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The Hospitalist

'Bridging leaders' link quality, medical education

A new community emerges

By Larry Beresford

In June 2019, a 5-hour preconference seminar at the annual Integrating Quality Conference of the Association of American Medical Colleges (AAMC) in Minneapolis highlighted the emergence of a new concept, and a new community, within the larger field of hospital medicine.

"Bridging leaders" are clinician-educators with a foot in two worlds: leading quality and safety initiatives within their teaching hospitals – with the hospitalist's customary participation in a broad spectrum of quality improvement (QI) efforts in the hospital – while helping to train future and current physicians. "Bridging" also extends to the third piece of the quality puzzle, the hospital and/or health system's senior administrators.

"About 8 years ago, another hospitalist and I found ourselves in this role, bridging graduate medical education with hospital quality and safety," said Jennifer S. Myers, MD, FHM, director of quality and safety education in the department of medicine at the University of Pennsylvania, Philadelphia. "The role has since begun to proliferate, in teaching settings large and small, and about 30-50 of us with somewhat similar job responsibilities have been trying to create a community."

Continued on page 12

Photograph by Trevr Merchant/Torch Media

Dr. Darlene Tad-y

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Hospital-acquired *C. diff.* tied to four antibiotic classes

By Mark S. Lesney
MDedge News

The use of four antibiotic classes designated "high risk" was found to be an independent predictor of hospital-acquired *Clostridioides difficile* (CDI), based upon an analysis of microbiologic and pharmacy data from 171 hospitals in the United States.

The high-risk antibiotic classes were second-, third-, and fourth-generation cephalosporins, fluoroquinolones, carbapenems, and lincosamides, according to a report by Ying P. Tabak, PhD, of Becton Dickinson in Franklin Lakes, N.J., and colleagues, published in Infection Control & Hospital Epidemiology.

Of the 171 sites studied, 66 (39%) were teaching hospitals and 105 (61%) were nonteaching hospitals. The high-risk antibiotics most frequently used were cephalosporins (47.9%), fluoroquinolones (31.6%), carbapenems (13.0%), and lincosamides (7.6%). The sites were distributed across various regions of the United States. The hospital-level antibiotic use was measured as days of therapy (DOT) per 1,000 days present (DP).

The study was not able to determine specific links to individual antibiotic classes but to the use of high-risk antibiotics as a whole, except for cephalosporins, which were significantly correlated with hospital-acquired CDI (r = 0.23; P less than .01).

The overall correlation of high-risk antibiotic use and hospital-acquired CDI was 0.22 (P = .003). Higher correlation was observed in teaching hospitals (r = 0.38; P = .002) versus nonteaching hospitals (r = 0.19; P = .055), according to the researchers. The authors attributed this to the possibility of teaching hospitals dealing with more elderly and sicker patients.

After adjustment for significant confounders, the use of high-risk antibiotics was still independently associated with significant risk for hospital-acquired CDI.

"For every 100-day increase of DOT per 1,000 DP in high-risk antibiotic use, there was a 12% increase in [hospital-acquired] CDI ([relative risk], 1.12; 95% [confidence interval], 1.04-1.21; P = .002)," according to the authors. This translated to four additional hospital-acquired CDI cases with every 100 DOT increase per 1,000 DP.

"Using a large and current dataset, we found an independent impact of hospital-level high-risk antibiotic use on [hospital-acquired] CDI even after adjusting for confounding factors such as community CDI pressure, proportion of patients aged 65 years or older, average length of stay, and hospital teaching status," the researchers concluded.

Funding was provided by Nabriva Therapeutics, an antibiotic development company.

Correction

September 2019 cover caption

The physician featured on the cover of the September 2019 issue of *The Hospitalist* was not identified accurately in the photo caption.

Because of a production error, the last name of Dr. Mangla Gulati was cut off and did not appear on the cover.

Readers can access a corrected pdf of the September issue on The Hospitalist website: https://mdedge-files-live.s3.us-east-2.amazonaws.com/files/s3fs-public/hosp_sept2019_lores_digital.pdf.

THE Hospitalist®

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The growing NP and PA workforce

High rate of turnover among NPs, PAs

By Thomas W. Frederickson, MD, SFHM

If you were a physician hospitalist in a group serving adults in 2017 you probably worked with nurse practitioners (NPs) and/or physician assistants (PAs). Seventy-seven percent of hospital medicine groups (HMGs) employed NPs and PAs that year.

In addition, the larger the group, the more likely the group was to have NPs and PAs as part of their practice model – 89% of hospital medicine groups with more than 30 physician had NPs and/or PAs as partners. In addition, the mean number of physicians for adult hospital medicine groups was 17.9. The same practices employed an average of 3.5 NPs, and 2.6 PAs.

Based on these numbers, there are just under three physicians per NP and PA in the typical HMG serving adults. This is all according to data from the 2018 *State of Hospital Medicine* (*SoHM*) report that was published in 2019 by the Society of Hospital Medicine.

These observations lead to a number of questions. One thing that is not clear from the *SoHM* is why NPs and PAs are becoming a larger part of the hospital medicine workforce, but there are some insights and conjecture that can be drawn from the data. The first is economics. Over 6 years, the median incomes of NPs and PAs have risen a relatively modest 10%; over the same period physician hospitalists have seen a whopping 23.6% median pay increase.

One argument against economics as a driving force behind greater use of NPs and PAs in the hospital medicine workforce is the billing patterns of HMGs that use NPs and PAs. Ten percent of HMGs do not have their NPs and PAs bill at all. The distribution of HMGs that predominantly bill NP and PA services as shared visits, versus having NPs and PAs bill independently, has also not changed much over the years, with 22% of HMGs having NPs and PAs bill independently as a predominant model. This would seem to suggest that some HMGs may not have learned how to deploy NPs and PAs effectively.

While inefficiency can be due to hospital bylaws, the culture of the hospital medicine group, or the skill set of the NPs and PAs working in HMGs – it would seem that, if the driving force for the increase in the utilization of NPs and PAs in HMGs was financial, then that would also result in more of these providers billing independently, or alternatively, an increase in hospitalist physician productivity, which the data do not show. However, multistate HMGs may have this figured out better than some of the rest of us – 78% of these HMGs have NPs and PAs billing independently! All other categories of HMGs together are around 13%, with the next highest being hospital or health system integrated delivery systems, where NPs/PAs bill independently about 15% of the time.

Dr. Frederickson

In the last 2 years of the survey, there have been marked increases in the number of NPs and PAs at HMGs performing "nontraditional" services. For example, outpatient work has increased from 11% to 17%, and work in the postacute space has increased from 13% to 25%. Work in behavioral health and alcohol and drug rehab facilities has also increased, from 17% to 26%. As HMGs seek to rationalize their workforce while expanding, it is possible that decision makers have felt that it was either more economical to place NPs and PAs in positions where they are seeing these patients, or it was more aligned with the NP/PA skill set, or both. In any event, as the scope of hospital medicine broadens, the use of PAs and NPs has also increased – which is probably not coincidental.

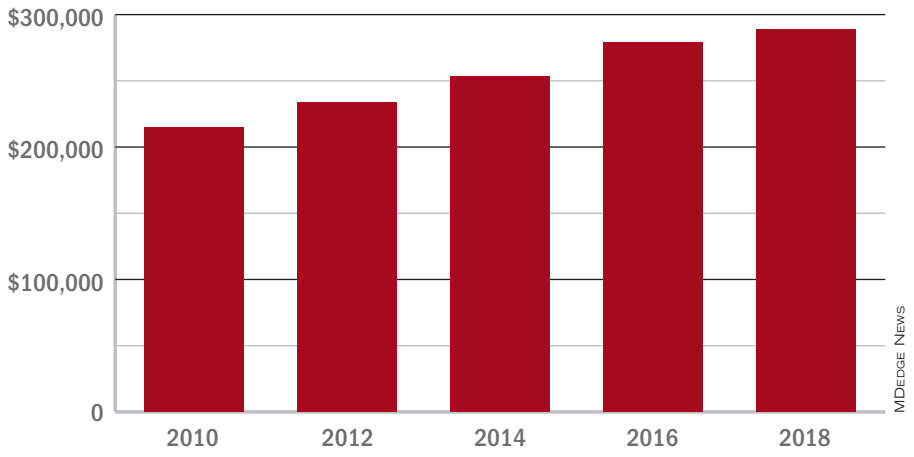
The average hospital medicine group continues to have staff openings. Workforce shortages may be leading to what in the past may have been considered physician openings being filled by NPs and PAs. Only 33% of HMGs reported having all their physician openings filled. Median physician shortage was 12% of total approved staffing. Given concerns in hospital medicine about provider burnout, the number of hospital medicine openings is no doubt a concern to HMG leaders and hospitalists. And necessity being the mother of invention, HMG leadership must be thinking differently than in the past about open positions and the skill mix needed to fill them. I believe this is leading to NPs and PAs being considered more often for a role that would have been open only to a physician in the past.

Just as open positions are a concern, so is turnover. One striking finding in the SoHM is the very high rate of turnover among NPs and PAs – a whopping 19.1% per year. For physicians, the same rate was 7.4% and has been declining every survey for many years. While NPs and PAs may be intended to stabilize the workforce, because of how this is being done in some groups, NPs and PAs may instead be a destabilizing factor. Rapid growth can lead to haphazard onboarding and less than clearly defined roles. NPs and PAs may often be placed into roles for which they are not yet prepared. In addition, the pay disparity between NPs and PAs and physicians has increased. As a new field, and with many HMGs still rapidly growing, increased thoughtfulness and maturity about how NPs and PAs are integrated into hospital medicine practices should lead to less turnover and better HMG stability in the future.

These observations could mark a future that includes higher pay for hospital medicine PAs and NPs (and potentially a slowdown in salary growth for physicians); HMGs taking steps to make the financial model more attractive by having NPs and PAs bill independently more often; and HMGs and their leaders engaging NPs and PAs by more clearly defining roles, shoring up onboarding and mentoring programs, and other measures that decrease turnover. This would help to make hospital medicine a career destination, rather than a stopping off point for NPs and PAs, much as it has become for internists over the past 20 years.

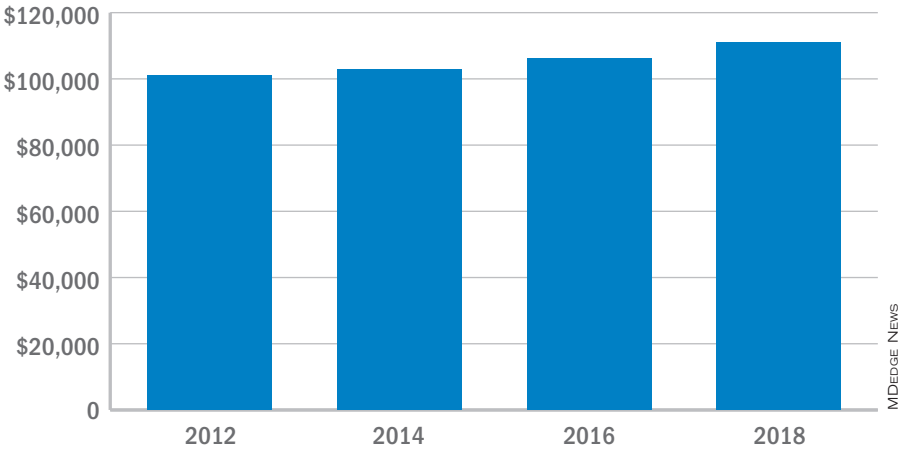
Dr. Frederickson is medical director, hospital medicine and palliative care, at CHI Health, Omaha, Neb., and assistant professor at Creighton University, Omaha.

Figure 1. Median annual physician compensation, by year



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

Figure 2. Median provider compensation, by year



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

Using AI safely in the clinical setting

Understanding limitations of technology is key

Artificial intelligence (AI) and machine learning (ML) are promoted as the solution to many health care problems, but the area risks becoming technology led – with only secondary consideration to the safe clinical application of the technology, says Robert Challen, PhD.

Dr. Challen, of the University of Exeter (England), is the lead author of a recent paper that examines the short-, medium-, and long-term issues with medical applications of AI.

"In the short term, AI systems will effectively function like laboratory screening tests, identifying patients who are at higher risk than others of disease, or who could benefit more from a particular treatment," Dr. Challen said. "We usually accept that laboratory tests are useful to help make a diagnosis; however, clinicians are aware that they might not always be accurate and interpret their output in the clinical context. AI systems are no different in that they will be a useful tool so long as they are designed with safety in mind and used with a pragmatic attitude to their interpretation."

