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The Hospitalist®

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Dr. Sareer Zia, hospitalist and physician advisor

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Inpatient telemedicine can help address hospitalist pain points

COVID-19 has increased confidence in the technology

By Sareer Zia, MD, MBA

Since the advent of COVID-19, health care has seen an unprecedented rise in virtual health. Telemedicine has come to the forefront of our conversations, and there are many speculations around its future state. One such discussion is around the sustainability and expansion of inpatient telemedicine programs post COVID, and if – and how – it is going to be helpful for health care.

Consider the following scenarios:

Scenario 1

A patient presents to an emergency department of a small community hospital. He needs to be seen by a specialist, but (s)he is not available, so patient gets transferred out to the ED of a different hospital several miles away from his hometown.

He is evaluated in the second ED by the specialist, has repeat testing done – some of those tests were already completed at the first hospital. After evaluating him, the specialist recommends that he does not need

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Hospitalist Movers and Shakers

By Matt Pesyna

Vivek H. Murthy, MD, was named by President Biden as his selection for Surgeon General of the United States. Dr. Murthy filled the same role from 2014 to 2017 during President Obama's administration.


Dr. Murthy

Dr. Murthy was a hospitalist and an instructor at Brigham and Women's Hospital at Harvard Medical School, Boston, prior to becoming surgeon general the first time.

David Tupponce, MD, recently was named the new president of Allegheny Health Network's Grove City (Pa.) Medical Center. He takes over for interim president Allan Klapper, MD, who filled the position since August 2020.


Dr. Tupponce

Dr. Tupponce comes to Grove City Medical Center after a successful tenure as president of Central Maine Medical Center, Lewiston, where he grew its physician group and fine-tuned the hospital quality program. Prior to that, he was chief executive officer at Tenet Healthcare's Abrazo Scottsdale (Ariz.) Campus and CEO at Paradise Valley Hospital, Phoenix,.

Dr. Tupponce is familiar with western Pennsylvania, having earned a master's degree in medical management from Carnegie Mellon University in Pittsburgh. He also was chief resident at the University of Pittsburgh Medical Center.

Malcolm Mar Fan, MD, has been elevated to medical director of the Hospitalist Group at Evangelical Community Hospital (Lewisburg, Pa.). In this new position, Dr. Mar Fan will oversee all operations for the facility's hospitalist program.

Dr. Mar Fan has been a hospitalist at Evangelical since 2014 after completing his internist residency at Albert Einstein Medical Center in Philadelphia. He has played a major role on Evangelical's Peri-Operative Glucose Management Committee and its Informatics Committee for Impatient and Outpatient Electronic Health Records.

Lyon County Kansas recently announced that **Ladun Oyenuga, MD**, has been appointed as public health officer for the county. She began her tenure on Jan. 1.

Dr. Oyenuga is a hospitalist at Newman Regional Health (Emporia, Kan.). She is a native of Nigeria and did her residency at Harlem (N.Y.) Hospital Center. She has been with Newman since 2017.

Cherese Mari Laulhere BirthCare Center (Long Beach, Calif.) recently announced the addition of an OB hospitalist program at Miller Children's & Women's Hospital. OB hospitalists, or laborists, care for women with obstetrical issues while in the hospital.

At Cherese Mari Laulhere, OB hospitalists will be on hand 24 hours a day to assist patients' OB/GYNs or to fill in if the personal physician cannot get to the hospital quickly.

Hospitalists at Nationwide Children's (Columbus, Ohio) are now providing care for children who are hospitalized at Adena Regional Medical Center (Chillicothe, Ohio).

It is an expansion of an ongoing partnership between the two hospitals. Adena and Nationwide Children's have been working together in helping to care for children in the south central and southern Ohio region since 2011. Nationwide Children's hospitalists will round in special care and the well-baby nursery at Adena, as well as provide education programs for Adena providers and staff.

MultiCare Health System (Tacoma, Wash.) has announced that it will expand its hospitalist program partnership with **Sound Physicians**, also based in Tacoma, to create a regionwide, cohesive group of providers. The goal is to help ensure efficient management of inpatient populations as a region instead of at the individual hospital level, and will allow MultiCare to implement standard tools, processes and regionwide best practices.

The hospitalist programs at Tacoma General Hospital, Allenmore Hospital, and Covington Medical Center will transition to Sound Physicians on April 5.

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THE HOSPITALIST is the official newspaper of the Society of Hospital Medicine, reporting on issues and trends in hospital medicine. THE HOSPITALIST reaches more than 35,000 hospitalists, physician assistants, nurse practitioners, medical residents, and health care administrators interested in the practice and business of hospital medicine. Content for THE HOSPITALIST is provided by Frontline Medical Communications. Content for the Society Pages is provided by the Society of Hospital Medicine.

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SHM CEO Eric E. Howell likes to fix things

Engineering provided a foundation for hospital medicine

Editor's note: This profile is part of SHM's celebration of National Hospitalist Day on March 4. Visit the website of The Hospitalist for more hospitalist profiles.

By Larry Beresford

For Eric E. Howell, MD, MHM, CEO since July 2020 for the Society of Hospital Medicine, an undergraduate degree in electrical engineering and a lifelong proclivity for figuring out puzzles,

Dr. Eric E. Howell

solving problems, and taking things apart to see how they fit back together were building blocks for an exemplary career as a hospitalist, group administrator, and medical educator.

When he was growing up in historic Annapolis, Md., near the shores of the Chesapeake Bay, things to put back together included remote-control airplanes, small boat engines, and cars. As a hospitalist, his interest in solving problems and facility with numbers and systems led him to become an expert on quality improvement, transitions of care, and conflict management.

"One thing about engineering: You're always having to fix things. It helps you learn to assess complex situations," said Dr. Howell, who is 52. "It was helpful for me to bring an engineering approach into the hospital. One of my earliest successes was reengineering admissions processes to dramatically reduce the amount of time patients were spending in the emergency room before they could be admitted to the hospital."

But his career path in hospital medicine came about by a lucky chance, following residency and a year as chief resident at Johns Hopkins Bayview Medical Center in Baltimore. "One of my duties as chief resident was taking care of hospitalized patients. I didn't know it but I was becoming a de facto hospitalist," he recalled.

At the time, he thought he might end up choosing to specialize in something like cardiology or critical care medicine, but in 2000 he was invited to join the new "non-housestaff" medical service at Bayview. Also called a general medicine inpatient service, it eventually evolved into the hospitalist service.

His residency program director, Roy Ziegelstein, MD, a cardiologist and now the vice dean of education at Johns Hopkins, created a job for him. "I was one of the first four doctors hired. I thought I'd just do it for a year, but I loved inpatient work, so I stayed," Dr. Howell said. "Roy mentored me for the next 20 years and helped me to become an above average hospitalist."

Early on, Dr. Howell's department chair, David Hellman, MD, who had worked at the University of California–San Francisco with hospital medicine pioneer Robert Wachter, MD, MHM, sent Dr. Howell to San Francisco to be mentored by Dr. Wachter, since there were few hospital mentors on the East Coast at that time.

Dr. Ziegelstein

"What I took away from that experience was how important it was to professionalize hospital medicine – in order to develop specialized expertise," Dr. Howell recalled. "Dr. Wachter taught me that hospitalists need to have a professional focus. Quality improvement, systems-based improvement, and value all became part of that," he said.

"Many people thought to be a hospitalist all you had to know was basic medicine. But it turns out medicine in the hospital is just as specialized as any other specialty. The hospital itself requires specialized knowledge that didn't even exist 20 years ago." Because of complicated disease states and clinical systems, hospitalists have to be better at navigating the software of today's hospital.

Courtesy Dr. Eric E. Howell

Dr. Eric E. Howell was raised on the shores of the Chesapeake Bay in Maryland and continues to spend time on the water.

Seeing new job opportunities

Dr. Howell describes his career path as a new job focus opening up every 5 years or so, redefining what he does and trying something new and exciting with better pay. His first was a focus on clinical hospital medicine and learning how to be a better doctor. Then in 2005 he began work as a teacher at Johns Hopkins School of Medicine. There he mastered the teaching of medical trainees, winning awards as an instructor, including SHM's award for excellence in teaching.

In 2010 he again changed his focus to program building, leading the expansion of the hospitalist service for Bayview and three other hospitals in the Johns Hopkins system. Dr. Howell helped grow the service to nearly 200 clinicians while becoming skilled at operational and program development.

His fourth job incarnation, starting in 2015, was the obsessive pursuit of quality improvement, marshaling data to measure and improve clinical and other outcomes on the quality dashboard – mortality, length of stay, readmissions, rates of adverse events – and putting quality improvement strategies in place.

"Our mortality rates at Bayview were well below national standards. We came up with an amazing program. A lot of hospital medicine programs pursue improvement, but we really measured it. We benchmarked ourselves against other programs at Hopkins," he said. "I set up a dedicated conference room, as many QI programs do. We called it True North, and each wall had a different QI focus, with updates on the reported metrics. Every other week we met there to talk about the metrics," he said.

That experience led to working with SHM, which he had joined as a member early in his career and for which he had previously served as president. He became SHM's quality improvement liaison and a co–principal investigator on Project BOOST (Better Outcomes for Older Adults Through Safe Transitions), SHM's pioneering, national mentored-implementation model aimed at improving transitions of care from participating hospitals to reduce readmissions. "BOOST really established SHM's reputation as a quality improvement–oriented organization. It was a stake in the ground for quality and led to SHM receiving the Joint Commission's 2011 John M. Eisenberg Award for Innovation in Patient Safety and Quality," he said.

Dr. Howell's fifth career phase, medical society management, emerged when he was recruited to apply for the SHM chief executive position – held since its inception by retiring CEO Larry Wellikson, MD, MHM. Dr. Howell started work at SHM in the midst of the pandemic, spending much of his time working from home – especially when Philadelphia implemented stricter COVID-19 restrictions. Once pandemic restrictions are loosened, he expects to do a lot of traveling. But for now, the external-facing part of his job is mainly on Zoom.

Making the world a better place

Dr. Howell said he has held fast to three mottos in life, which have guided his career path as well as his personal life: (1) to make the world a better place; (2) to be ethical and transparent; and (3) to invest in people. His wife of 19 years, Heather Howell, an Annapolis realtor, says making the world a better place is what they taught their children,

Continued on following page

Survey Insights

Hospital medicine groups are getting larger

What are the implications for your workplace?

By Andrew White, MD, SFHM

Although readers will be forgiven for missing the subtle change, the tables in the 2020 *State of Hospital Medicine* (*SoHM*) Report underwent a landmark structural change that echoes the growth of our field. In the latest *SoHM* Report, the hospital medicine group (HMG) size categories all increased significantly to reflect the fact that hospitalist groups have grown from a median of 9 physician full-time equivalents (FTE) in 2016 to a median of 15.2 employed/contracted FTE (excluding FTE provided by locum tenens providers) in 2020.

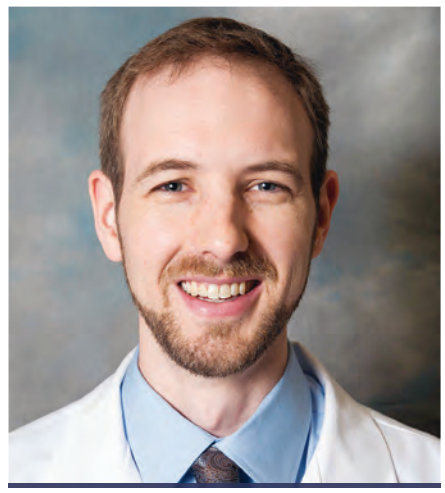
For many years, the Report considered "large" adult HMGs to be those with 30 or more FTE of physicians, and smaller groups were organized by FTE categories of <5, 5-9, 10-19, and 20-29. Now the *SoHM* Report describes a large HMG as 50 employed/contracted FTE or greater, a category that represents 12.7% of HMGs serving adults. The other categories expanded to <5, 5-14, 15-29, and 30-49, respectively. Overall, HMGs are growing in size, and the *SoHM* displays new data slices that help leaders to compare their group to modern peers.

There are some caveats to consider. First, these figures represent only physician FTE, and essentially all these large groups employ NP/PA hospitalists as well. Second, these HMGs typically employ some part-time and contracted PRN physicians in this FTE count. In combination, these two factors mean that large HMGs often employ many more than 50 individual clinicians. In fact, the average number

of physicians in this cohort was 72.3 before counting NP/PAs and locums. Third, do not interpret the portion of large groups in the survey (12.7%) as insignificant. Because each one employs so many total hospitalists, large HMGs collectively represent a common work environment for many hospitalists in the United States. Lastly, although pediatric HMGs have grown, far fewer (3.1%) have over 50 FTE, so this column focuses on HMGs serving adults.

Why does it matter that groups are growing in size? The *SoHM* Report offers extensive data to answer this question. Here are a couple of highlights but consider buying the report to dig deeper. First, large groups are far more likely to offer variable scheduling. Although the 7-on, 7-off scheduling pattern is still the norm in all group sizes, large HMGs are most likely to offer something flexible that might enhance career sustainability for hospitalists. Second, large groups are the most likely to employ hospitalists with extra training, whether that be geriatrics, palliative care, pediatrics, or a medicine subspecialty. Working in a large group means you can ask for curbside consults from a diverse and well-trained bunch of colleagues. Third, large groups were most likely to employ nocturnists, meaning fewer night shifts are allocated to the hospitalists who want to focus on daytime work. From an individual perspective, there is a lot to like about working in a large HMG.

There are some drawbacks to larger groups, of course. Large groups can be less socially cohesive and the costs of managing 70-100 hospitalists typically grow well past the capacity of a single group leader. My personal belief is that these downsides can be solved through economies of scale and skilled management teams. In addition, a large group can afford to dedicate leadership FTE to niche hospitalist needs, such as career development and coaching, which are difficult to fund in small practices. This also provides more opportunities for staff hospitalists to begin taking on some leadership or administrative duties or branch out into related areas such as quality improvement, case management physician adviser roles, or IT expertise.



Dr. White is associate professor of medicine at the University of Washington, Seattle. He is the chair of SHM's Practice Analysis Committee.

Ultimately, large groups typically represent the maturation of an HMG within a large hospital – it signifies that the hospital relies on that group to deliver great patient outcomes in every corner of the hospital. Where you practice remains a personal choice, but the emergence of large groups hints at the clout and sophistication hospitalists can build by banding together. Learn more about the full 2020 *SoHM* Report at hospitalmedicine.org/sohm.

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Mason, 18, who starts college at Rice University in fall 2021 with an interest in premed, and Anna, 16, a competitive sailor. "We always had a poster hanging in our house extolling that message," Ms. Howell said.

Dr. Howell grew up in a nautical family, with many of his relatives working in the maritime business. His kids grew up on the water, learning to pilot a powerboat before driving a car, as he did. "We boat all the time on the bay" in his lobster boat, which he often works on to keep it seaworthy, Ms. Howell said.

"There's nothing like taking care of hospitalized patients to make you feel you're making the world a better place," Dr. Howell observed. "Very often you can make a huge difference for the patients you do care for, and that is incredibly rewarding." Although the demands of his SHM leadership position required relinquishing most of his responsibilities at Johns Hopkins, he continues to see patients and teach residents there 2-4 weeks a year on a teaching service.

"Why do I still see patients? I find it so rewarding. And I get to teach, which I love," he said. "To be honest, I don't think you truly need to see patients to be head of a professional medical society like SHM. Maybe someday I'll give that up. But only if it's necessary to make the society more successful."

Half of Dr. Howell's Society work now is planned and half is "putting out fires" – while learning members' needs in real time. "Right now, we're worried about burnout and PTSD, because frankly it's stressful to take care of COVID patients. It's scary for a lot of clinicians. I'm working with our members to make sure they have what they need to be clinically prepared, including resources to be more resilient professionally."

Every step of his career, Dr. Howell said, has seemed like the best job he ever had. "Making the world a better place is still important to me. I tell SHM members that it's important to know they are making a difference. What they're doing is really important, especially with COVID, and it needs to be sustainable," he said.

COURTESY DR. ERIC E. HOWELL

Dr. Eric E. Howell was chief medical officer for the Joint Commission–accredited Baltimore Civic Center Field Hospital for COVID-19 patients, opened in March 2020.

"SHM has such a powerful mission – it's about making patient care better, and making hospitalists better clinicians. I know the Society is having a powerful impact, and that's good enough for me. I'm into teams. Hospital medicine is a team sport, but so is SHM, interacting with its members, staff, and board."

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Do you want to become a hospitalist leader?

Learn how or even whether you should

By Eric Butterman

Have you ever thought you could be a leader, in your hospitalist group, in hospital administration, or at another institution? The reasons to seek a leadership role as a hospitalist are many, but there are also many drawbacks. According to hospitalists who have reached high rungs on the leadership ladder, you will need a blend of desire, enthusiasm, education, and experience if you want to succeed in leadership.

What are the right reasons?

"People who make good leaders have a sense of purpose and want to make a difference," said Eric E. Howell, MD, MHM, CEO of the Society of Hospital Medicine, and former chief of medical units at Johns Hopkins Bayview in Baltimore. "I think most hospitalists have that sense of wanting to help patients and society, so that's a strong mission in itself. Just by training and the very design of our health care system, hospitalists are often natural leaders, and in leadership roles, because they run teams of clinicians and train medical students."

