

Dr. Ashley Jenkins, right, and Dr. Brian Herbst Jr., both of Cincinnati Children's Hospital Medical Center

POPCoRN mobilizes pediatric capacity during pandemic

Med-peds hospitalists were an organizing force

By Larry Beresford

As U.S. health care systems prepare for inpatient surges linked to hospitalizations of critically ill COVID-19 patients, two hospitalists with med-peds training (combined training in internal medicine and pediatrics) have launched an innovative solution to help facilities deal with the challenge.

The Pediatric Overflow Planning Contingency Response Network (POPCoRN) has quickly linked almost 400 physicians and other health professionals, including hospitalists, attending physicians, res-

idents, medical students, and nurses. The network wants to help provide more information about how pediatric-focused institutions can safely gear up to admit adult patients in children's hospitals, in order to offset the predicted demand for hospital beds for patients with COVID-19.

According to the POPCoRN website (www.popcorn-network.org), the majority of providers who have contacted the network say they have already started or are committed to planning for their pediatric facilities to be used for adult overflow. The Children's Hospital

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Lessons learned during the COVID-19 pandemic

By Jashanpreet Singh, MD, FACP, SFHM



Dr. Singh is currently the chief of inpatient operations at Adena Health System in Chillicothe, Ohio, where he also has key roles in medical informatics and health IT. He is also the president-elect of the Central Ohio Chapter of SHM.

Each day, we're inundated with news about the COVID-19 pandemic and how it continues to strain our health care system and resources. With more than 1.15 million positive cases in the United States and over 67,000 deaths as of this writing, it has been a scary yet humbling experience for everyone. There is no doubt this pandemic will be a defining moment in health care for several reasons. From supply chain disruptions and personal protective equipment (PPE) and ventilator shortages to exhausted caregivers – both physically and mentally – this event has pushed the envelope on finding answers from federal and state authorities. Hospital administrations are working harder than ever to rise to the challenge and do what is best for their frontline staff and, more importantly, the patients and the communities they serve.

The provider experience during COVID-19

Hospitalists are in a unique situation as frontline providers. Managing daily throughput of patients has always been a key role for the specialty. They also play an integral role in their own care teams alongside nurses, trainees, case managers, pharmacists, and others in cohorted COVID-19 units. Now more than ever, such a geographic placement of patients is quickly emerging as a must-have staffing model to reduce risk of cross-contamination and preserving critical PPE supplies. This heightened awareness, coupled with anxiety, sometimes leads to added stress and burnout risk for hospitalists.

Communication is critical in creating situational awareness and reducing anxiety within the teams. This is exactly where hospitalists can lead:

- Active presence in hospital incident command centers and infection control boards
- Close coordination with emergency medicine colleagues and bed placement navigators
- Development of protocols for appropriate testing
- Frequent daily huddles to discuss current state- and hospital-level testing guidelines
- Close involvement in the hospital operations committee

- Advocating for or securing more testing or supplies, especially PPE
- Effective communication about changes in PPE requirements and conservation strategies as per the Centers for Disease Control and Prevention, State Department of Health, and the hospital infection control board
- Crisis-driven changes, including development and review of triage and treatment protocols and elective procedure cancellations
- Census numbers and capacity/staffing adjustments within the team to meet temporary dips and surges in on-service patient volumes
- Frontline caregiver mental and physical health assessment

Daily huddles at key times (e.g., at shift start and end times) can help to identify these barriers. If operational issues arise, there should be a clear channel to escalate them to senior leadership.

Hospitalists could also use several strategies proven to improve staff morale and resilience. For instance, take this time to connect with friends and family virtually, unplug when off from work, explore one's spiritual self through meditation and prayers, spend time with nature, exercise daily, seek humor, and develop or work on one's hobby.

This essay is excerpted from an article that appeared originally on The Hospital Leader, the official blog of SHM. To read the complete article and other essays by hospitalists, visit thehospitalleader.org/.

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How to expand the APP role in a crisis

An opportunity to better appreciate the value of PAs, NPs

By Larry Beresford

Advanced practice providers – physician assistants and nurse practitioners – at the 733-bed Emory University Hospital in Atlanta are playing an expanded role in the admission of patients into the hospital, particularly those suspected of having COVID-19.

Before the pandemic crisis, evaluation visits by the APP would have been reviewed on the same day by the supervising physician through an in-person encounter with the patient. The new protocol is not outside of scope-of-practice regulations for APPs in Georgia or of the hospital's bylaws. But it offers a way to help limit the overall exposure of hospital staff to patients suspected of COVID-19 infection, and the total amount of time providers spend in such patients' room. Just one provider now needs to meet the patient during the admissions process, while the attending physician can fulfill a requirement for seeing the patient within 24 hours during rounds the following day. Emergency encounters would still be done as needed.

These protocols point toward future conversations about the limits to APPs' scope of practice, and whether more expansive approaches could be widely adopted once the current crisis is over, say advocates for the APPs' role.

"Our APPs are primarily doing the admissions to the hospital of COVID patients and of non-COVID patients, as we've always done. But with COVID-infected or -suspected patients, we're trying to minimize exposure for our providers," explained Susan Ortiz, a certified PA, lead APP at Emory University Hospital. "In this way, we can also see more patients more efficiently." Ms. Ortiz said she finds in talking to other APP leads in the Emory system that "each facility has its own culture and way of doing things. But for the most part, they're all trying to do something to limit providers' time in patients' rooms."

In response to the rapidly moving crisis, tactics to limit personnel in COVID patients' rooms to the "absolutely essential" include gathering much of the needed history and other information requested from the patient by telephone, Ms. Ortiz said. This can be done either over the patient's own cell phone or a phone placed in the room by hospital staff. Family members may be called to supplement this information, with the patient's consent.

Once vital sign monitoring equipment is hooked up, it is possible to monitor the patient's vital signs remotely without making frequent trips into the room. That way, in-person vital sign monitoring doesn't need to happen routinely – at least not as often. One observation by clinicians on Ms. Ortiz's team: listening for lung sounds with a stethoscope has not been shown to alter treatment for these patients. Once a chest x-ray

shows structural changes in a patient's lung, all lung exams are going to sound bad.

The admitting provider still needs to meet the patient in person for part of the admission visit and physical exam, but the amount of time spent in close personal contact with the patient can be much shorter, Ms. Ortiz said. For patients who are admitted, if there is a question about difficulty swallowing, they will see a speech pathologist, and if evidence of malnutrition, a nutritionist. "But we have to be extremely thoughtful about when people go into the room. So we are not

ordering these ancillary services as routinely as we do during non-COVID times," she said.

Realizing appropriate levels of fear

Emory's hospitalists are communicating daily about a rapidly changing situation. "We get a note by email every day, and we have a Dropbox account for downloading more information," Ms. Ortiz said. A joint on-call system is used to provide backup coverage of APPs at the seven Emory hospitals. When replacement shifts need filling in a hurry, practitioners are able to obtain emergency credentials at any of the other hospitals. "It's a voluntary process to sign up to be on-call," Ms. Ortiz said. So far, that has been sufficient.

All staff have their own level of "appropriate fear" of this infection, Ms. Ortiz noted. "We have an extremely supportive group here to back up those of us who, for good reason, don't want to be admitting the COVID patients." Ms. Ortiz opted out of doing COVID admissions because her husband's health places him at particular risk. "But with the cross-coverage we have, sometimes I'll provide assistance when needed if a patient is suspected of being infected." APPs are critical to Emory's hospital medicine group – not ancillaries. "Everyone here feels that way. So we want to give them a lot of support. We're all pitching in, doing it together," she said.

"We said when we started with this, a couple of weeks before the surge started, that you could volunteer to see COVID patients," said Emory hospitalist Jessica Nave, MD. "As we came to realize that the demand would be greater, we said you would need to opt out of seeing these patients, rather than opt in, and have a reason for doing so." An example is pregnant staff, of which there seems to be a lot at Emory right now, Dr. Nave said, or those who are immunocompromised for other reasons. Those who don't opt out are seeing the majority of the COVID patients, depending on actual need.

Dr. Nave is married to another hospitalist at Emory. "We can't isolate from each other or our children. He and I have a regimented protocol for

how we handle the risk, which includes taking off our shoes and clothes in the garage, showering and wiping down every place we might have touched. But those steps are not guarantees." Other staff at Emory are isolating from their families for weeks at a time. Emory has a conference hotel offering discounted rates to staff. Nine physicians at Emory have been tested for the infection based on presenting symptoms, but at press time none had tested positive.

Streamlining code blue

Another area in which Emory has revised its policies in response to COVID-19 is for in-hospital cardiac arrest code response. Codes are inherently unpredictable, and crowd control has always been an issue for them, Dr. Nave said. "Historically, you could have 15 or more people show up when a code was called. Now, more than ever, we need to limit the number of people involved, for the same reason, avoiding unnecessary patient contact."

The hospital's Resuscitation Committee took the lead on developing a new policy, approved by its Critical Care Committee and COVID Task Force, to limit the number of professionals in the room when running a code to an essential six: two doing chest compression, two managing airways, a code leader, and a critical care nurse. Outside the patient's door, wearing the same personal protective equipment (PPE), are a pharmacist, recorder, and runner. "If you're not one of those nine, you don't need to be involved

and should leave the area," Dr. Nave said.

Staff have been instructed that they need to don appropriate PPE, including gown, mask, and eye wear, before entering the room for a code – even if that delays the start of intervention. "We've also made a code kit for each unit with quickly accessible gowns and masks. It should be used only for code blues."

Increasing flexibility for the team

PAs and NPs in other locations are also exploring opportunities for gearing up to play larger roles in hospital care in the current crisis situation. The American Association of Physician Assistants has urged all U.S. governors to issue executive orders to waive state-specific licensing requirements for physician supervision or collaboration during the crisis, in order to increase flexibility of health care teams to deploy APPs.

AAPA believes the supervisory requirement is the biggest current barrier to mobilizing PAs and NPs. That includes those who have been furloughed from outpatient or other settings but are limited in their ability to contribute to the COVID crisis by the need to sign a supervision agreement with a physician at a new hospital.

