada, Australia, and India.
SYNOPSIS: The study monitored 2,003 medical and surgical ICU patients on pharmacological throm-

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boprophylaxis (unfractionated or low-molecular-weight heparin) after receiving either adjunctive pneumatic compression or pharmacological thromboprophylaxis alone. The primary outcome was incident (newly diagnosed) proximal lower-limb DVT detected by twice-weekly venous ultrasonography until ICU discharge, death, attainment of full mobility, or trial day 28, whichever occurred first. Key secondary outcomes included the occurrence of any lower-limb DVTs and pulmonary embolism. Intermittent pneumatic compression was used a median of 22 hours daily. The incidence of proximal lower limb DVT did not differ in the two groups and was relatively low (4%) in the control group. There were also no differences in the groups in the composite VTE, death at 28 days, or any other secondary outcomes studied.

The main limitation of the study was the low incidence of primary outcomes in the control group, which reduced the power of the study.

BOTTOM LINE: Based on the PREVENT trial, adjunctive intermittent pneumatic compression provided no additional benefit to pharmacological prophylaxis in the prevention of incident proximal lower-limb DVT.

CITATION: Arabi Y et al. Adjunctive intermittent pneumatic compression for venous thromboprophylaxis. N Eng J Med. 2019 Feb 18. doi: 10.1056/NEJMoa1816150.

6 Sepsis patients with hypothermia face greater mortality risk

CLINICAL QUESTION: Is lower body temperature associated with lower rates of sepsis bundle implementation, sicker patients, and poorer outcomes?

BACKGROUND: Fevers (like other vital sign abnormalities) often trigger interventions from providers. However, hypothermia (temperature under 36˚ C) may also be associated with higher mortality.

STUDY DESIGN: Retrospective subanalysis of a previous study (Focused Outcome Research on Emergency Care for Acute respiratory distress syndrome, Sepsis and Trauma [FORECAST]).

SETTING: Adult patients with severe sepsis based on Sepsis-2 in 59 ICUs in Japan.

SYNOPSIS: The study involved 1,143 patients admitted to ICUs with severe sepsis (62.6% with septic shock). The median age was 73 years with a median APACHE II and SOFA scores of 22 and 9, respectively. Core temperatures were measured on admission to ICU with patients categorized into three arms: temperature under 36˚ C (hypothermic), temperature 36˚-38˚ C, and febrile patients with temperature greater than 38˚ C. Of studied patients, 11.1% were hypothermic on presentation. These patients were older, sicker (higher APACHE/SOFA scores), had lower body mass indexes, and had higher prevalence of septic shock than did the febrile patients. Hypothermic patients fared worse in every clinical outcome measured – in-hospital mortality, 28-day mortality, ventilator-free days, ICU-free days, length of hospital stay, and likelihood of discharge home. The

Short Takes

Cognitively impaired patients less likely to be readmitted with care transitions program

Retrospective cohort analysis of the Mayo Clinic Care Transitions Program for patients at risk of readmission shows that cognitively impaired patients were less likely to be readmitted than were cognitively intact ones. The authors were unable to identify which individual program components were most important in preventing readmission

CITATION: Thorsteinsdottir B et al. Care transitions program for high-risk frail older adults is most beneficial for patients with cognitive impairment. J Hosp Med. 2019. doi: 10.12788/jhm.3112.

Improve diagnostic accuracy by involving multiple physicians

A cross-sectional study using data from the Human Diagnosis Project (Human Dx) showed that the collective intelligence of attending physicians, residents, fellows, and medical students improved diagnostic accuracy, compared with that of individual physicians. However, the cases in Human Dx may not be representative of the scenarios encountered in day-to-day practice, and the subject merits further study.

CITATION: Barnett ML et al. Comparative accuracy of diagnosis by collective intelligence of multiple physicians vs individual physicians. JAMA Netw Open. 2019;2(3):e190096.

odds ratio of in-hospital mortality for hypothermic patients, compared with reference febrile patients, was 1.76 (95% CI, 1.14-2.73). Patients with hypothermia were also significantly less likely to receive the entire 3-hour resuscitation bundle, including broad-spectrum antibiotics (56.3%) versus 60.8% of patients with temperature 36-38˚ C and 71.1% for febrile group (P = .003).