Danielle Scheurer, MD, MSCR, SFHM, chief quality officer and professor of medicine at the Medical University of South Carolina, and current president of SHM, said some hospitalists end up in leadership roles almost by accident – because there is a leadership "void" in the health system where they work, and no one else wants to step up. Others disconnect from the leadership track and are happy to simply be part of a team.

"If you are yearning to make a difference and that's your motivation then you will find leadership is more fulfilling than difficult," she said.

Dr. Shen

"Leading your peers is often one of the most challenging parts of leadership. I think taking on even just a small activity like, say, working on a clinical pathway for the group, will result in a lot of preparation for future leadership roles."

"But if you take a leadership role to fill a void or think you just want to take some nonclinical time, it's probably not a good idea. Some people think administrative leadership is easier than being a hospitalist, but it is not. Leadership should not be about getting away from something else. It should be a thoughtful career move, and if it is, being a leader can be meaningful and fulfilling."

Nancy Spector, MD, the vice dean for faculty and executive director of the Executive Leadership in Academic Medicine program at Drexel University College of Medicine in Philadelphia, said a willingness to fail is vital for a leader. "You have to be open to successes, yes, but also to making mistakes," she said. "It's about honing the skills that leadership requires and be open to development and change."

Kierstin Cates Kennedy, MD, SFHM, chief of hospital medicine at the University of Alabama at Birmingham, said that a hospitalist fresh out of residency will gain insight into whether leadership is the right path by acquiring a deeper understanding of how health care institutions work.

"When you are new to the hospital, you see how things work, how people interact with each other, and learn the politics," she said. "One of the easiest ways to do it is get involved in a committee and be a part of meetings. You can have some input and get exposure to other leaders and they can learn more about you. Once you get an organizational understanding under your belt, then you can start taking on projects to gain even more understanding."

Are you still up for it?

If you think you have the commitment and desire for leadership as an early career hospitalist, how would you continue down the leadership path?

"A great way is to find a person you want to be like, who could be a mentor. Find a successful leader that you admire, and one who is willing to guide you," Dr. Howell said. "Books are helpful as well, and I still find I'm learning today – I have a list that includes *Drive* by Daniel Pink and *Good to Great* by Jim Collins. There are Malcolm Gladwell books that also have terrific knowledge to impart."

Mark W. Shen, MD, SFHM, associate professor at Dell Medical School at the University of Texas at Austin and former president of St. Louis Children's Hospital, said potential hospitalist leaders must be aware of their fellow clinicians.

"Pay attention to the needs of the hospitalist group as they are articulated by the lead hospitalist, the administration, and the patients," he said. "There are so many activities that come up on a day-in, day-out basis. You should jump in and volunteer to take the lead on some of those activities. Leading your peers is often one of the most challenging parts of leadership. I think taking on even just a small activity like, say, working on a clinical pathway for the group, will result in a lot of preparation for future leadership roles."

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Initiating another new program

One of Dr. Howell's last major projects for Hopkins was to launch and be chief medical officer for the Joint Commission–accredited Baltimore Civic Center Field Hospital for COVID-19 patients, opened in March 2020. With a surge capacity of 250 beds, and a negative-pressure ward set up in the center's exhibit hall, it is jointly operated by the University of Maryland Medical System and Johns Hopkins Hospital. The field hospital's mission has since expanded to include viral tests, infusions of monoclonal antibodies, and COVID-19 vaccinations.

Planning for a smooth transition, Dr. Howell brought Melinda E. Kantsiper, MD, director of clinical operations, Division of Hospital Medicine at Johns Hopkins Bayview, on board as associate medical officer, to eventually replace him as CMO after a few months working alongside him. "Eric brings that logical engineering eye to problem solving," Dr. Kantsiper said.

"We wanted to build a very safe, high-quality hospital setting but had to do it very quickly. Watching him once again do what he does best, initiating a new program, building things carefully and thoughtfully, without being overly cautious, I could see his years of experience and good judgment about how hospitals run. He's very logical but very caring. He's also good at spotting young leaders and their talents."

Some people have a knack for solving problems, added Dr. Ziegelstein, Dr. Howell's mentor from his early days at Bayview. "Eric is different. He's someone who's able to identify gaps, problem areas, and vulnerabilities within an organization and then come up with a potential menu of solutions, think about which would be most likely to succeed, implement it, and assess the outcome. That's the difference between a skilled manager and a true leader, and I'd say Eric had that ability while still in training," Dr. Ziegelstein said.

"Eric understood early on not only what the field of hospital medicine could offer, he also understood how to catalyze change, without taking on too much change at one time," Dr. Ziegelstein said. "He understood people's sensibilities and concerns about this new service, and he catalyzed its growth through incremental change."

COURTESY JOHNS HOPKINS MEDICINE

Dr. Melinda E. Kantsiper is director of clinical operations in the division of hospital medicine at Johns Hopkins Bayview Medical Center, Baltimore.

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An example of an early career activity that Dr. Shen felt was valuable to future leaders was helping in the development of a hospitalist core curriculum. "We would use the core curriculum to educate students and residents coming through our rotation and have some degree of commonality or standardization," he said. "So even though I wasn't an explicit leader of the hospitalist group at the time, I'd say that helping develop the core curriculum aided me in understanding what leadership was all about."

Getting started in a leadership role, Dr. Spector said, can be helped by embracing a knowledge of the business of medicine. "Business and finance are a reality you shouldn't avoid," she said. "Another way to learn is to partner with your local administrators or whoever is running your division or your department. There are business managers and business partners in every institution, and you can learn a great deal from them. It's important to network and get to know people because we're a people business, and opportunity comes when people know who you are."

Dr. Nancy Spector

Dr. Howell noted that advocating for yourself is sometimes hard, and it can be a red flag to administrators in some circumstances, but you should tell your bosses where you want to go professionally.

"You can say to your supervisors that you want to grow professionally, and let's face it, there are naturally inclined leaders. We all need to be transparent in goal paths," he said. "But if you want a leadership role for power, money, and prestige then I don't think you are applying the right thinking. If you want to help others and you have a mission you believe in, you should communicate that to your bosses."

Dr. Scheurer believes choosing between clinical and administrative leadership is not so clear cut, because in the health care setting they tend to morph into each other. "Many times clinicians will end up taking on a leadership role that has a significant administrative component to it," she said. "I do think if clinicians make a career move and get the right training then they can be exemplary leaders in health care, but I do worry a little about clinicians going into leadership roles without any formal training. They are usually well-intentioned but that's not enough. It's not any different than medical training. If you want to be a good leader you need training to develop your skills, and a lot of those skills do not come naturally or easily. We thrust good clinicians into leadership roles because they are good clinicians, but if they don't have the right skills, being a leader can be a problem."

How do leaders improve?

If you have made it to a leadership position, and have been in that role for a while, you might start to feel that you are stuck in your growth trajectory. If so, how do you continue to improve?

According to Dr. Kennedy, whether you are looking to get into leadership or want to improve, focusing on emotional intelligence is important. "A book like *Emotional Intelligence 2.0* by Travis Bradbury is a great introduction," she said. "With my leadership team, we did a book club where we read *Primal Leadership*, which is focused on emotional intelligence and on aspects like setting a culture."

Dr. Howell said that to grow as a leader, be careful what you say no to. "I used to talk about having a tag line that was 'just say yes,'" he said. "At least try to say yes most of the time because it opens up opportunities and shows you are looking to do more, not less."

Also, Dr. Howell recommends that leaders look for tools that help minimize blind spots, and acquire information from staff through survey assessments. "Get the input of others on your strengths and weaknesses," he said. "Nurses, doctors, and sometimes patients can give you good information that will help you grow as a leader. Don't be afraid of feedback."

How can we never stop learning?

Dr. Scheurer said it is important for hospitalists to recognize that you are never finished learning when you are a leader.

"See leadership as a continuous learning journey. You can never be too good of a leader in medicine," she said. "Never stop learning, because the field keeps changing and you have to constantly learn and find pleasure in that learning. You should look at leadership the same way. A lot of leadership theories change with the times and you should always try to get good advice. You don't take every piece of advice – just like in medicine when you read an article and you try to apply it to patients in your practice. Take some advice, leave some advice, and develop a leadership style that is genuine and authentic."

Dr. Kennedy believes that a hospitalist's leadership potential may be limited if he or she sees continued learning as a chore, rather than an opportunity.

"If you resent continuing to learn about leadership, then is it really for you?" she asked. "I find myself reading on the topic or talking about it, and it's fun. How do you make a workplace environment function better, how do you inspire people, how do you help them grow? These are some of the most important questions leaders face. Isn't it fun if you can find some answers?"

Dr. Danielle Scheurer

"Business and finance are a reality you shouldn't avoid. Another way to learn is to partner with your local administrators or whoever is running your division or your department. There are business managers and business partners in every institution, and you can learn a great deal."

"If you want to be a good leader you need training to develop your skills, and a lot of those skills do not come naturally or easily. We thrust good clinicians into leadership roles because they are good clinicians, but if they don't have the right skills, being a leader can be a problem."

Courtesy Brennan Wesley, Medical University of South Carolina

Dr. Danielle Scheurer (third from left) of the Medical University of South Carolina, Charleston, talks with colleagues.

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Virtual is the new real

Why did we fall short on maximizing telehealth's value in the COVID-19 pandemic?

By Chandra S. Lingisetty, MD, MBA, MHCM; Rupesh Prasad, MD, MPH, CPE, SFHM; Venkataraman Palabindala, MD, MBA, FACP, SFHM

The COVID-19 pandemic catalyzed the transformation of Internet-based, remotely accessible innovative technologies. Internet-based customer service delivery technology was rapidly adopted and utilized by several services industries, but health care systems in most of the countries across the world faced unique challenges in adopting the technology for the delivery of health care services. The health care ecosystem of the United States was not immune to such challenges, and several significant barriers surfaced while the pandemic was underway.

Complexly structured, fragmented, unprepared, and overly burnt-out health systems in the United States arguably have fallen short of maximizing the value of telehealth in delivering safe, easily accessible, comprehensive, and cost-effective health care services. In this essay, we examine the reasons for such a suboptimal performance and discuss a few important strategies that may be useful in maximizing the value of telehealth in several, appropriate health care services.

"While most health systems took a heroic approach to the adoption of telehealth during COVID-19, despite being unprepared, the need for a systematic telehealth deployment is far from being adequately fulfilled."

Hospitals and telehealth

Are hospitalists preparing ourselves "not to see" patients in a hospital-based health care delivery setting? If you have not yet started, now may be the right time! Yes, a certain percentage of doctor-patient encounters in hospital settings will remain virtual forever.

A well-established telehealth infrastructure is rarely found in most U.S. hospitals, although the COVID-19 pandemic has unexpectedly boosted the rapid growth of telehealth in the country.[1] Public health emergency declarations in the United States in the face of the COVID-19 crisis have facilitated two important initiatives to restore health care delivery amidst formal and informal lockdowns that brought states to a grinding halt. These extend from expansion of virtual services, including telehealth, virtual check-ins, and e-visits, to the decision by the Department of Health & Human Services Office of Civil Rights to exercise enforcement discretion and waive penalties for the use of relatively inexpensive, non–public-facing mobile and other audiovisual technology tools.[2]

Hospital-based care in the United States taps nearly 33% of national health expenditure. An additional 30% of national health expenditure that is related to physicians, prescriptions, and other facilities is indirectly influenced by care delivered at health care facilities.[3] Studies show that about 20% of ED visits could potentially be avoided via virtual urgent care offerings.[4] A rapidly changing health care ecosystem is proving formidable for most hospital systems, and a test for their resilience and agility. Not just the implementation of telehealth is challenging, but getting it right is the key success factor.

Hospital-based telehealth

Expansion of telehealth coverage by the Centers for Medicare & Medicaid Services and most commercial payers did not quite ride the pandemic-induced momentum across the care continuum. Hospitals are lagging far behind ambulatory care in implementing telehealth. As illustrated in the "4-T Matrix" (see graphic) we would like to examine four key reasons for such a sluggish initial uptake and try to propose four important strategies that may help us to maximize the value created by telehealth technologies.

1. Timing

The health care system has always lagged far behind other service industries in terms of technology adaptation. Because of the unique nature of health care services, face-to-face interaction supersedes all other forms of communication. A rapidly evolving pandemic was not matched by simultaneous technology education for patients and providers. The enormous choice of hard-to-navigate telehealth tools; time and labor-intensive implementation; and uncertainty around payer, policy, and regulatory expectations might have precluded providers from the rapid adoption of telehealth in the hospital setting. Patients' specific characteristics, such as the absence of technology-centered education, information, age, comorbidities, lack of technical literacy, and dependency on caregivers contributed to the suboptimal response from patients and families.

Deploying simple, ubiquitous, user-friendly, and technologically less challenging telehealth solutions may be a better approach to increase the adoption of such solutions by providers and patients. Hospitals need to develop and distribute telehealth user guides in all possible modes of communication. Provider-centric in-service sessions, workshops, and live support by "superuser teams" often work well in reducing end-user resistance.

2. Technical

Current electronic medical records vary widely in their features and offerings, and their ability to interact with third-party software and platforms. Dissatisfaction of end users with EMRs is well known, as is their likely relationship to burnout. Recent research continues to show a strong relationship between EMR usability and the odds of burnout among physicians.[5] In the current climate, administrators and health informaticists have the responsibility to avoid adding increased burdens to end users.

Another issue is the limited connectivity in many remote/rural areas that would impact implementation of telehealth platforms. Studies indicate that 33% of rural Americans lack access to high-speed broadband Internet to support video visits.[6] The recent successful implementation of telehealth across 530 providers in 75 ambulatory practices operated by Munson Healthcare, a rural health system in northern Michigan, sheds light on the technology's enormous potential in providing safe access to rural populations.[6,7]

Privacy and safety of patient data are of paramount importance. According to a national poll on healthy aging by the University of Michigan in May 2019, targeting older adults, 47% of survey responders expressed difficulty using technology and 49% of survey responders were concerned about privacy.[8] Use of certification and other tools offered by the Office of the National Coordinator for Health Information Technology would help reassure users, and the ability to cap-

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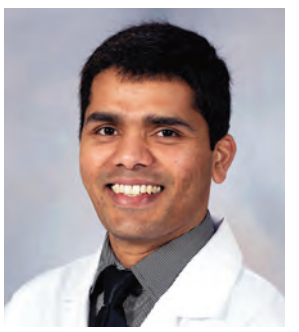

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ture and share images between providers would be of immense benefit in facilitating e-consults.

The need of the hour is redesigned workflow, to help providers adopt and use virtual care/telehealth efficiently. Workflow redesign must be coupled with technological advances to allow seamless integration of third-party telehealth platforms into existing EMR systems or built directly into EMRs. Use of quality metrics and analytical tools specific to telehealth would help measure the technology's impact on patient care, outcomes, and end-user/provider experience.

3. Teams and training

Outcomes of health care interventions are often determined by the effectiveness of teams. Irrespective of how robust health care systems may have been initially, rapidly spreading infectious diseases like COVID-19 can quickly derail the system, bringing the workforce and patients to a breaking point.[5] Decentralized, uncoordinated, and siloed efforts by individual teams across the care continuum were contributing factors for the partial success of telehealth care delivery pathways. The hospital systems with telehealth-ready teams at the start of the COVID-19 pandemic were so rare that the knowledge and technical training opportunities for innovators grew severalfold during the pandemic.

As per the American Medical Association, telehealth success is massively dependent on building the right team. Core, leadership, advisory, and implementation teams comprising clinical representatives, end users, administrative personnel, executive members of the organization, technical experts, and payment/policy experts should be put together before implementing a telehealth strategy.[9] Seamless integration of hospital-based care with ambulatory care via a telehealth platform is complete only when care managers are trained and deployed to fulfill the needs of a diverse group of patients. Deriving overall value from telehealth is only possible only when there is a skill development, training and mentoring team put in place.

4. Thinking

In most U.S. hospitals, inpatient health care is equally distributed between nonprocedure and procedure-based services. Hospitals resorted to suspension of nonemergent procedures to mitigate the risk of spreading COVID-19. This was further compounded by many patients' self-selection to defer care, an abrupt reduction in the influx of patients from the referral base because of suboptimally operating ambulatory care services, leading to low hospital occupancy.

Hospitals across the nation have gone through a massive short-term financial crunch and unfavorable cash-flow forecast, which prompted a paradoxical work force reduction. While some argue that it may be akin to strategic myopia, the authors believed that such a response is strategically imperative to keep the hospital afloat. It is reasonable to attribute the paucity of innovation to constrained resources, and health systems are simply staying overly optimistic about "weathering the storm" and reverting soon to "business as usual." The technological framework necessary for deploying a telehealth solution often comes with a price. Financially challenged hospital systems rarely exercise any capital-intensive activities. By contrast, telehealth adoption by ambulatory care can result in quicker resumption of patient care in community settings. A lack of operational and infrastructure synchrony between ambulatory and in-hospital systems has failed to capture telehealth-driven inpatient volume. For example, direct admissions from ambulatory telehealth referrals was a missed opportunity in several places. Referrals for labs, diagnostic tests, and other allied services could have helped hospitals offset their fixed costs. Similarly, work flows related to discharge and postdischarge follow up rarely embrace telehealth tools or telehealth care pathways. A brisk change in the health care ecosystem is partly responsible for this.