The crisis is creating an opportunity to bet-

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Ms. Ortiz



Dr. Nave



Ms. Cardin



Ms. Scheffer

Modify risk factors to manage ICU delirium in patients with COVID-19

By Heidi Splete

MDedge News

CCOVID-19 patients treated in intensive care units are at increased risk for delirium, and a bedside risk management strategy based on modifiable risk factors can help prevent lingering effects on cognition, according to an article published in *Critical Care*.

Several factors can contribute to an increased risk of ICU delirium in COVID-19 patients, wrote Katarzyna Kotfis, MD, of Pomeranian Medical University, Szczecin, Poland, and colleagues.

"In patients with COVID-19, delirium may be a manifestation of direct central nervous system invasion, induction of CNS inflammatory mediators, a secondary effect of other organ system failure, an effect of sedative strategies, prolonged mechanical ventilation time, or environmental factors, including social isolation," they said.

Delirium in the context of COVID-19 can mean an early sign of infection, so patients should be screened using dedicated psychometric tools. Also, COVID-19 has been shown to cause pneumonia in elderly patients, who are at high risk

for severe pulmonary disease related to COVID-19 and for ICU delirium generally.

In addition, don't underestimate the impact of social isolation created by quarantines.

"What is needed now, is not only high-quality ICU care, concentrated on providing adequate respiratory support to critically ill patients, but an identification of the source and degree of mental and spiritual suffering of patients as well as their families to provide the most ethical and person-centered care during this humanitarian crisis," they wrote. However, nonpharmacologic interventions such as mobility outside the ICU room and interactions with family members are limited by the COVID-19 situation.

As for risk-reduction strategies, the researchers noted that "delirium in mechanically ventilated patients can be reduced dramatically to 50% using a culture of lighter sedation and mobilization via the implementation of the safety bundle called

the ABCDEFs promoted by the Society of Critical Care Medicine in their ICU Liberation Collaborative," although COVID-19 isolation is a barrier, they said.

The ABCDEF bundle consists of Assessment of pain, Both spontaneous awakening trials and spontaneous breathing trials, Choice of sedation, Delirium (hyperactive or hypoactive),

Early mobility, and Family presence; all of which are challenging in the COVID-19 environment, the researchers said.

They advised implementing easy screening methods for delirium to reduce the burden on medical staff, and emphasized the importance of regular patient orientation, despite social separation from family and caregivers.

"No drugs can be recommended for the prevention or treatment of ICU delirium other than avoidance of overuse of potent psychoactive agents like sedatives and neuromuscular blockers (NMB) unless patients absolutely require such manage-

ment," they added.

"Delirium is so common and so hard to manage in the COVID-19 population," Mangala Narasimhan, DO, of Northwell Health in New Hyde Park, N.Y., said in an interview. Delirium is impacted by many sources including a viral encephalopathy, the amount and duration of sedation medications, and prolonged intubation and hypoxemia, she said. "Managing the delirium allows you to wake the patient up successfully and without a lot of discoordination. This will help with weaning." Barriers to delirium management for COVID-19 patients include the length of time on a ventilator, as well as amount of sedatives and paralytics, and the added issues of renal insufficiency, she noted. The take-home message for clinicians is the need to perform weaning trials to manage delirium in the ICU. "We have to combat this delirium in order to be successful in taking these patients off of ventilators," she said.

"Adherence to the ABCDEF bundle can reduce the incidence of delirium, from approximately 75% of mechanically ventilated patients to 50% or less," David L. Bowton, MD, of Wake Forest Baptist Health in Winston-Salem, N.C., said in an interview.



Dr. Narasimhan



Dr. Bowton

Continued from previous page

ter appreciate the value PAs and NPs bring to health care, said Tracy Cardin, ACNP-BC, SFHM, vice president for advanced practice providers at Sound Physicians, a national hospitalist company based in Tacoma, Wash. The company recently sent a memo to the leadership of hospital sites at which it has contracts, requesting suspension of the hospitals' requirements for a daily physician supervisory visit for APPs – which can be a hurdle when trying to leverage all hands on deck in the crisis.

NPs and PAs are stepping up and volunteering for COVID patients, Ms. Cardin said. Some have even taken leaves from their jobs to go to New York to help out at the epicenter of the U.S. crisis. "They want to make a difference. We've been deploying nonhospitalist medicine APPs from surgery, primary care, and elsewhere, embedding them on the hospital medicine team."

Before the crisis, APPs at Sound Physicians weren't always able to practice at the top of their licenses, depending on the hospital setting, added Alicia Scheffer, CNP, the company's Great Lakes regional director for APPs. "Then COVID-19 showed up and really expedited conversations about how to maximize caseloads using APPs and about the fear of failing patients due to lack of capacity."

In several locales, Sound Physicians is using quarantined providers to do telephone triage, or staffing ICUs with APPs backed up by telemedicine. "In APP-led ICUs, where the nurses are leading, they are intubating patients, placing central lines, things we weren't allowed to do before," Ms. Scheffer said.

Embracing a spirit of improvisation

There is a lot of tension at Emory University Hospital these days, reflecting the fears and uncertainties about the crisis, Dr. Nave said. "But there's also a strangely powerful camaraderie like I've never seen before. When you walk onto the COVID units, you feel immediately bonded to the nurses, the techs, the phlebotomists. And you feel like you could talk about anything."

Changes such as those made at Emory have been talked about for a while, for example when hospitalists are having a busy night, she said. "But because this is a big cultural change, some physicians resisted it. We trust our APPs. But if the doctor's name is on a patient chart, they want to see the patient – just for their own comfort level."

Ms. Ortiz thinks the experience with the COVID crisis could help to advance the conversation about the appropriate role for APPs and

their scope of practice in hospital medicine, once the current crisis has passed. "People were used to always doing things a certain way. This experience, hopefully, will get us to the point where attending physicians have more comfort with the APP's ability to act autonomously," she said.

"We've also talked about piloting telemedicine examinations using Zoom," Dr. Nave added. "It's making us think a lot of remote cross-coverage could be done that way. We've talked about using the hospital's iPads with patients. This crisis really makes you think you want to innovate, in a spirit of improvisation," she said. "Now is the time to try some of these things."

Editors note: During the COVID-19 pandemic, many hospitals are seeing unprecedented volumes of patients requiring hospital medicine groups to stretch their current resources and recruit providers from outside their groups to bolster their inpatient services. The Society of Hospital Medicine has put together the following stepwise guide for onboarding traditional outpatient and subspecialty-based providers to work on general medicine wards: COVID-19 nonhospitalist onboarding resources – <https://www.hospitalmedicine.org/clinical-topics/coronavirus-disease-2019-covid-19-resources-for-hospitalists/non-hospitalist-resources/>.

Telehealth at the forefront of the pandemic

Define the problems you are trying to solve before launching a program

By Marina S. Farah, MD, MHA

On Jan. 20, 2020, the first confirmed case of the 2019 novel coronavirus in the United States was admitted to Providence Regional Medical Center in Everett, Wash. Less than 3 months later, the COVID-19 pandemic has put enormous stress on the U.S. health care system, which is confronting acute resource shortages because of the surge of acute and critically ill patients, health care provider safety and burnout, and an ongoing need for managing vulnerable populations while minimizing the infection spread.

With the onset of these unprecedented challenges, telehealth has emerged as a powerful new resource for health care providers, hospitals, and health care systems across the country. This article offers a summary of government regulations that enabled telehealth expansion, and provides an overview of how two health care organizations, Providence St. Joseph Health and Sound Physicians, are employing telehealth services to combat the COVID-19 health care crisis.

The government response: Telehealth expansion

In response to the pandemic, the Centers for Medicare & Medicaid Services have significantly increased access to telehealth services for Medicare and Medicaid beneficiaries. CMS swiftly put measures in place such as:

- Expanding telehealth beyond rural areas.
- Adding 80 services that can be provided in all settings, including patient homes.
- Allowing providers to bill for telehealth visits at the same rate as in-person visits.

The U.S. Department of Health & Human Services also aided this effort by waiving the following:

- Requirements that physicians or other health care professionals must have licenses in the state in which they provide services, if they have an equivalent license from another state.
- Penalties for HIPAA violations against health care providers that serve patients in good faith through everyday communications technologies, such as FaceTime or Skype.

Without prior regulatory and reimbursement restrictions, telehealth rapidly became a powerful tool in helping to solve some of the problems brought about by the COVID-19 pandemic.

Providence telehealth for COVID-19

Providence St. Joseph Health is a not-for-profit health care system operating 51 hospitals and 1,085 clinics across Alaska, California, Montana, New Mexico, Oregon, Texas, and Washington. Providence has developed an enterprise telemedicine network with more than 100 virtual programs. Several of these services – including Telestroke, Telepsychiatry, TeleICU, and Telehospitalist – have been scaled across several states as a clinical cloud. More than 400 telemedicine endpoints are deployed, such as robotic carts and fixed InTouch TVs. In fact, the first U.S. COVID-19 patient was treated at Providence Regional Medical Center in Everett, using the telemedical robot Vici from InTouch Health.

According to Todd Czartoski, MD, chief medical technology officer at Providence, “while telehealth has been around for many years, COVID-19 opened a lot of people’s eyes to the value of virtual care delivery.”

Providence’s telehealth response to COVID-19 has encompassed five main areas: COVID-19 home care, COVID-19 acute care, ambulatory virtual visits, behavioral health concierge expansion, and addi-



Dr. Czartoski

tional support for outside partnerships.

COVID-19 Home Care

Providence rapidly deployed home monitoring for nearly 2,000 positive or presumptive COVID-19 patients. Those symptomatic, clinically stable patients are given a thermometer and a pulse oximeter, and are monitored from home by a central team of nurses and physicians using the Xealth and Twistle programs.

“While telehealth has been around for many years, COVID-19 opened a lot of people’s eyes to the value of virtual care delivery.”

Providence is evaluating expansion of home monitoring to other diagnoses, including higher acuity conditions.

COVID-19 Acute Care

TeleTriage expedites the triage of suspected COVID-19 patients and reduces the use of personal protective equipment (PPE) by 50% per patient per day. To date, TeleTriage has resulted in the conservation of more than 90,000 PPE units.