BOTTOM LINE: Hypothermia in patients with severe sepsis is associated with a significantly higher disease severity, mortality risk, and lower implementation of sepsis bundles. More emphasis on earlier identification and treatment of this specific patient population appears needed.

CITATION: Kushimoto S et al. Impact of body temperature abnormalities on the implementation of sepsis bundles and outcomes in patients with severe sepsis: A retrospective sub-analysis of the focused outcome of research of emergency care for acute respiratory distress syndrome, sepsis and trauma study. Crit Care Med. 2019 May;47(5):691-9.

Dr. Sekaran is a hospitalist at Massachusetts General Hospital.

By Hugo Torres, MD, MPH

7 Don't delay antibiotic treatment in elderly patients with UTI

CLINICAL QUESTION: Is there an association between delayed antibiotic treatment and adverse outcomes in elderly patients with suspected or confirmed urinary tract infections (UTIs)?

BACKGROUND: If left untreated, UTIs may lead to severe complications. Although campaigns aimed at decreasing unnecessary prescriptions have reduced the number of antibiotic prescriptions for UTI, a concurrent rise in the rates of gram-negative bloodstream infections (BSIs) has also been observed.

STUDY DESIGN: Retrospective, population-based cohort study with data compiled from primary care records from 2007 to 2015 linked to hospital episode statistics and death records.

SETTING: General practices in England.

SYNOPSIS: The investigators analyzed 312,896 UTI episodes among 157,264 unique patients (65 years of age or older) during the study period. Exclusion criteria included asymptomatic bacteriuria and complicated UTI. Of 271,070 patients who received antibiotics on the day of presentation with symptoms, 0.2% developed BSI within 60 days versus 2.2% of patients in whom antibiotics were delayed and 2.9% among patients not prescribed antibiotics. After adjustment for comorbidities, sex, and socioeconomic status, patients in whom antibiotics were deferred had a 7.12-fold greater odds of BSI, compared with the immediate-antibiotic group. BSIs were more common among men and older patients. All-cause mortality, a secondary outcome, was 1.16-fold higher with deferred antibiotics and 2.18 times higher with no antibiotics.


Dr. Torres

While the cohort studied was very large, a causal relationship cannot be firmly established in this observational study. Also, researchers were unable to include laboratory data, such as urinalysis and culture, in their analysis.

BOTTOM LINE: Delayed prescription of antibiotics for elderly patients presenting with UTI in primary care settings was associated with higher rates of BSI and death.

CITATION: Gharbi M et al. Antibiotic management of urinary tract infection in elderly patients in primary care and its association with bloodstream infections and all-cause mortality: Population-based cohort study. BMJ. 2019 Feb;364:1525.

8 IV-to-oral antibiotics can benefit patients with MRSA bloodstream infection

CLINICAL QUESTION: Is sequential IV-to-oral antibiotic therapy as effective as outpatient parenteral antibiotic therapy (OPAT) in patients with MRSA BSI?

BACKGROUND: Methicillin-resistant *Staphylococcus aureus* bloodstream infections carry a high risk of morbidity and relapse with most published guidelines recommending prolonged courses of IV antibiotics to ensure complete clearance of the infection. However, long-term IV antibiotic therapy may also be costly and is not without its own complications. An equally effective IV-to-oral antibiotic therapy would be welcome.

STUDY DESIGN: Retrospective cohort study.

SETTING: A single academic center in the United States.

SYNOPSIS: The investigators reviewed data from 492 adults with at least one positive blood culture for MRSA who had not yet completed their antibiotic course at the time of discharge during the index hospitalization but were sufficiently stable to complete outpatient antibiotic treatment. Of this cohort, 70 patients were switched to oral antibiotic therapy on discharge, while the rest received OPAT. The primary outcome was clinical failure, a 90-day composite measure of MRSA bloodstream infection recurrence, deep MRSA infection, or all-cause mortality. The most commonly used oral antibiotics were linezolid, trimethoprim/sulfamethoxazole, and clindamycin, all with high bioavailability. Endovascular infection was present in 21.5% of the study population. After propensity score adjustment for covariates, patients who received oral antibiotics had a nonsignificant reduction in the rate of clinical failure (hazard ratio, 0.379; 95% CI, 0.131-1.101).

Limitations of the study included its observational design with potential for significant residual confounding despite the propensity score–adjusted analysis, its single-center setting, the low frequency of endovascular infections, and the uncertainty in how the loss of patients to follow-up might have affected the results.