Digital strategy needs to be incorporated into business strategy. For the reasons already discussed, telehealth technology is not a "nice to have" anymore, but a "must have." At present, providers are of the opinion that about 20% of their patient services can be delivered via a telehealth platform. Similar trends are observed among patients, as a new modality of access to care is increasingly beneficial to them. Telehealth must be incorporated in standardized hospital workflows. Use of telehealth for preoperative clearance will greatly minimize same-day surgery cancellations. Given the potential shortage in resources, telehealth adoption for inpatient consultations will help systems conserve personal protective equipment, minimize the risk of staff exposure to COVID-19, and improve efficiency.

Digital strategy also prompts the reengineering of care delivery.[10] Excessive and unused physical capacity can be converted into digital care hubs. Health maintenance, prevention, health promotion, health education, and chronic disease management not only can serve a variety of patient groups but can also help address the "last-mile problem" in health care. A successful digital strategy usually has three important components – Commitment: Hospital leadership is committed to include digital transformation as a strategic objective; Cost: Digital strategy is added as a line item in the budget; and Control: Measurable metrics are put in place to monitor the performance, impact, and influence of the digital strategy.

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Conclusion

For decades, most U.S. health systems occupied the periphery of technological transformation when compared to the rest of the service industry. While most health systems took a heroic approach to the adoption of telehealth during COVID-19, despite being unprepared, the need for a systematic telehealth deployment is far from being adequately fulfilled. The COVID-19 pandemic brought permanent changes to several business disciplines globally. Given the impact of the pandemic on the health and overall well-being of American society, the U.S. health care industry must leave no stone unturned in its quest for transformation.

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Hospital at Home

Delivering hospital-level care without the hospital

Part 1: History, efficacy, and early adoption

By Marina S. Farah, MD, MHA

The United States spends one-third of the nation's health dollars on hospital care, amounting to $1.2 trillion in 2018.[1] U.S. hospital beds are prevalent,[2] and expensive to build and operate, with most hospital services costs related to buildings, equipment, salaried labor, and overhead.[3]

Despite their mission to heal, hospitals can be harmful, especially for frail and elderly patients. A study completed by the Office of the Inspector General found that 13.5% of hospitalized Medicare patients experienced an adverse event that resulted in a prolonged hospital stay, permanent harm, a life-sustaining intervention or death.[4] In addition, there is growing concern about acquired posthospitalization syndrome caused by the physiological stress that patients experience in the hospital, leaving them vulnerable to clinical adverse events such as falls and infections.[5]

In the mid-1990s, driven by a goal to "avoid the harm of inpatient care and honor the wishes of older adults who refused to go to the hospital," Bruce Leff, MD, director of the Center for Transformative Geriatric Research and professor of medicine at Johns Hopkins University in Baltimore, and his team set out to develop and test Hospital at Home (HaH) – an innovative model for delivering hospital-level care to selected patients in the safety of their homes.

More than 20 years later, despite extensive evidence supporting HaH safety and efficacy, and its successful rollout in other countries, the model has not been widely adopted in the United States. However, the COVID-19 pandemic amplified interest in HaH by creating an urgent need for flexible hospital bed capacity and heightening concerns about hospital care safety, especially for vulnerable adults.

In this article series about HaH, we first introduce HaH history and efficacy. Then, in a second article, we discuss what it takes to successfully implement HaH.

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Hospital at Home: History, efficacy, and early adoption

The earliest HaH study, a 17-patient pilot conducted by Dr. Leff's team from 1996 to 1998, proved that HaH was feasible, safe, highly satisfactory, and cost effective for selected acutely ill older patients with community-acquired pneumonia, chronic heart failure, chronic obstructive pulmonary disease, or cellulitis.[6] In 2000-2002, a National Demonstration and Evaluation Study of 455 patients across three sites determined that patients treated in Hospital at Home had statistically significant shorter length of stay (3.2 vs. 4.9 days), lower cost ($5,081 vs. $7,480), and fewer complications.[7] Equipped with evidence, Dr. Leff and his team focused on HaH dissemination and implementation across several health care systems.[8]

Presbyterian Healthcare Services in Albuquerque was one of the earliest adopters of HaH and launched the program in 2008. The integrated system serves one-third of New Mexicans and includes nine hospitals, more than 100 clinics, and the state's largest health plan. According to Nancy Guinn, MD, a medical director of Presbyterian Healthcare at Home, "Innovation is key to survive in a lean environment like New Mexico, which has the lowest percentage of residents with insurance from their employer and a high rate of government payers."

Presbyterian selected nine diagnoses for HaH focus: congestive heart failure, chronic obstructive pulmonary disease, community-acquired pneumonia, cellulitis, deep venous thrombosis, pulmonary embolism, complicated urinary tract infection or urosepsis, nausea and vomiting, and dehydration. The HaH care, including physician services, is reimbursed via a partial DRG (diagnosis-related group) payment that was negotiated internally between the health system and Presbyterian Health Plan.

The results demonstrated that, compared to hospitalized patients with similar conditions, patients in HaH had a lower rate of falls (0% vs. 0.8%), lower mortality (0.93% vs. 3.4%), higher satisfaction (mean score 90.7 vs. 83.9) and 19% lower cost.[9] According to Dr. Guinn, more recent results showed even larger cost savings of 42%.[10] After starting the HaH model, Presbyterian has launched other programs that work closely with HaH to provide a seamless experience for patients. That includes the Complete Care Program, which offers home-based primary, urgent, and acute care to members covered through Presbyterian Health Plan and has a daily census of 600-700 patients.

Another important milestone came in 2014 when Icahn School of Medicine at Mount Sinai in New York was awarded $9.6 million by the Center for Medicare and Medicaid Innovation (CMMI) to test the HaH model during acute illness and for 30 days after admission. A case study of 507 patients enrolled in the

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More Americans readmitted for heart failure

By Patrice Wendling

Heart failure (HF) hospitalizations and readmissions are on the rise in the United States, reversing a multiyear downward trend, a new national cohort study shows.

Overall primary HF hospitalization rates per 1,000 adults declined from 4.4 in 2010 to 4.1 in 2013, and then increased from 4.2 in 2014 to 4.9 in 2017.

Rates of unique patient visits for HF were also on the way down – falling from 3.4 in 2010 to 3.2 in 2013 and 2014 – before climbing to 3.8 in 2017.

Similar trends were observed for rates of post-discharge HF readmissions (from 1.0 in 2010 to 0.9 in 2014 to 1.1 in 2017) and all-cause 30-day readmissions (from 0.8 in 2010 to 0.7 in 2014 to 0.9 in 2017).

"We should be emphasizing the things we know work to reduce heart failure hospitalization, which is, No. 1, prevention," senior author Boback Ziaeian, MD, PhD, said in an interview.

Comorbidities that can lead to heart failure crept up over the study period, such that by 2017, hypertension was present in 91.4% of patients, diabetes in 48.9%, and lipid disorders in 53.1%, up from 76.5%, 44.9%, and 40.4%, respectively, in 2010. Half of all patients had coronary artery disease at both time points. Renal disease shot up from 45.9% to 60.6% by 2017.

"If we did a better job of controlling our known risk factors, we would really cut down on the incidence of heart failure being developed and then, among those estimated 6.6 million heart failure patients, we need to get them on our cornerstone therapies," said Dr. Ziaeian, of the Veterans Affairts Greater Los Angeles Healthcare System and the University of California, Los Angeles.

Sodium-glucose cotransporter 2 (SGLT2) inhibitors, which have shown clear efficacy and safety in trials like DAPA-HF and EMPEROR-Reduced, provide a "huge opportunity" to add on to standard therapies, he noted. Competition for VA contracts has brought the price down to about $50 a month for veterans, compared with a cash price of about $500-$600 a month.

Yet in routine practice, only 8% of veterans with HF at his center are on an SGLT2 inhibitor, compared with 80% on ACE inhibitors or beta-blockers, observed Dr. Ziaeian. "This medication has been indicated for the last year and a half and we're only at 8% in a system where we have pretty easy access to medications."

> *"We should be emphasizing the things we know work to reduce heart failure hospitalization."*

As reported online Feb. 10 in JAMA Cardiology (doi: 10.1001/jamacardio.2020.7472), notable sex differences were found in hospitalization, with higher rates per 1,000 persons among men.

In contrast, a 2020 report on HF trends in the VA system showed a 2% decrease in unadjusted 30-day readmissions from 2007 to 2017 and a decline in the adjusted 30-day readmission risk.

The present study did not risk-adjust readmission risk and included a population that was 51% male, compared with about 98% male in the VA, the investigators noted.

"The increasing hospitalization rate in our study may represent an actual increase in HF hospitalizations or shifts in administrative coding practices, increased use of HF biomarkers, or lower thresholds for diagnosis of HF with preserved ejection fraction," they wrote.

The analysis was based on data from the Nationwide Readmission Database, which included 35,197,725 hospitalizations with a primary or secondary diagnosis of HF and 8,273,270 primary HF hospitalizations from January 2010 to December 2017.

A single primary HF admission occurred in 5,092,626 unique patients and 1,269,109 had two or more HF hospitalizations. The mean age was 72.1 years.

The administrative database did not include clinical data, so it wasn't possible to differentiate between HF with preserved or reduced ejection fraction, the authors noted. Patient race and ethnicity data also were not available.

"Future studies are needed to verify our findings to better develop and improve individualized strategies for HF prevention, management, and surveillance for men and women," the investigators concluded.

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program in 2014 through 2017 revealed that HaH patients had statistically significant shorter length of stay (3.2 days vs. 5.5 days), and lower rates of all-cause 30-day hospital readmissions (8.6% vs. 15.6%), 30-day ED revisits (5.8% vs. 11.7%), and SNF admissions (1.7% vs. 10.4%), and were also more likely to rate their hospital care highly (68.8% vs. 45.3%).[11]

In 2017, using data from their CMMI study, Mount Sinai submitted an application to the Physician-Focused Payment Model Technical Advisory Committee (PTAC) to implement Hospital at Home as an alternative payment model that bundles the acute episode with 30 days of postacute transitional care. The PTAC unanimously approved the proposal and submitted their recommendations to the Secretary of Health & Human Services (HHS) to implement HaH as an alternative payment model that included two parts:

1. A bundled payment equal to a percentage of the prospective DRG payment that would have been paid to a hospital.
2. A performance-based payment (shared savings/losses) based on (a) total spending during the acute care phase and 30 days afterward relative to a target price, and (b) performance on quality measures.[12]

In June 2018, the HHS secretary announced that he was not approving the proposal as written, citing, among other things, concerns about proposed payment methodology and patient safety.[13]

Hospital at Home: Present state

Despite additional evidence of HaH's impact on lowering cost, decreasing 30-day readmissions, and improving patient satisfaction and functional outcomes without an adverse effect on mortality,[14, 15] the model has not been widely adopted, largely because of lack of fee-for-service reimbursement from the public payers (Medicare and Medicaid) and complex logistics to implement it.

However, the COVID-19 pandemic created an urgent need for flexible hospital bed capacity and amplified concerns about hospital care safety for vulnerable populations. In response, the Centers for Medicare & Medicaid Services introduced its Hospitals without Walls initiative that allowed hospitals to provide services in other health care facilities and sites that are not part of the existing hospital.[16] On Nov. 25, 2020, CMS announced expansion of the Hospital Without Walls initiatives to include a Hospital Care at Home program that allows eligible hospitals to treat eligible patients at home.[17]

With significant evidence supporting HaH's safety and efficacy, and long overdue support from CMS, it's now a matter of how to successfully implement it. In our next article, we discuss what it takes to select and enroll patients, deliver acute care at home, and ensure a smooth postacute transition within the HaH model.

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PHM Fellows

Inclusivity needed in PHM fellowships

"Other avenues" to board certification must be considered

By Catherine Ezzio, MD

A year and a half ago, I found myself seated in a crowded hall at the national Pediatric Hospital Medicine conference. Throughout the conference, trainees like me were warmly welcomed into small groups and lunch tables. I tried to keep my cool while PHM "celebrities" chatted with me in the elevator. Most sessions were prepared with plenty of chairs, and those that were not encouraged latecomers to grab a spot on the floor or the back wall – the more the merrier.

The intention of this "advice for applicants" meeting was to inspire and guide our next steps toward fellowship, but a discomforting reality loomed over us. It was the first year graduating pediatricians could not choose PHM board certification via the practice pathway – we needed an invitation in the form of a fellowship match.

"Unfortunately, despite expansion of PHM fellowship programs and 15 seats added from last year, we learned this December that there still are not enough positions to welcome qualified applicants with open arms."

The "hidden curriculum" was not subtle: People who scored a seat would keep their options open within the field of PHM, and those who did not had a murkier future. This message stood in stark contrast to the PHM inclusivity I had experienced all conference, and planted seeds of doubt: Was I welcome here? Did I "deserve" a seat?

I found the experience as a PHM fellowship applicant to be uncomfortable, and my all-too familiar friend "imposter syndrome" set up camp in my brain and made herself at home. I had no way of knowing how many programs to apply to, how many to interview at, or the chances of my matching at all. Once on the interview trail, I realized I was not alone in my discomfort – most applicants harbored some trepidation, and no one truly knew how the chips would fall on Match Day.

I am thrilled and relieved to have come out the other end in a great position. The team I work with and learn from is phenomenal. I am grateful that ACGME accreditation ensures structures are in place for fellows to be supported in their academic and educational efforts and have full confidence that the skills I gain in fellowship will help me contribute to progression of the field of PHM and improve my performance as a clinician-educator.

Sadly, each year PHM match day celebrations are dampened by the knowledge that a large portion of our colleagues are being left out in the cold with an "unmatched" notification in their inboxes. Approximately 200 graduating pediatricians become pediatric hospitalists each year,[1] but only 68 fellowship positions were available in the United States for matriculation in 2020.[2] In 2019, PHM fellowship candidates navigated the 6-month application journey with aspirations to further their training in the profession they love. Of the candidates who submitted a rank list committing to 2 or more years in PHM fellowship, 35% were denied.

Unfortunately, despite expansion of PHM fellowship programs and 15 seats added from last year, we learned this December that there still are not enough positions to welcome qualified applicants with open arms: Thirty-three percent of candidates ranked PHM programs first in the NRMP but did not match – the highest unmatched percentage out of all pediatric subspecialties.[3]

The NRMP report shared a glimpse of our colleagues who received interview invitations and submitted a rank list, but this is likely an underestimation of pediatric graduates who wanted to obtain PHM board certification and wound up on a different path. Some residents anticipated the stiff competition and delayed their plans to apply for fellowship, while others matched into another subspecialty that was able to accommodate them. Many pediatric graduates joined the workforce directly as pediatric hospitalists knowing the practice pathway to certification is not available to them. Along with other physicians without board certification in PHM, they shoulder concerns of being withheld from professional advancement opportunities.

For the foreseeable future it is clear that pediatric hospitalists without board certification will be a large part of our community, and are crucial to providing high-quality care to hospitalized children nationally. In 2019, a national survey of pediatric hospital medicine groups revealed that 50% of pediatric hospitalist hires came directly out of residency, and only 8% of hires were fellowship trained.[4] The same report revealed that 26% of physicians were board certified. These percentages are likely to change over the next 5 years as the window of practice pathway certification closes and fellowship programs continue to expand. Only time will tell what the national prevalence of board-certified pediatric hospitalists settles out to be.

Historically, PHM fellowship graduates have assumed roles that include teaching and research responsibilities, and ACGME fellowship requirements have ensured that trainees graduate with skills in medical education and scholarship, and need only 4 weeks of training to be done in a community hospital.[5] Pediatric hospitalists who do not pursue board certification are seeing the growing pool of PHM fellowship graduates prepared for positions in academic institutions. It is reasonable that they harbor concerns about being siloed toward primarily community hospital roles, and for community hospitalists to feel that this structure undervalues their role within the field of PHM.

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At a time when inclusivity and community in medicine are receiving much-needed recognition, the current fellowship application climate has potential to create division within the PHM community. Newly graduating pediatric residents are among the populations disproportionately affected by the practice pathway cutoff. Like other subspecialties with ever-climbing steps up the "ivory tower" of academia and specialization within medicine, the inherent structure of the training pathway makes navigating it more difficult for pediatricians with professional, geographic, and economic diversity or constraints.

Med-Peds–trained colleagues have the added challenge of finding a fellowship position that is willing and able to support their concurrent internal medicine goals. International medical graduates make up about 20% of graduating residents each year, and just 11% of matched PHM fellows.[3,6] Similarly, while DO medical graduates make up 20% of pediatric residents in the United States, only 10% of matched PHM fellows were DOs.[3,6] New pediatricians with families or financial insecurity may be unable to invest in an expensive application process, move to a new city, and accept less than half of the average starting salary of a pediatric hospitalist for 2-3 years.[7]

The prevalence of implicit bias in medicine is well documented, and there is growing evidence

that it negatively impacts candidate selection in medical education and contributes to minorities being underrepresented in the physician workforce.[8] We must recognize the ways that adding a competitive costly hurdle may risk conflict with our mission to encourage diversity of representation within PHM leadership positions.