AndreyPopov/Getty Images

The paper also suggests a set of short- and medium-term clinical safety issues that need addressing when bringing these systems from laboratory to bedside.

In the longer term, as more continuously learning and autonomous systems are developed, the safety risks will need to be continuously reevaluated, he added.

"Any new technology comes with limitations and understanding those limitations is key to safe use of that technology. In the same way a new screening test has limitations on its sensitivity and specificity that define how it can be used, AL and ML systems have limitations on accuracy and which patients they can be used on," Dr. Challen said. If hospitalists understand these limitations, they can participate better in their development.

Dr. Challen recommends that hospitalists help the development of AI tools by participating in studies that assess AI applications in the clinical environment. "Try to make sure that where AI research is taking place, there is strong clinical involvement."

Reference

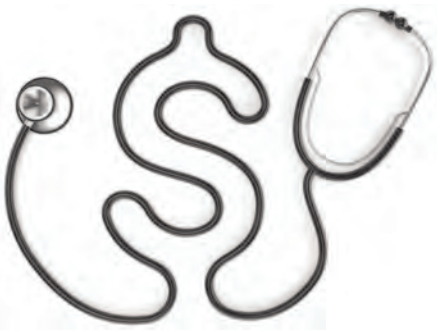
Challen R et al. Artificial intelligence, bias and clinical safety. BMJ Qual Saf. 2019 Jan 12. doi: 10.1136/bmjqs-2018-008370.

Considering the value of productivity bonuses

Connect high-value care with reimbursement

Physician payment models that include productivity bonuses are widespread, says Reshma Gupta, MD, MSHPM.

"These payment models are thought to affect clinician behavior, with productivity bonuses incentivizing clinicians to do more. While new policies aim to reduce total costs of care, little is known about the association between physician payment models and the culture of delivering high-value care," said Dr. Gupta, the medical director for quality improvement at UCLA Health in Los Angeles.



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To find out if hospitalist reimbursement models are associated with high-value culture in university, community, and safety-net hospitals, internal medicine hospitalists from 12 hospitals across California completed a cross-sectional survey assessing their perceptions of high-value care culture within their institutions. Dr. Gupta and colleagues summarized the results.

The study found that nearly 30% of hospitalists who were sampled reported payment with productivity bonuses, while only 5% of hospitalists sampled reported quality or value-based bonuses, Dr. Gupta said. "Hospitalists who reported payment with productivity bonuses were more likely to report lower high-value care culture within their programs."

Hospitalist leaders interested in improving high-value care culture can use the High Value Care Culture Survey (http://www.highvaluecareculturesurvey.com) to quickly assess the culture within their programs, diagnose areas of opportunity and target improvement efforts.

"They can test new physician payment models within their programs and evaluate their high-value care culture to identify areas of opportunity for improvement," Dr. Gupta said.

Reference

Gupta R et al. Association between hospitalist productivity payments and high-value care culture. J Hosp Med. 2019;1;16-21.

Policymakers must invest in health care innovation

Affordable pharma tops consumer list

In 2017, the US spent $3.5 trillion on health care, and that number is projected to be close 20% of GDP over the next 10 years. For consumers, prescription drugs feel like the biggest contributor.

"Although pharma spending accounts for less than 10% of health care spending, consumers bear much more of the out-of-pocket cost at the pharmacy counter than they pay for hospital or physician costs," said Tanisha Carino, PhD, author of a Health Affairs blog post about directions for innovation in health care. "This experience has led to rising concerns among Americans about the cost of prescription drugs."

Addressing the affordability of prescription drugs "will require investing in medical research and policies that speed new products to the market that will promote competition and, hopefully, will hold down prices and offer greater choice to patients," said Dr. Carino, who is executive director of FasterCures, a center of the Milken Institute devoted to improving the biomedical innovation ecosystem. "Policymakers have an opportunity to address the immediate concerns patients have in affording their medication."

DNY59/Getty Images

According to Dr. Carino, policymakers can also continue to encourage health-improving medical innovation through the following:

- Boosting investment in research and development.
- Increasing safety and coordination of health data for biomedical research.
- Incentivizing innovation in underinvested areas.
- Building the capacity of patient organizations.

Hospitalists, she added, will play a critical role in participating in the clinical research that will lead to the next generation of treatments.

Reference

Carino T. "To get more bang for your healthcare buck, invest in innovation." Health Affairs Blog. 2019 Jan 24. doi: 10.1377/hblog20190123.483080. Accessed Feb. 6, 2019.

Engaging patients, improving quality

Hospitalization can be a vulnerable time for patients and their families. While challenges associated with the quality and safety of hospital care are well documented, perspectives of patients, families, caregivers, and other stakeholders are not as easily understood and are important targets of improvement research.

This led to the initiation of the i-HOPE Patient Engagement Study, a collaboration including SHM's Center for Quality Improvement. The team completed a systematic and broad engagement process, followed by an in-person prioritization meeting to generate a priority list of research topics that describe the most important gaps in the care of hospitalized patients.

The Hospitalist recently spoke with Luci Leykum, MD, MSc, MBA, SFHM, principal investigator for the i-HOPE Study, professor of medicine in the South Texas Veterans Health Care System and incoming associate chair for clinical innovation at the University of Texas at Austin.

Why is it vital to include the perspective of the patient during a hospital stay?

We cannot optimally improve outcomes of hospitalized patients if we don't have patients' perspectives on what needs to be improved. Hearing these perspectives also provides insights into how we can address gaps in hospital care.

How were patients and other stakeholders engaged during the i-HOPE program?

Patients, caregivers, and stakeholders were engaged throughout the entire project, from conceptualization to dissemination of results.

We worked with seven patient partners to develop the proposal that we submitted to the Patient-Centered Outcomes Research Institute. They were involved in all phases of the project, from developing the informational webinars and surveys to analyzing our results.

Dr. Leykum

We engaged additional patients, caregivers, and stakeholders to submit their highest priority research questions for improving hospital care. A total of 117 patients and 127 caregivers submitted questions. Our patient partners and more than 30 stakeholders were involved in prioritizing those research questions to develop our final agenda.

What is unique about the i-HOPE project, compared with other projects that may have had similar intended objectives?

Our project is unique in several respects. First, it was completely patient partnered. Having patients as equal members of the team changed our approach at every level – from how we communicated with patients and stakeholders to how we analyzed and presented our data. Second, we worked with a larger number of stakeholders representing a broad range of constituencies, from professional societies to health care delivery systems to payers.

How has SHM's Center for Quality Improvement helped the i-HOPE program?

The Center for Quality Improvement helped considerably with the project. The researchers involved in i-HOPE were all members of the SHM Research Committee and were familiar with SHM's capability as a partner in larger-scale projects. The SHM Meetings team was instrumental in making our in-person patient and stakeholder prioritization meeting happen as well.

How can the findings of the i-HOPE program be applied?

We hope everyone can utilize our findings. Patients, families, and caregivers can use our results to improve their own care. Providers and delivery systems can target their improvement efforts using our findings to ensure that their work has the greatest impact on patients. Policy makers and funders can use our findings to direct work to the priority areas we identified. And finally, we hope the hospital research community uses our results to develop novel interventions to improve care.

For more information on the i-HOPE Patient Engagement Study, visit hospitalmedicine.org/ihope.

The Board Room

Flying toward equity and inclusion

Diversity as a 'team sport'

By Flora Kisuule, MD, MPH, SFHM

These are challenging, and sometimes tragic, times in the history of the United States. The image of a father and child face down in the Rio Grande River, drowning as they tried to cross from Mexico into Texas, is heartbreaking. Irrespective of your political affiliation, we can agree that the immigration process is far from ideal and that no one should die in pursuit of a better life.

The United States has a complicated history with equity and inclusion, for all persons, and we are now living in times when the scab is being ripped off and these wounds are raw. What role can the Society of Hospital Medicine play to help heal these wounds?

I am a first-generation immigrant to the United States. I remember walking down the streets of my neighborhood in Uganda when my attention was drawn to a plane flying overhead. I thought to myself, "Some lucky duck is going to the U.S." The United States was the land of opportunity and I was determined to come here. Through hard work and some luck, I arrived in the United States on June 15, 1991, with a single suitcase packed full of hope, dreams, and $3,000.

> *"We recruit ... irrespective of religious beliefs or sexual orientation. ... A heterogeneous group of people leads to an engaged and high-performing culture."*

Fast-forward 28 years. I am now a hospitalist and faculty at Johns Hopkins University, Baltimore, the associate director of the division of hospital medicine, and the vice chair for clinical operations at Johns Hopkins Bayview Medical Center. I learned about hospital medicine during my third year of medical school at the University of Minnesota, Minneapolis. While I loved general medicine, I could not see myself practicing anywhere outside of the hospital.

Following residency at Johns Hopkins Bayview, I still felt that a hospital-based practice was tailor-made for me. As I matured professionally, I worked to improve the provision of care within my hospital, and then started developing educational and practice programs in hospital medicine, both locally and internationally. My passion for hospital medicine led me to serve on committees for SHM, and this year, I was honored to join the SHM Board of Directors.

It is hard to answer the question of why, or how, one person immigrates to the United States and finds success while another loses their life. A quote attributed to Edmund Burke says, "the only thing necessary for the triumph of evil is for good [wo]men to do nothing." One of SHM's core values is to promote diversity and inclusion. A major step taken by the society to promote work in this area was to establish the diversity and inclusion Special Interest Group in 2018. I am the board liaison for the diversity and inclusion SIG and will work alongside this group, which aims to:

- Foster diversity, equity, and inclusion in SHM.
- Increase visibility of diversity, equity, and inclusion to the broader hospital medicine community.
- Support hospital medicine groups in matching their workforces to their diverse patient populations.
- Develop tool kits to improve the provision of care for our diverse patient population.
- Engender diversity among hospitalists.
- Develop opportunities for expanding the fund of knowledge on diversity in hospital medicine through research and discovery.
- Participate in SHM's advocacy efforts related to diversity and inclusion.
- Develop partnerships with other key organizations to advance diversity, equity, and inclusion platforms so as to increase the scalability of SHM's efforts.

Dr. Kisuule is associate director of the division of hospital medicine at Johns Hopkins Bayview and assistant professor at Johns Hopkins University, both in Baltimore, and a member of the SHM Board of Directors.

We have been successful at Hopkins with diversity and inclusion, but that did not occur by chance. I believe that diversity and inclusion is a team sport and that everyone can be an important part of that team. In my hospitalist group, we actively engage women, men, doctors, nurse practitioners, physician assistants, administrators, minorities, and nonminorities. We recruit to – and cherish members of – our group irrespective of religious beliefs or sexual orientation. We believe that a heterogeneous group of people leads to an engaged and high-performing culture.

I have traveled a convoluted path since my arrival in 1991. Along the way, I was blessed with a husband and son who anchor me. Every day they remind me that the hard work I do is to build on the past to improve the future. My husband, an immigrant from Uganda like me, reminds me that we are lucky to have made it to the United States and that the ability and freedom to work hard and be rewarded for that hard work is a great privilege. My son reminds me of the many other children who look at me and know that they too can dare to dream. Occasionally, I still look up and see a plane, and I am reminded of that day many years ago. Hospital medicine is my suitcase packed with hopes and dreams for me, for this specialty, and for this country.

Pediatric hospitalist certification beset by gender bias concerns

Are women unfairly penalized?

By M. Alexander Otto
MDedge News

More than 1,625 pediatricians have applied to take the first pediatric hospitalist certification exam in November 2019, and approximately 93% of them have been accepted, according to a statement from the American Board of Pediatrics.

It was the rejection of the 7%, however, that set off a firestorm on the electronic discussion board for the American Academy of Pediatrics (AAP) hospital medicine this summer, and led to a petition to the board to revise its eligibility requirements, ensure that the requirements are fair to women, and bring transparency to its decision process. The petition has more than 1,400 signatures.

"What's generated concern is how the board is grandfathering current pediatric hospitalists into certification via a "practice pathway" until the fellowship requirement takes hold after 2023."

Seattle Children's Hospital and Yale New Haven (Conn.) Children's Hospital have both said they will not consider board certification in hiring decisions until the situation is resolved.