BOTTOM LINE: Selected patients with MRSA BSI may be successfully treated with sequential IV-to-oral antibiotic therapy.

CITATION: Jorgensen SCJ et al. Sequential intravenous-to-oral outpatient antibiotic therapy for MRSA bacteraemia: One step closer. J Antimicrob Chemother. 2019 Feb;74(2):489-98.

Dr. Torres is a hospitalist at Massachusetts General Hospital.

By Amar Vedamurthy, MBBS, MS

9 Andexanet alfa reverses factor Xa inhibitors

CLINICAL QUESTION: Does andexanet alfa reverse acute major bleeding associated with factor Xa inhibitors?

BACKGROUND: Factor Xa inhibitors have become increasingly popular in the treatment and prevention of thrombotic events, but the lack of specific reversal agents in the event of life-threatening or uncontrolled bleeding may limit their use. Andexanet alfa is a new Food and Drug Administration–approved reversal agent which rapidly reduces anti–factor Xa activity, thereby reversing the anticoagulation effects of factor Xa inhibitors.

STUDY DESIGN: A prospective, open-label, single-group cohort study.

SETTING: An industry-sponsored, multicenter study.

SYNOPSIS: The study evaluated 352 adult patients who had acute major bleeding (such as intracrani-

Continued on following page

Short Takes

Febuxostat associated with increased CV, all-cause mortality compared with allopurinol

The Cardiovascular Safety of Febuxostat and Allopurinol in Patients With Gout and Cardiovascular Morbidities (CARES) trial was a multicenter, randomized, double-blind cardiovascular outcomes trial conducted in 6,190 patients with gout treated with either febuxostat or allopurinol.

Febuxostat did not increase the risk of the composite primary outcome of major adverse cardiovascular events, but it was associated with a significant increase in cardiovascular deaths and all-cause mortality. The FDA issued a Drug Safety Communication in February 2019 and added a Boxed Warning to the prescription information.

CITATION: White WB et al. Cardiovascular safety of febuxostat or allopurinol in patients with gout. N Eng J Med. 2018;378:1200-10.

Follow-up of incidental high-risk nodules on CT pulmonary angiography

This was a retrospective cohort study examining patients with incidental pulmonary nodules diagnosed when emergency department or hospitalized patients underwent CT pulmonary angiography (CTPA). Only a quarter of the patients with pulmonary nodules received explicit follow-up instructions, with less than one-half of those patients taking the next appropriate step. Overall, follow-up for pulmonary nodules was poor.

CITATION: Kwan JL et al. Follow up of incidental high-risk pulmonary nodules on computed tomography pulmonary angiography at care transitions. J Hosp Med. 2019 Feb 20. doi: 10.12788/jhm.3128.

Continued from previous page

al hemorrhage [64%] or GI bleeding [26%] within 18 hours after administration of a factor Xa inhibitor, including apixaban, rivaroxaban, or edoxaban). Efficacy was assessed in 254 patients who met criteria for severe bleeding and elevated baseline anti–factor Xa activity. Patients were administered a bolus dose of andexanet alfa followed by a 2-hour infusion. The median anti–factor Xa activity reduced by 92% each among patients receiving apixaban or rivaroxaban. The majority (82%) of evaluable patients achieved excellent or good hemostasis at 12 hours after andexanet alfa administration, which compares favorably with the hemostatic efficacy of 72% observed with prothrombin complex concentrate used to reverse anticoagulation in patients treated with vitamin K antagonists. Of patients in the study, 10% experienced a thrombotic event during the 30-day follow-up period, and 14% died.

Limitations of the study include lack of a control group and absence of a significant relationship between a reduction in anti–factor Xa activity and hemostasis. The sponsor is planning to conduct a randomized trial with FDA guidance in the near future.

BOTTOM LINE: Andexanet alfa is an FDA-approved agent and appears effective in achieving hemostasis in patients with a factor Xa inhibitor–associated major acute bleeding.

CITATION: Connolly SJ et al. Full study report of andexanet alfa for bleeding associated with factor Xa inhibitors. N Eng J Med. 2019 Feb 7. doi: 10.1056/NEJMoa1814051.

10 MRSA decolonization reduces postdischarge infections

CLINICAL QUESTION: Does postdischarge decolonization of MRSA carriers lead to lower future risk of MRSA infection?