We have not yet successfully bridged the gap between qualified PHM fellowship candidates and available fellowship positions. I worry that this gap and the lack of transparency surrounding it is resulting in one portion of new pediatricians being welcomed by the subspecialty, and others feeling unsupported and alienated by the larger PHM community as early career physicians.

Right now, the only solution available is expansion of fellowship programs. We see progress with the new addition of fellowship positions every year, but finding funding for each position is often a lengthy endeavor, and the COVID-19 pandemic has tightened the purse strings of many children's hospitals. It may be many years before the number of available fellowship positions more closely approximates the 200 pediatricians that become hospitalists each year.

The most equitable solution would be offering other avenues to board certification while this gap is being bridged, either by extending the practice pathway option, or making a third pathway that requires less institutional funding per fellow, but still incentivizes institutional investment in fellowship positions and resources (e.g., a pathway requiring some number of years in practice, plus 1 year in fellowship centered around a nonclinical academic curriculum).

In the absence of the solutions above, we collectively hold the responsibility of maintaining inclusivity and support of our PHM colleagues with and without board certification. One important strategy provided by Gregory Welsh, MD,[9] is to incorporate community hospital medicine rotations into residency training. Sharing this side of PHM with residents may help some graduates avoid a training pathway they may not want or need. More importantly, it would raise trainee exposure and interest toward a service that is both expansive – approximately 70% of pediatric hospitalists practice in a community hospital – and crucial to children's health nationally.

"At a time when inclusivity and community in medicine are receiving much-needed recognition, the current fellowship application climate has potential to create division within the PHM community."

Pediatric hospitalists who are not eligible for board certification are vital and valued members of the PHM community, and as such need to maintain representation within PHM leadership. Professional development opportunities need to remain accessible outside of fellowship. The blossoming of virtual conferences and Zoom meet-ups in the face of the COVID-19 pandemic have shown us that with innovation (and a good Internet connection), networking and mentorship can be accomplished across thousands of miles.

While there's great diversity within PHM, this subspecialty has a history of attracting pediatricians with some common core qualities: grit, creativity, and the belief that a strong team is far greater than the sum of its parts. I have confidence that, if we approach this PHM transition period with transparency about our goals and challenges, this community can emerge from it strong and united.

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Getting by with a little help from our friends

Palliative care and hospital medicine partnerships in the pandemic

By Clarissa Johnston MD, FACP; Victoria Cooremans, MD; Sherine Salib, MD, FACP; Kirsten Nieto, MD; Snehal Patel, MD, FACP

Patients dying without their loved ones, families forced to remotely decide goals of care without the physical presence or human connection of the care team, overworked staff physically isolated from their critically ill patients, and at-risk community members with uncertain and undocumented goals for care are among the universal challenges confronted by hospitals and hospitalists during this COVID-19 pandemic.

Partnerships among hospital medicine (HM) and palliative care (PC) teams at Dell Medical School/Dell Seton Medical Center thrive on mutually shared core values of patient-centered care – compassion, empathy, and humanity.

A key collaboration between PC and HM involved adapting our multidisciplinary huddle to focus on communication effectiveness and efficiency in the medical intensive care unit (MICU). Expanded interprofessional and cross-specialty collaboration promoted streamlined, succinct, and standardized communication with patients' families while their loved ones were critically ill with COVID-19.

The PC team attended daily MICU multidisciplinary huddles, attentive to both the medical and psychosocial updates for each patient. During huddles, residents or HM providers were asked to end their presentation with a clinical status "headline" and solicited feedback from the multidisciplinary team before messaging to the family.

The PC team then communicated with families a succinct and cohesive medical update and continuously explored goals of care. This allowed the HM team, often overwhelmed with admissions, co-managing intensive care patients, and facilitating safe discharges, to focus on urgent issues while PC provided continuity and personalized support for patients and families.

The PC team's ability to synthesize and summarize clinical information from multiple teams and then provide cohesive updates in patient-friendly language modeled important communication skills for learners and simultaneously benefited HM providers.

Our chaplains, too, were central to facilitating timely, proactive conversations and documentation of Medical Power of Attorney (MPOA) for patients with COVID-19 admitted to our hospital. HM prioritized early admission conversations with patients to counsel them on severity of illness and prognosis based on risk factors, to elucidate wishes for intubation or resuscitation, and to capture their desired medical decision-maker. HM was notified of all COVID and PUI admissions, allowing us to speak with even critically ill patients in the ER or ICU prior to intubation in order to quickly and accurately capture patients' wishes for treatment and delegate decision-makers. Our chaplains supported and supplemented these efforts by diligently and dutifully soliciting, hearing, and documenting patient MPOA delegates, with over 50% MPOA completion by 24 hours of hospitalization.

> *"Our hospital medicine and palliative care teams have an established strong partnership. The COVID-19 pandemic created novel communication challenges but our shared mission toward patient-centered care allowed us to effectively collaborate."*

Another early PC-HM project, "Meet My Loved One," was adapted from the University of Alabama at Birmingham's Palliative and Comfort Unit. The absence of families visiting the ICU and sharing pictures, stories, anecdotes of our patients left a deeply felt, dehumanizing void in the halls and rooms of our hospital.

To fill this space with life and humanity, furloughed medical students on their "transition of care" electives contacted family members of their "continuity" patients focusing primarily on those patients expected to have prolonged ICU or hospital stays and solicited personal, humanizing information about our patients. Questions included: "What is your loved one's preferred name or nickname?" and "What are three things we should know to take better care of your loved one?"

With family permission, we posted this information on the door outside the patient's room. Nursing staff, in particular, appreciated getting to know their patients more personally and families appreciated the staff's desire to know their loved one as an individual.

It is also important to acknowledge setbacks. Early efforts to engage technology proved more foe than friend. We continue to struggle with using our iPads for video visits. Most of our families prefer "WhatsApp" for video communication, which is not compatible with operating systems on early versions of the iPad, which were generously and widely donated by local school systems.

Desperate to allow families to connect, many providers resorted to using personal devices to facilitate video visits and family meetings. And we discovered that many video visits caused more not less family angst, especially for critically ill patients. Families often required preparation and coaching on what to expect and how to interact with intubated, sedated, proned, and paralyzed loved ones.

Our hospital medicine and palliative care teams have an established strong partnership. The COVID-19 pandemic created novel communication challenges but our shared mission toward patient-centered care allowed us to effectively collaborate to bring the patients goals of care to the forefront aligning patients, families, physicians, nurses, and staff during the COVID-19 surge.

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This article is part of a series written by members of the Division of Hospital Medicine at Dell Medical School, exploring lessons learned from the coronavirus pandemic and outlining an approach for creating COVID-19 Centers of Excellence. The article first appeared in The Hospital Leader, the official blog of the Society of Hospital Medicine.

COVID-19: Another study links colchicine to better results

Drug works on "overabundant inflammatory response"

By Randy Dotinga

The gout drug colchicine appears to lower the severity of COVID-19, a small new Brazilian study finds, adding to evidence that the familiar medication holds promise as a treatment for hospitalized patients.

Patients who received colchicine in this randomized, double-blinded, placebo-controlled clinical trial presented better evolution in terms of the need for supplemental oxygen and the length of hospitalisation. ... Colchicine was safe and well tolerated," the study authors wrote in RMD Open (2021 Feb 4. doi: 10.1136/rmdopen-2020-001455). However, deaths were rare in the trial, they added, and it is impossible to "evaluate the capacity of colchicine to avoid admission to ICU and reduce mortality."

The oral anti-inflammatory colchicine, widely used as treatment in rheumatic disease, was first approved in the United States 60 years ago. Researchers began to explore its potential as a COVID-19 treatment in the early months of the pandemic.

On Jan. 25, an international team of researchers reported in a press release – but not yet a published paper – that the drug seemed to reduce hospitalizations, mechanical ventilation, and deaths in the ColCORONA trial. Earlier, a much-smaller, randomized, open-label, Greek trial linked the drug to reduced time to clinical deterioration and hospital stay (JAMA Netw Open. 2020;3[6]:e2013136. doi: 10.1001/jamanetworkopen.2020.13136).

The Brazilian authors of the new study, led by Maria Isabel Lopes of the University of São Paulo's Ribeirão Preto Medical School, randomly assigned 75 hospitalized patients with moderate to severe COVID-19 to colchicine or placebo. A total of 72 subjects completed the April-August 2020 trial: 36 received colchicine (typically 0.5 mg three times for 5 days, then 0.5 mg twice daily for 5 days; doses were adjusted in low-weight patients and those with chronic kidney disease). The other 36 received the placebo.

(In the United States, 0.6-mg tablets of generic colchicine cost as little as $1.90 each with free coupons, according to goodrx.com.)

The median age in the groups was similar (55 years); and the placebo group had more women (61% vs. 47% in the colchicine group, $P = .34$). All 72 patients received the same COVID-19 treatment at the time of the trial: azithromycin, hydroxychloroquine, and unfractionated heparin. Most patients, about two-thirds in both groups, also received methylprednisolone because they needed higher amounts of supplemental oxygen.

Patients in the colchicine group needed supplemental oxygen for less time: Their median time of need was 4.0 days (interquartile range, 2.0-6.0) vs. 6.5 days (IQR, 4.0-9.0) for the placebo group ($P < .001$). The median time for hospitalization was also lower at 7.0 days (IQR, 5.0-9.0) for the colchicine group vs. 9.0 (IQR, 7.0-12.0) for the placebo group (log rank test, 10.6; $P = .001$).

The researchers also reported the percentage of patients who needed supplemental oxygen at day 2 as 67% with colchicine vs. 86% with placebo, and at day 7 as 9% vs. 42% (log rank test, 10.6; $P = .001$). Two patients in the placebo group died, both from ventilator-associated pneumonia.

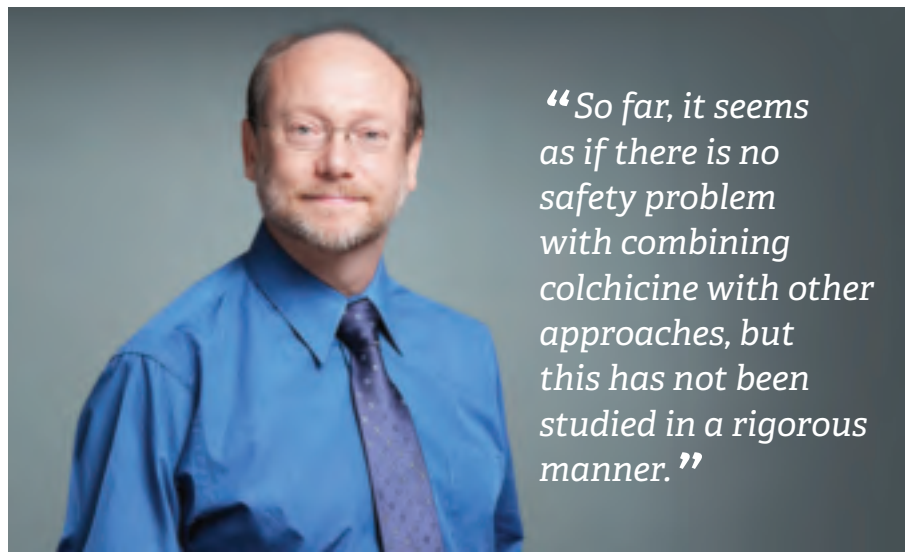
As for side effects, new or worsened diarrhea was reported more often in the colchicine group (17% vs. 6% with placebo), but the difference was not statistically significant ($P = .26$), and diarrhea was controlled via medication.

The researchers reported that limitations include the exclusion criteria and their inability to link colchicine to rates of ICU admissions and death.

The drug appears to help patients with COVID-19, the study authors wrote, by "inhibiting inflammasome, reducing neutrophil migration and activation, or preventing endothelial damage."

A "well-conceived and well-designed" study

In an interview, NYU Langone Health rheumatologist Michael H. Pillinger, MD – an investigator with the ColCORONA trial – praised the Brazilian study. It "appears well-conceived and well-designed, and was enrolled at a rate that was greater than the sample size that was estimated to be needed based on power analysis," he said.



Dr. Michael H. Pillinger

The Brazilian study is small, he noted. (In contrast, the ColCORONA trial had 4,488 outpatient participants.) "This study differs from ColCORONA in several ways – the most important being that it is a study of inpatients with moderate to severe COVID (really mostly moderate)," Dr. Pillinger added. "ColCORONA is looking at a target audience that is much larger – outpatients with mild to moderate COVID with risk factors for hospitalization. Both questions are really important and certainly not mutually exclusive, since our care remains inadequate in both venues. This study also adds value in that several other studies have been conducted in hospital patients with enrollment criteria relatively similar to this one, and all showed benefit, but those were open-label or retrospective, and this is blinded and placebo-controlled."

Use of colchicine in patients with COVID-19

Should hospitalists turn to colchicine in patients with COVID-19? "I would rather that it still be used in the context of research until formal recommendations can be made by bodies like the NIH and CDC," Dr. Pillinger said. "But certainly, there may be times when physicians feel compelled to treat patients off label."

He cautioned, however, that colchicine should never be used with some other drugs. Its interaction with the antibiotic clarithromycin can be fatal, he noted. And, he said, the drug must be monitored in general since it can cause rare, severe problems.

"Overall, colchicine probably works on the overabundant inflammatory response to COVID, and it may be that it can be combined with other drugs that affect viral replication or promote immunity – e.g. vaccines," Dr. Pillinger said. "So far, it seems as if there is no safety problem with combining colchicine with other approaches, but this has not been studied in a rigorous manner."

Moving forward, he said, the drug's very low price outside of the United States "could provide resource-poor countries with a way to help keep patients out of precious hospital beds – or help them go home sooner once admitted."

For now, however, "we need a large-scale inpatient study, and one is currently going on in Great Britain. We also need validation of the outpatient ColCORONA study, and studies to look at whether colchicine can work in conjunction with other strategies," he said.

The study was funded by grants from the São Paulo Research Foundation, Brazilian National Council for Scientific and Technological Development, and CAPES Foundation. No disclosures are reported. Dr. Pillinger reports serving as an investigator for the ColCORONA trial and receiving a unrelated investigator-initiated grant from Hikma, a colchicine manufacturer.

Microthrombi, necrosis seen in hearts on autopsy

By Debra L. Beck

Autopsies on patients who died from COVID-19 are providing important clues on how to treat the disease. In an analysis of 40 hearts from COVID-19 patients who died early in the pandemic, myocyte necrosis was seen in 14 hearts, or 35%.

In the majority of these hearts, pathologists found both small areas of focal necrosis and cardiac thrombi, most of which were microthrombi in myocardial capillaries, arterioles, and small muscular cells.

In an interview, senior author Aloke V. Finn, MD, CVPath Institute, Gaithersburg, Md., stressed the importance of understanding what they saw, but also what they didn't see.

"What we saw in the majority of patients with myocardial injury were these small areas of infarct and microthrombi in small vessels. What we didn't see was any evidence of myocarditis or huge infarcts inthe LAD artery," he said. "There is no test that will tell you there are microthrombi and no imaging tests that will show these focal areas of necrosis, but that doesn't mean it's not there."

The finding of myocyte necrosis in about one-third of samples is consistent with another study that showed that 30%-40% of patients hospitalized with COVID-19 have elevated troponins, noted Dr. Finn. The investigators were unable to obtain troponin levels on their patients, which could limit the clinical translation of myocardial necrosis detected at autopsy.

"What we're seeing ... is evidence of an immune-mediated reaction."

Dr. Finn and colleagues published their findings online in Circulation (doi: 10.1161/CIRCULATIONAHA.120.051828).

The report is a follow-up to another just published by Dr. Finn's group in the Journal of the American College of Cardiology (2021 Jan;77[3]314-25), which showed that myocarditis is very rare in COVID-19 autopsies.

Only three of 14 individuals (21.4%) with evidence of myocyte necrosis showed evidence of acute MI, which Dr. Finn and colleagues define as an area of necrosis at least 1 cm^2 in size. The remaining 11 (78.6%) had only discrete areas of myocyte necrosis (>20 necrotic myocytes with an area of ≥0.05 mm^2, but <1 cm^2).

"This makes sense when we saw what type of thrombus there was in these cases; it wasn't thrombus in major epicardial vessels but microthombi in small vessels," said Dr. Finn.

In those with necrosis, cardiac thrombi were present in 11 of 14 (78.6%) cases, with 2 of 14 (14.2%) having epicardial coronary artery thrombi and 0 of 14 (64.3%) having microthrombi in myocardial capillaries, arterioles, and small muscular arteries.

Further supporting the role of COVID-19–related hypercoagulability as the cause of myocardial injury in many patients, the investigators noted that the incidence of severe coronary artery disease (defined as >75% cross sectional narrowing) did not differ significantly between those with and without necrosis.

Going one step further, Dr. Finn's team compared cardiac microthrombi from their COVID-19–positive autopsy cases with intramyocardial thromboemboli from COVID-19 cases. They also compared the samples with aspirated thrombi obtained during primary percutaneous coronary intervention from uninfected and COVID-19–infected patients presenting with ST-segment elevation MI (STEMI).