TeleHospitalist services expanded from traditional night coverage to caring for patients in COVID-19 units around the clock. Currently, there are 25 telehospitalists who practice both in-person and virtual medicine.

TeleICU offers remote management of more than 180 ICU beds across 17 hospitals from two central command centers in Washington

state and Alaska. The services include night-time intensivist and ICU nurse coverage, including medication and ventilator management, and family conferences. COVID-19 increased the demand for TeleICU, with anticipated expansion to more than 300 beds.

Core TeleSpecialty services include TeleStroke and TelePsychiatry across 135 remote sites.

Ambulatory Virtual Visits

Providence launched the COVID-19 hub microsite to help educate patients by providing accurate and timely information. A chatbot named Grace helps screen patients who are worried about COVID-19. Grace also suggests next steps, such as a video visit with a patient’s primary care provider or a visit using Express Care/Virtual team, a direct-to-consumer service available to patients within and outside of the health care system.

In less than 2 weeks, Providence enabled virtual visits for more than 7,000 outpatient providers, with more than 14,000 alternative visits now occurring daily. This has allowed primary and specialty providers to continue to manage their patient panels remotely. The number of Express Care/Virtual visits increased from 60 to more than 1,000 per day.

BHC Expansion

In the effort to improve care for its caregivers, Providence launched a behavioral health concierge (BHC) service that offers employees and their dependents virtual access to licensed mental health professionals. Over the last half of 2019, BHC provided more than 1,000 phone and virtual visits, depending on the individual preference of patients. Notably, 21% percent of users were physicians; 65% of users were seen the same day and 100% of users were seen within 48 hours.

COVID-19 increased demand for services that initially started in Seattle and rapidly expanded to California, Montana, and Oregon.

Outside Partnerships

Providence has established partnerships with outside facilities by providing services to 135 sites across eight states. COVID-19 accelerated the employment of new services, including TeleICU.

Figure 1: Providence Telehealth for COVID-19

1. COVID-19 Home Care	<ul style="list-style-type: none">• Home Monitoring• Hospital at Home
2. COVID-19 Acute Care	<ul style="list-style-type: none">• TeleICU• TeleHospitalist• TeleTriage• TeleSpecialty
3. Ambulatory Virtual Visits	<ul style="list-style-type: none">• TelePrimary Care• TeleSpecialty
4. BHC Expansion	<ul style="list-style-type: none">• Caring for our Caregivers
5. Outside Partnerships	<ul style="list-style-type: none">• Enterprise• Regional Partners

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Telemedicine at Sound Physicians

Sound Physicians is a national physician-founded and -led organization that provides emergency medicine, critical care, hospital medicine, population health, and physician advisory services. Five years ago, Sound launched a telemedicine service line. I spoke with Brian Carpenter, MD, national medical director for TeleHospitalist Services at Sound, to learn about his experience implementing Telehospitalist programs across 22 hospitals and 22 skilled nursing facilities.



Dr. Carpenter

Prior to COVID-19, Sound offered a spectrum of telemedicine services including night-time telephonic cross-coverage, as well as video-assisted admissions, transfers, and rapid responses. In 2019, Sound Telehospitalists received 88,000 connect requests, including 6,400 video-assisted new admissions and 82 rapid responses. Typically, one physician covers four to eight hospitals with back-up available for surges. The team uses a predictive

model for staffing and developed an acuity-based algorithm to ensure that patients in distress are evaluated immediately, new stable admissions on average are seen within 12 minutes, and order clarifications are provided within 30 minutes.

The COVID-19 pandemic created an urgent demand for providers to

“A true telemedicine program encompasses change management ... and mechanisms for continuous process improvement.”

support an overwhelmed health care system. Without the traditional barriers to implementation – such as lack of acceptance by medical staff, nurses, and patients; strict state licensing and technology requirements; lack of reimbursement; and delays in hospital credentialing – Sound was able to develop a rapid implementation model for telemedicine services. Currently, four new hospitals are in the active implementation

phase, with 40 more hospitals in the pipeline.

Implementing a telemedicine program at your hospital

In order to successfully launch a telemedicine program, Dr. Carpenter outlined the following critical implementation steps:

- In collaboration with local leadership, define the problem you are trying to solve, which helps inform the scope of the telemedicine practice and technology requirements (for example, night-time cross-coverage vs. full telemedicine service).
- Complete a discovery process (for example, existing workflow for patient admission and transfer) with the end-goal of developing a workflow and rules of engagement.
- Obtain hospital credentialing/privileges and EMR access.
- Train end-users, including physicians and nurse telepresenters.

Dr. Carpenter offered this advice to those considering a telemedicine program: “Telemedicine is not just about technology; a true telemedicine program encompasses change management, work-flow development, end-user training, compliance, and mechanisms for continuous



Dr. Farah is a hospitalist, physician adviser, and Lean Six Sigma Black Belt. She is a performance improvement consultant based in Corvallis, Ore., and a member of The Hospitalist's editorial advisory board.

process improvement. We want to make things better for the physicians, nurses, and patients.”

Telehealth is offering support to health care providers on the front lines, patients in need of care, and health care systems managing the unprecedented surges in volume.

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What are the major cardiovascular issues?

Acute viral myocarditis often confounds with ischemic injury

**By Bishnu H. Subedi, MD, FACC;
Raghavendra Tirupathi, MD, FACP;
Swetha Areti, MD; Venkataraman
Palabindala, MD, SFHM, MBA**

Frontline health care workers are facing escalating challenges with rapidly spreading coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.¹ Hospitalists will often deal with various manifestations of acute cardiac injury, controversial withholding of ACE inhibitors (ACEI) or angiotensin receptor blockers (ARBs), arrhythmic toxicities from such drug therapies as hydroxychloroquine.

Presentation and cardiac risks from COVID-19

Patients with COVID-19 often have presented with noncardiac symptoms, usually a febrile illness associated with cough or shortness of breath. Recent reports from Italy and New York have suggested patients also can present with isolated cardiac involvement without any other symptoms that can portend a grim prognosis.² Cardiac effects include myocarditis, acute coronary syndrome, malignant arrhythmias, ultimately cardiogenic shock, and cardiac arrest.³

The mortality rate correlates with older age, preexisting health conditions, and availability of medical resources. A recent meta-analysis including 53,000 COVID-19 patients found the most common comorbidities were hypertension (19%), diabetes (8%), and cardiovascular disease (CVD) (3%).⁴ Half of the cases died from respiratory failure and one-third have died from concomitant respiratory and heart failure. Acute heart failure alone accounted for about 7% of cases.⁵

Overall mortality rate can be better understood with the largest case series to-date of COVID-19 in mainland China published by the Chinese Center for Disease Control and Prevention. The overall case-fatality rate was 2.3% (1,023 deaths among 44,672 confirmed cases), but the mortality reached 10.5% in patients with underlying CVD.⁶

Acute cardiac injuries in COVID-19

Acute cardiac injury (ACI) is defined as troponin elevation above the 99th percentile of the upper reference limit.⁷ A practical description of ACI in COVID-19 patients should also include broader definition with new abnormalities in ECG since not all patients with acute cardiac effects have developed troponin elevation.³ More recent reports showed up to 28% of hospitalized patients had a myocardial injury.³

It is not uncommon to see a patient with COVID-19 myocarditis as a mimicker of acute ST-elevation myocardial infarction (STEMI). The mechanism of ACI is unknown, though several hypotheses have been proposed based on case series and retrospective reviews. These include direct viral invasion into myocardial cells leading to myocarditis, oxygen demand-supply mismatch, acute coronary syndrome from plaque rupture,

stress, or cytokine-mediated cardiomyopathy.³ The exact incidence of true MI from occlusive coronary disease in the COVID-19 population is yet unknown.

In some cases, troponin elevation may be a late manifestation of COVID-19. As coronavirus disease progressed slowly, a rapid rise of troponin was noted when patients developed acute respiratory failure after 10 days of illness. Among non-survivors, a steady rise in troponin was observed from day 4 through day 22.⁸

ACI is associated with ICU admission and mortality. Both troponin and BNP levels increased significantly during the course of hospitalization in those who ultimately died, but no such changes were evident in survivors.³ ACI was higher in nonsurvivors (59%) than in survivors (1%).⁸ ACI was higher in ICU patients (22%), compared with non-ICU patients (2%).⁹ Patients with CVD were more likely to exhibit elevation of troponin levels (54%), compared with patients without CVD (13%).³

Higher troponin levels and the presence of CVD are directly proportional to severe disease and death. Patients with elevated troponin developed more frequent complications including acute respiratory distress syndrome, malignant arrhythmias including ventricular tachycardia/ventricular fibrillation, acute coagulopathy, and acute kidney injury.^{3,8} Death was markedly higher in patients with elevated troponin, compared with normal levels: 60% versus 9%. Only 8% with no CVD and normal troponin died, whereas 69% of people with underlying CVD and elevated troponin died.³

The median duration from illness onset to death was 23 (8-41) days in the group with elevated troponin. Patients with CVD and escalation of troponin levels had the shortest survival of 1-5 days. The dynamic rise of cardiac biomarkers and increased incidence of malignant arrhythmias during the course of illness shows that myocardial injury played a greater role in the fatal outcome of COVID-19 than the presence of preexisting CVD itself.³

Management of acute cardiac issues in COVID-19

There are no established therapeutic options with randomized, clinical trials specific to the management of COVID-19 patients at this point. Standard supportive care and individualized treatment plan based on existing guidelines is probably the best approach. Disposition of cases and cardiac testing should be tailored, based on local protocols, availability of resources and expertise.¹⁰

There seems to be a consensus that baseline troponin levels should be obtained in all admitted patients. Repeat troponin levels can be obtained based on the severity of illness, for example, daily troponin checks are reasonable in ICU patients and every-other-day troponin testing may be reasonable in general inpatients. Routine troponin testing in minimally symptomatic or asymptomatic patients will likely

not change any outcome.^{3,11,12}

Daily ECG is reasonable in severe COVID-19. However, routine transthoracic ECGs (TTEs) are not reasonable, unless it will change further treatment plans. TTEs are reasonable in patients with significant troponin elevation, a decline in central venous oxygen saturation, new heart failure, shock, new persistent arrhythmias, or significant new ECG changes.¹²

Limited TTEs for a focused exam enough to answer the clinical question should be ordered to minimize the risk of viral exposure to the sonographers. Transesophageal echo will rarely be needed, and its use should be minimized to reduce

“Meticulous evaluation is needed for possible ischemic changes before taking the patient to the cardiac cath lab in order to reduce unnecessary virus exposure to the operators.”

direct contact exposure and because of anesthesia risks.¹³ Routine stress testing should not be ordered in active COVID-19 and should be deferred for outpatient evaluation, if clinically indicated, once the patient recovers from the infection.¹²

Myocarditis and pericarditis are potential manifestations of acute cardiac injury. Recent case reports have suggested evidence of myocarditis confirmed with cardiac MRI.¹¹ Because of high fatality rates with cardiac involvement and no proven therapies yet, the role of routine advanced cardiac imaging such as cardiac CT, cardiac MRI, or cardiac biopsy is unclear.