BACKGROUND: MRSA carriers are at higher risk of infection and rehospitalization after hospital discharge. Education regarding hygiene, environmental cleaning, and decolonization of MRSA carriers have been used as possible preventive strategies. Decolonization has been effective in reducing surgical-site infections, recurrent skin infections, and infections in ICU. However, there is sparsity of data on the efficacy of routine decolonization of MRSA carriers after hospital discharge.

STUDY DESIGN: Multicenter, randomized, unblinded controlled trial.

SETTING: A total of 17 hospitals and seven nursing homes in Southern California.

SYNOPSIS: The study included 2,121 inpatients hospitalized within the previous 30 days and found to be MRSA carriers. Patients were randomized to education only (1,063) or decolonization plus education (1,058), with both groups followed for 12 months after discharge. Decolonization consisted of 4% rinse-off chlorhexidine for daily bathing or showering, 0.12% chlorhexidine mouthwash twice daily, and 2% nasal mupirocin twice daily. The primary outcome was MRSA infection as defined by the CDC. Secondary outcomes included MRSA infection based on clinical judgment, infection from any cause, and infection-related hospitalization. Per protocol analysis showed that MRSA infection occurred in 9.2% in the education group and 6.3% in the decolonization plus education group, with 30% reduction in the risk of infection (HR, 0.70; 95% CI, 0.51-0.99; number needed to treat to prevent one infection, 30). The decolonization group also had a lower hazard of clinically judged infection from any cause (HR, 0.83; 95% CI, 0.70-0.99) and infection-related hospitalization (HR, 0.76; 95% CI, 0.62-0.93).

Limitations of the study include unblinded intervention, missing of milder infections that might not have required hospitalization, and frequent insufficient documentation in charts for events to be deemed infection according to the CDC criteria.

BOTTOM LINE: Decolonization of MRSA carriers post discharge may lower MRSA-related infections and infections more than hygiene education alone.

CITATION: Huang SS et al. Decolonization to reduce postdischarge infection risk among MRSA carriers. N Eng J Med. 2019;380:638-50.

Dr. Vedamurthy is a hospitalist at Massachusetts General Hospital.

In pain treatment, racial bias common among physician trainees

Race-based decision making observed

By Kari Oakes
MDedge News
REPORTING FROM APS 2019

MILWAUKEE – More than 40% of white physician trainees demonstrated racial bias in medical decision making about treatment of low back pain, as did 31% of nonwhite trainees. However, just 6% of white residents and fellows, and 10% of the nonwhite residents and fellows, reported that patient race had factored into their treatment decisions in a virtual patient task.

The 444 medical residents and fellows who participated viewed video vignettes presenting 12 virtual patients who presented with low back pain, wrote Alexis Grant of Indiana University–Purdue University Indianapolis and her colleagues. In a poster presentation at the scientific meeting of the American Pain Society, Ms. Grant, a doctoral student in clinical psychology, and her collaborators explained that participants agreed to view a series of 12 videos of virtual patients.

The videos presented male and female virtual patients who were black or white and who had jobs associated with low or high socioeconomic status (SES). Information in text vignettes accompanying the videos included occupation, pain etiology, physical exam findings, and pain intensity by self-report.

After viewing the videos and reading the vignettes, participating clinicians were asked to use a 0-100 visual analog scale to report their likelihood of referring patients to a pain specialist or to physical therapy and of recommending opioid or nonopioid analgesia.

"Next, they rated the degree to which they considered different sources of patient information when making treatment decision," Ms. Grant and her coauthors wrote. Statistical analysis "examined the extent to which providers demonstrated statistically reliable treatment differences across patient race and SES." These findings were compared with how clinicians reported they used patient race and SES in decision making.

Demonstrated race-based decision making occurred for 41% of white and 31% of nonwhite clinicians. About two-thirds of providers (67.3%) were white, and of the remainder, 26.3% were Asian, 4.4% were classified as "other," and 2.1% were black. The respondents were aged a mean 29.7 years, and were 42.3% female.

In addition, Ms. Grant and her coauthors estimated provider SES by asking about parental SES, dividing respondents into low (less than $38,000), medium ($38,000-$75,000), and high (greater than $75,000) SES categories.