The autopsy-obtained microthrombi had significantly more fibrin and terminal complement C5b-9 immunostaining than intramyocardial thromboemboli from COVID-19–negative subjects and than aspirated thrombi from either COVID-positive or COVID-negative STEMI patients.

"Basically, what we're seeing in these thrombi is evidence of an immune-mediated reaction," said Dr. Finn. "It is nonspecific but can also lead to coagulation problems."

A version of this article first appeared on Medscape.com.

Tough pain relief choices in the pandemic

By Allison Shelley

More people with fever and body aches are turning to NSAIDs to ease symptoms, but the drugs have come under new scrutiny as investigators work to determine whether they are a safe way to relieve the pain of COVID-19 vaccination or symptoms of the disease.

Early on in the pandemic, French health officials warned that NSAIDs, such as ibuprofen, could worsen coronavirus disease, and they recommended switching to acetaminophen instead. The National Health Service in the United Kingdom followed with a similar recommendation for acetaminophen.

But the European Medicines Agency took a different approach, reporting "no scientific evidence" that NSAIDs could worsen COVID-19. The U.S. Food and Drug Administration also opted not to take a stance.

The debate prompted discussion on social media, and inspired Craig Wilen, MD, PhD, from Yale University, New Haven, Conn., and associates to examine the effect of NSAIDs on COVID-19 infection and immune response. Their findings were published in the Journal of Virology (doi: 10.1128/JVI.00014-21).

"It really bothered me that non–evidence-based decisions were driving the conversation," Dr. Wilen said. "Millions of people are taking NSAIDs every day and clinical decisions about their care shouldn't be made on a hypothesis."

One theory is that NSAIDs alter susceptibility to infection by modifying ACE2. The drugs might also change the cell entry receptor for SARS-CoV-2, alter virus replication, or even modify the immune response.

British researchers, also questioning the safety of NSAIDs in patients with COVID-19, delved into National Health Service records to study two large groups of patients, some of whom were taking the pain relievers.

"We were watching the controversy and the lack of evidence and wanted to contribute," lead investigator Angel Wong, PhD, from the London School of Hygiene and Tropical Medicine, said in an interview. And with nearly 11 million NSAID prescriptions dispensed in primary care in England alone in the past 12 months, the inconsistency was concerning.

The team compared COVID-19–related deaths in two groups: one group of more than 700,000 people taking NSAIDs, including patients with rheumatoid arthritis and osteoarthritis; and another of almost 3.5 million people not on the medication.

NSAIDs work by inhibiting cyclooxygenase-1 and COX-2 enzymes in the body, which are crucial for the generation of prostaglandins. These lipid molecules play a role in inflammation and are blocked by NSAIDs.

The investigators found no evidence of a harmful effect of NSAIDs on COVID-19–related deaths; their results were published in the Annals of the Rheumatic Diseases (doi: 10.1136/annrheumdis-2020-219517).

The results are in line with a Danish study that also showed no evidence of a higher risk for severe COVID-19 outcomes with NSAID use (PLoS One. 2020 Sep 8. doi: 10.1371/journal.pmed.1003308).

"It's reassuring," Dr. Wong said, "that patients can safely continue treatment."

Dr. Wilen's team found that SARS-CoV-2 infection stimulated COX-2 expression in human and mice cells. However, suppression of COX-2 by two commonly used NSAIDs, ibuprofen and meloxicam, had no effect on ACE2 expression, viral entry, or viral replication.

Understanding the effect of NSAIDs on cytokine production is critical, Dr. Wilen pointed out, because they might be protective early in COVID-19 but pathologic at later stages.

A version of this article first appeared on Medscape.com.

Characteristics of kids in ICU for COVID-19

By Marcia Frellick

Little has been known about children sick enough with COVID-19 to require intensive care because such patients are relatively few, but preliminary data analyzed from a nationwide registry indicate that they are more likely to be older, to be Black, and to have asthma.

Gastrointestinal distress is also more common in children with severe COVID-19, according to research by Sandeep Tripathi, MD. Dr. Tripathi, a pediatric intensivist and associate professor at the University of Illinois at Peoria, presented the findings on Feb. 3 at the Society for Critical Care Medicine 2021 Critical Care Congress.

Results from the SCCM's VIRUS: COVID-19 Registry, which involved data from 49 sites, included 181 children admitted to an intensive care unit between February and July 2020. Those in the ICU were older than patients who did not receive care in the ICU (10 years vs. 3.67 years; $P < .01$) and were more likely to be Black (28.8% vs. 17.8%; $P = .02$).

More of the patients who required intensive care had preexisting conditions (58.2% vs. 44.3%; $P = .01$), the most common of which was asthma.

For both the ICU patients and the non-ICU group, the most common presenting symptom was fever.

Symptoms that were more common among children needing ICU care included nausea/vomiting (38.4% vs. 22.1%; $P < .01$), dyspnea (31.8% vs. 17.7%; $P < .01$), and abdominal pain (25.2% vs. 14.1%; $P < .01$).

Significantly higher proportions of ICU patients had multisystem inflammatory syndrome of childhood (MIS-C) (44.2% vs. 6.8%; $P < .01$) and acute kidney injury (9.34% vs. 1.7%; $P < .01$).

"The children who presented with MIS-C tended to be much sicker than children who present with just COVID," Dr. Tripathi said in an interview.

In this analysis, among children in ICUs with COVID, the mortality rate was 4%, Dr. Tripathi said.

He said he hopes the information, which will be periodically published with updated data, will raise awareness of which children might be likely to experience progression to severe disease.

"The information may help physicians be more mindful of deterioration in those patients and be more aggressive in their management," he said. When children are brought to the emergency department with the features this analysis highlights, he said, "physicians should have a low threshold for treating or admitting the patients."

Another study that was presented on Feb. 3 in parallel with the registry study described patterns of illness among 68 children hospitalized with COVID-19 in a tertiary-care pediatric center.

In that analysis, Meghana Nadiger, MD, a critical care fellow with Nicklaus Children's Hospital in Miami, found that all patients admitted to the pediatric ICU (n = 17) had either MIS-C or severe illness and COVID-19–related Kawasaki-like disease.

The investigators also found that the patients with serious illness were more commonly adolescents with elevated body mass index (73%). In this study, 83.8% of the hospitalized children were Hispanic. They also found that 88.8% of the children older than 2 years who had been hospitalized with COVID-19 were overweight or obese, with a BMI >25 kg/m^2.

Jerry Zimmerman, MD, PhD, director of continuous quality improvement at Seattle Children's Hospital, said that he found it interesting that in the Nadiger study, "All of the children with severe illness had MIS-C as compared to adults, who typically are critically ill with severe acute respiratory distress syndrome." Dr. Zimmerman was not involved in either study.

He said that, although the high percentage of Hispanic patients in the hospitalized population may reflect the high percentage of Hispanic children in the Miami area, it may also reflect challenges of controlling the disease in the Hispanic community. Such challenges might include shortages of personal protective equipment, poorer access to health care, and difficulty in social distancing.

A version of this article first appeared on Medscape.com.

Technology

Continued from page 1

to be admitted to the hospital and can be safely followed up as an outpatient. The patient does not require any further intervention and is discharged from the ED.

Scenario 2

Dr. N is a hospitalist in a rural hospital that does not have intensivist support at night. She works 7 on/7 off and is on call 24/7 during her "on" week. Dr. N cannot be physically present in the hospital 24/7. She receives messages from the hospital around the clock and feels that this call schedule is no longer sustainable. She doesn't feel comfortable admitting patients in the ICU who come to the hospital at night without physically seeing them and without ICU backup. Therefore, some of the patients who are sick enough to be admitted in ICU for closer monitoring but can be potentially handled in this rural hospital get transferred out to a different hospital.

Dr. N has been asking the hospital to provide her intensivist back up at night and to give her some flexibility in the call schedule. However, from hospital's perspective, the volume isn't high enough to hire a dedicated nocturnist, and because the hospital is in the small rural area, it is having a hard time attracting more intensivists. After multiple conversations between both parties, Dr. N finally resigns.

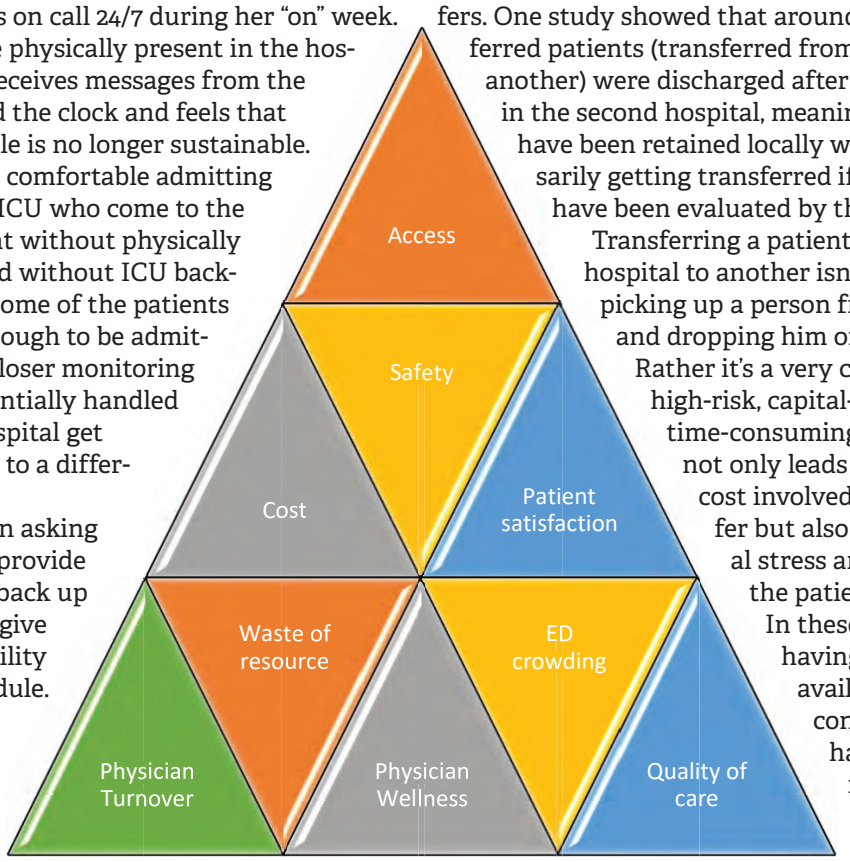


Figure 1: Pain points in health care

Scenario 3

Dr. A is a specialist who is on call covering different hospitals and seeing patients in clinic. His call is getting busier. He has received many new consults and also has to follow up on his other patients in hospital who he saw a day prior.

Dr. A started receiving many pages from the hospitals – some of his patients and their families are anxiously waiting on him so that he can let them go home once he sees them, while some are waiting to know what the next steps and plan of action are. He ends up canceling some of his clinic patients who had scheduled an appointment with him 3, 4, or even 5 months ago. It's already afternoon.

Dr. A now drives to one hospital, sees his new consults, orders tests which may or may not get results the same day, follows up on other patients, reviews their test results, modifies treatment plans for some while clearing other patients for discharge. He then drives to the other hospital and follows the same process. Some of the patients aren't happy because of the long wait, a few couldn't arrange for the ride to go home and ended up staying in hospital 1 extra night, while the ER is getting backlogged waiting on discharges.

These scenarios highlight some of the important and prevalent pain points in health care as shown in Figure 1.

Scenario 1 and part of scenario 2 describe what is called potentially avoidable interfacility transfers. One study showed that around 8% of transferred patients (transferred from one ED to another) were discharged after ED evaluation in the second hospital, meaning they could have been retained locally without necessarily getting transferred if they could have been evaluated by the specialist.[1] Transferring a patient from one hospital to another isn't as simple as picking up a person from point A and dropping him off at point B. Rather it's a very complicated, high-risk, capital-intensive, and time-consuming process that not only leads to excessive cost involved around transfer but also adds additional stress and burden on the patient and family. In these scenarios, having a specialist available via teleconsult could have eliminated much of this hassle and cost, allowing the patient to stay locally close to family and get access to necessary medical expertise from any part of the country in a timely manner.

Scenario 2 talks about the recruitment and retention challenges in low-volume, low-resourced locations because of call schedule and the lack of specialty support. It is reported in one study that 19% of common hospitalist admissions happen between 7:00 p.m. and 7:00 a.m. Eighty percent of admissions occurred prior to midnight. Nonrural facilities averaged 6.69 hospitalist admissions per night in that study, whereas rural facilities averaged 1.35 admissions.[2] It's like a double-edged sword for such facilities. While having a dedicated nocturnist is not a sustainable model for these hospitals, not having adequate support at night impacts physician wellness, which is already costing hospitals billions of dollars as well as leading to physician turnover: It could cost a hospital somewhere between $500,000 and $1 million to replace just one physician.[3] Hence, the potential exists for a telehospitalist program in these settings to address this dilemma.

> *"When physicians are on vacation or there is surge capacity (that can be forecast by using various predictive analytics models), hospitals can make plans accordingly and make use of telemedicine services."*

Scenario 3 sheds light on the operational issues resulting in reduced patient satisfaction and lost revenues, both on the outpatient and inpatient sides by cancellation of office visits and ED backlog. Telemedicine use in these situations can improve the turnaround time of physicians who can see some of those patients while staying at one location as they wait on other patients to show up in the clinic or wait on the operation room crew, or the procedure kit etcetera, hence improving the length of stay, ED throughput, patient satisfaction, and quality of care. This also can improve overall workflow and the wellness of physicians.

One common outcome in all these scenarios is emergency department overcrowding. There have been multiple studies that suggest that ED overcrowding can result in increased costs, lost revenues, and poor clinical outcomes, including delayed administration of antibiotics, delayed administration of analgesics to suffering patients, increased hospital length of stay, and even increased mortality.[4-6] A crowded ED limits the ability of an institution to accept referrals and increases medicolegal risks. (See Figure 2.)

Another study showed that a 1-hour reduction in ED boarding time would result in over $9,000 of additional revenue by reducing ambulance diversion and the number of patients who left without being seen.[7] Another found that using tele-emergency services can potentially result in net savings of $3,823 per avoided transfer, while accounting for the costs related to tele-emergency technology, hospital revenues, and patient-associated savings.[8]

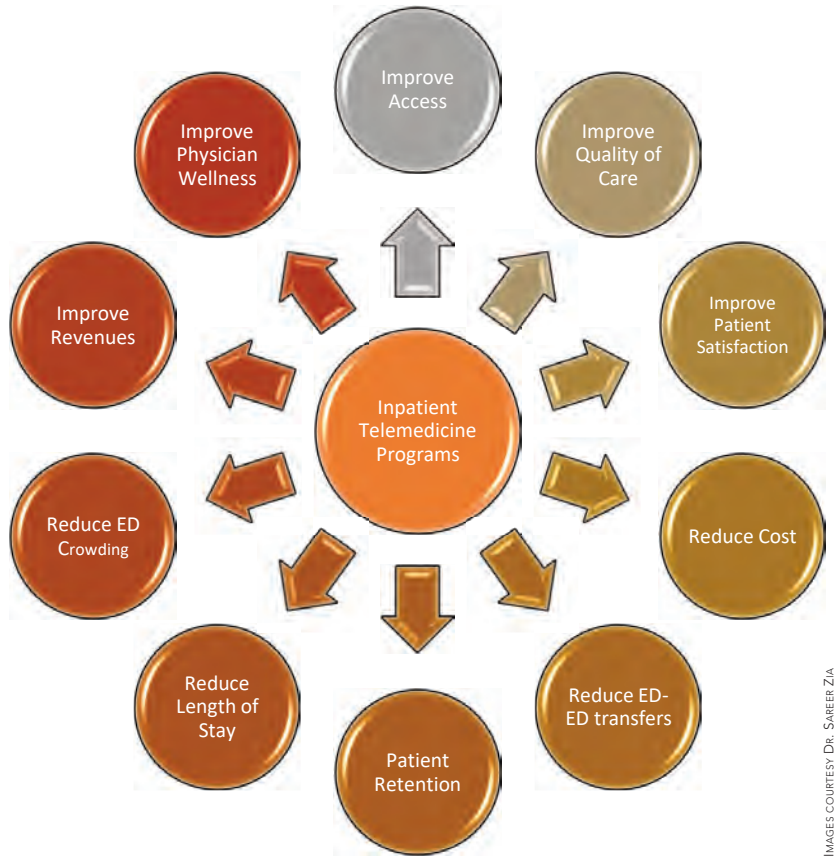
There are other instances where gaps in staffing and cracks in workflow can have a negative impact on hospital operations. For example, the busier hospitals that do have a dedicated nocturnist also struggle with physician retention, since such hospitals have higher volumes and higher cross-coverage needs, and are therefore hard to manage by just one single physician at night. Since these are temporary surges, hiring another full-time nocturnist is not a viable option for the hospitals and is considered an expense in many places.

Similarly, during day shift, if a physician goes on vacation or there are surges in patient volumes, hiring a locum tenens hospitalist can be an expensive option, since the cost also includes travel and lodging. In many instances, hiring locum tenens in a given time frame is also not possible, and it leaves the physicians short staffed, fueling both physicians' and patients' dissatisfaction and leading to other operational and safety challenges, which are highlighted above.