The American Board of Pediatrics (ABP) declined an interview request pending its formal response to the Aug. 6 petition, but in a statement to this news organization, executive vice president Suzanne Woods, MD, said, "The percentage of women and men meeting the eligibility requirements for the exam did not differ. We stress this point because a concern about possible gender bias appears to have been the principal reason for this ... petition, and we wanted to offer immediate reassurance that no unintended bias has occurred."

"We are carefully considering the requests and will release detailed data to hospitalists on the AAP's [pediatric hospital medicine (PHM) electronic discussion board] and on the ABP's website. We are conferring with ABP PMH subboard members as well as leaders from our volunteer community. We expect to provide a thoughtful response within the next 3 weeks," Dr. Woods said in the Aug. 15 statement.

"Case-by-case" exceptions

The backstory is that, for better or worse depending on who you talk to, pediatric hospital medicine is becoming a board-certified subspecialty. A fellowship will be required to sit for the exam after a few years, which is standard for subspecialties.

What's generated concern is how the board is grandfathering current pediatric hospitalists into certification via a "practice pathway" until the fellowship requirement takes hold after 2023.

To qualify for the November test, hospitalists had to complete 4 years of full-time practice by June 30, 2019, which has been understood to mean 48 months of continual employment. At least 50% of that time had to be devoted to "professional activities ... related to the care of hospitalized children," and at least 25% of that "devoted to direct patient care." For about 2,000 work-hours per year, it translated to "450-500 hours" of direct patient care "per year over the most recent four years" to sit for the test, the board said.


Dr. Fromme

"For individuals who have interrupted practice during the most recent four years for family leave or other such circumstances, an exception may be considered if there is substantial prior experience in pediatric hospital medicine. ... Such exceptions are made at the discretion of the ABP and will be considered on a case-by-case basis." Specific criteria for exceptions were not spelled out.

In the end, there were more than a few surprises when denial letters went out in recent months, and scores of appeals have been filed. There's "a lot of tension and a lot of confusion" about why some people with practice gaps during the 4 years were approved, but others were denied. There's been "a lack of transparency on the ABP's part," said H. Barrett Fromme, MD, section chief of pediatric hospital medicine and a professor of pediatrics at the University of Chicago.

"The standard has to be reasonable"

There are concerns about the availability of fellowship slots and other issues, but the 4-year rule – instead of averaging clinical hours over 4 or 5 years, for instance – is the main sticking point. It's a gender issue because "women take maternity; women move with their spouse; women take care of elders; women tend to be in these roles that require time off" more than men do, Dr. Fromme said.

Until the board releases its data, the gender breakdown of the denials and the degree to which practice gaps due to such issues led to them is unknown. There's concern that women have been unfairly penalized.

The storm was set off on the email list this summer by stories from physicians such as Chandani DeZure, MD, a pediatric hospitalist currently working in the neonatal ICU at Stanford (Calif.) University. She was denied a seat at the table in November, appealed, and was denied again.

She was a full-time pediatric hospitalist at Children's National Medical Center in Washington from 2014, when she graduated residency, until October 2018, when her husband, also a doctor, was offered a promising research position in California, and "we decided to take it," Dr. DeZure said.

They moved to California with their young son in November. Dr. DeZure got her California medical license in 6 weeks, was hired by Stanford in January, and started her new postion in mid-April.


Dr. DeZure

Because of the move, she worked only 3.5 years in the board's 4-year practice window, but, as is common with young physicians, that time was spent in direct patient care, for a total of over 6,000 hours.

"How is that not good enough? How is a person that worked 500 hours with patients for 4 years" – for a total of 2,000 hours – "better qualified than someone who worked 100% for 3 and a half years? Nobody is saying there shouldn't be a standard, but the standard has to be reasonable," Dr. DeZure said.

"Illegal regardless of intent"

It's situations like Dr. DeZure's that led to the petition. One of demands is that APB "revise the practice pathway criteria to be more inclusive of applicants with interrupted practice and varied clinical experience, to include clear-cut parameters rather than considering these applications on a closed-door 'case-by-case basis ... at the discretion of the ABP.'"

Also, the petition asks the board to "clarify the appeals process and improve responsiveness to appeals and inquiries regarding denials."

As ABP noted in its statement, however, the major demand is that the board "facilitate a timely analysis to determine if gender bias is present." The petition noted that signers "do not suspect intentional bias on the part of the ABP; however, if gender bias is present it is unethical and potentially illegal regardless of intent."

For now, the perception is that the board has "a hard 48-month rule" with not many exceptions; there are people who are "very concerned that, 'Oh my gosh, I can't have children for 4 years because I won't be able to sit for the boards.' No one should ever have to have that in their head," Dr. Fromme said. At this point, it seems that 3 months off for maternity is being grandfathered in, but perhaps not 6 months for a second child; no one knows for sure.

Dr. DeZure, meanwhile, continues to study for the board exam, just in case.

Looking back over the past year, she said "I could have somehow picked up one shift a week moonlighting that would have kept me eligible, but the [board] didn't respond to me" when contacted about her situation during the California move.

"The other option was for me was to live across the country from my husband with a small child," she said.

Bridging Leaders

Continued from page 1

Following the lead of the American College of Graduate Medical Education[1] and its standards for clinical learning environments that include integration of patient safety and quality improvement, these have become graduate medical education (GME) priorities. Students need to learn the theory and practice of safety and quality improvement on the job as part of their professional development. Residency program directors and other trainers thus need to find opportunities for them to practice these techniques in the clinical practice environment.

At the same time, mobilizing those eager medical learners to plan and conduct quality improvement projects can enhance a hospital's ability to advance its mission in the new health care environment of accountable care and population health.

A new concept arises

Is bridging leaders a real thing? The short answer is yes, said Thomas Ciesielski, MD, GME medical director for patient safety, quality education, and clinical learning environment review program development at Washington University in St. Louis. "This is a new trend, but it's still in the process of defining itself. Every bridging leader has their own identity based on their institution. Some play a bridging role for the entire institution; others play similar roles but only within a specific department or division. There's a lot of learning going on in our community," he said.

The first Bridging Leaders track was held last year at AAMC's 2018 Integrating Quality Conference, an event which has been held annually for the past decade. The concept was also highlighted in a 2017 article in the Journal of Graduate Medical Education[2] by bridging leaders, including many of the faculty at the subsequent AAMC sessions, highlighting their roles and programs at six academic medical centers.

One of those coauthors, hospitalist Vineet Arora, MD, MAPP, MHM, was recently appointed to a new position at University of Chicago Medicine: associate chief medical officer for the clinical learning environment – which pulls together many of the threads of the bridging leaders movement into a single job title. Dr. Arora said her job builds on her prior work in GME and improves the clinical learning environment for residents and fellows by integrating them into the health system's institutional quality, safety, and value missions. It also expands on that work to include faculty and allied health professionals. "I just happen to come from the health system side," she said.

Connecting the clinic and the classroom

As with the early days of the hospitalist movement, bridging leaders are trying to build a community of peers with common interests.

"We're just at the beginning," Dr. Arora said. "Hospitalists have been the natural torch bearers for quality and safety in their hospitals, and also play roles in the education of residents and medical students, working alongside residency program directors. They are well versed in quality and in education. So, they are the natural bridges between education and clinical care," she said. "We also know this is a young group that comes to our meetings. One-third of them have been doing this for only the past 2 years or less – so they are early in their career paths."

Front-line clinical providers, such as residents, often have good ideas, and bridging leaders can bring these ideas to the health system's leaders, Dr. Arora said. "Bridging at the leadership level also involves thinking about the larger priorities of the system." There are trust issues that these leaders can help to bridge, as well as internal communication barriers. "We also realize that health systems have to move quickly in response to a rapidly changing environment," she noted.

Dr. Arora

Hospitalists "are well versed in quality and in education. So, they are the natural bridges between education and clinical care."

"You don't want a hundred quality improvement projects being done by students that are unaligned with the organization's priorities. That leads to waste, and highlights the need for greater alignment," Dr. Arora added. "Think about using frontline staff as agents of change, of engaging with learners as a win/win – as a way to actually solve the problems we are facing."

A bridging leader occupies a role in which they can influence and affect these two parts of the mission of health care, somebody whose leadership responsibilities sit at the intersection of these two areas, said Darlene Tad-y, MD, director of GME quality and safety programs at the University of Colorado, Aurora.

"Once, these people were mostly in academic medical centers, but that's not so true anymore. A director of quality for a hospital medicine group is responsible for developing the group's quality strategy, but at the same time responsible for teaching members of the group – not only doing QI but teaching others how to do it," she said.

"Hospitalists make terrific bridging leaders. We really are in that sweet spot, and we can and should step into these leadership roles," Dr. Tad-y said. "Because of our role in the hospital, we know the ins and outs of how processes work or don't work. We have an insider's view of the system's dysfunction, which puts us in a great place to lead these efforts."

The bridging leaders movement has been a grass-roots development, Dr. Tad-y explained. "It's not like people started with the job title. But because all of this work was needed, a few people started doing it – and they began seeking each other out. Then they found that there were more than a few of us. We just hadn't known what it was called."

What is being bridged?

There has long been a relationship between individuals who lead in the clinical environment and those who lead in education, such as the program directors of residency programs, said Janis Orlowski, MD, chief health care officer for AAMC, which represents 154 MD-granting medical schools and their associated teaching hospitals.

"Our association's three missions of research, education, and patient care really come together around the bridging leaders concept. So, this movement is well aligned. And as bridging leaders started to develop as a group, they found a home in AAMC and at our Integrating Quality Conference," she said.

"Where we see this integration is in the teaching of residents and medical students in the clinical environment," Dr. Orlowski said. "It's not just their knowledge of disease or treatments or procedural skills that needs to be taught. They also need to understand the safe and effective clinical environment, and the role of learners in patient safety, quality improvement, and efficient and cost-effective hospital care. They need to understand value." A new field of health systems science is emerging and quality improvement is evolving to incorporate population health. But traditional medical faculty may not be that comfortable teaching it.

Any physician who sees that they have a role in the clinical, administrative, and educational worlds can do the bridging, Dr. Orlowski said. "It could be any environment in which care is provided and learning takes place. I mentioned QI and patient safety, but among the other essential skills for the doctor of tomorrow are teamwork, interprofessional training in how to work with, for example, the pharmacist and dietitian, and understanding the value they bring."

Whenever quality improvement projects are undertaken as part of postgraduate medical education, they should be aligned with the institution's quality improvement plan and with the priorities of the health system, said Rob Dressler, MD, MBA, quality and safety officer at Christiana Health Care System in Newark, Del., and president of the Alliance of Independent Academic Medical Centers (AIAMC), which represents 80 hospital and health systems active in the emerging movement for bridging leaders.

"GME needs to keep the C-suite aware of its frontline efforts to improve quality and safety, so the institution's return on investment can be recognized," he said. "The AIAMC has consistently advocated for the building of bridges between GME leaders and their C-suites at our member hospitals. If you are doing process improvement, you need to be aligned with the organization and its priorities, or you'll be less successful."

AIAMC convenes the National Initiative – a multi-institutional collaborative in which residents lead multidisciplinary teams in quality improvement projects. A total of 64 hospitals and health systems have participated since the program started in 2007. "We need to train our clinicians to solve the problems of tomorrow," Dr. Dressler said.

Bridging leaders in action

The leaders contacted for this article offered some examples of bridging in action. Dr. Arora has used "crowd sourcing" – a technique employed extensively in her work with Costs of Care, a global nonprofit trying to drive better health care at lower cost – to implement a local program for frontline clinicians to generate ideas on how to improve value and reduce unnecessary treatment.

"We created our local 'Choosing Wisely' challenge for residents and staff at the University of Chicago – with the understanding that the winner would get analytic and time support to pursue their project," she said. A resident winner was a finalist in the RIV (Research, Innovations and Clinical Vignettes) competition at a recent SHM Annual Conference.

At the University of Colorado, there is an associate program director who is responsible for the quality improvement curriculum for residents, Dr. Tad-y said. Because teaching QI means doing QI, the associate program director had to start implementing QI in the hospital, learning how to choose appropriate QI projects for the residents. That meant looking at quality priorities for the hospital – including venous thromboembolism prophylaxis, fall prevention, and rates of central line–associated bloodstream infections and catheter-associated urinary tract infections. "A critical priority was to align the learners' QI projects with what the hospital is already working on," she explained.