Myocarditis can likely be caused either by the virus itself, or the body's immune and inflammatory response (cytokine storm) to the virus.^{2,3} The use of anti-inflammatory drugs like colchicine, ibuprofen, steroids, or statins is not yet established.^{10,12} Drugs like remdesivir, lopinavir-ritonavir, hydroxychloroquine, chloroquine, and anti-interleukin-6 agents have been invariably used with some anecdotal success, and randomized clinical trials for some of these drugs are currently ongoing.

Physicians may encounter situations to call a STEMI code or not in COVID-19 patients.^{2,11} Patients may have substernal pain, diffuse or regional ST elevations in ECG, and reduced left ventricular dysfunction with regional wall motion abnormalities on ECG. These findings may be caused by myocarditis, acute type 1 MI, or stress-induced cardiomyopathy. Clinicians should make their judgment based on the overall pretest probability for type 1 MI, incorporating risk factor profiles and the presence of typical symptoms.

Treatment practice for questionable STEMI cases will likely vary across the country as we are learning more about the virus. Cath lab operators are at risk for COVID-19 infection through direct contact with patients. Few cardiologists were

admitted after COVID-19 infections in the ICU at a New York hospital after they were involved in a acute MI case in a cath lab.¹⁴ Based on the Chinese experience, some have suggested the idea of lytic therapy first with follow-up cardiac CT to assess the recanalization of perfusion status, but at this point, this strategy remains controversial in the United States. In addition, if the patient has myocarditis instead, there will be a risk for pericardial effusion and hemorrhagic complications with lytic therapy.

Case examples

1. A 70-year-old male presents with fevers, chest pain, cough, shortness of breath. He has a history of metabolic syndrome and 30 pack-years of smoking. His ECG showed 1.5 mm ST elevation in inferior leads with reciprocal ST depressions in lateral leads, and his initial troponin is 2. Echocardiogram showed reduced left ventricle ejection fraction (LVEF) of 32% and inferior wall hypokinesis. He is suspected COVID-19, and his polymerase chain reaction result is pending. How would you manage this patient?

This patient presented with febrile illness, but he had a very high pretest probability for obstructive coronary artery disease based on his age, male sex, and multiple risk factors. He may have a viral syndrome, and it is a stressful situation for him. This may have precipitated plaque rupture causing acute MI.

Activating the STEMI pathway for emergent left heart catheterization is likely appropriate in this case. Coronary angiogram in this patient showed a 100% occluded mid-right coronary artery with a fresh thrombus. Delaying cardiac cath would have possibly led to malignant arrhythmias and death from ischemic injury. We need to be cognizant patients can die from non-COVID-related emergencies also.

2. An 18-year-old healthy male presents with cough and chest pain and has bilateral lung infiltrates. ECG showed anterolateral 2 mm ST elevations and no reciprocal ST changes. Stat TTE showed anterior wall hypokinesis and LV function 30% and his initial troponin is 0.6 (normal is <0.5). The nasopharyngeal swab is sent out and his COVID result is pending. How would you manage this patient?

A young patient with no cardiovascular risk factors has a very low pretest probability for obstructive coronary disease, and the likelihood of having a true ischemic MI is low even though he has significant new ST elevations. Especially with presumed COVID-19 and risk of virus exposure to the cath lab personnel, it will be prudent to manage this patient with supportive therapy including beta-blockers, ACEIs, etc. Repeat echo in 7 days before discharge showed improved LVEF 45%.

Controversy on ACEI/ARB

The SARS-CoV-2 virus enters via cell-entry receptor namely angiotensin-converting enzyme 2 (ACE2). SARS-CoV-2 is thought to have a higher affinity for ACE2 than other SARS viruses.¹⁵

ACE2 is expressed in the heart, lungs, vasculature, and kidneys. ACEI and ARBs in animal models increase the expression of ACE2,¹⁶ though this has not been confirmed in human studies.

This has led to the hypothesis that ACEI and ARBs might worsen myocarditis or precipitate the acute coronary syndrome. It has also been hypothesized that the upregulation of ACE2 is therapeutic in COVID-19 and that ARBs might be protective during infection.¹⁷

The increased ACE2 expression induced by ACEI or ARB would aggravate lung injury of patients with COVID-19. However, a previous study showed a beneficial effect of ACEI/ARB in patients admitted with viral pneumonia, as it significantly reduced the pulmonary inflammatory response and cytokine release caused by virus infection.¹⁸

Therefore, this remains an area of investigation, and it is unclear how these medications affect patients with COVID-19. In a recent review, with a limited number of patients, the mortality of those treated with or without the use of ACEI/ARB did not show a significant difference in the outcome.³

Both American and European cardiology societies recommend against routine discontinuation of ACEI and ARBs in patients with COVID-19 because of risks of uncontrolled hypertension and heart failure, stroke, or heart attack.¹⁹ However, it will be reasonable to hold off in inpatients in cases of acute kidney injury, hypotension, shock, etc.¹²

Cardiac concern about hydroxychloroquine and chloroquine

Hydroxychloroquine (HCQ) is an antimalarial drug shown to have in vitro (but not yet in vivo) activity against diverse RNA viruses, including SARS-CoV-1.²⁰ An expert consensus group from China suggests that chloroquine improved lung imaging and shortened disease course.²¹ HCQ was found to be more potent than chloroquine in inhibiting SARS-CoV-2 in vitro.²²

Based on limited in vitro and anecdotal clinical data from other countries, the U.S. Food and Drug Administration recently authorized emergency use of chloroquine and HCQ in hopes of slowing the progression of the disease when a clinical trial is not available, or participation is not feasible for use of these drugs in hospitalized patients. However, with no clear benefit, there is a concern for possible risks with cardiac toxicity.

HCQ is known to cause cardiomyopathy in a dose-dependent manner over several years. Given the anticipated short duration in COVID-19, it is not an expected risk. QT-segment prolongation and torsades de pointes, especially if administered in combination with azithromycin, is possible even in short-term use.²³

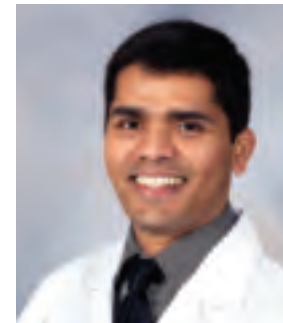
Given that, frequent ECG monitoring is indicated for patients being treated with chloroquine



Dr. Subedi



Dr. Tirupathi



Dr. Palabindala

Dr. Subedi is a noninvasive cardiologist for Wellspan Health System in Franklin and Cumberland counties in south central Pennsylvania. He is a clinical assistant professor of medicine at Penn State College of Medicine, Hershey, Pa. He is an active member of the critical care committee at Wellspan Chambersburg (Pa.) Hospital. Dr. Tirupathi is the medical director of Keystone Infectious Diseases/HIV in Chambersburg and currently chair of infection prevention at Wellspan Chambersburg and Waynesboro Hospitals, all in Pennsylvania. He also is the lead physician for antibiotic stewardship at these hospitals. Dr. Areti is currently working as a hospitalist at Wellspan Chambersburg Hospital and is a member of the Wellspan pharmacy and therapeutics committee. Dr. Palabindala is hospital medicine division chief at the University of Mississippi Medical Center, Jackson.

or HCQ. All other QT-prolonging drugs should be discontinued. Continuous telemetry monitoring while under treatment is reasonable. HCQ should not be started if baseline QTc is >500 msec and it should be stopped if the patient develops ventricular arrhythmias.¹²

Key points

- Acute cardiac injury or myocarditis is common among patients infected with COVID-19. Often, COVID myocarditis can mimic acute MI or stress cardiomyopathy and will present diagnostic and therapeutic challenges. On the other hand, isolated cardiac involvement can occur, even without symptoms and signs of interstitial pneumonia.
- A most important indicator of worse prediction is the degree of myocardial injury, regardless of preexisting conditions or underlying cardiovascular disease.
- Early recognition of cardiac involvement will be helpful in targeting more aggressive supportive therapies. Commonly available clinical tools like bloodwork, ECG, or echocardiogram should be adequate to diagnose carditis in most cases.
- Advanced cardiac imaging tests or cardiac biopsy are of uncertain benefits. Meticulous evaluation is needed for possible ischemic changes before taking the patient to the cardiac cath lab in order to reduce unnecessary virus exposure to the operators.
- ACEI/ARB should be continued in most cases in COVID patients based on cardiology societies' recommendations.
- With the widespread use of antimalarial drugs like chloroquine or hydroxychloroquine, frequent ECG and continuous telemetry monitoring is reasonable to rule out ventricular arrhythmias like torsades.
- There is no specific treatment to date for acute cardiac injuries. Since there are no specific guidelines and information about the virus is rapidly changing, it will be prudent to fol-

Continued on following page

Results from 11 COVID-19 cardiovascular studies expected within months

By M. Alexander Otto

MDedge News

The American Heart Association has awarded \$1.2 million in grants to teams at 11 institutions to study COVID-19 effects on the cardiovascular and cerebrovascular systems. Work is set to start in June, with findings reported in as few as 6 months. The Cleveland Clinic will coordinate the efforts, collecting and disseminating the findings.

There were more than 750 research proposals in less than a month after the association announced its COVID-19 and its Cardiovascular Impact Rapid Response Grant initiative.