Telemedicine services in these situations can provide cross-coverage while nocturnists can focus on admissions and other acute issues. Also,

	Scenario 1	Scenario 2	Scenario 3
	Avoidable Transfer		
Safety and Quality Issues	Delay in Care		Delay in Care
	Transport related Injuries		Delay in Discharge
Increased Cost			Increased LOS
	Transportation Cost	Physician Turnover	Reduced ED Throughput
Increased Waste	Redundant Test		Increased Avoidable Days
Decreased Revenue	Reduced Patient Retention		Cancellation of Office Visits
Decreased Access			
Reduced Physician Satisfaction		Impact on Physician Wellness	
ED OVERCROWDING			
Quality and Safety Issues	Medical Errors		
	Delay in Care including decreased administration of antibiotics and analgesics, increased ICU length of stay, increased mortality		
Reduced Patient Satisfaction	Patient Leaving Without Being Seen		
Decreased Access	Ambulance Diversion		
Reduced Revenues			

Figure 2: Relationship of limited human capital (physicians) to pain points of health care



Images courtesy Dr. Sareer Zia

Figure 3: Likely impact of inpatient telemedicine programs on health care industry

when physicians are on vacation or there is surge capacity (that can be forecast by using various predictive analytics models), hospitals can make plans accordingly and make use of telemedicine services. For example, Providence St. Joseph Health reported improvement in timeliness and efficiency of care after implementation of a telehospitalist program. Their 2-year study at a partner site showed a 59% improvement in patients admitted prior to midnight, about $547,000 improvement in first-day revenue capture, an increase in total revenue days and comparable patient experience scores, and a substantial increase in inpatient census and case mix index.[9]

"There are barriers to the integration and implementation of inpatient telemedicine, including regulations, reimbursement, physician licensing, adoption of technology, and trust among staff and patients."

Other institutions have successfully implemented some inpatient telemedicine programs – such as telepsych, telestroke, and tele-ICU – and some have also reported positive outcomes in terms of patient satisfaction, improved access, reduced length of stay in the ED, and improved quality metrics. Emory Healthcare in Atlanta reported $4.6 million savings in Medicare costs over a 15-month period from adopting a telemedicine model in the ICU, and a reduction in 60-day readmissions by 2.1%.[10] Similarly, another study showed that one large health care center improved its direct contribution margins by 376% (from $7.9 million to $37.7 million) because of increased case volume, shorter lengths of stay, and higher case revenue relative to direct costs. When combined with a logistics center, they reported improved contribution margins by 665% (from $7.9 million to $60.6 million).[11]

There are barriers to the integration and implementation of inpatient telemedicine, including regulations, reimbursement, physician licensing, adoption of technology, and trust among staff and patients. However, I am cautiously optimistic that increased use of telehealth during the COVID-19 pandemic has allowed patients, physicians, nurses, and health care workers and leaders to gain experience with this technology, which will help them gain confidence and reduce hesitation in adapting to this new digital platform. Ultimately, the extent to which telemedicine is able to positively impact patient care will revolve around overcoming these barriers, likely through an evolution of both the technology itself and the attitudes and regulations surrounding it.

I do not suggest that telemedicine should replace the in-person encounter, but it can be implemented and used successfully in addressing the pain points in U.S. health care. (See Figure 3.)

To that end, the purpose of this article is to spark discussion around different ways of implementing telemedicine in inpatient settings to solve many of the challenges that health care faces today.

Dr. Zia is an internal medicine board-certified physician who has worked as a hospitalist in a medically underserved area. She is a founder of a telemedicine company called Virtual Hospitalist. She has served in various leadership roles including medical director of the department of hospital medicine, medical staff president, and physician adviser. She has a special interest in improving access to health care in physician shortage areas by leveraging technology.

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New SHM Fellows: Class of 2021

The Society of Hospital Medicine has announced its 2021 class of Master Fellows, Senior Fellows, and Fellows in Hospital Medicine.

All Fellowship classes are listed in alphabetical order.

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Study dispels 'Lazarus phenomenon'

By Patrice Wendling

Among critically ill patients pulseless after planned withdrawal of life-sustaining therapies, cardiac activity restarted in 14% of cases, research shows.

Reassuringly, most resumption of heart activity happened in the first 1-2 minutes and most lasted 1 or 2 seconds.

"The reason we wanted to look at death determination specifically is we know that the stories persist about people coming back to life following death, and that's not just in the public, it's in the medical community as well," lead author Sonny Dhanani, MD, of Children's Hospital of Eastern Ontario, Ottawa, said.

"We thought that, if we provided scientific evidence of whether this happened or not, we might dispel some myths and misunderstanding, which would hopefully promote organ donation."

About 70% of organ donations occur after brain death, but an increasing number follow circulatory determination of death, he noted. Most protocols recommend 5 minutes of apnea and pulselessness by arterial catheter monitor before declaring death. But practices vary from 10 minutes in some European countries to 75 seconds in infant heart donors at one Colorado hospital.

Reports of patients recovering 10 minutes after pulselessness have raised concerns about the Lazarus phenomenon, or autoresuscitation, but are based in patients after cardiopulmonary resuscitation was terminated.

The present study, known as Death Prediction and Physiology After Removal of Therapy (DePParRT), enrolled patients at 20 intensive care sites in Canada, the Czech Republic, and the Netherlands, only if surrogate decision-makers agreed on withdrawal of life-sustaining measures without CPR and imminent death was anticipated.

As reported Jan. 28 in the New England Journal of Medicine (2021;384:345-52), physicians observed resumption of circulation or cardiac activity prospectively in 1% of 631 patients based on bedside ECG, arterial pressure catheter monitors, palpated arterial pulse, breaths, or physical movements.

A retrospective review of data from 480 patients with complete ECG and arterial waveforms and at least 5 minutes of continuous waveform monitoring after pulselessness showed resumption of cardiac activity in 14% of patients.

The longest period of pulselessness before the heart showed signs of activity again was 4 minutes and 20 seconds. "So that was a reassuring number, because that's within our 5-minute window that we currently use," Dr. Dhanani said.

Importantly, "nobody woke up, nobody ended up being resuscitated, and all of these individuals died. And I think that's going to be very helpful in this context," he added.

In all, there were 77 cessations and resumptions in 67 of the 480 patients. The median duration of resumed cardiac activity was 3.9 seconds but, notably, ranged from 1 second to 13 minutes and 14 seconds.

"Though surprising, I think maybe not unreasonable," observed Dr. Dhanani. "The heart is a very robust organ, and we maybe should anticipate these things happening, where at the end of life the heart may restart for minutes."

In this situation, it's important to wait the 13 minutes for the heart to stop again and then "wait another 5 minutes to make sure it doesn't restart before determining death," he said. "I think that's where this study is going to now inform policy makers and guidelines, especially in the context of donations."

The findings will be taken as strong support for the 5-minute window, said Robert Truog, MD, director of the Harvard Medical School Center for Bioethics, Boston.

A version of this article first appeared on Medscape.com.

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Ceftolozane-tazobactam found effective in critically ill

By Mark S. Lesney, PhD

Ceftolozane-tazobactam (C/T) was found effective for treating pneumonia, intra-abdominal infections, and urinary tract infections caused by *Pseudomonas aeruginosa*, according to the results of a retrospective, observational study conducted in critically ill patients.

The multicenter, observational study assessed 95 patients who received C/T for *P. aeruginosa* serious infections, according to a report published online in the International Journal of Antimicrobial Agents (doi: 10.1016/j.ijantimicag.2020.106270).

C/T is a novel beta-lactam/beta-lactamase–inhibitor combination active against gram-negative bacteria including *P. aeruginosa*. This paper presents the largest real-life experience published on C/T therapy for treating serious *P. aeruginosa* infections according to researchers Barbara Balandin, MD, of the Hospital Universitario Puerta de Hierro, Majadahonda, Spain, and colleagues.

The main infections treated were nosocomial pneumonia (56.2%), intra-abdominal infection (10.5%), tracheobronchitis (8.4%), and urinary tract infection (6.3%). Most infections were complicated with sepsis (49.5%) or septic shock (45.3%), and bacteremia (10.5%).

A total of 46 episodes were treated with high-dose C/T (3 g every 8 hours), and 38 episodes were treated with standard dosage (1.5 g every 8 hours). Almost half (44.2%) of the patients were treated with C/T monotherapy, and the remaining group received combination therapy with other antibiotics, according to the researchers.

The primary outcome of the study was to assess the efficacy and toxicity of C/T therapy. The secondary outcome was to evaluate the risk factors for all-cause 30-day mortality from the first day of therapy.

Most of the infections (93.7%) were severe and included the presence of sepsis (49.5%) or septic shock (45.3%). Bacteremia was observed in 15 (15.7%) patients. Bacteremia was secondary to nosocomial pneumonia in eight cases, catheter infection in five, urinary tract infection in one, and soft tissue infection in one. According to their susceptibility profiles, 46 (48.4%) of the strains were classified as extensively drug-resistant (XDR) *P. aeruginosa* and 35 (36.5%) were multidrug-resistant (MDR) *P. aeruginosa*.

Sixty-eight (71.6%) patients presented a favorable clinical response, which was defined as a resolution of presenting symptoms and signs of the infection by the end of therapy. Microbiological eradication was documented in 42.1% (40/95) of the episodes. However, the global ICU mortality was still high, at 36.5%, with mortality mainly related to the severity of the infection.

Mortality was found to be significantly correlated with the Charlson Comorbidity Index (5.7 vs. 4.3; $P = .04$) and the need for life-supporting therapies such as vasopressors (66.6% vs. 46.9%; $P = .03$) and renal replacement therapy (46.6% vs. 18.1%; $P = .002$). In addition, mortality was significantly associated with a higher sequential organ failure assessment (SOFA) score during C/T therapy (SOFA1, SOFA 3, and SOFA 7; $P < .001$).

"The lack of a positive effect from combined therapy suggests that C/T monotherapy may be sufficient for treating *P. aeruginosa* isolates that are susceptible to that agent," the researchers suggested. "This study shows that C/T appears to be a suitable, effective, and safe drug for treating severe infections due to *P. aeruginosa*, highlighting nosocomial pneumonia caused by MDR/XDR *P. aeruginosa* in ICU patients with multiple comorbidities ... and needing life-sustaining therapies."

Dexmedetomidine, propofol similar in ventilated adults with sepsis

Results confirm current guidelines

By Marcia Frellick

Outcomes for mechanically ventilated adults with sepsis receiving light sedation were the same whether they received dexmedetomidine or propofol, according to data from a 13-center randomized, controlled, double-blind study published online Feb. 2 in the New England Journal of Medicine (2021. doi: 10.1056/NEJMoa2024922).

Dexmedetomidine (an alpha$_2$-receptor agonist) and propofol (a gamma-aminobutyric acid [GABA]–receptor agonist) have similar safety profiles.

The findings from the Maximizing the Efficacy of Sedation and Reducing Neurological Dysfunction and Mortality in Septic Patients with Acute Respiratory Failure (MENDS2) trial were published on an accelerated schedule to coincide with the Critical Care Congress sponsored by the Society of Critical Care Medicine.

Lead author Christopher G. Hughes, MD, chief of anesthesiology in critical care medicine at Vanderbilt University Medical Center, Nashville, Tenn., told this news organization that previous trials have shown that dexmedetomidine is likely superior to benzodiazepines, especially in improving delirium, coma, and time on a ventilator. Until this trial, dexmedetomidine's performance in a head-to-head comparison with propofol – the current standard-of-care agent – was not clear.

> *"It's important that we did not find a difference in either the main cognition or the other cognitive scores between the two agents."*

Researchers discovered that, "despite theoretical advantages of dexmedetomidine, that did not translate into the clinical realm when patients were receiving up-to-date sedation care," he said.

Guidelines currently recommend either drug when light sedation is needed for adults on ventilators. The drugs are different in the way they affect arousability, immunity, and inflammation, but a comparison of outcomes in adults with sepsis – in terms of days alive without brain dysfunction – had never before been performed in a randomized, controlled trial.

In this trial, 422 patients were randomly assigned to receive either dexmedetomidine (0.15-1.5 mcg/kg of body weight per hour) or propofol (5-50 mcg/kg per minute). Doses were adjusted by bedside nurses (who were unblinded) to achieve specified sedation goals.

The primary outcome was days alive without delirium or coma in the 14 days of intervention. The researchers found no difference between the two groups (adjusted median, 10.7 vs. 10.8 days; odds ratio, 0.96; 95% confidence interval, 0.74-1.26).

There was also little difference in three secondary outcomes: ventilator-free days (adjusted median, 23.7 vs. 24.0 days; OR, 0.98); death at 90 days (38% vs. 39%; hazard ratio, 1.06); or the Telephone Interview for Cognitive Status (TICS) Total score measuring global cognition at 6 months (adjusted median score, 40.9 vs. 41.4; OR, 0.94).

Dr. Hughes said the researchers "specifically went with a high-severity-of-illness cohort that would be most likely to see an effect."

He said the drugs have different adverse-effect profiles, so a clinician can consider those in deciding between the two, but either should be fine at baseline.

The researchers note that at least 20 million patients each year develop sepsis with severe organ dysfunction, and more than 20% receive mechanical ventilation.

Confirmation of current guidelines

Sandra Kane-Gill, PharmD, president-elect of SCCM, stated in an interview that she is impressed with the study design and said the results give definitive confirmation of current guidelines.

"The rigorous study design is different from previous comparative-effectiveness trials on the drugs in this group of patients," she said.

As to what clinicians think about when choosing one over the other, Dr. Kane-Gill said that with dexmedetomidine, there may be more concern about bradycardia, whereas propofol may be associated with concerns of high triglycerides.

"There may be more comfort with use of propofol," and dexmedetomidine can be more costly than propofol, she added, so those could be factors in decision-making as well.

> *"COVID patients would be the type of patients we enrolled in this study, with the high severity of illness and the infection on top of being on a ventilator."*

Dr. Hughes said this study offers a robust look at cognition after the ICU, which is getting increasing attention.

"We had a much more extensive cognitive battery we performed on patients than in previous studies," Dr. Hughes said, "and it's important that we did not find a difference in either the main cognition or the other cognitive scores between the two agents."

Enrollment was completed before the pandemic, but he said the results are relevant to COVID-19 patients because those who are on ventilators in the ICU are in a sick, septic-shock cohort.

"COVID patients would be the type of patients we enrolled in this study," he said, "with the high severity of illness and the infection on top of being on a ventilator. We know that sedation regimens have been challenging in COVID patients."

Dr. Hughes and Dr. Kane-Gill have disclosed no relevant financial relationships.

A version of this article first appeared on Medscape.com.

In the Literature

Clinician reviews of HM-centric research

By Haley Briggs, PA-C; Khooshbu Dayton, MD; Reem Hanna, MD; Mark Kissler, MD; Maria Klimenko, MD; Robert Metter, MD; Joshua Raines, MD; Alexander Sun, MD; Michael Tozier, MD; Bethany Zablotsky, PA-C

Division of Hospital Medicine, University of Colorado School of Medicine, Aurora

IN THIS ISSUE

By Haley Briggs, PA-C

1 Systemic corticosteroids associated with lower mortality in critically ill patients with COVID-19

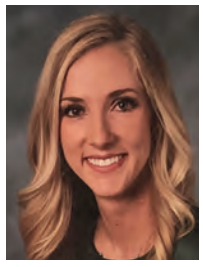
CLINICAL QUESTION: Is there an association between the use of systemic corticosteroids and decreased mortality among critically ill patients with coronavirus disease 2019 (COVID-19)?

BACKGROUND: Amid an ongoing global pandemic, there is increased need for safe and effective therapies to treat COVID-19. Corticosteroids are an attractive putative therapy since they are affordable, widely available, and generally well-tolerated. This meta-analysis is the first to address their use in critically ill patients with COVID-19.

STUDY DESIGN: Prospective meta-analysis of randomly controlled trials.

SETTING: Investigators systematically searched ClinicalTrials.org, the Chinese Clinical Trial Registry, the EU Clinical Trials Register, and the WHO Rapid Evidence Appraisal for COVID-19 Therapies (REACT) Working Group to identify open prospective, randomized, controlled studies evaluating the therapeutic efficacy of corticosteroids in treating critically ill patients with COVID-19.

SYNOPSIS: Seven trials met criteria to be included in the meta-analysis. Of a total of 1,703 patients, 678 were randomized to corticosteroids and 1,025 to usual care or placebo. Median age was 60 years, and 29% of patients were women. "Critically ill" varied from a 6 L/min oxygen requirement to need for intubation/mechanical ventilation. The primary outcome was 28-day all-cause mortality. There were 222 deaths (32.7%) among patients randomized to corticosteroids and 425 deaths (41.4%) among patients randomized to usual care or placebo (odds ratio, 0.66; 95% confidence interval, 0.53-0.82; *P* less than .001).



Ms. Briggs

Limitations include inconsistencies between trials based on varying days of reported mortality and inconsistent reporting of adverse events. Furthermore, the analysis could not assess the optimal dose and duration of treatment.

BOTTOM LINE: Administration of systemic corticosteroids is associated with a reduced 28-day all-cause mortality in critically ill patients with COVID-19.