Demonstrated bias based on socioeconomic status was common, and similar across levels of provider SES, at 41%, 43%, and 38% for low, medium, and high SES residents and fellows, respectively. However, the disconnect between reported and demonstrated bias that was seen with race was not seen with SES bias, with 43%-48% of providers in each SES group reporting that they had factored patient SES into their treatment decision making.

"These results suggest that providers have low awareness of making different pain treatment decisions" for black patients, compared with decision making for white patients, Ms. Grant and her colleagues wrote. "Decision-making awareness did not substantially differ across provider race or SES." She and her collaborators called for more research into whether raising awareness about demonstrated racial bias in decision making can improve both racial and socioeconomic gaps in pain care.

The authors reported funding from the National Institutes of Health. They reported no conflicts of interest.

Measles complications in the U.S. unchanged in posteradication era

By Ted Bosworth
MDedge News
REPORTING FROM SID 2019

CHICAGO – An evaluation of the measles threat in the modern era gives no indication that the risk of complications or death is any different than it was before a vaccine became available, according to an analysis of inpatient complications between 2002 and 2013.

In 2000, measles was declared eliminated in the United States, but for those who have been infected since that time, the risk of serious complications and death has not diminished, noted Raj Chovatiya, MD, PhD, in a session at the annual meeting of the Society for Investigative Dermatology.

By eliminated, the Centers of Disease Control and Prevention – which reported 86 confirmed cases of measles in 2000 – was referring to a technical definition of no new endemic or continuous transmissions in the previous 12 months. It was expected that a modest number of cases of this reportable disease would continue to accrue for an infection that remains common elsewhere in the world.

TED BOSWORTH/MDEDGE NEWS

Dr. Raj Chovatiya

Attempting to provide perspective of the measles threat and the impact of the vaccine, Dr. Chovatiya cited a hypothetical calculation that 732,000 deaths from measles would have been expected in the United States among the pool of children born between 1994 and 2013 had no vaccine been offered.

"Worldwide there are about 20 million cases of measles annually with an estimated 100,000 deaths attributed to this cause," said Dr. Chovatiya, who is a dermatology resident at Northwestern University, Chicago.

In the United States, posteradication infection rates remained at low levels for several years but were already rising from 2002 to 2013, when Dr. Chovatiya and his coinvestigators sought to describe the incidence, associations, comorbidities, and outcomes of hospitalizations for measles. Toward the end of the period the researchers were examining the incidence rates climbed more steeply.

"So far this year, 764 CDC cases of measles [were] reported. That is the most we have seen in the U.S. since 1994," Dr. Chovatiya said.

Based on his analysis of hospitalizations from 2002 to 2013, the threat of these outbreaks is no different then that before the disease was declared eliminated or before a vaccine became available.

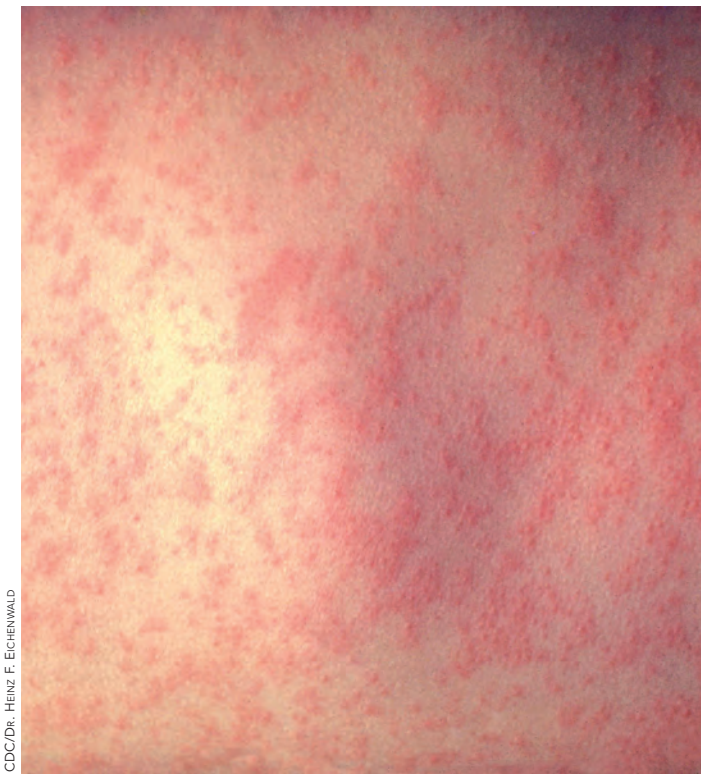
The cross-sectional study was conducted with data from the Nationwide Inpatient Sample, an all-payer database that is considered to be a representative of national trends.