"We were just blown away and so impressed to see this level of interest and commitment from the teams submitting such thorough proposals so quickly," AHA President Robert Harrington, MD, chair of the department of medicine at Stanford (Calif.) University, said in a press statement.

"There's so much we don't know about this unique coronavirus, and we continue to see emerging complications affecting both heart and brain health for which we desperately need answers and we need them quickly."

The projects include the following:

- A Comprehensive Assessment of Arterial and Venous Thrombotic Complications in Patients With COVID-19, led by Columbia University, New York.
- Repurposing Drugs for Treatment of Cardiomyopathy Caused by Coronavirus-2 (SARS-CoV-2), led by Brigham and Women's Hospital and Harvard Medical School, Boston.
- Risk of Severe Morbidity and Mortality of Coronavirus Disease 2019 (COVID-19) Among Patients Taking Antihypertensive Medications, led by Kaiser Permanente Southern California.
- Deep Learning Using Chest Radiographs to Predict COVID-19 Cardiopulmonary Risk, led by

Massachusetts General Hospital, Boston.

- Cardiovascular Outcomes and Biomarker Titrated Corticosteroid Dosing for SARS CoV-2 (COVID-19): A Randomized Controlled Trial, led by the Mayo Clinic, Rochester Minn.
- Outcomes for Patients With Hypertension, Diabetes, and Heart Disease in the Coronavirus Pandemic: Impact of Angiotensin Converting Enzyme Inhibitors and Angiotensin Receptor Blockers Treatment, led by Stanford University.
- Rapid COVID-19-on-a-Chip to Screen Competitive Targets for SARS-CoV-2 Spike Binding Sites, led by University of California, Los Angeles.
- COVID-19 Infection, African Amer-

ican Women and Cardiovascular Health, led by University of California, San Francisco.

- Myocardial Virus and Gene Expression in SARS CoV-2 Positive Patients with Clinically Important Myocardial Dysfunction, led by the University of Colorado, Aurora.
- The Role of the Platelet in Mediating Cardiovascular Disease in SARS-CoV-2 Infection, led by the University of Massachusetts, Worcester.
- Harnessing Glycomics to Understand Myocardial Injury in COVID-19, led by the University of Nebraska Medical Center, Omaha.

The AHA also awarded \$800,000 for short-term projects to members of its new Health Technologies & Innovation Strategically Focused Research Network.

Continued from previous page

low common-sense approaches outlined by institutions like the Brigham and Women's Hospital COVID-19 Critical Care clinical guidelines, which incorporate new clinical information on a daily basis (<https://www.covidprotocols.org/>).

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POPCoRN network

Continued from page 1

Association has issued a guidance on this kind of community collaboration for children's hospitals partnering with adult hospitals in their community and with policy makers.

"We are a network of folks from different institutions, many med-peds-trained hospitalists but quickly growing," said Leah Ratner, MD, a second-year fellow in the Global Pediatrics Program at Boston Children's Hospital and co-founder of POPCoRN. "We came together to think about how to increase capacity – both in the work force and for actual hospital space – by helping to train pediatric hospitalists and pediatrics-trained nurses to care for adult patients."



Dr. Ratner

A web-based platform filled with a rapidly expanding list of resources, an active Twitter account, and utilization of Zoom networking software for webinars and working-group meetings have facilitated the network's growth. "Social media has helped us," Dr. Ratner said. But equally important are personal connections.

"It all started just a few weeks ago," added co-founder Ashley Jenkins, MD, a med-peds hospital medicine and general academics research fellow in the division of hospital medicine at Cincinnati Children's Hospital Medical Center. "I sent out some emails in mid-March, asking what other people were doing about these issues. Leah and I met as a result of these initial emails. We immediately started connecting with other health systems and it just expanded from there. Once we knew that enough other systems were thinking about it and trying to build capacity, we started pulling the people and information together."

High-yield one-pagers

A third or more of those on the POPCoRN contact list are also participating as volunteers on its varied working groups, including health system operation groups exploring the needs of three distinct hospital models: freestanding children's hospitals; community hospitals, which may see small numbers of children; and integrated mixed hospitals, which often means a pediatric hospital or pediatric units located within an adult hospital.

An immediate goal is to develop high-yield informational "one-pagers," culling essential clinical facts on a variety of topics in adult inpatient medicine that may no longer be familiar to working pediatric hospitalists. These one-pagers, designed with the help of network members with graphic design skills, address topics such as syncope or chest pain or managing exacerbation of chronic obstructive pulmonary disease in adults. They draw upon existing informational sources, encapsulating practical information tips that can be used at the bedside, including test work-ups, differential diagnoses, treatment approaches, and other pearls for providers. Drafts are reviewed for content by specialists, and then by pediatricians to make sure the information covers what they need.

Also under development are educational ma-

terials for nurses trained in pediatrics, a section for outpatient providers redeployed to triage or telehealth, and information for other team members including occupational, physical, and respi-

"We came together to think about how to increase capacity ... by helping to train pediatric hospitalists and pediatrics-trained nurses to care for adult patients."

ratory therapists. Another section offers critical care lectures for the nonintensivist. A metrics and outcomes working group is looking for ways to evaluate how the network is doing and who is being reached without having to ask frontline providers to fill out surveys.

"We've also tried to target junior physicians who could step up into leadership roles and to pull in medical students – who are the backbone of this network through their administrative support."

Dr. Ratner and Dr. Jenkins have created an intentional structure for encouraging mentoring. They also call on their own mentors – Ahmet Uluer, DO, director of Weitzman Family Bridges Adult Transition Program at Boston Children's Hospital, and Brian Herbst Jr., MD, medical director of the Hospital Medicine Adult Care Service at Cincinnati Children's – for advice.

Beyond the silos

Pediatric hospitalists may have been doing similar things, working on similar projects, but not necessarily reaching out to each other across a system that tends to promote staying within administrative silos, Dr. Uluer said. "Through our personal contacts in POPCoRN, we've been able to reach beyond the silos. This network has worked like medical crowd sourcing, and the founders have been inspirational."

Dr. Herbst added, "How do we expand bandwidth and safely expand services to take young patients and adults from other hospitals? What other populations do we need to expand to take? This network is a workplace of ideas. It's amazing to see what has been built in a few weeks and how useful it can be."

Med-peds hospitalists are an important resource for bridging the two specialties. Their experience with transitioning young adults with long-standing chronic conditions of childhood, who have received most of their care at a children's hospital before reaching adulthood, offers a helpful model. "We've also tried to target junior physicians who could step up into leadership roles and to pull in medical stu-

dents – who are the backbone of this network through their administrative support," Dr. Jenkins said.

Marie Pfarr, MD, also a med-peds-trained hospital medicine fellow at Cincinnati Children's, was contacted in March by Dr. Jenkins. "She said they had this brainstorm, and they were getting feedback that it would be helpful to provide educational materials for pediatric providers. Because I have an interest in medical education, she asked if I wanted to help. I was at home struggling with what I could contribute during this crazy time, so I said yes."

Dr. Pfarr leads POPCoRN's educational working group, which came up with a list of 50 topics in need of one-pagers and people willing to create them, mostly still under development. The aim for the one-pagers is to offer a good starting point for pediatricians, helping them, for example, to ask the right questions during history and physical exams. "We also want to offer additional

resources for those who want to do a deeper dive."

Dr. Pfarr said she has enjoyed working closely with medical students, who really want to help. "That's been great to see. We are all working toward the same goal, and we help to keep each other in check. I think there's a future for this kind of mobilization



Dr. Jenkins

through collaborations to connect pediatric to adult providers. A lot of good things will come out of the network, which is an example of how folks can talk to each other. It's very dynamic and changing every day."

One of those medical students is Chinma Onyewuenyi, finishing her fourth year at Baylor College of Medicine. Scheduled to start a med-peds residency at Geisinger Health in Danville, Pa., on July 1, she had completed all of her rotations and was looking for ways to get involved in the pandemic response while respecting the shelter-in-place order. "I had heard about the network, which was recruiting medical students to play administrative roles for the working groups. I said, 'If you have anything else you need help with, I have time on my hands.'"

Ms. Onyewuenyi says she fell into the role of a lead administrative volunteer, and her responsibilities grew from there, eventually taking charge of all the medical students' recruiting, screening, and assignments, freeing up the project's physician leaders from administrative tasks. "I wanted something active to do to contribute, and I appreciate all that I'm learning. With a master's degree in public health, I have researched how health care is delivered," she said.

"This experience has really opened my eyes to what's required to deliver care, and just the level of collaboration that needs to go on with something like this. Even as a medical student, I felt glad to have an opportunity to contribute beyond the administrative tasks. At meetings, they ask for my opinion."

Continued on following page

Doctor with a mask: Enhancing communication and empathy

By Taru Saigal, MD

Delivering a goodbye monologue to an elderly patient, I said: “Tomorrow, my colleague Dr. XYZ, who is an excellent physician, will be here in my place, and I will leave a detailed sign out for them.” I was on the last day of a 7-day-long block on hospital medicine service. Typically, when I say goodbye, some patients respond “thank you, enjoy your time,” some don’t care, and some show disappointment at the transition. This patient became uneasy, choking back tears, and said: “But, I don’t want a new doctor. You know me well. ... They don’t even allow my family in the hospital.”

That expression of anxiety, of having to build rapport with a new provider, concerns about continuity of care, and missing support of family members were not alien to me. As I instinctively took a step toward him to offer a comforting hug, an unsolicited voice in my head said, “social distancing.” I steered back, handing him a box of tissues. I continued: “You have come a long way, and things are looking good from here,” providing more details before I left the room. There was a change in my practice that week. I didn’t shake hands with my patients; I didn’t sit on any unassigned chair; I had no family members in the room asking me questions or supporting my patients. I was trying to show em-

pathy or a smile behind a mask and protective eyewear. The business card with photograph had become more critical than ever for patients to “see” their doctor.

Moving from room to room and examining patients, it felt like the coronavirus was changing the practice of medicine beyond concerns of virus transmission, losing a patient, or putting in extra hours. I realized I was missing so-called “nonverbal communication” amid social distancing: facial expressions, social touch, and the support of family or friends to motivate or destress patients. With no visitors and curbed health care staff entries into patient’s rooms, social distancing was amounting to social isolation. My protective gear and social distancing seemed to be reducing my perceived empathy with patients, and the ability to build a good patient-physician relationship.