CITATION: The WHO REACT Working Group. Association between administration of systemic corticosteroids and mortality among critically ill patients with COVID-19: A meta-analysis. JAMA Intern Med. 2020;324(13):1330-41. doi: 10.1001/jama.2020.17023.

Ms. Briggs is a clinical instructor in the division of hospital medicine at the University of Colorado, Aurora.

By Khooshbu Dayton, MD

2 Over-the-scope clip an effective initial treatment for severe non-variceal upper GI bleeding

CLINICAL QUESTION: Do over-the-scope clips (OTSC) improve patient outcomes, compared with standard hemostasis in initial endoscopic treatment of severe nonvariceal upper gastrointestinal bleeds (NVUGIB)?

BACKGROUND: Recurrent gastrointestinal bleeding is common in NVUGIBs (bleeding ulcers or Dieulafoy lesions) and can cause significant morbidity and mortality. There have been no randomized controlled trials comparing initial treatment with OTSC vs. standard endoscopic treatments.

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

SETTING: Two academic medical centers.

SYNOPSIS: Of patients meeting clinical and endoscopic parameters (ulcers, Dieulafoy lesions, or stigmata of recent hemorrhage [SRH]), 53 were randomized to OTSC or standard endoscopic hemostasis arms. Patients had similar baseline risk factors and were followed prospectively for 30 days. There was a significant reduction in rate of rebleeding in the OTSC vs. standard endoscopic hemostasis group (4% vs. 29%). Number needed to treat was 4. There was also a lower rate of severe complications and red blood cell (RBC) transfusions in the OTSC group, compared with the control group (0% vs. 14%). All patients with rebleeding had SRH on endoscopy.

Generalization may be limited in some hospitalized patients since only two centers participated and patients with refractory shock, severe hemorrhage (transfusion of greater than 6 units RBCs), or malignancy with less than 30-day predicted survival were excluded.

Dr. Dayton

BOTTOM LINE: Initial treatment with OTSC reduced rates of rebleeding, severe complications, and RBC transfusions, compared with standard endoscopic hemostasis, in patients with severe NVUGIBs. Patients with major SRH (active bleed, visible vessel, adherent clot) benefitted significantly from OTSC; however, those with lesser SRH (oozing, flat spots) did not benefit.

CITATION: Jensen DM et al. Randomized controlled trial of over-the-scope clip as initial treatment of severe non-variceal upper gastrointestinal bleeding. Clin Gastroenterol Hepatol. 2020 Aug 20:S1542-3565(20)31155-1. doi: 10.1016/j.cgh.2020.08.046.

Dr. Dayton is assistant professor in the division of hospital medicine at the University of Colorado, Aurora.

By Reem Hanna, MD

3 Drug-coated balloon angioplasty superior to standard angioplasty for dysfunctional dialysis AVFs

CLINICAL QUESTION: Does drug-coated balloon angioplasty have better outcomes than standard angioplasty in vascular stenosis of arteriovenous fistulas?

BACKGROUND: Vascular stenosis of arteriovenous fistulas (AVFs) is common and can lead to inadequate hemodialysis. With standard angioplasty, about 50% of patients require repeat intervention within 6 months. Paclitaxel drug-coated balloon angioplasty has been shown to

Continued on following page

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be effective and safe in the femoral artery, but its efficacy and safety in patients with dysfunctional fistulas has yet to be determined.

STUDY DESIGN: Prospective, single-blind, randomized, controlled trial.

SETTING: Twenty-nine sites in the United States, Japan, and New Zealand.

SYNOPSIS: Of participants with new or restenotic lesions in native upper-extremity AVFs, 330 were enrolled. Following angioplasty, 170 patients were treated with a drug-coated balloon, and 160 were treated with a standard balloon. During the 6 months after index procedure, target-lesion primary patency was maintained in 82.2% (125 of 152) in the drug-coated balloon group versus 59.5% (88 of 148) in the standard-balloon group (*P* less than .001). Serious adverse events within 30 days were compared, and the drug-coated balloon was found to be noninferior to the standard balloon (4.2% [7 of 166] and 4.4% [7 of 158], respectively; *P* = .002 for noninferiority).

Dr. Hanna

Limitations of this study include the lack of a double-blind trial design, industry sponsorship, and a short follow-up period.

BOTTOM LINE: Drug-coated balloon angioplasty is superior to standard angioplasty in achieving and maintaining patency of stenotic or restenotic arteriovenous fistulas without an increase in serious adverse events.

CITATION: Lookstein RA et al. Drug-coated balloons for dysfunctional dialysis arteriovenous fistulas. N Engl J Med. 2020;383(8):733-42. doi: 10.1056/ NEJMoa1914617.

Dr. Hanna is assistant professor in the division of hospital medicine at the University of Colorado, Aurora.

"Among patients with heart failure with reduced ejection fraction already on recommended goal-directed therapy, adding empagliflozin resulted in a lower risk of hospitalization for HF, regardless of the presence of diabetes."

By Mark Kissler, MD

4 Oral fluoxetine does not improve functional outcome after acute stroke

CLINICAL QUESTION: Does daily oral fluoxetine decrease disability at 6 months after acute stroke?

BACKGROUND: Currently, there are conflicting data about the role of selective serotonin reuptake inhibitors (SSRIs) following acute stroke. Several prior studies, including a 2011 randomized trial (FLAME), reported improved outcomes with SSRIs. AFFINITY is part of a three-trial effort (including FOCUS and EFFECTS) to better characterize the role of SSRIs after acute stroke.

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

SETTING: Forty-three hospital stroke units in Australia, New Zealand, and Vietnam.

SYNOPSIS: In a sample of 1,280 poststroke patients, 20 mg fluoxetine daily for 6 months did not improve disability scores, as measured by the modified Rankin Scale (mRS), when compared with placebo. Importantly, patients in the treatment group also had significantly increased risk of falls, bone fracture, and seizures.

Strengths of the trial include ethnic diversity and adherence to the assigned groups. The study was slightly underpowered (data was calculated for 1,256 patients, with plan for 1,440 based on power analysis). The results of this trial are consistent with those seen in FOCUS and EFFECTS and with a Cochrane review of controlled trials of fluoxetine following acute stroke.

Dr. Kissler

The question remains whether patients with more severe stroke may still derive some benefit from SSRIs, as patients in AFFINITY had lower NIH stroke scale scores than those in the FLAME trial.

BOTTOM LINE: When added to multidisciplinary stroke care, daily fluoxetine does not significantly improve functional status at 6 months and is associated with increased adverse events.

CITATION: Hankey GJ et al. Safety and efficacy of fluoxetine on functional outcome after acute stroke (AFFINITY): A randomised, double-blind, placebo-controlled trial. Lancet Nuerol. 2020;19:651-60. doi: 10.1016/S1474-4422(20)30207-6.

Dr. Kissler is a clinical instructor in the division of hospital medicine at the University of Colorado, Aurora.

By Maria Klimenko, MD

5 Empagliflozin reduces HF hospitalizations in HFrEF patients with or without diabetes

CLINICAL QUESTION: Does empagliflozin reduce the risk of heart failure events in patients with HFrEF regardless of diabetes status?

Dr. Klimenko

BACKGROUND: The recent Dapagliflozin in Patients With Heart Failure and Reduced Ejection Fraction (DAPA-HF) trial showed that dapagliflozin reduces absolute risk for heart failure (HF) hospitalization and cardiovascular death among individuals with heart failure with reduced ejection fraction (HFrEF), regardless of the presence of diabetes. The study reviewed here is the second largest trial that evaluates the effect of sodium glucose cotransporter-2 (SGLT2) inhibitors in patients with HFrEF, with or without diabetes.

STUDY DESIGN: Double-blind, randomized, placebo-controlled trial.

SETTING: International, multicenter trial.

SYNOPSIS: Of patients with class II-IV HF and ejection fraction less than 40% and already on recommended goal-directed therapy, with or without diabetes, 3,730 received empagliflozin (10 mg daily) or placebo and were followed for a median of 16 months. Fewer patients on empagliflozin required hospitalization for HF, compared with placebo (13.2% vs. 18.3%, number needed to treat 19). There was no significant difference in cardiovascular death. Annual rate of decline in estimated glomerular filtration rate was also slower in the empagliflozin group (–0.55 vs. –2.28 mL/min per 1.73 m^2 of BSA/year). The effect of empagliflozin was consistent in patients, regardless of the presence of diabetes. Uncomplicated genital tract infection was more frequent with empagliflozin (1.7% vs 0.6%).

Limitations of this study include that it was industry sponsored and that only 24% of the study participants were women and 70% were white; however, these demographics are similar to study populations in other trials.

BOTTOM LINE: Among patients with HFrEF already on recommended goal-directed therapy, adding empagliflozin resulted in a lower risk of hospitalization for HF, regardless of the presence of diabetes.

CITATION: Packer M et al. Cardiovascular and renal outcomes with empagliflozin in heart failure. N Engl J Med. 2020 Oct 8;383(15):1413-24. doi: 10.1056/NEJMoa2022190.

Dr. Klimenko is assistant professor in the division of hospital medicine at the University of Colorado, Aurora.

By Robert Metter, MD

6 Postoperative atrial fibrillation is associated with stroke risk

CLINICAL QUESTION: Is new-onset atrial fibrillation in the postoperative setting associated with increased risk of stroke?

BACKGROUND: New-onset postoperative atrial fibrillation (AFib) is often treated as a temporary phenomenon because of postoperative stress and inflammation. It is unknown whether it is associated with increased risk of subsequent AFib and/or stroke.

STUDY DESIGN: Retrospective cohort study.

SETTING: Postoperative patients in Olmsted County, Minn.

SYNOPSIS: Of patients who had

SHORT TAKES

Bedside optic nerve ultrasonography for diagnosing increased intracranial pressure

A systematic review and meta-analysis of optic nerve ultrasonography found that a normal optic nerve sheath diameter (less than 5.0 mm) had a high sensitivity and low negative likelihood ratio, which may help rule out increased intracranial pressure (ICP). An elevated diameter (greater than or equal to 5.0 mm) had a high specificity and positive likelihood ratio indicating increased ICP and need for additional confirmatory testing.

CITATION: Koziarz A et al. Bedside optic nerve ultrasonography for diagnosing increased intracranial pressure: a systematic review and meta-analysis. Ann Intern Med. 2019 Dec 17;171(12):896-905. doi: 10.7326/M19-0812.

SHORT TAKES

SARS-CoV-2 RNA presence in renal tissue associated with AKI and reduced survival

In a postmortem series of 63 patients with SARS-CoV-2 respiratory infection, SARS-CoV-2 viral RNA was detected in a higher percentage of patients with acute kidney injury than without and was associated with a reduction in survival time.

CITATION: Braun F et al. SARS-CoV-2 renal tropism associates with acute kidney injury. Lancet. 2020 Aug 29;396:598-98. doi: 10.1016/S0140-6736(20)31759-1.

Aspirin reduces incidence of colorectal cancer in Lynch Syndrome

A 10-year follow-up of patients with Lynch syndrome randomized to aspirin vs. placebo showed a 4% absolute risk reduction of colorectal cancer, although there was no reduction in other cancers associated with Lynch Syndrome.

CITATION: Burn J et al. Cancer prevention with aspirin in hereditary colorectal cancer (Lynch syndrome), 10-year follow-up and registry-based 20-year data in the CAPP2 study: A double-blind, randomised, placebo-controlled trial. The Lancet. 2020;395(10240):1855-63. doi: 10.1016/s0140-6736(20)30366-4.

CITATION: Koziarz A et al. Bedside optic nerve ultrasonography for diagnosing increased intracranial pressure: a systematic review and meta-analysis. Ann Intern Med. 2019 Dec 17;171(12):896-905. doi: 10.7326/M19-0812.

"In patients with incompletely recovered COPD exacerbations, the addition of ciprofloxacin at 14 days did not impact the time to next exacerbation."

new-onset AFib within 30 days of undergoing noncardiac surgery under general anesthesia, 452 were matched 1:1 with non-AFib controls. Type of surgery was included in match criteria. Mean follow-up period was 5.4 years (interquartile range, 1.4-9.2). Hazard ratio for ischemic stroke or transient ischemic attack (TIA) for patients with postoperative AFib, compared with those without, was 2.69 (1.35-5.37); for subsequent AFib, the hazard ratio was 7.94 (4.85-12.98). Of note, CHADS2VASC scores were significantly higher in new-onset postoperative AFiv patients vs. those who did not develop postoperative AFib (median 4 vs. 3 [IQR, 2-5]; *P* less than .001).

This study suggests that postoperative AFib may not simply be a transient arrhythmia limited to the postoperative period and is associated with increased risk of stroke and TIA. Further studies are needed to determine whether or not anticoagulation is effective in reducing this risk.

Dr. Metter

BOTTOM LINE: New-onset AFib after noncardiac surgery is associated with increased risk of stroke or TIA.

CITATION: Siontis KC et al. Association of new-onset atrial fibrillation after noncardiac surgery with subsequent stroke and transient ischemic attack. JAMA. 2020 Sep 1;324(9):871-8. doi: 10.1001/jama.2020.12518

Dr. Metter is assistant professor in the division of hospital medicine at the University of Colorado, Aurora.

By Joshua Raines, MD

7 Ciprofloxacin not effective in treatment of incompletely recovered COPD exacerbations

CLINICAL QUESTION: In patients with incompletely recovered chronic obstructive pulmonary disease exacerbations, does additional treatment with ciprofloxacin impact time to next exacerbation?

BACKGROUND: Chronic obstructive pulmonary disease (COPD) exacerbations are associated with accelerated lung function decline and increased mortality. By 5 weeks after exacerbation, 25% of patients do not recover to baseline, and by 3 months, 33% do not recover. An elevated c-reactive protein (CRP) at 14 days after exacerbation has been associated with increased risk of recurrent exacerbations. This finding suggests that unresolved bacterial infections may contribute to prolonged symptoms, prompting the hypothesis that additional antibiotics may provide a benefit.

Dr. Raines

STUDY DESIGN: Double-blind, randomized, placebo-controlled trial.

SETTING: Four academic hospitals in the United Kingdom.

SYNOPSIS: Of patients with a recent COPD exacerbation who had persistent symptoms or a CRP greater than 8 mg/L, 144 were randomized to ciprofloxacin vs. placebo. Inclusion criteria included patients older than 45 years of age and GOLD stage II-IV COPD. There was no significant difference between the groups in the primary outcome of time to next exacerbation within a 90-day follow-up. Prespecified secondary outcomes, including median time to exacerbation, duration of symptoms, changes in spirometry, quality of life, and CRP levels, also showed no difference. The lack of improvement with ciprofloxacin suggests that persistent symptoms and/or CRP elevations are driven by airway inflammation, rather than bacterial infection. The small number of enrolled patients does raise the possibility of a type II error, or failure to reject the null hypothesis.

BOTTOM LINE: In patients with incompletely recovered COPD exacerbations, the addition of ciprofloxacin at 14 days did not impact the time to next exacerbation.

CITATION: Ritchie AI et al. Targeted retreatment of incompletely recovered chronic obstructive pulmonary disease exacerbations with ciprofloxacin: A double-blind, randomized, placebo-controlled, multicenter, phase 3 clinical trial. American Journal of Respiratory and Critical Care Medicine. 2020;202(4):549-557.doi: 10.1164/rccm.201910-2058oc.

Dr. Raines is clinical instructor in the division of hospital medicine at the University of Colorado, Aurora.

By Alexander Sun, MD

8 Morphine is safe and may improve health status in patients with COPD

CLINICAL QUESTION: Does low-dose, sustained-release morphine safely improve disease-specific health status in chronic obstructive pulmonary disease patients with chronic breathlessness?

BACKGROUND: Breathlessness is common in chronic obstructive pulmonary disease (COPD) and can have

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a detrimental effect on health status. Low-dose opioids have been used for treatment of chronic breathlessness, but prior studies were limited by sample size or duration, leaving concerns about safety and efficacy.

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

SETTING: A pulmonary rehabilitation center and two hospitals in the Netherlands.

SYNOPSIS: Of patients with COPD who had completed pulmonary rehabilitation and had modified Medical Research Council (mMRC) breathlessness grades 2, 3, or 4, 111 were randomized to 10 mg oral sustained-release morphine vs. placebo twice daily for 4 weeks. Patients receiving morphine had improved COPD assessment test scores (–2.18 points; P = .03). In subgroup analysis of mMRC grades 3-4, there was no significant change.

Dr. Sun

There was no difference in breathlessness. Patients on morphine had no significant differences in $PaCO_2$ or amount of time nocturnal SpO_2 was below 90%. Patients experienced similar overall incidence of any adverse event (nausea, vomiting, drowsiness, constipation, and sleepiness), COPD exacerbations, and hospitalizations. Patients on morphine had more constipation. The study was limited by decreased enrollment, with only 27% of eligible patients giving consent, leading to inclusion of mMRC grade 2 patients.

BOTTOM LINE: Low-dose, sustained-release morphine may improve COPD specific health status without affecting $PaCO_2$ or causing other serious adverse effects.