"In our practice, all fellows need education and training in patient safety, how to recognize medical errors and close calls, and how to use our errors reporting system," Dr. Myers said. "They also need to participate in errors analysis discussions. But we have struggled to get residents to attend those meetings. There's not enough time in their schedules, and here at Penn, we have 1,500 residents and fellows, and maybe only 20 of these formal medical errors conferences per year," she said.

Dr. Orlowski

"Bridging leaders are not an exclusive group but open to anyone who finds their passion in teaching quality and safety."

Dr. Myers worked with the hospital's patient safety officer and head of GME to design a simulated approach to fill the gap, a simulation of the root cause analysis process – how it works, the various roles played by different individuals, and what happens after it is done. "In my role, I trained one faculty member in each large residency program in how to identify a case and how to use the simulation," she said. "They can now teach their own learners and make it more relevant to their specialty."

Penn also has a blueprint for quality – a road map for how the organization socializes health care quality, safety, and value, Dr. Myers said. "Every 3 or 4 years our CEO looks at the road map and tries to get feedback on its direction from payers and insurers, quality leaders, academic department heads – and residents. I was in a good position to organize a session for a representative group of residents to get together and talk about where they see the quality and safety gaps in their everyday work."

The role of the bridging leader is a viable career path or target for many hospitalists, Dr. Arora said. "But even if it's not a career path for you, knowing that hospitalists are at the forefront of the bridging leaders movement could help you energize your health system. If you are seeing gaps in quality and safety, this is an issue you can bring before the system."

These days doctors are wearing a lot of hats and filling roles that weren't seen as much before, said Dr. Orlowski. "Bridging leaders are not an exclusive group but open to anyone who finds their passion in teaching quality and safety. Maybe you're doing quality and safety, but not education, but you recognize its importance, or vice versa. First of all, look to see what this bridging leaders thing really is, and how it might apply to you. You might say: 'That accurately describes what I'm doing now. I have the interest; I want to learn more.'"

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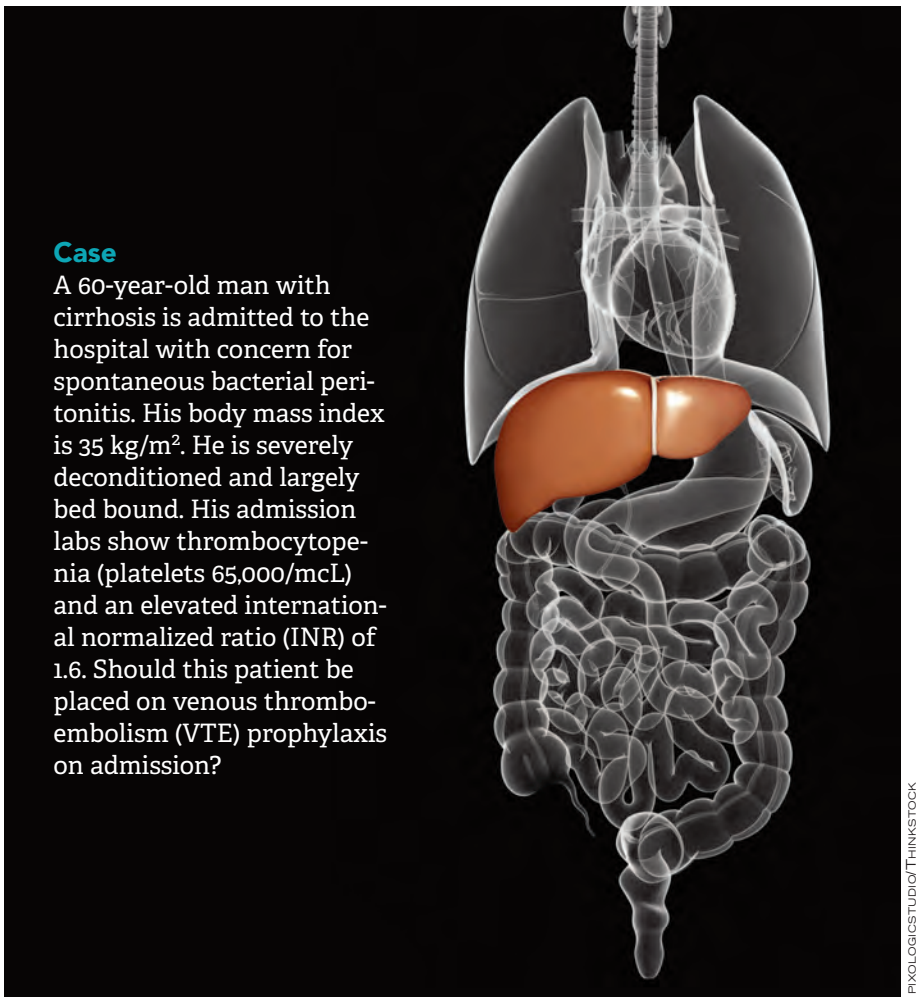
Key Clinical Question

How should anticoagulation be managed in a patient with cirrhosis?

DOACs may be a practical option for some CLD patients

By Raj Sehgal, MD, FHM, and Denver E. Buchanan, PharmD, BCPS



PIXOLOGICSTUDIO/THINKSTOCK

Case

A 60-year-old man with cirrhosis is admitted to the hospital with concern for spontaneous bacterial peritonitis. His body mass index is 35 kg/m². He is severely deconditioned and largely bed bound. His admission labs show thrombocytopenia (platelets 65,000/mcL) and an elevated international normalized ratio (INR) of 1.6. Should this patient be placed on venous thromboembolism (VTE) prophylaxis on admission?

Brief overview

Patients with chronic liver disease (CLD) have previously been considered "auto-anticoagulated" because of markers of increased bleeding risk, including a decreased platelet count and elevated INR, prothrombin time, and activated partial thromboplastin time. It is being increasingly recognized, however, that CLD often represents a hypercoagulable state despite these abnormalities.[1]

While cirrhotic patients produce less of several procoagulant substances (such as factors II, V, VII, X, XI, XII, XIII, and fibrinogen), they are also deficient in multiple anticoagulant factors (such as proteins C and S and antithrombin) and fibrinolytics (plasminogen). While the prothrombin time and activated partial thromboplastin time are sensitive to levels of procoagulant proteins in plasma, they do not measure response to the natural anticoagulants and therefore do not reflect an accurate picture of a cirrhotic patient's risk of developing thrombosis. In addition, cirrhotic patients have many other risk factors for thrombosis, including poor functional status, frequent hospitalization, and elevated estrogen levels.

Overview of the data

VTE incidence among patients with CLD has varied across studies, ranging from 0.5% to 6.3%.[2] A systemic review of VTE risk in cirrhotic patients concluded that they "have a significant risk of VTE, if not higher than noncirrhotic patients and this risk cannot be trivialized or ignored."[2]

In a nationwide Danish case-control study, patients with cirrhosis had a 1.7 times increased risk of VTE, compared with the general population.[3] Hypoalbuminemia appears to be one of the strongest associated risk factors for VTE in these patients, likely as a reflection of the degree of liver synthetic dysfunction (and therefore decreased synthesis of anticoagulant factors). One study showed that patients with an albumin of less than 1.9 g/dL had a VTE risk five times higher than patients with an albumin of 2.8 g/dL or higher.[4]

Prophylaxis

Given the increased risks of bleeding and thrombosis in patients with cirrhosis, how should VTE prophylaxis be managed in hospitalized patients? While current guidelines do not specifically address the use of pharmacologic prophylaxis in cirrhotic patients, the Padua Predictor Score, which is used to assess VTE risk in the general hospital population, has also been shown to be helpful in the subpopulation of patients with CLD (Table 1).

In one study, cirrhotic patients who were "high risk" by Padua Predictor score were over 12 times more likely to develop VTE than those who were "low risk."[5] Bleeding risk appears to be fairly low, and similar to those patients not receiving prophylactic anticoagulation. One retrospective case series of hospitalized cirrhotic patients receiving thromboprophylaxis showed a rate of GI bleeding of 2.5% (9 of 355 patients); the rate of major bleeding was less than 1%.[6]

Continued on page 16

Table 1. Padua Prediction Score[12]

Active cancer (metastases and/or chemoradiotherapy in the previous 6 months)	3
Previous VTE (with the exclusion of superficial vein thrombosis)	3
Bedrest for ≥3 days	3
Thrombophilia	3
Recent (≤1 month) trauma and/or surgery	2
Elderly age (≥70 years)	1
Heart and/or respiratory failure	1
Acute myocardial infarction or ischemic stroke	1
Acute infection and/or rheumatologic disorder	1
Obesity (body mass index ≥30 kg/m²)	1
Ongoing hormonal treatment	1
High risk of VTE	**≥4 points**

Source: J Thromb Haemost. 2010;8(11):2450-7

MDEDGE NEWS

Dr. Sehgal

Dr. Buchanan

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> *"Hypoalbuminemia appears to be one of the strongest associated risk factors for VTE in [CLD] patients, likely as a reflection of the degree of liver synthetic dysfunction."*

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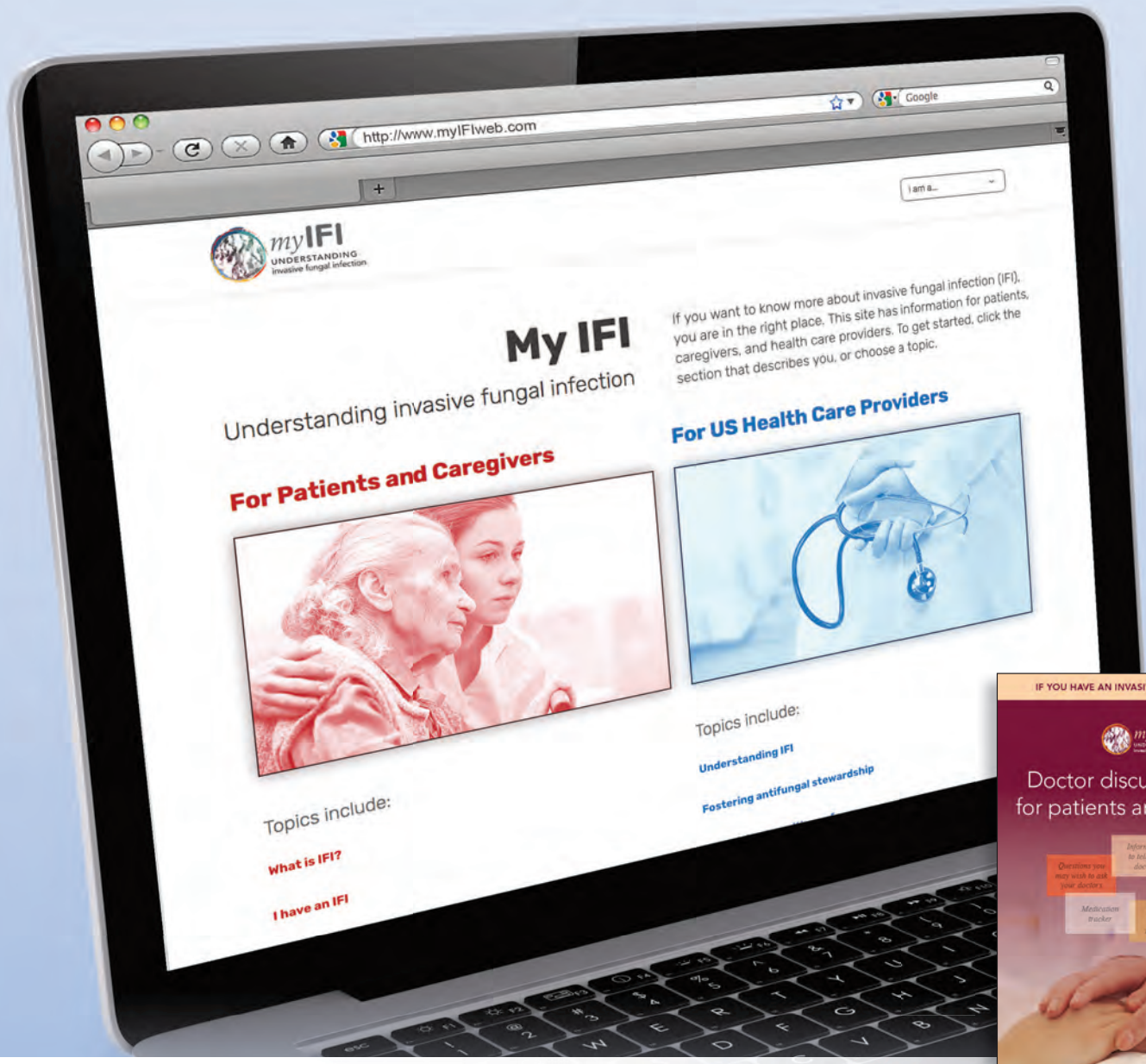