Amid alarms, beeps, and buzzes, patients were not only missing their families but also the familiar faces of their physicians. I needed to raise my game while embracing the “new normal” of health care. Cut to the next 13 patients: I paid more attention to voice, tone, and posture. I called patient families from the bedside instead of the office. I translated my emotions with words, loud and clear, replacing “your renal function looks better” (said without a smile) with “I am happy to see your renal function better.”

Through years of practice, I felt prepared to deal with feelings of denial, grief, anxiety, and much more, but the emotions arising as a result of this pandemic were unique. “I knew my mother was old, and this day would come,” said one of the inconsolable family members of a critically ill patient. “However, I wished to be at her side that day, not like this.” I spend my days listening to patient and family concerns about unemployment with quarantine, fears of spreading the disease to loved ones, and the possibility of medications not working.

After a long day, I went back to that first elderly patient to see if he was comfortable with the transition of care. I did a video conference with his daughter, and repeated my goodbyes. The patient smiled and said: “Doc, you deserve a break.” That day I learned about the challenges of good clinical rounding in coronavirus times, and how to overcome them. For “millennial” physicians, it is our first pandemic, and we are learning from it every day.

Driving home through empty streets, I concluded that my answers to the clinical questions asked by patients and families lean heavily on ever-changing data, and the treatments offered have yet to prove their mettle. As a result, I will continue to focus as much on the time-tested fundamentals of clinical practice: communication and empathy. I cannot allow the social



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distancing and the mask to hide my compassion, or take away from patient satisfaction. Shifting gears, I turned on my car radio, using music to reset my mind before attending to my now-homeschooling kids.

Resources

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Equitable access to resources

Another major focus for the network is promoting health equity – giving pediatric providers and health systems equitable access to information that meets their needs, Dr. Ratner said. “We’ve made a particular effort to reach out to hospitals that are the most vulnerable, including rural hospitals, and to those serving the most vulnerable patients,” she noted. These also include the homeless and refugees.

“We’ve been trying to be mindful of avoiding the sometimes-intimidating power structure that has been traditional in medicine,” Dr. Ratner said. The network’s equity working group is trying to provide content with structural competency and cultural humility. “We’re learning a lot about the ways the health care system is broken,” she added. “We all



Dr. Uong

agree that we have a fragmented health care system, but there are ways to make it less fragmented and learn from each other.”

In the tragedy of the COVID epidemic, there are also unique opportunities to learn to work collab-

“Everyone at this institution feels the same – that we’re locked in on meeting the need. ... There’s been a lot of attention paid to making us feel supported in this work.”

oratively and make the health care system stronger for those in greatest need, Dr. Ratner added. “What we hope is that our network becomes an example of that, even as it is moving so quickly.”

Audrey Uong, MD, an attending physician in the division of hospital medicine at Children’s

Hospital at Montefiore Medical Center in New York, connected with POPCoRN for an educational presentation reviewing resuscitation in adult patients. She wanted to talk with peers about what’s going on, so as not to feel alone in her practice. She has also found the network’s website useful for identifying educational resources.

“As pediatricians, we have been asked to care for adult patients. One of our units has been admitting mostly patients under age 30, and we are accepting older patients in another unit on the pediatric wing.” This kind of thing is also happening in a lot of other places, Dr. Uong said. Keeping up with these changes in her own practice has been challenging.

She tries to take one day at a time. “Everyone at this institution feels the same – that we’re locked in on meeting the need. Even our child life specialists, when they’re not working with younger patients, have created this amazing support room for staff, with snacks and soothing music. There’s been a lot of attention paid to making us feel supported in this work.”

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COVID-19–associated coagulopathy

Early recognition and anticoagulation is imperative to improve clinical outcomes

By **Sri Lakshmi Hyndavi Yeruva, MD;**
Trevor Henderson; Jaffar A. Al-Tawfiq, MD,
FACP; Raghavendra Tirupathi, MD, FACP

Coronavirus disease 2019 (COVID-19) is a viral illness caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), causing a pandemic affecting many countries around the world, beginning in December 2019 and spreading rapidly on a global scale since. Globally, its burden has been increasing rapidly, with more than 1.2 million people testing positive for the illness and 123,000 people losing their lives, as per April 15's WHO COVID-19 Situation Report.¹ These numbers are increasing with each passing day. Clinically, SARS-CoV-2 has a highly variable course, ranging from mild disease manifested as a self-limited illness (seen in younger and healthier patients) to severe pneumonia/acute respiratory distress syndrome and multiorgan failure with intravascular coagulopathy.²

In this article, we intend to investigate and establish a comprehensive review of COVID-19–associated coagulopathy mechanisms, laboratory findings, and current management guidelines put forth by various societies globally.

Mechanism of coagulopathy

COVID-19–associated coagulopathy has been shown to predispose to both arterial and venous thrombosis through excessive inflammation and hypoxia, leading to activation of the coagulation cascade and consumption of coagulation factors, resulting in microvascular thrombosis.³ Though the exact pathophysiology for the activation of this cascade is not known, the proposed mechanism has been: endothelial damage triggering platelet activation within the lung, leading to aggregation, thrombosis, and consumption of platelets in the lung.^{2,4,5}

Fox et al. noted similar coagulopathy findings of four deceased COVID-19 patients. Autopsy results concluded that the dominant process was diffuse alveolar damage, notable CD4+ aggregates around thrombosed small vessels, significant associated hemorrhage, and thrombotic microangiopathy restricted to the lungs. The proposed mechanism was the activation of megakaryocytes, possibly native to the lung, with platelet aggregation, formation of platelet-rich clots, and fibrin deposition playing a major role.⁶

It has been noted that diabetic patients are at an increased risk of vascular events and hypercoagulability with COVID-19.⁷ COVID-19 can also cause livedo reticularis and acrocyanosis because of the microthrombosis in the cutaneous vasculature secondary to underlying coagulopathy, as reported in a case report of two U.S. patients with COVID-19.⁸

Clinical and laboratory abnormalities

A recent study reported from Netherlands by Klok et al. analyzed 184 ICU patients with COVID-19 pneumonia and concluded that the cu-

mulative incidence of acute pulmonary embolism (PE), deep vein thrombosis (DVT), ischemic stroke, MI, or systemic arterial embolism was 31% (95% confidence interval, 20%–41%). PE was the most frequent thrombotic complication and was noted in 81% of patients. Coagulopathy, defined as spontaneous prolongation of prothrombin time (PT) >3 sec or activated partial thromboplastin time (aPTT) >5 sec, was reported as an independent predictor of thrombotic complications.³

Hematologic abnormalities that were noted in COVID-19 coagulopathy include decreased platelet counts, decreased fibrinogen levels, elevated PT/international normalized ratio (INR), elevated PTT, and elevated D-dimer.^{9,10} In a retrospective analysis⁹ by Tang et al., 71.4% of nonsurvivors and 0.6% of survivors had met the criteria of disseminated intravascular coagulation (DIC) during their hospital stay. Nonsurvivors of COVID-19 had statistically significant elevation of D-dimer levels, fibrinogen degradation product (FDP) levels, PT, and aPTT, when compared to survivors ($P < .05$). The overall mortality in this study was reported as 11.5%.⁹ In addition, elevated D-dimer, fibrin and FDP levels and longer PT and aPTT were associated with poor prognosis.

Thus, D-dimer, PT, and platelet count should be measured in all patients who present with COVID-19 infection. We can also suggest that, in patients with markedly elevated D-dimer (three- to fourfold increase), admission to hospital should be considered even in the absence of severe clinical symptoms.¹¹

COVID-19 coagulopathy management

In a retrospective study⁹ of 449 patients with severe COVID-19 from Wuhan, China, by Tang et al., 99 patients mainly received low-weight molecular heparin (LMWH) for 7 days or longer. No difference in 28-day mortality was noted between heparin users and nonusers (30.3% vs. 29.7%; $P = .910$). A lower 28-day mortality rate was noted in heparin patients with sepsis-induced coagulopathy score of ≥ 4.0 (40.0% vs. 64.2%; $P = .029$) or a D-dimer level greater than sixfold of upper limit of normal, compared with nonusers of heparin.¹²

Another small study of seven COVID-19 patients with acroischemia in China demonstrated that administering LMWH was successful at decreasing the D-dimer and fibrinogen degradation product levels but noted no significant improvement in clinical symptoms.¹³

Recently, the International Society of Thrombosis and Hemostasis and American Society of Hematology published recommendations and guidelines regarding the recognition and management of coagulopathy in COVID-19.¹¹ Prophylactic anticoagulation therapy with LMWH was recommended in all hospitalized patients with COVID-19, provided there was an absence of any contraindications (active bleeding, platelet count less than $25 \times 10^9/L$ and fibrinogen less than 0.5 g/dL). Anticoagulation with LMWH was associated with better prognosis in severe COVID-19 patients



Dr. Yeruva



Mr. Henderson



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and in COVID-19 patients with markedly elevated D-dimer, as it also has anti-inflammatory effects.¹² This anti-inflammatory property of heparin has been documented in previous studies but the underlying mechanism is unknown and more research is required.^{14,15}

Despite coagulopathy being noticed with cases of COVID-19, bleeding has been a rare finding in COVID-19 infections. If bleeding is noted, recommendations were made to keep platelet levels greater than $50 \times 10^9/L$, fibrinogen less than 2.0 g/L, and INR greater than 1.5.¹¹ Mechanical thromboprophylaxis should be used when pharmacologic thromboprophylaxis is contraindicated.¹⁶

COVID-19 patients with new diagnoses of venous thromboembolism (VTE) or atrial fibril-

Continued on following page

Severe COVID-19 illness most often affects children with comorbidities

By Steve Cimino

MDedge News

Pediatric patients with significant comorbidities appear to be at increased risk of severe COVID-19 illness, according to a preliminary study on COVID-19 in North American pediatric ICUs (PICUs).