CITATION: Verberkt CA et al. Effect of sustained-release morphine for refractory breathlessness in chronic obstructive pulmonary disease on health status: A randomized clinical trial. JAMA Intern Med. 2020;e203134. doi: 10.1001/jamainternmed. 2020.3134.

Dr. Sun is assistant professor in the division of hospital medicine at the University of Colorado, Aurora.

By Michael Tozier, MD

9 Low-dose edoxaban cuts stroke incidence in elderly patients with AFib and bleeding risk factors

CLINICAL QUESTION: Is low-dose edoxaban effective and safe for stroke prevention in elderly patients with atrial fibrillation who would otherwise not be prescribed anticoagulation because of bleeding risk?

BACKGROUND: In patients with nonvalvular atrial fibrillation (AFib), age is associated with increased stroke risk but is also an independent risk factor for bleeding. Prior retrospective studies and meta-analyses have shown elderly patients generally benefit from anticoagulation with direct-acting anticoagulants; however, there have been no randomized trials evaluating efficacy and safety in very elderly patients for whom providers would otherwise not prescribe anticoagulation because bleeding risk.

STUDY DESIGN: Industry-sponsored, multicenter, block-randomized, double-blinded, placebo-controlled trial.

SETTING: Multiple centers in Japan.

SYNOPSIS: Patients were randomized to 15 mg daily edoxaban or placebo, with 492 patients per arm. Participants were over 80 years of age with nonvalvular AFib and were not on anticoagulation because of renal impairment (creatin clearance, 15-30 mL/min), bleeding history, weight less than 45 kg, NSAID use, or antiplatelet use.

Dr. Tozier

Average age was 87 years, weight 50.6 kg, body mass index 22, CHADS2-VASc 4.9, HAS-BLED 2.3, and CrCl 36.3 mL/min. Median follow-up was 466 days. In the edoxaban arm, the rate of the primary efficacy outcome of stroke or systemic embolism was 2.3% per patient year vs. 6.7% with placebo (hazard ratio, 0.34; confidence interval, 0.19-0.61), driven by ischemic stroke. The primary safety outcome of major bleeding occurred at 3.3% per patient year vs. 1.8 % with placebo (HR, 1.87; CI, 0.9-3.89), driven by gastrointestinal bleeding.

Limitations include a high withdrawal rate, with 81 and 75 withdrawals in the edoxaban and placebo arms, respectively. The very elderly, low body mass index, Japanese population in this study may limit external validity.

BOTTOM LINE: In this study of patients older than 80 years with AFib and higher bleeding risk, for every 100 patients treated with low-dose edoxaban, 4 fewer patients experienced ischemic strokes and 1 additional patient experienced gastrointestinal bleeding, compared with placebo.

CITATION: Okumura K et al. Low-dose edoxaban in very elderly patients with atrial fibrillation. N Engl J Med. 2020;383:1735-45. doi: 10.1056/NEJMoa 2012883.

Dr. Tozier is a clinical instructor in the division of hospital medicine at the University of Colorado, Aurora.

> *"Post-PCI genotype-guided therapy for CYP2C19 loss-of-function carriers may not be more effective than conventional therapy with clopidogrel at preventing recurrent ischemic events."*

By Bethany Zablotsky, PA-C

10 Genotype-guided CYP2Y12-inhibitor selection and ischemic events in post-PCI patients

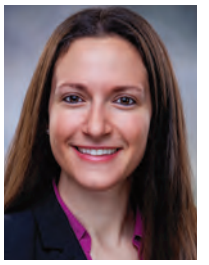
CLINICAL QUESTION: Is genotype-guided oral CYP2Y12 inhibitor selection more effective than traditional clopidogrel therapy at preventing recurrent ischemic events in treatment of patients post–percutaneous coronary intervention?

BACKGROUND: Current guidelines do not recommend genetic testing prior to starting clopidogrel, a commonly used oral platelet adenosine diphosphate CYP2Y12 receptor inhibitor that must be metabolized by CYP2C19 to its active metabolite. There are concerns that poor metabolizers of clopidogrel may have a higher incidence of ischemic events.

STUDY DESIGN: Open-label, randomized, clinical trial.

SETTING: Forty medical centers in the United States, Canada, South Korea, and Mexico.

SYNOPSIS: Of patients who underwent percutaneous coronary intervention (PCI), 5,302 were divided into a genotype-guided group or conventional-therapy group. In the genotype-guided group, patients identified as having CYP2C19 loss-of-function carriers were prescribed ticagrelor, and the rest were given clopidogrel. Everyone in the conventional group received clopidogrel. All patients received aspirin as well. Primary end point was composite cardiovascular death, myocardial infarction, stroke, stent thrombosis, and recurrent ischemia over 12 months. These events occurred in 5.85% of the genotype-guided group and 4.03% of the conventional-therapy group. This absolute difference of 1.8% did not meet the pre-established superiority criteria hazard ratio of 0.66, 95% confidence interval, 0.43-1.02; P = .6.



Ms. Zablotsky

Study limitations included noncompliance and individual preference to use clopidogrel instead of the assigned ticagrelor. The trial was also underpowered to detect a relative risk reduction less than 50%.

BOTTOM LINE: Post-PCI genotype-guided therapy for CYP2C19 loss-of-function carriers may not be more effective than conventional therapy with clopidogrel at preventing recurrent ischemic events; however, a better powered study may yield different results.

CITATION: Pereira NL et al. Effect of genotype-guided oral P2Y12 inhibitor selection vs conventional clopidogrel therapy on ischemic outcomes after percutaneous coronary intervention: The TAILOR-PCI randomized clinical trial. JAMA. 2020;324(8):761-71. doi: 10.1001/jama.2020.12443

Ms. Zablotsky is an Advanced Practice Fellow in Hospital Medicine at the University of Colorado, Aurora.

SHORT TAKES

Cancer is rare in primary care patients with unexpected weight loss

A retrospective study of 63,973 adults with unexpected weight loss in primary care offices found that only 1.4% were subsequently diagnosed with cancer within 6 months. Patients with greater than 3% risk of cancer warranting further investigation included men older than 50 years with a smoking history and patients with certain clinical features or lab abnormalities associated with malignancy.

CITATION: Nicholson BD et al. Prioritising primary care patients with unexpected weight loss for cancer investigation: Diagnostic accuracy study. BMJ. 2020;370:m2651. Published 2020 Aug 13. doi: 10.1136/bmj.m2651.

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When the X-Waiver gets X'ed

Implications for hospitalists

By Richard Bottner, DHA, PA-C, and Marlene Martin, MD

There are two pandemics permeating the United States: COVID-19 and addiction. To date, more than 468,000 people have died from COVID-19 in the United States. In the 12-month period ending in May 2020, over 80,000 died from a drug related cause – the highest number ever recorded in a year. Many of these deaths involved opioids.

COVID-19 has worsened outcomes for people with addiction. There is less access to treatment, increased isolation, and worsening psychosocial and economic stressors. These factors may drive new, increased, or more risky substance use and return to use for people in recovery. As hospitalists, we have been responders in both COVID-19 and our country's worsening overdose and addiction crisis.

In December 2020's *Journal of Hospital Medicine* article "Converging crises: Caring for hospitalized adults with substance use disorder in the time of COVID-19" (2020 Oct. 15[10]:628-30), Dr. Honora Englander and her coauthors called on hospitalists to actively engage patients with substance use disorders during hospitalization. The article highlights the colliding crises of addiction and COVID-19 and provides eight practical approaches for hospitalists to address substance use disorders during the pandemic, including initiating buprenorphine for opioid withdrawal and prescribing it for opioid use disorder (OUD) treatment.

Buprenorphine effectively treats opioid withdrawal, reduces OUD-related mortality, and decreases hospital readmissions related to OUD. To prescribe buprenorphine for OUD in the outpatient setting or on hospital discharge, providers need an X-Waiver. The X-Waiver is a result of the Drug Addiction Treatment Act 2000 (DATA 2000), which was enacted in 2000. It permits physicians to prescribe buprenorphine for OUD treatment after an 8-hour training. In 2016, the Comprehensive Addiction and Recovery Act extended buprenorphine prescribing to physician assistants (PAs) and advanced-practice nurses (APNs). However, PAs and APNs are required to complete a 24-hour training to receive the waiver.

> *"As buprenorphine becomes more accessible, we can be leaders in further adopting it (and other substance use disorder medications ...)"*

On Jan. 14, 2021, the U.S. Department of Health & Human Services under the Trump administration announced it was removing the X-Waiver training previously required for physicians to prescribe this life-saving medication. However, on Jan. 20, 2021, the Biden administration froze the training requirement removal pending a 60-day review. The excitement about the waiver's eradication further dampened on Jan. 25, when the plan was halted because of procedural factors coupled with the concern that HHS may not have the authority to void requirements mandated by Congress.

Many of us continue to be hopeful that the X-Waiver will soon be gone. The Substance Abuse and Mental Health Services Administration has committed to working with federal agencies to increase access to buprenorphine. The Biden administration also committed to addressing our country's addiction crisis, including a plan to "make effective prevention, treatment, and recovery services available to all, including through a $125 billion federal investment."

Despite the pause on HHS's recent attempt to "X the X-Waiver," we now have renewed attention and interest in this critical issue and an opportunity for greater and longer-lasting legislative impact. SHM supports that Congress repeal the legislative requirement for buprenorphine training dictated by DATA 2000 so that it cannot be rolled back by future administrations. To further increase access to buprenorphine treatment, the training requirement should be removed for all providers who care for individuals with OUD.

The X-Waiver has been a barrier to hospitalist adoption of this critical, life-saving medication. HHS's stance to nix the waiver, though fleeting, should be interpreted as an urgent call to the medical community, including us as hospitalists, to learn about buprenorphine with the many resources available (see Table 1). As hospital medicine providers, we can order buprenorphine for patients with OUD during hospitalization. It is discharge prescriptions that have been limited to providers with an X-Waiver.

What can we do now to prepare for the eventual X-Waiver training removal? We can start by educating ourselves with the resources listed in Table 1. Those of us who are already buprenorphine champions could lead trainings in our home institutions. In a future without the waiver there will be more flexibility to develop hospitalist-focused buprenorphine trainings, as the previous ones were geared for outpatient providers. Hospitalist organizations could support hospitalist-specific buprenorphine trainings and extend the models to include additional medications for addiction.

There is a large body of evidence regarding buprenorphine's safety and efficacy in OUD treatment. With a worsening overdose crisis, there have been increasing opioid-related hospitalizations. When new medications for diabetes, hypertension, or DVT treatment become available, as hospitalists we incorporate them into our toolbox. As buprenorphine becomes more accessible, we can be leaders in further adopting it (and other substance use disorder medications while we are at it) as our standard of care for people with OUD.

Dr. Bottner

Dr. Martin

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Table 1. Resources for buprenorphine education

Resource	Description
Providers Clinical Support System	Provides buprenorphine education, including a free X-Waiver training
California Bridge program	Resources include ordersets, workflows, and lectures on substance use disorder treatment
SAMHSA Treatment Improvement Protocol 63	Reviews medications for OUD and how to address OUD across practice settings as well as other support strategies
SHM Substance Use Disorder Special Interest Group	Regular venue to support hospital efforts to improve substance use disorder care and advocacy
UCSF* National Clinician Consultation Center Substance Use Warmline	Peer-to-peer consultation for providers available Monday-Friday from 9 a.m. to 8 p.m. ET at 855-300-3595
American Society of Addiction Medicine	Provides multiple X-Waiver training options

*University of California, San Francisco

Source: Dr. Bottner, Dr. Martin

Who do you call in those late, quiet hours, when all seems lost?

Selfless acts, fortitude of spirit

By Jordan Messler, MD, SFHM

I swear by Apollo Physician and Asclepius and Hygeia and Panacea and all the gods and goddesses, making them my witnesses, that I will fulfill according to my ability and judgment this oath and this covenant.

On my desk sits a bust of Hygeia, a mask from Venice, next to a small sculpture and a figurine of the plague doctor. Nearby, there is a Klimt close-up of Hygeia, a postcard portraying Asclepius, St. Sebastian paintings, and quotes from Maimonides. They whisper secrets and nod to the challenges of the past. These medical specters, ancient voices of the past, keep me grounded. They speak, listen, and elevate me, too. They bring life into my otherwise quiet room.

We all began our careers swearing to Apollo, Asclepius, Hygeia, and Panacea when we recited the Hippocratic Oath. I call upon them, and other gods and totems, and saints and ancient healers, now more than ever. As an atheist, I don't appeal to them as prayers, but as Hippocrates intended. I look to their supernatural healing powers as a source of strength and as revealers of the natural and observable phenomena.

> *"Hospitalists march into the hospital risking their lives. We always wear PPE for MRSA, ESBL, or C. diff. And enter reverse isolation rooms wearing N95s for possible TB cases. But those don't elevate to the volume, to the same fear, as gowning up for COVID-19."*

Apollo was one of the Twelve Olympians, a God of medicine, father of Asclepius. He was a healer, though his arrows also bore the plagues of the Gods.

For centuries, Apollo was found floating above the marble dissection table in the Bologna anatomical theater, guiding students who dove into the secrets of the human body.

Asclepius, son of Apollo, was hailed as a god of medicine. He healed many from plagues at his temples throughout the Ancient Greek and Roman empires. He was mentored in the healing arts by the centaur, Chiron. His many daughters and sons represent various aspects of medicine including cures, healing, recovery, sanitation, and beauty. To Asclepius, temples were places of healing, an ancient ancestor to modern hospitals.

Two of his daughters, Panacea and Hygeia, gave us the healing words of panacea and hygiene. Today, these acts of hygiene, handwashing, mask-wearing, and sanitation are discussed across the world louder than ever. While we're all wishing for a panacea, we know it will take all the attributes of medicine to get us through this pandemic.

Hospitalists are part of the frontline teams facing this pandemic head-on. Gowning up for MRSA isolation seems quaint nowadays.

My attendings spoke of their fears, up against the unknown while on service in the 1980s, when HIV appeared; 2014 brought the Ebola biocontainment units. Now, this generation works daily against a modern plague, where every day is a risk of exposure. When every patient is in isolation, the garb begins to reflect the PPE that emerged during a 17th-century plague epidemics, the plague doctor outfit.

Godfather II fans recall the famous portrayal of the Aug. 16th festival to San Rocco play out in the streets of New York. For those stricken with COVID-19 and recovered, you emulate San Rocco, in your continued return to service.

The Scuola Grande di San Rocco, in Venice, is the epitome of healing and greatness in one building. Tintoretto, the great Venetian painter, assembled the story of healing through art and portraits of San Rocco. The scuola, a confraternity, was a community of healers, gathered in one place to look after the less fortunate.

Hospitalists march into the hospital risking their lives. We always wear PPE for MRSA, ESBL, or *C. diff*. And enter reverse isolation rooms wearing N95s for possible TB cases. But those don't elevate to the volume, to the same fear, as gowning up for COVID-19.

Hospitalists, frontline health care workers, embody the story of San Sebastian, another plague saint who absorbed the arrows, the symbolic plagues, onto his own shoulders so no one else had to bear them. San Sebastian was a Christian persecuted by a Roman emperor once his beliefs were discovered. He is often laden with arrows in spots where buboes would have appeared: the armpits and the groin. His sacrifice for others' recovery became a symbol of absorbing the plague, the wounds, and the impact of the arrows.

This sacrifice epitomizes the daily work the frontline nurses, ER docs, intensivists, hospitalists, and the entire hospital staff perform daily, bearing the slung arrows of coronavirus.

One of the images I think of frequently during this time lies atop Castel San Angelo in Rome. Built in 161 AD, it has served as a mausoleum, prison, papal residence, and is currently a museum. Atop San'Angelo stands St. Michael, the destroyer of the dragon. He is sheathing his sword in representation of the end of the plague in 590.

The arrows flow, yet the sword will be sheathed. Evil will be halted. The stories of these ancient totems and powers can give us strength as they remind us of the work that was done for centuries: pestilence, famine, war. The great killers never go away completely.

Dr. Messler is the executive director, quality initiatives at Glytec and works as a hospitalist at Morton Plant Hospitalist group in Clearwater, Fla.

Fast forward to today

These medical specters serve as reminders of what makes the field of medicine so inspiring: the selfless acts, the fortitude of spirit, the healers, the long history, and the shoulders of giants we stand upon. From these stories, we spring the healing waters we bathe in to give us the courage to wake up and care for our patients each day. These specters encourage us to defeat any and all of the scourges that come our way.

I hear and read stories about the frontline heroes, the vaccine makers, the PPE creators, the health care workers, grocery store clerks, and teachers. I'm honored to hear of these stories and your sacrifices. I'm inspired to continue upholding your essence, your fight, and your stories. In keeping with ancient empire metaphors, you are taking the slings of the diseased arrows flying to our brethren as you try to keep yourself and others safe.

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The sheathing of this sword will come. These arrows will be silenced. But until then, I lean on these pictures, these stories, and these saints, to give us all the strength to wake up each morning and continue healing.

They serve as reminders of what makes the field of medicine so great: the selfless acts, the fortitude of spirit, the healers, the long history, and the shoulders of giants we stand upon. From these stories spring the healing waters we bathe in to give us the courage to wake up and care for our patients each day and defeat any and all scourges that come our way.

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The Hospitalist