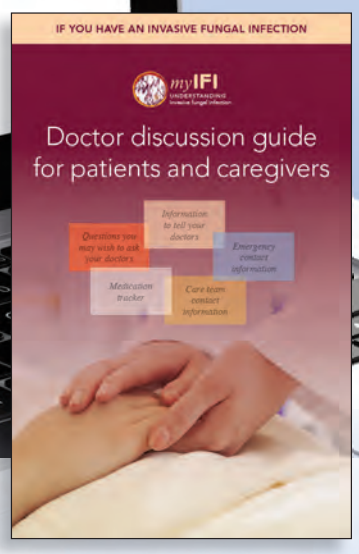

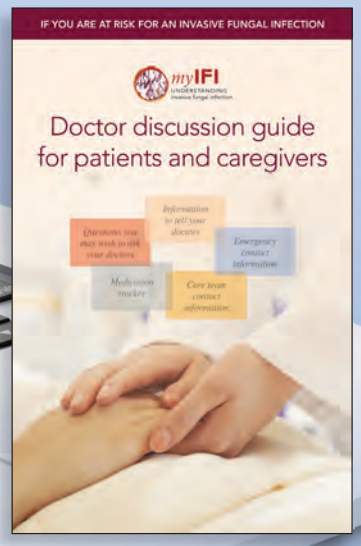

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Continued from page 14

Selection of anticoagulant for VTE prophylaxis should be similar to non-CLD patients. The choice of agent (low-molecular-weight heparin [LMWH] or unfractionated heparin) and dosing depends on factors including renal function and body weight. If anticoagulation is contraindicated (because of thrombocytopenia, for example), then mechanical prophylaxis should be considered.[7]

"[Low-molecular-weight heparin] is often the preferred choice for anticoagulation in CLD patients. However, some limitations exist including the ... limited reliability of anti–factor Xa levels."

Treatment

What about anticoagulation in patients with a known VTE? Food and Drug Administration safety recommendations are based on Child-Pugh class, although the current data on the safety and efficacy of full-dose anticoagulation therapy for VTE in patients with cirrhosis are limited (Table 2). At this point, LMWH is often the preferred choice for anticoagulation in CLD patients. However, some limitations exist including the need for frequent subcutaneous injections and limited reliability of anti–factor Xa levels.

Cirrhotic patients often fail to achieve target anti–factor Xa levels on standard prophylactic and therapeutic doses of enoxaparin. This, however, is likely a lab anomaly as in vitro studies have shown that cirrhotic patients may show an increased response to LMWH despite reduced anti–factor Xa levels.[8] Thus, LMWH remains the standard of care for many CLD patients.

The use of vitamin K antagonists (VKAs) such as warfarin for VTE treatment can be difficult to manage. Traditionally CLD patients have been started on lower doses of warfarin but given their already elevated INR, this may lead to a subtherapeutic dose of VKAs. A recent study of 23 patients with cirrhosis demonstrated that a target INR of 2-3 can be reached with VKA doses similar to those in noncirrhotic patients.[9] These data support the practice of using the same VKA dosing strategies for CLD patients, and selecting a starting dose based on patient parameters such as age and weight.

While the use of direct oral anticoagulants (DOACs) for this patient population is still not a common practice, they may be a practical option for some CLD patients. A meta-analysis found that the currently used DOACs have no significant risk of drug-induced hepatic injury.[10] Currently, only observational data are available to assess the benefits and risks of bleeding with DOACs in this patient population, as patients with significant liver disease were excluded from the major randomized trials.[11] DOACs may also represent a complicated choice for some patients given the effect of liver injury on their metabolism (Table 3).

Table 2. Anticoagulant safety in patients with chronic liver disease

Anticoagulant	Child-Pugh class	U.S. FDA recommendation
Heparin	A	No dose adjustment
	B	No dose adjustment
	C	No dose adjustment
Enoxaparin	A	Use with caution; no dose adjustment
	B	Use with caution; no dose adjustment
	C	Use with caution; no dose adjustment
Warfarin	A	Titrate to therapeutic INR*
	B	Titrate to therapeutic INR
	C	Titrate to therapeutic INR
Dabigatran	A	No dose adjustment
	B	Use with caution; no dose adjustment
	C	Not recommended
Rivaroxaban	A	No dose adjustment
	B	Not recommended
	C	Not recommended
Apixaban	A	No dose adjustment
	B	Use with caution; no dose adjustment
	C	Not recommended
Edoxaban	A	No dose adjustment
	B	Not recommended
	C	Not recommended

*International normalized ratio

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Table 3. Route of clearance of direct oral anticoagulants[11]

DOAC	Hepatic elimination	Renal elimination
Dabigatran	20%	80%
Rivaroxaban	65%	35%
Apixaban	75%	25%
Edoxaban	50%	50%

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Source: J Am Coll Cardiol. 2018;71(19):2162-75

Quiz

Question: Which of the following factors would be associated with an increased risk of thrombosis in a patient with cirrhosis?
A. International normalized ratio of 3.5
B. Albumin of 1.5 g/dL
C. Platelet count of 40,000/mcL
D. Body mass index of 20 kg/m^2

Answer: B
Cirrhotic patients with low albumin levels are at an increased risk of thrombosis, with one study showing a risk five times higher for venous thromboembolism in patients with albumin of 1.9 g/dL or less, when compared with those with a level greater than 2.8 g/dL.[4] In these patients, the low albumin level is likely a marker of worse liver synthetic function, which corresponds to decreased production of anticoagulant factors. International normalized ratio level alone is a poor marker of thrombosis and bleeding risk in cirrhotic patients. A lower platelet count (less than 50,000/mcL) would be associated with an increased risk of bleeding. Body mass index greater than 30 kg/m^2 is associated with an increased risk of thrombosis per the Padua Prediction Score.

Application of data to the original case

This patient should be assessed for both risk of VTE and risk of bleeding during the hospital admission. CLD patients likely have a risk of VTE similar to (or even greater than) that of general medical patients. The Padua score for this patient is 4 (bed rest, body mass index) indicating that he is at high risk of VTE. While he is thrombocytopenic, he is not below the threshold for receiving anticoagulation. His INR is elevated but this does not confer any reduced risk of VTE.

Bottom line

This patient should receive VTE prophylaxis with either subcutaneous heparin or LMWH during his hospital admission.

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Older IBD patients are most at risk of postdischarge VTE

By Steve Cimino
MDedge News

Hospitalized patients with inflammatory bowel diseases (IBD) are most likely to be readmitted for venous thromboembolism (VTE) within 60 days of discharge, according to a new study that analyzed 5 years of U.S. readmissions data.

"Given increased thrombotic risk postdischarge, as well as overall safety of VTE prophylaxis, extending prophylaxis for those at highest risk may have significant benefits," wrote Adam S. Faye, MD, of Columbia University, and coauthors. The study was published in Clinical Gastroenterology and Hepatology (2019 Jul 20. doi: 10.1016/j.cgh.2019.07.028).

To determine which IBD patients would be most in need of postdischarge VTE prophylaxis, as well as when to administer it, the researchers analyzed 2010-2014 data from the Nationwide Readmissions Database (NRD). They found a total of 872,122 index admissions for IBD patients; 4% of those patients had a prior VTE. Of the index admissions, 1,160 led to a VTE readmission within 90 days. Readmitted patients had a relatively equal proportion of ulcerative colitis (n = 522) and Crohn's disease (n = 638).

More than 90% of VTE readmissions occurred within 60 days of discharge; the risk was highest over the first 10 days and then decreased in each ensuing 10-day period until a slight increase at the 81- to 90-day period. All patients over age 30 had higher rates of readmission than those of patients under age 18, with the highest risk in patients between the ages of 66 and 80 years (risk ratio, 4.04; 95% confidence interval, 2.54-6.44, *P* less than .01). Women were at lower risk (RR, 0.82; 95% CI, 0.73-0.92, *P* less than .01). Higher risks of readmission were also associated with being on Medicare (RR 1.39; 95% CI, 1.23-1.58, *P* less than .01) compared with being on private insurance and being cared for at a large hospital (RR, 1.26; 95% CI, 1.04-1.52, *P* = .02) compared with a small hospital.

The highest risk of VTE readmission was associated with a prior history of VTE (RR, 2.89; 95% CI, 2.40-3.48, *P* less than .01), having two or more comorbidities (RR, 2.57; 95% CI, 2.11-3.12, *P* less than .01) and having a *Clostridioides difficile* infection as of index admission (RR, 1.90; 95% CI, 1.51-2.38, *P* less than .01). In addition, increased risk was associated with being discharged to a nursing or care facility (RR, 1.85; 95% CI, 1.56-2.20, *P* less than .01) or home with health services (RR, 2.05; 95% CI, 1.78-2.38, *P* less than .01) compared with a routine discharge.

> *"Increased risk (of VTE) was associated with being discharged to a nursing or care facility or home with health services."*

In their multivariable analysis, similar factors such as a history of VTE (adjusted RR, 2.41; 95% CI, 1.99-2.90, *P* less than .01), two or more comorbidities (aRR, 1.78; 95% CI, 1.44-2.20, *P* less than .01) and *C. difficile* infection (aRR, 1.47; 95% CI, 1.17-1.85, *P* less than.01) continued to be associated with higher risk of VTE readmission.

Though they emphasized that the use of NRD data offered the impressive ability to "review over 15 million discharges across the U.S. annually," Dr. Faye and coauthors acknowledged that their study did have limitations. These included the inability to verify via chart review the study's outcomes and covariates. In addition, they were unable to assess potential contributing risk factors such as medication use, use of VTE prophylaxis during hospitalization, disease severity, and family history. Finally, though unlikely, they admitted the possibility that patients could be counted more than once if they were readmitted with a VTE each year of the study.

In the Literature

Clinician reviews of HM-centric research

By Jessica Burke, MD; Kevin Hageman, DO; Derek S. Kruse, MD; Russell Ledford, MD; Kevin Liu, MD; Kelly C. Sponsler, MD; Krista Ann Suojanen, MD; and Chase J. Webber, DO

Section of Hospital Medicine, Vanderbilt University Medical Center, Nashville, Tenn.

IN THIS ISSUE

By Jessica Burke, MD

1 No mortality benefit after intensive glucose control once Hb A1c curves equalize

CLINICAL QUESTION: Is there a reduction in cardiovascular events in veterans with type 2 diabetes who were treated with intensive glucose control versus standard therapy at 15 years' follow-up?


Dr. Burke

BACKGROUND: A previous study reported that a median of 5.6 years of intensive versus standard glucose lowering in veterans with type 2 diabetes resulted in significantly reduced risk of major cardiovascular events after 10 years of combined intervention and observational follow-up.
STUDY DESIGN: Prospective cohort.
SETTING: Veterans Affairs Healthcare System.
SYNOPSIS: In the original trial, 1,791 veterans were randomly assigned to receive either intensive or standard glucose control therapy. After conclusion of that study, 1,655 participants were followed using central databases, and 1,391 also provided data via surveys and chart review. Initially the difference in the glycated hemoglobin (Hb A_{1c}) curves between the two groups averaged 1.5%, but it declined to 0.2%-0.3% 3 years after the trial ended. The median Hb A1c then stabilized to 8% in both groups.

Over a period of 15 years of combined intervention and posttrial follow-up, the risks of major cardiovascular events or death were not lower in the intensive-therapy group (hazard ratio for composite outcome, 0.91; 95% confidence interval, 0.78-1.06; P = .23; HR for death, 1.02; 95% CI, 0.88-1.18). The risk of major cardiovascular disease outcomes was reduced during the approximately 10-year interval of separation of the Hb A_{1c} curves (HR, 0.83; 95% CI, 0.70-0.99), but it did not persist after equalization of Hb A_{1c} levels (HR, 1.26; 95% CI, 0.90-1.75). Limitations include the observational study design, the study population of mostly older men, and reliance on administrative data for outcomes.
BOTTOM LINE: More than 5 years of intensive glucose lowering, compared with standard therapy, did not show significantly lower risks of cardiovascular events or mortality once the glycated hemoglobin curves equalized during follow-up in years 11-15.
CITATION: Reaven PD et al. Intensive glucose control in patients with type 2 diabetes – 15-year follow-up. New Engl J Med. 2019 Jun 6;380(23):2215-24.