“Consistent with the few other initial reports on COVID-19 on children, our study found the clinical course of COVID-19 to be far less severe and the hospital outcomes to be better in critically ill children than those reported in adults,” wrote Lara S. Shekerdemian, MD, of the Texas Children’s Hospital in Houston, and coauthors. The study was published in *JAMA Pediatrics*.

To determine the impact of COVID-19 on children in North America during the early stages of this global pandemic, the researchers launched a multicenter cross-sectional study of 48 COVID-19-positive children who were admitted to 46 participating PICUs during March 14–April 3. A total of

52% (n = 25) of the children were male and their median age was 13 years; 17% (8) of the children were less than 1 year of age, 13% (6) were aged 1–5 years, 15% (7) were 6–10 years, and 56% (27) were 11–21 years. Of the 46 hospitals, 30 did not admit any critically ill children with confirmed COVID-19 infections during the study period, including all 6 hospitals in Canada.

Significant preexisting comorbidities were heavily present in this cohort, with 50% (n = 24) having 1, 17% (n = 8) having 2, and 19% (n = 9) having 3 or more. Forty percent of the children had medically complex comorbidities; other comorbidities included immune suppression/malignancy, obesity, diabetes, seizures, congenital heart disease, sickle cell disease, and chronic lung disease.

A total of 69% (n = 33) of patients were seriously or critically ill upon admission, 25% (n = 12) required vasoactive drugs, and 23% (n = 11) had two or more organ systems fail.

In regard to treatment, 61% of patients (n = 28) received targeted therapies. The most frequently

used was hydroxychloroquine in 21 patients – alone in 11 and in combination in 10, with azithromycin in 7, with remdesivir in 1, with tocilizumab in 1, and with azithromycin and tocilizumab in 1. Azithromycin was used in one patient alone. Remdesivir was used as a single agent in two patients and in combination in six.

Eighty-one percent of patients (n = 39) required respiratory support that exceeded their baseline, although 21 of the 39 (54%) were managed non-invasively. The other 18 (38%) children required endotracheal or tracheostomy ventilation, and adjunctive ventilatory interventions or extracorporeal therapies were required in 6 (13%) children.

At the time the study was published, 2 of the 18 children requiring ventilation had died; 3 still required mechanical ventilation, 7 had discontinued mechanical ventilation but remained hospitalized, and 6 had been discharged. The two patients who died were aged 12 and 17 years; the authors noted that “both had preexisting comorbidities and developed multisystem organ failure.”

Continued from previous page

lation should be prescribed therapeutic anticoagulation. Patients who are already on anticoagulation for VTE or atrial fibrillation should continue their therapy unless the platelet count is less than 30–50 x 10⁹/L or if the fibrinogen is less than 1.0 g/L.¹⁶

Conclusion

Coagulopathies associated with COVID-19 infections have been documented in several studies around the world, and it has been shown to be fatal in some cases. Despite documentation, the mechanism behind this coagulopathy is not well understood. Because of the potentially lethal complications associated with coagulopathies, early recognition and anticoagulation is imperative to improve clinical outcomes. These results are very preliminary: More studies are required to understand the role of anticoagulation and its effect on the morbidity and mortality associated with COVID-19-associated coagulopathy.

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Fountains of Wayne, and a hospitalist's first day, remembered

By Raj Sehgal, MD, FHM

Like many in the health care field, I have found it hard to watch the news over these past couple of months when it seems that almost every story is about COVID-19 or its repercussions. Luckily, I have two young daughters who “encourage” me to listen to the Frozen 2 soundtrack instead of putting on the evening news when I get home from work. Still, news managers to seep through my defenses. As I scrolled through some headlines recently, I learned of the death of musician Adam Schlesinger from COVID-19. He wasn't a household name, but his death still hit me in unexpected ways.

I started internship in late June 2005, in a city (Portland, Ore.) about as different from my previous home (Dallas) as any two places can possibly be. I think the day before internship started still ranks as the most nervous of my life. I'm not sure how I slept at all



On his first day at Portland (Ore.) Veterans Affairs Hospital, Dr. Raj Sehgal saw the late Adam Schlesinger perform at a record store gig.

that night, but somehow I did and arrived at the Portland Veterans Affairs Hospital the following

morning to start my new career.

And then ... nothing happened. Early on that first day, the electronic medical records crashed, and no patients were admitted during our time on “short call.” My upper-level resident took care of the one or two established patients on the team (both discharged), so I ended the day with records that would not be broken during the remainder of my residency: 0 notes written, 0 patients seen. Perhaps the most successful first day that any intern, anywhere has ever had, although it prepared me quite poorly for all the subsequent days.

Since I had some time on my hands, I made the 20-minute walk to one of my new hometown's record stores where Fountains of Wayne (FOW) was playing an acoustic in-store set. Their album from a few years prior, “Welcome Interstate Managers,” was in heavy rotation when I made the drive from Dallas to Portland. It was (and is) a great album for long drives – melodic, catchy, and (mostly) up-tempo. Adam and the band's singer, Chris Collingwood, played several songs that night on the store's stage. Then they headed out to the next city, and I headed back home and on to many far-busier days of residency.

We would cross paths again a decade later. I moved back to Texas and became a hospitalist. It turns out that, if you have enough hospitalists of a certain age and if enough of those hospitalists have unearned confidence in their musical ability, then a covers band will undoubtedly be formed. And so, it happened here in San Antonio. We were not selective in our song choices – we played songs from every decade of the last 50 years, bands as popular as the Beatles and as indie as the Rentals. And we played some FOW.

Our band (which will go nameless here so that our YouTube recordings are more difficult to find) played a grand total of one gig during our years of intermittent practicing. That one gig was my wedding rehearsal dinner and the penultimate song we played was “Stacy's Mom,” which is notable for being both FOW's biggest hit and a completely inappropriate song to play at a wedding rehearsal dinner. The crowd



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was probably around the same size as the one that had seen Adam and Chris play in Portland 10 years prior. I don't think the applause we received was quite as genuine or deserved, though.

After Adam and Chris played their gig, there was an autograph session and I took home a signed poster. Last year, I decided to take it out of storage and hang it in my office. The date of the show and the first day of my physician career, a date now nearly 15 years ago, is written in psychedelic typography at the bottom. The store that I went to that day is no longer there, a victim of progress like so many other record stores across the country. Another location of the same store is still open in Portland. I hope that it and all the other small book and music stores across the country can survive this current crisis, but I know that many will not.

So, here's to you Adam, and to all the others who have lost their lives to this terrible illness. As a small token of remembrance, I'll be playing some Fountains of Wayne on the drive home tonight. It's not quite the same as playing it on a cross-country drive, but hopefully, we will all be able to do that again soon.

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Hospitalist Insight

Masks, fear, and loss of connection in the era of COVID-19

There is an interpersonal side to this pandemic

By Leif Hass, MD

Over the din of the negative pressure machine, I shouted goodbye to my patient and zipped my way out of one of the little plastic enclosures in our ED and carefully shed my gloves, gown, and face shield, leaving on my precious mask. I discarded the rest with disgust and a bit of fear. I thought, “This is a whole new world, and I hate it.”

I feel as if I am constantly battling the fear of dying from COVID-19 but am doing the best I can, given the circumstances at hand. I have the proper equipment and use it well. My work still brings meaning: I serve those in need without hesitation. The problem is that deep feeling of connection with patients, which is such an important part of this work, feels like fraying threads moving further apart because of the havoc this virus has wrought. A few weeks ago, the intricate fabric of what it is to be human connected me to patients through the basics: touch, facial expressions, a physical proximity, and openhearted, honest dialogue. Much of that’s gone, and while I can carry on, I will surely burn out if I can’t figure out how to get at least some of that connection back.

Overwhelmed by the amount of information I need to process daily, I had not been thinking about the interpersonal side of the pandemic for the first weeks. I felt it leaving the ED that morning and later that day, and I felt it again with Ms. Z, who was not even suspected of having COVID. She is a 62-year-old I interviewed with the help of a translator phone. At the end of our encounter, she said “But doctor, will you make my tumor go away?” From across the room, I said, “I will try.” I saw her eyes dampen as I made a hasty exit, following protocol to limit time in the room of all patients.

Typically, leaving a patient’s room, I would feel a fullness associated with a sense of meaning. How did I feel after that? In that moment, mostly ashamed at my lack of compassion during my time with Ms. Z. Then, with further reflection, tense

from all things COVID-19! Having an amped-up sympathetic nervous system is understandable, but it’s not where we want to be for our compassion to flow.

We connect best when our parasympathetic nervous system is predominant. So much of the stimuli we need to activate that part of the nervous system is gone. There is a virtuous cycle, much of it unconscious, where something positive

“With gloves, masks, distance, and fear between us and our patients, we need to actively engage our pro-social tools to turn the negative spiral of fear into the virtuous cycle of positive emotions that promotes healing.”

leads to more positivity, which is crucial to meaningful patient encounters. We read each other’s facial expressions, hear the tone of voice, and as we pick up subtle cues from our patient, our nervous system is further engaged and our hearts opened.

The specter of COVID-19 has us battling a negative spiral of stress and fear. For the most part, I try to keep that from consuming me, but it clearly saps my energy during encounters. In the same way we need to marshal our resources to battle both the stress and the disease itself, we need to actively engage pro-social elements of providing care to maintain our compassion. Clearly, I needed a more concerted effort to kick start this virtuous cycle of compassion.

My next patient was Ms. J., a 55-year-old with advanced chronic obstructive pulmonary disease (COPD) who came in the night before with shortness of breath. Her slight frame shook from coughing as I entered the room. I did not think she had COVID-19, but we were ruling it out.

We reviewed how she felt since

admission, and I performed a hasty exam and stepped back across the room. She coughed again and said, “I feel so weak, and the world feels so crazy; tell it to me straight.” Then looking in my eyes, “I am going to make it, doc?”

I took my cue from her; I walked back to the bedside, placed a gloved hand on her shoulder and with the other, I took her hand. I bent forward just a little. Making eye contact and attempting a comforting tone of voice, I said, “Everyone is a little scared, including me. We need each other more than ever these days. We will do our best for you. That means thoughtful medical care and a whole lot of love! And, truly, I don’t think you are dying; this is just one of your COPD flares.”

“God bless you!” she said, squeezing my hand as a tear rolled down her cheek.