Characteristic of measles, the majority of the 582 hospitalizations evaluated over this period occurred in children aged between 1 and 9 years. The proportion of patients with preexisting chronic comorbid conditions was low. Rather, "most were pretty healthy" prior to admission, according to Dr. Chovatiya, who said that the majority of admissions were from an emergency department.

Measles, which targets epithelial cells and depresses the immune system, is a potentially serious disease because of its ability to produce complications in essentially every organ of the body, including the lungs, kidneys, blood, and central nervous system. Consistent with past studies, the most common complication in this series was pneumonia, observed in 20% of patients. The list of other serious complications identified in this study period, including encephalitis and acute renal failure, was long.

"We observed death in 4.3% of our 582 cases, or about 25 cases," reported Dr. Chovatiya. He indicated that this is a high percentage among a population composed largely of children who were well before hospitalization.

The mortality rate from measles was numerically but not statistically higher than that of overall hospital admissions during this period, but an admission for measles was associated with significantly longer average length of stay (3.7 vs. 3.5 days) and slightly but significantly higher direct costs ($18,907 vs. $18,474).



CDC/DR. HEINZ F. EICHENWALD

"So far this year, 764 CDC cases of measles [were] reported. That is the most we have seen in the U.S. since 1994."

"I want to point out that these are just direct inpatient costs," Dr. Chovatiya said. Extrapolating from published data about indirect expenses, he said that the total health cost burden "is absolutely staggering."

Previous studies have suggested that about 25% of patients with measles require hospitalization and 1 in every 1,000 patients will die. The data collected by Dr. Chovatiya support these often-cited figures, indicating that they remain unchanged in the modern era.

This new set of data emphasizes the need to redouble efforts to address the reasons for the recent outbreaks, particularly insufficient penetration of vaccination in many communities.

The vaccine "is inexpensive, extremely effective, and lifesaving," said Dr. Chovatiya, making the point that all of the morbidity, mortality, and costs he described are largely avoidable.

Attempting to provide perspective of the measles threat and the impact of the vaccine, Dr. Chovatiya cited a hypothetical calculation that 732,000 deaths from measles would have been expected in the United States among the pool of children born between 1994 and 2013 had no vaccine been offered. Again, most of these deaths would have occurred in otherwise healthy children.

Dr. Chovatiya reported no potential conflicts of interest.

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A warning song to keep our children safe

Pay heed to "The House of the Rising Sun"

By Jordan Messler, MD, SFHM

"There is a house in New Orleans. They call the Rising Sun. And it's been the ruin of many a poor boy. And, God, I know I'm one."

The 1960s rock band the Animals will tell you a tale to convince you to get vaccinated. Don't believe me? Follow along.

The first hints of the song "House of the Rising Sun" rolled out of the hills of Appalachia.

Somewhere in the Golden Triangle, far away from New Orleans, where Virginia, Kentucky, and Tennessee rise in quiet desolation, a warning song about a tailor and a drunk emerged. Sometime around the Civil War, a hint of a tune began. Over the next century, it evolved, until it became cemented in rock culture 50 years ago by The Animals, existing as the version played most commonly today.

In the mid-19th century, medicine shows rambled through the South, stopping in places like Noetown or Daisy. The small towns would empty out for the day to see the entertainers, singers, and jugglers perform. Hundreds gathered in the hot summer day, the entertainment solely a pretext for the traveling doctors to sell their wares, the snake oil, and cure-alls, as well as various patent medicines.

These were isolated towns, with no deliveries, few visitors, and the railroad yet to arrive. Frequently, the only news from outside came from these caravans of entertainers and con men who swept into town. They were like Professor Marvel from The Wizard of Oz, or a current-day Dr. Oz, luring the crowd with false advertising, selling colored water, and then disappearing before you realized you were duped. Today, traveling doctors of the same ilk convince parents to not vaccinate their children, tell them to visit stem cell centers that claim false cures, and offer them a shiny object with one hand while taking their cash with the other.

Yet, there was a positive development in the wake of these patent medicine shows: The entertainment lingered. New songs traveled the same journeys as these medicine shows – new earworms that would then be warbled in the local bars, while doing chores around the barn, or simply during walks on the Appalachian trails.