Dr. Burke is a hospitalist at Vanderbilt University Medical Center, Nashville, Tenn.

By Kevin Hageman, DO

2 PICC lines often used inappropriately in advanced CKD patients

CLINICAL QUESTION: How common is peripherally inserted central catheter (PICC) use in patients with advanced chronic kidney disease (CKD), and are there associated complications?

BACKGROUND: PICC insertion is associated with risk for venous thrombosis and stenosis. National guidelines recommend avoiding PICC lines in patients with CKD stage 3b (glomerular filtration rate less than 45 mL/min per 1.73 m^2) in order to preserve venous integrity for future creation of arteriovenous fistula, which is the ideal vascular access for hemodialysis.
STUDY DESIGN: Prospective cohort.
SETTING: 52 hospitals in Michigan.
SYNOPSIS: Data obtained from inpatients within the Michigan Hospital Medicine Safety Consortium between 2013 and 2016 showed that, of 20,545 total PICCs placed, 23% were placed in patients with a glomerular filtration rate less than 45 mL/min per 1.73 m^2, and 3.2% were placed in those receiving dialysis. PICC placement in advanced CKD was more common in the ICU than in the ward setting, and placement more frequently utilized multilumen instead of single-lumen catheters. PICC-related complications were not more common in advanced CKD but were more often seen in the ICU and with multilumen PICCs. About one-quarter of PICCs were used for durations of less than 5 days.


Dr. Hageman

The study is limited by lack of data in a subset of patients who had no documented GFR (2.7%) or missing covariate data (2.7%). The inability to ascertain other clinical information, such as nephrology approval of PICC, functional AV fistula or other hemodialysis access, or PICC complications after discharge further limit the findings.

Hospitalists should first decide if a PICC line is truly indicated, and if so, carefully weigh the risks and benefits of PICC placement in patients with advanced CKD.
BOTTOM LINE: PICC placement is common and often inappropriate in hospitalized patients with advanced CKD.
CITATION: Paje D et al. Use of peripherally inserted central catheters in patients with advanced chronic kidney disease A prospective cohort study. Ann Intern Med. 2019 Jun 4;171:10-8.

Dr. Hageman is a hospitalist at Vanderbilt University Medical Center, Nashville, Tenn.

By Derek S. Kruse, MD

3 PPI use associated with all-cause and cause-specific mortality

CLINICAL QUESTION: How great is the mortality risk when using proton pump inhibitors (PPI) and are there specific causes of death associated with PPI use?
BACKGROUND: PPI use has previously been associated with an increased risk of acute kidney injury, *Clostridium difficile* infection, osteoporosis, dementia, and all-cause mortality. An estimation of the level of mortality risk, as well as cause-specific mortality risk, may better inform decisions about prescribing PPIs.


Dr. Kruse

STUDY DESIGN: Longitudinal observational cohort.
SETTING: Department of Veterans Affairs.
SYNOPSIS: Using a cohort of veterans newly prescribed acid suppression therapy in 2002-2004, 157,625 new PPI users were compared with 56,842 new H_2 receptor–blocker users. Over the following 10 years, a specific cause of death was determined using national death index data. In that period, 37.3% of patients died, with PPI use associated with 45.2 excess deaths per 1,000 patients (95% confidence interval, 28.2-61.4). There were significant associations with the following specific causes of death: circulatory system diseases (17.5 excess deaths per 1,000 patients, 95% CI, 5.5-28.8), neoplasms (12.9; 95% CI, 1.2-24.3), genitourinary system diseases including chronic kidney disease (6.3; 95% CI, 1.6-7.0), and infectious/parasitic diseases (4.2; 95% CI, 3.2-9.2).

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Limitations include the observational study design and potential for confounding variables not accounted for by the researchers. There is also a question of broader applicability given the VA patient population. Nevertheless, this study adds to growing evidence regarding risks associated with PPI use. Clinicians should consider prescribing PPIs only for indications and durations where it is known to offer benefit in order minimize risk of adverse events.

BOTTOM LINE: PPI use is associated with an excess risk of death, particularly death caused by cardiovascular disease, malignancy, genitourinary diseases, and infection.

CITATION: Xie Y et al. Estimates of all-cause mortality and cause specific mortality associated with proton pump inhibitors among US veterans: Cohort study. BMJ. 2019 May 29;365:l1580.

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By Russell Ledford, MD

4 Inpatient opioid administration associated with postdischarge opioid use

CLINICAL QUESTION: Are inpatient opioid administration and inpatient opioid administration patterns associated with postdischarge opioid use in opioid-naive patients?

Dr. Ledford

BACKGROUND: Efforts to reduce and monitor high-risk opioid prescribing have largely focused on outpatient prescribing with less empiric evaluation of inpatient administration. Little is known about the association of inpatient opioid administration and postdischarge opioid use.

STUDY DESIGN: Retrospective cohort.

SETTING: 12 community and academic hospitals in Pennsylvania.

SYNOPSIS: With electronic health record data from 2010-2014 to evaluate 148,068 opioid-naive patients aged 18 years and older, this study showed a relationship between inpatient opioid administration, specific patterns of inpatient opioid administration, and postdischarge opioid use. Specifically, inpatient opioid administration was associated with a 3.0% increase (95% CI, 2.8%-3.2%) in opioid use at 90 days post discharge. Additionally, inpatient opioid administration within 12 hours of hospital discharge was associated with a 3.6% increase (95% CI, 3.3%-3.9%) in opioid use at 90 days post discharge.

This observational study is prone to potential unmeasured confounders negating any clear causation. Rather, hospitalists should be aware of the increasing focus on inpatient opioid administration as it relates to outpatient opioid use, especially in the setting of the current opioid crisis.

BOTTOM LINE: Inpatient opioid administration and administration patterns are associated with 90-day postdischarge opioid use in opioid-naive patients.

CITATION: Donohue JM et al. Patterns of opioid administration among opioid-naive inpatients and associations with postdischarge opioid use. Ann Intern Med. 2019 Jun 18:171(2):81-90.

Dr. Ledford is a hospitalist at Vanderbilt University Medical Center, Nashville, Tenn.

By Kevin Liu, MD

5 Surgery for adhesive small-bowel obstruction linked with lower risk of recurrence

CLINICAL QUESTION: What is the association between operative intervention for adhesive small-bowel obstruction (aSBO) and long-term risk of recurrence?

BACKGROUND: Guidelines recommend nonoperative monitoring for aSBO; however, long-term association of operative versus nonoperative management and aSBO recurrence is poorly understood.

STUDY DESIGN: Longitudinal, retrospective cohort.

SETTING: Hospitals in Ontario.

SYNOPSIS: Administrative data for 2005-2014 was used to identify 27,904 adults hospitalized for an initial episode of aSBO who did not have known inflammatory bowel disease, history of radiotherapy, malignancy, ileus, impaction, or anatomical obstruction. Approximately 22% of patients were managed surgically during the index admission. Patients were followed for a median of 3.6 years. Overall, 19.6% of patients experienced at least one admission for recurrence of aSBO during the study period. With each recurrence, the probability of subsequent recurrence increased, the time between episodes decreased, and the probability of being treated surgically decreased.

Patients were then matched into operative (n = 6,160) and nonoperative (n = 6,160) cohorts based on a propensity score which incorporated comorbidity burden, age, gender, and socioeconomic status. Patients who underwent operative management during their index admission for aSBO had a lower overall risk of recurrence compared to patients managed nonoperatively (13.0% vs. 21.3%; *P* less than .001). Operative intervention was associated with lower hazards of recurrence even when accounting for death. Additionally, surgical intervention after any episode was associated with a significantly lower risk of recurrence, compared with nonoperative management.

BOTTOM LINE: Contrary to surgical dogma, surgical intervention is associated with reduced risk of recurrent aSBO in patients without complicating factors. Hospitalists should consider recurrence risk when managing these patients nonoperatively.

CITATION: Behman R et al. Association of surgical intervention for adhesive small-bowel obstruction with the risk of recurrence. JAMA Surg. 2019 May 1;154(5):413-20.

6 Echocardiography in AMI not associated with improved outcomes

CLINICAL QUESTION: Does the use of echocardiography have any association with outcomes in acute myocardial infarction (AMI)?

BACKGROUND: Guidelines recommend that patients with AMI undergo universal echocardiography for the assessment of cardiac structure and ejection fraction, despite modest diagnostic yield.

STUDY DESIGN: Retrospective cohort.

SETTING: 397 U.S. hospitals contributing to the Premier Healthcare Informatics inpatient database.

SYNOPSIS: ICD-9 codes were used to identify 98,999 hospitalizations with a discharge diagnosis of AMI. Of these, 70.4% had at least one transthoracic echocardiogram performed. Patients who underwent echocardiogram were more likely than patients without an echocardiogram to have heart failure, pulmonary disease, and intensive care unit stays and require interventions such as noninvasive and invasive ventilation, vasopressors, balloon pumps, and inotropic agents.

Risk-standardized echocardiography rates varied significantly across hospitals, ranging from a median of 54% in the lowest quartile to 83% in the highest quartile. The authors found that use of echocardiography was most strongly associated with the hospital, more so than individual patient factors. In adjusted analyses, no difference was seen in inpatient mortality (odds ratio, 1.02; 95% CI, 0.88-1.99) or 3-month readmission (OR, 1.01; 95% CI, 0.93-1.10), but slightly longer mean length of stay (0.23 days; 95% CI, 0.04-0.41; *P* = .01) and higher mean costs ($3,164; 95% CI, $1,843-$4,485; *P* < .001) were found in patients treated at hospitals with the highest quartile of echocardiography use, compared with those in the lowest quartile.

Limitations include lack of information about long-term clinical outcomes, inability to adjust for ejection fraction levels, and reliance on administrative data for AMI and procedure codes.

BOTTOM LINE: In a cohort of patients with AMI, higher rates of hospital echocardiography use did not appear to be associated with better clinical outcomes but were associated with longer length of stay and greater hospital costs.

CITATION: Pack QR et al. Association between inpatient echocardiography use and outcomes in adult patients with acute myocardial infarction. JAMA Intern Med. 2019 Jun 17. doi: 10.1001/jamainternmed.2019.1051.

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By Krista Ann Suojanen, MD

7 Physician burnout costly to organizations and U.S. health system

CLINICAL QUESTION: What is the attributable cost of physician burnout at both the U.S. health care system level and individual organization level?

BACKGROUND: Occupational burnout is more prevalent among physicians than among the general population, and physician burnout is associated with several negative clinical outcomes. However, little is known about the economic cost of this widespread issue.

STUDY DESIGN: Cost-consequence analysis using a novel mathematical model.

SETTING: Simulated population of U.S. physicians.

SYNOPSIS: Researchers conducted a cost-consequence analysis using a mathematical model designed to determine the financial impact of burnout – or the difference in observed cost and the theoretical cost if physicians did not experience burnout. The model used a hypothetical physician population based on a

2013 profile of U.S. physicians, a 2014 survey of physicians that assessed burnout, and preexisting literature on burnout to generate the input data for their model. The investigators focused on two outcomes: turnover and reduction in clinical hours. They found that approximately $4.6 billion per year is lost in direct cost secondary to physician burnout, with the greatest proportion coming from physician turnover. The figure ranged from $2.6 billion to $6.3 billion in multivariate sensitivity analysis. For an organization, the cost of burnout is about $7,600 per physician per year, with a range of $4,100 to $10,200. Though statistical modeling can be imprecise, and the input data were imperfect, the study was the first to examine the systemwide cost of physician burnout in the United States.


Dr. Suojanen

BOTTOM LINE: Along with the negative effects on physician and patient well-being, physician burnout is financially costly to the U.S. health care system and to individual organizations. Programs to reduce burnout could be both ethically and economically advantageous.

CITATION: Han S et al. Estimating the attributable cost of physician burnout in the United States. Ann Intern Med. 2019;170(11):784-90.

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By Chase J. Webber, DO

8 AMA discharge linked to increased readmissions, discontinuity of care

CLINICAL QUESTION: What is the impact of discharge against medical advice (AMA) on 30-day readmission rates and outcomes on subsequent hospitalization?

BACKGROUND: AMA discharges are common (1%-2% of all U.S. discharges) and disproportionately affect vulnerable patient populations, specifically those of lower socioeconomic status and the uninsured. Previous studies have been insufficiently powered to assess the effects of AMA discharge on 30-day readmission rates at a national level.

STUDY DESIGN: Retrospective cohort.

SETTING: Community and teaching hospitals in 22 states.

SYNOPSIS: With use of the 2014 Nationwide Readmissions Database of 23,110,641 index hospitalizations of patients 18 years or older, this study found that AMA discharge occurred with 1.3% of admissions. AMA discharge was associated with greater than twice the odds of 30-day readmission, compared with routine discharge. Of patients discharged AMA, 20.2% had an unplanned readmission within 30 days, compared with 10.1% of patients discharged routinely (OR, 2.25; 95% CI, 2.20-2.30; *P* less than .001).


Dr. Webber

Patients who were discharged AMA had almost 20 times the odds of undergoing repeat AMA discharge at readmission (OR, 18.41; 95% CI, 17.46-19.41; *P* less than .001) and twice the odds of presenting to a different hospital (OR, 2.35; 95% CI, 2.22-2.49; *P* less than .001). The study did not capture readmissions in a different state than that of the index hospital and was limited to the 22 states participating in the 2014 Readmissions Database.

BOTTOM LINE: Discharge AMA is associated with significantly higher odds of 30-day readmission, subsequent AMA discharge and presentation to another hospital, compared with routine discharge.

CITATION: Kumar N. Burden of 30-day readmissions associated with discharge against medical advice among inpatients in the United States. Am J Med. 2019 Jun;132(6):708-17.

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Short Take

Measurement of nonfasting lipid levels gains support

Post hoc data on 8,270 patients associating nonfasting lipid levels with incident atherosclerotic cardiovascular disease events further supports the growing acceptance of measuring nonfasting lipids in routine cardiovascular risk assessment.

CITATION: Mora S et al. Association of nonfasting vs fasting lipid levels with risk of major coronary events in the Anglo-Scandinavian Cardiac Outcomes Trial-Lipid Lowering Arm. JAMA Intern Med. 2019 Jul 1;179(7):898-905.

Who makes the rules? CMS and IPPS

Major MS-DRG changes postponed

By John Biebelhausen, MD, MBA; Jennifer Cowart, MD, FHM; and Aaron Hamilton, MD, MBA, SFHM

The introduction of the Medicare Inpatient Prospective Payment System (IPPS) through amendment of the Social Security Act in 1983 transformed hospital reimbursement in the United States. Under the IPPS, a new form of Medicare prospective payment that paid hospitals a fixed amount per discharge for inpatient services was created: the diagnosis-related group (DRG). This eliminated the preceding retrospective cost reimbursement system in an attempt to stop health care price inflation.

Each DRG represents a grouping of similar conditions and procedures for services provided during an inpatient hospitalization reimbursed under Medicare Part A. The Centers for Medicare & Medicaid Services uses the Medicare Severity DRG (MS-DRG) system to account for severity of illness and resource consumption. There are three levels of severity based upon secondary diagnosis: major complication/comorbidity (MCC), complication/comorbidity (CC), and noncomplication/comorbidity (non-CC).

Payment rates are defined by base rates for operating costs and capital-related costs which are adjusted for relative weight (the average cost within a DRG, compared with the average Medicare case cost) and market condition adjustments. As the largest single health care payer in the United States, CMS's annual changes to the IPPS have a major impact on hospital reimbursement.

In May 2019, CMS released its annual proposed rule for the Hospital IPPS suggesting extensive changes to MS-DRG reimbursements. Notably, CMS proposed changing the severity level of nearly 1,500 diagnosis codes by adjusting their categorization between MCC, CC, or non-CC. The majority of these changes included downgrading MCCs to CCs or non-CCs. In fact, 87% of the changes involved a downgrade from one of the higher severity levels to a non-CC level, while only 13% involved an upgrade from a lower severity level to MCC level.

UTAH778/THINKSTOCK

The CMS derived these changes from an algorithmic review and input from their clinical advisers to determine each diagnoses impact on resource utilization. Multiple major groups of codes were included in the downgraded groups, including secondary cancer diagnoses, organ transplant status, and hip fracture.

Evaluating codes based on coded resource use alone could have had a major negative impact on the clinical practice of hospitalists as it undervalues cognitive and clinical work associated with these secondary diagnoses.

As an example, malignant neoplasm of head of pancreas (ICD-10, C25.0) was proposed to move to a non-CC. Under CMS's proposed rule, if a patient was admitted with complications of pancreatic cancer such as cholangitis caused by biliary obstruction, the pancreatic cancer diagnosis would not serve as a CC since the primary condition for which the patient was hospitalized would be cholangitis. The anticipated increase in such a patient's length of stay, severity of illness, and expected resource utilization would be grossly misrepresented in this case by CMS's proposed rule changes. CMS also proposed to move major organ transplant status (including heart, lung, kidney, and pancreas) from CC to non-CC status. Again, the cognitive work and resource utilization required to manage these patients would be underrepresented with this change, given the increased complexity of managing immunosuppressant medications or conducting an infectious diagnostic work-up in immunosuppressed patients.

The Society of Hospital Medicine Public Policy Committee provides comments annually to CMS on the IPPS, advocating for hospitalists and patients. After advocacy efforts from SHM and other groups expressing concern about making such significant changes to the DRG system without further study, the IPPS final rule was released on Aug. 2, 2019. SHM's efforts paid off. The final rule excluded the proposed broad changes to the MS-DRG system that were in the proposed rule.

In deciding not to finalize the proposed severity level changes, CMS wrote that the adoption of these broad changes will be postponed in order "to fully consider the technical feedback provided" regarding the proposal. The final rule also describes making a "test GROUPER [software program] publicly available to allow for impact testing," and allows for the possibility of phasing in changes and eliciting feedback. SHM is fully supportive of the decision to postpone major changes to the MS-DRG system in the IPPS until further review is obtained, and will continue to monitor this issue and provide appropriate input to CMS for our hospitalist members.

As hospitalists, it is important to understand the foundational role that public policy and CMS rule creation have on our work. Influencing change to the MS-DRG system is yet another example of how SHM's work has impacted the policy domain, limiting negative effects on our members and advancing the practice of hospital medicine.

Dr. Biebelhausen is head of the section of hospital medicine at Virginia Mason Medical Center, Seattle. Dr. Cowart is a hospitalist at the Mayo Clinic in Jacksonville, Fla. Dr. Hamilton is a hospitalist and associate chief quality officer at the Cleveland Clinic.

How to nearly eliminate CLABSIs in children's hospitals

By M. Alexander Otto
MDedge News

SEATTLE – Levine Children's Hospital, in Charlotte, N.C., dropped its central line–associated bloodstream infection rate from 1.13 per 1,000 line-days to 0.67 in just a few months, with a mix of common sense steps and public accountability.

Levine Children's was at about the 50th percentile for CLABSIs, compared with other children's hospitals, but dropped to the 10th percentile after the changes. There were 21 CLABSIs in 2017, but only 12 in 2018. The hospital went 6 straight months without a CLABSI after the changes were made. The efforts saved about $300,000 and 63 patient-days.

"We really had great success," said Kayla S. Koch, MD, a pediatric hospitalist at Levine Children's, who presented the findings at Pediatric Hospital Medicine.

Hospital units had been working to reduce CLABSIs, but they were each doing their own thing. "Many of our units were already dabbling, so we just sort of brought them together. We standardized the process and got everyone on the same page," said copresenter Ketan P. Nadkarni, MD, also a pediatric hospitalist at Levine Children's.

It wasn't hard to get buy-in. "I don't think the units were aware that everyone was doing it differently," and were on board once the problem was explained. Also, using the same approach throughout the hospital made it easier for nurses and physicians moving between units, he said.

M. Alexander Otto/MDedge News

Dr. Kayla S. Koch and Dr. Ketan P. Nadkarni

Each morning, the nurse supervisor and patient nurse would partner up at the bedside to check that central venous lines were set up correctly. They examined the alcohol disinfectant caps to make sure they were clean; determined that children were getting chlorhexidine gluconate baths; checked the dressings for bleeding and soiling; noted in the electronic medical record why the patient had a central line; and discussed with hospitalists if it were still needed. Problems were addressed immediately.

These quality processes were all tracked on wall racks placed in plain sight on each unit, including the neonatal and pediatric ICUs. Each central line patient had a card that listed what needed to be done, with a green stripe on one side and a red stripe on the other. If everything was done right, the green side faced out; if even one thing was done wrong, the red side was displayed, for all to see. It brought accountability to the process, the presenters said at the meeting sponsored by SHM, the American Academy of Pediatrics, and the Academic Pediatric Association.

The wall rack also had the central line audit schedule, plus diagrams that showed every failed item, the reason for it, and the unit's compliance rate. Anyone walking by could see at a glance how the unit was doing that day and overall.

The number of dressing options was reduced from 10 to 2, a SorbaView SHIELD and a Tegaderm-like dressing, which made it easier to standardize the efforts. A protocol also was put in place to reinforce oozing dressings, instead of automatically changing them. "We were doing too many changes," Dr. Koch said.

Compliance with the bundle was almost 90%. Staff "really got into it, and it was great to see," she said.

The "initial success was almost unexpected, and so dramatic." The goal now is to sustain the improvements, and roll them out to radiology and other places where central lines are placed, Dr. Nadkarni said.

CPAP safety for infants with bronchiolitis

By M. Alexander Otto
MDedge News

SEATTLE – Rady Children's Hospital in San Diego has been doing continuous positive airway pressure for infants with bronchiolitis on the general pediatrics floors safely and with no problems for nearly 20 years, according to a presentation at Pediatric Hospital Medicine.

It's newsworthy because "very, very few" hospitals do bronchiolitis continuous positive airway pressure (CPAP) outside of the ICU. "The perception is that there are complications, and you might miss kids that are really sick if you keep them on the floor." However, "we have been doing it safely for so long that no one thinks twice about it," said Christiane Lenzen, MD, a pediatric hospitalist at Rady and an assistant clinical professor of pediatrics at the University of California, San Diego.

It doesn't matter if children have congenital heart disease, chronic lung disease, or other problems, she said, "if they are stable enough for the floor, we will see if it's okay."

Rady's hand was forced on the issue because it has a large catchment area but limited ICU beds, so for practical reasons and within certain limits, CPAP moved to the floors. One of Dr. Lenzen's colleagues noted that, as long as there's nurse and respiratory leadership buy in, "it's actually quite easy to pull off in a very safe manner."

Rady has a significant advantage over community hospitals and other places considering the approach, because it has onsite pediatric ICU services for when things head south. Over the past 3 or so years, 52% of the children the pediatric hospital medicine service started on CPAP (168/324) had to be transferred to the ICU; 17% were ultimately intubated.

Many of those transfers were caused by comorbidities, not CPAP failure, but other times children needed greater respiratory support; in general, the floor CPAP limit is 6 cm H_2O and a fraction of inspired oxygen of 50%. Also, sometimes children needed to be sedated for CPAP, which isn't done on the floor.

With the 52% transfer rate, "I would worry about patients who are sick enough to need CPAP staying" in a hospital without quick access to ICU services, Dr. Lenzen said.

Even so, among 324 children who at least initially were treated with CPAP on the floor – out of 2,424 admitted to the pediatric hospital medicine service with bronchiolitis – there hasn't been a single pneumothorax, aspiration event, or CPAP equipment–related injury, she said.

CPAP on the floor has several benefits. ICU resources are conserved, patient handoffs and the work of transfers into and out of the ICU are avoided, families don't have to get used to a new treatment team, and infants aren't subjected to the jarring ICU environment.

For it to work, though, staff "really need to be on top of this," and "it needs to be very tightly controlled" with order sets and other measures. There's regular training at Rady for nurses, respiratory therapists, and hospitalists on CPAP equipment, airway management, monitoring, troubleshooting, and other essentials.

Almost all children on the pediatric floors have a trial of high-flow nasal cannula with an upper limit of 8 L/min. If the Respiratory Assessment Score hasn't improved in an hour, CPAP is considered. If a child is admitted with a score above 10 and they seem to be worsening, they go straight to CPAP.

Children alternate between nasal prongs and nasal masks to prevent pressure necrosis, and are kept nil per os while on CPAP. They are on continual pulse oximetry and cardiorespiratory monitoring. Vital signs and respiratory scores are checked frequently, more so for children who are struggling.