In 1937, Alan Lomax arrived in Noetown, Ky., with a microphone and an acetate record and recorded the voice of 16-year-old Georgia Turner singing "House of the Rising Sun." She didn't know where she heard that song, but most likely picked it up at the medicine show.

One of those singers was Clarence Ashley, who would croon about the Rising Sun Blues. He sang with Doc Cloud and Doc Hauer, who offered tonics for whatever ailed you. Perhaps Georgia Turner heard the song in the early 1900s as well. Her 1937 version contains the lyrics most closely related to the Animals' tune.

Lomax spent the 1940s gathering songs around the Appalachian South. He put these songs into a songbook and spread them throughout the country. He would also return to New York City and gather in a room with legendary folk singers. They would hear these new lyrics, new sounds, and make them their own.

In that room would be Lead Belly, Pete Seeger, Woody Guthrie, and Josh White, the fathers of folk music. The music Lomax pulled out of the mountains in small towns would become new again in the guitars and harmonicas of the Greenwich Village singers and musicians. Pete Seeger performed with the Weavers, named because they would weave songs from the past into new versions.

"House of the Rising Sun" was woven into the folk music landscape, evolving and growing. Josh White is credited with changing the song from a major key into the minor key we know today. Bob Dylan sang a version. And then in 1964, Eric Burdon and The Animals released their version, which became the standard. An arpeggio guitar opening, the rhythm sped up, a louder sound, and that minor key provides an emotional wallop for this warning song.

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Numerous covers followed, including a beautiful version of "Amazing Grace", sung to the tune of "House of the Rising Sun" by the Blind Boys of Alabama.

The song endures for its melody as well as for its lyrics. This was a warning song, a universal song, "not to do what I have done." The small towns in Kentucky may have heard of the sinful ways of New Orleans and would spread the message with these songs to avoid the brothels, the drink, and the broken marriages that would reverberate with visits to the Crescent City.

"House of the Rising Sun" is one of the most covered songs, traveling wide and far, no longer with the need for a medicine show. It was a pivotal moment in rock 'n roll, turning folk music into rock music. The Animals became huge because of this song, and their version became the standard on which all subsequent covers based their version. It made Bob Dylan's older version seem quaint.

The song has been in my head for a while now. My wife is hoping writing about it will keep it from being played in our household any more. There are various reasons it has been resonating with me, including the following:

- It traces the origins of folk music and the importance of people like Lomax and Guthrie to collect and save Americana.
- The magic of musical evolution – a reminder of how art is built on the work of those who came before, each version with its unique personality.
- The release of "House of the Rising Sun" was a seminal, transformative moment when folk became rock music.
- The lasting power of warning songs.
- The hucksters that enabled this song to be kept alive.

That last one has really stuck with me. The medicine shows are an important part of American history. For instance, Coca-Cola started as one of those patent medicines; it was one of the many concoctions of the Atlanta pharmacist John Stith Pemberton, sold to treat all that ails us. Dr. Pepper, too, was a medicine in a sugary bottle – another that often contained alcohol or cocaine. Society wants a cure-all, and the marketing and selling done during these medicine shows offered placebos.

The hucksters exist in various forms today, selling detoxifications, magic diet cures, psychic powers of healing, or convincing parents that their kids don't need vaccines. We need a warning song that goes viral to keep our children safe. We are blessed to be in a world without smallpox, almost rid of polio, and we have the knowledge and opportunity to rid the world of other preventable illnesses. Measles was declared eliminated in the United States in 2000; now, outbreaks emerge in every news cycle.

The CDC admits they have not been targeting misinformation well. How can we spread the science, the truth, the message faster than the lies? Better marketing? The answer may be through stories and narratives and song, with the backing of good science. "House of the Rising Sun" is a warning song. Maybe we need more. We need that deep history, that long trail to remind us of the world before vaccines, when everyone knew someone, either in their own household or next door, who succumbed to one of the childhood illnesses.

Let the "House of the Rising Sun" play on. Create a new version, and let that message reverberate, too.

Tell your children; they need to be vaccinated.

Dr. Messler is a hospitalist at Morton Plant Hospitalist group in Clearwater, Fla. He previously chaired SHM's Quality and Patient Safety Committee and has been active in several SHM mentoring programs, most recently with Project BOOST and Glycemic Control.

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