The patient-to-nurse ratio drops from the usual 4:1 to 3:1 when a child goes on CPAP, and to 2:1 if necessary. Traveling nurses aren't allowed to take CPAP cases.

Drug abuse–linked infective endocarditis spiking in U.S.

By Jennie Smith
MDedge News

Hospitalizations for infective endocarditis associated with drug abuse doubled in the United States from 2002 to 2016, in a trend investigators call "alarming," and link to a concurrent rise in opioid abuse.

Patients tend to be younger, poorer white males, according to findings published online in the Journal of the American Heart Association (2019 Sep 18. doi: 10.1161/JAHA.119.012969).

For their research, Amer N. Kadri, MD, of the Cleveland Clinic and colleagues looked at records for nearly a million hospitalizations for infective endocarditis (IE) in the National Inpatient Sample registry. All U.S. regions saw increases in drug abuse–linked cases of IE as a share of IE hospitalizations. Incidence of drug abuse–associated IE rose from 48 cases/100,000 population in 2002 to 79/100,000 in 2016. The Midwest saw the highest rate of change, with an annual percent increase of 4.9%.

While most IE hospitalizations in the study cohort were of white men (including 68% for drug-linked cases), the drug abuse–related cases were younger (median age, 38 vs. 70 years for nondrug-related IE), and more likely male (55.5% vs. 50%). About 45% of the drug-related cases were in people receiving Medicaid, and 42% were in the lowest quartile of median household income.

The drug abuse cases had fewer renal and cardiovascular comorbidities, compared with the nondrug cases, but were significantly more likely to present with HIV, hepatitis C, alcohol abuse, and liver disease. Inpatient mortality was lower among the drug-linked cases – 6% vs. 9% – but the drug cases saw significantly more cardiac or valve surgeries, longer hospital stays, and higher costs.

"Hospitalizations for IE have been increasing side by side with the opioid epidemic," the investigators wrote in their analysis. "The opioid crisis has reached epidemic levels, and now drug overdoses have been the leading cause of injury-related death in the U.S. Heroin deaths had remained relatively low from 1999 until 2010 whereas it then increased threefold from 2010-2015."

The analysis showed a rise in drug abuse–associated IE "that corresponds to this general period." The findings argue, the investigators said, for better treatment for opioid addiction after hospitalization and greater efforts to make drug rehabilitation available after discharge. The researchers described as a limitation of their study the use of billing codes that changed late in the study period, increasing detection of drug abuse cases after 2015. They reported no outside funding or conflicts of interest.

'Landmark' study: Prasugrel superior to ticagrelor in ACS

By Bruce Jancin
MDedge News

Dr. Stephanie Schuepke

Bruce Jancin/MDedge News

Dr. Gilles Montalescot

PARIS – Prasugrel proved superior to ticagrelor in patients with acute coronary syndrome (ACS) in what was hailed as "a landmark study" presented at the annual congress of the European Society of Cardiology.

The results of ISAR-REACT 5 (Intracoronary Stenting and Antithrombotic Regimen: Rapid Early Action for Coronary Treatment 5) were unequivocal: "In ACS patients with or without ST-segment elevation, treatment with prasugrel as compared with ticagrelor significantly reduced the composite rate of death, myocardial infarction, or stroke at 1 year without an increase in major bleeding," declared first author Stephanie Schuepke, MD, a cardiologist at the German Heart Center in Munich.

The study outcome was totally unexpected. Indeed, the result didn't merely turn heads, it no doubt caused numerous wrenched necks caused by strenuous double-takes on the part of interventional cardiologists at the congress. That's because, even though both ticagrelor and prasugrel enjoy a class I recommendation for use in ACS in the ESC guidelines, it has been widely assumed – based on previous evidence plus the fact that ticagrelor is the more potent platelet inhibitor – that ticagrelor is the superior drug in this setting. It turns out, however, that those earlier studies weren't germane to the issue directly addressed in ISAR-REACT 5, the first-ever direct head-to-head comparison of the two potent P2Y12 inhibitors in the setting of ACS with a planned invasive strategy.

"Obviously, very surprising results," commented Roxana Mehran, MD, professor of medicine and director of interventional cardiology research and clinical trials at the Icahn School of Medicine at Mount Sinai, New York, who cochaired a press conference where Dr. Schuepke shared the study findings.

"We were surprised as well," confessed Dr. Schuepke. "We assumed that ticagrelor is superior to prasugrel in terms of clinical outcomes in patients with ACS with a planned invasive strategy. But the results show us that the opposite is true."

ISAR-REACT 5 was an open-label, investigator-initiated randomized trial conducted at 23 centers in Germany and Italy. It included 4,018 participants with ST-elevation segment MI (STEMI), without STEMI, or with unstable angina, all with scheduled coronary angiography. Participants were randomized to ticagrelor or prasugrel and were expected to remain on their assigned potent antiplatelet agent plus aspirin for 1 year of dual-antiplatelet therapy.

The primary outcome was the composite of death, MI, or stroke at 1 year of follow-up. This endpoint occurred in 9.3% of the ticagrelor group and 6.9% of patients in the prasugrel group, for a highly significant 36% increased relative risk in the ticagrelor-treated patients. Prasugrel had a numeric advantage in each of the individual components of the endpoint: the 1-year rate of all-cause mortality was 4.5% with ticagrelor versus 3.7% with prasugrel; for MI, the incidence was 4.8% with ticagrelor and 3.0% with prasugrel, a statistically significant difference; and for stroke, 1.1% versus 1.0%.

Major bleeding as defined by the Bleeding Academic Research Consortium scale occurred in 5.4% of patients in the ticagrelor arm, and was similar at 4.8% in the prasugrel group, Dr. Schuepke continued.

Definite or probable stent thrombosis occurred in 1.3% of the ticagrelor group and 1.0% of patients assigned to prasugrel.

The mechanism for prasugrel's superior results is unclear, she said. Possibilities include the fact that it's a once-daily drug, compared with twice-daily ticagrelor, which could affect adherence; a differential profile in terms of drug interactions; and prasugrel's reversibility of action and capacity for step-down dosing in patients at high bleeding risk.

Discussant Gilles Montalescot, MD, PhD, called ISAR-REACT 5 a "fascinating" study. He elaborated: "It is a pragmatic study to answer a pragmatic question. It's not a drug trial; really, it's more a strategy trial, with a comparison of two drugs and two strategies."

DIVISION CHIEF, HOSPITAL MEDICINE
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- Codes run by critical care team
- Full subspecialist back up

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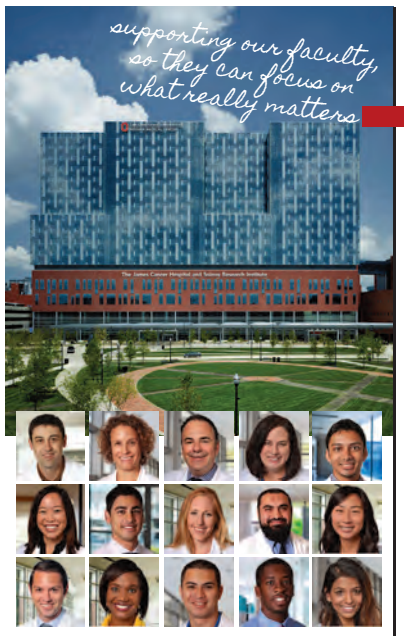

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Berkshire Health Systems

Climate change, health systems, and hospital medicine

Working toward carbon neutrality

By Kevin Conrad, MD, MBA, SFHM

I have always enjoyed talking with my patients from coastal Louisiana. They enjoy life, embrace their environment, and give me a perspective which is both similar and different than that of residents of New Orleans where I practice hospital medicine.

Their hospitalization is often a reflective moment in their lives. Lately I have been asking them about their advice to their children concerning the future of southern Louisiana in reference to sea rise, global warming, and increasing climatic events. More often than not, they have been telling their children it is time to move away.

These are a people who have strong devotion to family, but they are also practical. More than anything they would like their children to stay and preserve their heritage, but concern for their children's future outweighs that. They have not come to this conclusion by scientific reports, but rather by what is happening before them. This group of people doesn't alarm easily, but they see the unrelenting evidence of land loss and sea rise before them with little reason to believe it will change.

I am normally not one to speak out about climate change. Like most I have listened to the continuous alarms sounded by experts but have always assumed someone more qualified than myself should lead the efforts. But when I see the tangible effects of climate change both in my own life and the lives of my patients, I feel a sense of urgency.

12 years

Twelve years. That is the time we have to significantly reduce carbon emissions before catastrophic and potentially irreversible events will occur. This evidence is according to the authors of the landmark report by the UN Intergovernmental Panel on Climate Change released in October 2018. The report states urgent and unprecedented changes are needed to limit temperature elevations of 1.5˚C and 2˚C, as compared with the preindustrial era. Exceeding a 2˚C elevation will likely lead to global adverse events at an unprecedented level.[1]

The events forecast by the U.N. report are not abstract, particularly as they relate to public health. With high confidence, the report outlines with high specificity: increases in extreme heat, floods, crop failures, and a multitude of economic and social stressors which will affect the care of our most vulnerable patients.[1]

This statement by Dana Hanson, MD, president of the World Medical Association, summarizes the effects of climate change on the delivery of health care: *"Climate change represents an inevitable massive threat to global health that will likely eclipse the major pandemics as a leading cause of death in the 21st century."*

So, what does the health care system have to do with climate change and its primary driver, carbon emissions? More than I realized, as the U.S. health care industry produces 10% of the nation's carbon emissions.[2] If the U.S. health care system was a country it would be ranked seventh, ahead of the United Kingdom; 10% of all smog and 9% of all particulate-related respiratory disease can be attributed to the carbon emissions of the health care industry. This breaks down to possibly 20,000 premature deaths per year.[2] Our current health care industry is a significant driver of environmentally related disease and will continue to be so, unless major change occurs.

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Although much of it is behind the scenes, providing health care 24/7 is a highly energy-intensive and waste-producing endeavor. Many of the innovations to reduce carbon emissions that have been seen in other industries have lagged behind in health care, as we have focused on other issues.

But the health care system is transitioning. It strives to address the whole person, including where they live, work, and play. A key component of this will be addressing our impact on the environments we serve. How can we make that argument if we don't first address our own impact on the climate?

Carbon-neutral health care

Health care is one of the few industries that has the economic clout, the scientific basis, the community engagement, and perhaps most importantly the motivations to "first, do no harm" that could lead a national (if not a global) transformation in environmental stewardship among all industries.

Many agree that action is needed, but is essential that we set specific meaningful goals that take into account the urgency of the situation. One possible solution is to encourage every health care system to begin the process of becoming carbon neutral. Simply defined, carbon neutrality is balancing the activities that result in carbon emissions with activities that reduce carbon emissions. Carbon neutrality has become the standard by which an industry's commitment to reducing carbon emissions is measured. The measurement is standardized and achievable, and the basic concept is understood by most. It results not only in long-term benefits to climate change, but in immediate improvement of air quality in the local community. In addition, achieving carbon neutrality serves as a catalyst of new desired industries, improves employee morale, and aids in recruitment.[3]

So, what would a carbon-neutral health care system look like? In short, sustainability should be considered in all of its actions. Risks and benefits would be contemplated, as we do with all treatments, except now environmental risks would be brought into the equation. This includes the obvious, such as purchasing and supporting the development of renewable energy, but also transportation of patients and employees, food supply chains, and even the use of virtual visits to reduce the environmental impact of patient transportation.

I am optimistic that carbon neutrality is achievable in the health care sector. It can drive economic development and engage the community in environmental stewardship efforts. But time is of the essence and leaders for these efforts are needed now. As hospitalists, we are on the front lines of the health care system. We see the direct impact of social, economic, and environmental issues on our patients. We have credibility with both our patients and hospital administration. Among all industries, there need to be champions of environmental sustainability efforts. Hospitalists are uniquely positioned to fill that role.

My concern is that 12 years is right around the corner. We are at an inflection point on our efforts to reduce carbon emissions and that is good, but time has become our enemy. The difference between terrible and unlivable will be our, and the world's, response to reducing carbon emissions.

It is time for bold action from us, the health care community. It is our moment and our place to lead those efforts, so let's take advantage of both this challenge and this opportunity. Consider leading those efforts in your health care system.

Dr. Conrad is medical director of community affairs and health policy at Ochsner Health Systems in New Orleans.

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