“Bless you, too. We all need blessing with this madness going on,” I replied. Despite the mask, I am sure she saw the smile in my eyes. “Thanks for being the beautiful person you are and opening up to me. That’s the way we will make it through this. I will see you tomorrow.” Backing away, hands together in prayer, I gave a little bow and left the room.

With Ms. J.’s help, I began to figure it out. To tackle the stress of COVID, we need to be very direct – almost to the point of exaggeration – to make sure our words and actions convey what we need to express. William James, the father of psychology, believed that, if you force a smile, your emotions would follow. The neural pathways could work backward in that way. He said, “If you want a quality, act as if you have it.” The modern translation would be, “Fake it ‘til you make it.” You may be feeling stressed, but with a deep breath and a moment’s reflection on the suffering of that patient you are about to see, you can turn the tide on anxiety and give those under your care what they need.

These are unprecedented times; anxiety abounds. While we can aspire to positivity, there are times when we simply can’t muster showing it. Alternatively, as I experienced



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with Ms. J., honesty and vulnerability can open the door to meaningful connection. This can be quite powerful when we, as physicians, open up to our patients.

People are yearning for deep connection, and we should attempt to deliver it with:

- **Touch** (as we can) to convey connection.
- **Body language** that adds emphasis to our message and our emotions that may go above and beyond what we are used to.
- **Tone of voice** that enhances our words.
- **Talk** that emphasizes the big stuff, such as love, fear, connection, and community

With gloves, masks, distance, and fear between us and our patients, we need to actively engage our pro-social tools to turn the negative spiral of fear into the virtuous cycle of positive emotions that promotes healing of our patients and emotional engagement for those providing their care.

Clinician reviews of HM-centric research

By Jessica Dreicer, MD; David Fink, MD; Amber Inofuentes, MD; Alexander Lawson, MD; Ting Li, MD; Rahul Mehta, MD; Alexander S. Millard, MD; Bahnsen P. Miller, MD; Glenn Moulder, MD; Benjamin P. Sneed, MD

Section of Hospital Medicine, University of Virginia School of Medicine, Charlottesville

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By Jessica Dreicer, MD

1 Disconnect between POLST orders and end-of-life care

CLINICAL QUESTION: Do physician orders for life-sustaining treatment correlate with ICU admissions and invasive life-sustaining treatment at the end of life?

BACKGROUND: In order to reduce the mismatch between patients' desired and actual end-of-life care, the Physician Orders for Life-Sustaining Treatment (POLST) was created. POLST is a portable document delineating medical orders for emergency care treatment at the end of life including whether to attempt resuscitation and general level of medical interventions. For nursing home residents, an association between POLST creation and reduction of unwanted CPR has been substantiated. Outside of this population, the association is unknown.

STUDY DESIGN: Retrospective cohort study.

SETTING: Two academic hospitals in Washington.

SYNOPSIS: Patients older than age 18 years who had one of nine chronic health conditions associated with 90% of deaths among Medicare beneficiaries were identified using

Washington state death certificates. Additional inclusion criteria included hospital admission in the last 6 months of life and creation of a POLST prior to this admission. This led to identification of 1,818 patients. Patients with full-treatment POLST orders were significantly more likely to be admitted to the ICU as well as receive life-sustaining treatments such as mechanical ventilation, vasoactive infusions, or CPR, compared with patients with limited interventions or comfort-only POLST orders ($P < .001$ for both). 38% of patients with treatment-limiting POLSTs received aggressive end-of-life care that was discordant with their previously documented wishes.

BOTTOM LINE: Completion of POLST was associated with a greater likelihood of receiving end-of-life care that was in line with patients' previously documented wishes regarding admission to ICU and life-sustaining treatment. Washington was one of the first states to adopt POLST in 2005 and therefore these results may not be broadly applicable.

CITATION: Lee RY et al. Association of physician orders for life-sustaining treatment with ICU admission

among patients hospitalized near the end of life. JAMA. 2020 Feb 16;323(10):950-60.

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By Amber Inofuentes, MD

2 Treatment of opioid use disorder with buprenorphine and methadone effective but underutilized

CLINICAL QUESTION: In clinical practice, what is the effectiveness of different treatment pathways for opioid use disorder?

BACKGROUND:

Opioid use disorder (OUD) is a chronic disease with a high health care and societal burden from overdose and complications requiring hospitalization.

Dr. Inofuentes

Though clinical trials demonstrate effectiveness of methadone and buprenorphine, most patients do not have access to these medications.

STUDY DESIGN: Retrospective comparative effectiveness study.

SETTING: Nationwide claims database of commercial and Medicare Advantage Enrollees.

SYNOPSIS: A total of 40,885 individuals aged 16 years or older with OUD were studied in an intent-to-treat analysis of six unique treatment pathways. Though used in just 12.5% of patients, only treatment with buprenorphine or methadone was protective against overdose at 3 and 12 months, compared with no treatment. Additionally, these medications and nonintensive behavioral health counseling were associated with lower incidence of acute care episodes from complications of opioid use. Notably, those treated with buprenorphine or methadone for more than 6 months received the greatest benefit. With use of only health care encounters, the results may underes-

timate incidence of complications of ongoing opioid misuse.

BOTTOM LINE: Buprenorphine and methadone for OUD were associated with reduced overdose and opioid-related morbidity, compared with opioid antagonist therapy, inpatient treatment, or intensive outpatient behavioral interventions and should be considered a first-line treatment.

CITATION: Wakeman SE et al. Comparative effectiveness of different treatment pathways for opioid use disorder. JAMA Netw Open. 2020 Feb 5;3(2):e1920622. doi: 10.1001/jama-networkopen.2019.20622.

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By Alexander Lawson, MD

3 Pharmacologic and electrical cardioversion of acute Afib reduces hospital admissions

CLINICAL QUESTION: Is pharmacologic cardioversion and/or electrical cardioversion an appropriate initial management strategy for acute atrial fibrillation?

BACKGROUND:

Atrial fibrillation (Afib) is the most common arrhythmia requiring treatment in the ED. There is a paucity of literature regarding the management of acute (onset

< 48 h) atrial fibrillation in this setting and no conclusive evidence exists regarding the superiority of pharmacologic vs. electrical cardioversion.

STUDY DESIGN: Multicenter, single-blind, randomized, placebo-controlled trial.

SETTING: 11 Canadian academic medical centers.

SYNOPSIS: In this trial of 396 patients with acute Afib, half were randomly assigned to pharmacologic cardioversion with procainamide



Dr. Lawson



Dr. Inofuentes

infusion (followed by DC cardioversion, if unsuccessful), while half were given a placebo infusion then DC cardioversion. The primary outcome was conversion to sinus rhythm, with maintenance of sinus rhythm at 30 minutes. A secondary protocol evaluated the difference in efficacy between anterolateral (AL) and anteroposterior (AP) pad placement.

The “drug-shock” group achieved and maintained sinus rhythm in 96% of cases, compared to 92% in the “placebo-shock” group (statistically insignificant difference). The procainamide infusion alone achieved and maintained sinus rhythm in 52% of recipients, who thereby avoided the need for procedural sedation and monitoring. Notably, only 2% of patients in the study required admission to the hospital. Pad placement was equally efficacious in the AL or AP positions. The most common adverse event observed was transient hypotension during infusion of procainamide. No strokes were observed in either arm. Follow-up ECGs obtained 14 days later showed that 95% of patients remained in sinus rhythm.

BOTTOM LINE: Pharmacologic cardioversion with procainamide infusion and/or electrical cardiover-

sion is a safe and efficacious initial management strategy for acute atrial fibrillation, and all but eliminates the need for hospital admission.

CITATION: Stiell IG et al. Electrical versus pharmacological cardioversion for emergency department patients with acute atrial fibrillation (RAFF2): a partial factorial randomized trial. *Lancet*. 2020 Feb 1;395(10221):339-49.

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By Ting Li, MD

4 Empirical anti-MRSA therapy does not improve mortality in patients with pneumonia

CLINICAL QUESTION: Does empirical anti-methicillin-resistant *Staphylococcus aureus* (MRSA) therapy affect 30-day mortality in patients hospitalized with pneumonia, when compared with standard antibiotic regimens?

BACKGROUND: Empirical broad-spectrum antibiotics including anti-MRSA therapy are often selected because of concerns for resistant organisms. However, the outcomes of empirical anti-MRSA

therapy among patients with pneumonia are unknown.

STUDY DESIGN: A national retrospective multicenter cohort study of hospitalizations for pneumonia.

SETTING: This cohort study included 88,605 hospitalizations for pneumonia in the Veterans Health Administration health care system during 2008-2013, in which patients

received either anti-MRSA or standard therapy for community-onset pneumonia.

SYNOPSIS: Among 88,605 hospitalizations for pneumonia, 38% of the patients received empirical anti-MRSA therapy within the first day of hospitalization and vancomycin accounted for 98% of the therapy. The primary outcome was 30-day all-cause mortality after adjustment for patient comorbidities, vital signs, and laboratory results. Three treatment groups were studied: patients receiving anti-MRSA therapy (vancomycin hydrochloride or linezolid) plus guideline-recommended standard antibiotics (beta-lactam

and macrolide or tetracycline hydrochloride, or fluoroquinolone); patients receiving anti-MRSA therapy without standard antibiotics; and patients receiving standard therapy alone. There was no mortality benefit of empirical anti-MRSA therapy versus standard antibiotics, even in those with risk factors for MRSA or in those whose clinical severity warranted admission to the ICU. Empirical anti-MRSA treatment was associated with greater 30-day mortality compared with standard therapy alone, with an adjusted risk ratio of 1.4 (95% confidence interval, 1.3-1.5) versus empirical anti-MRSA treatment plus standard therapy and 1.5 (1.4-1.6) versus empirical anti-MRSA treatment without standard therapy.

BOTTOM LINE: Empirical anti-MRSA therapy does not improve mortality and should not be routinely used in patients hospitalized for community-onset pneumonia, even in those with MRSA risk factors.

CITATION: Jones BE et al. Empirical anti-MRSA vs. standard antibiotic therapy and risk of 30-day mortality in patients hospitalized for pneumonia. *JAMA Intern Med*. 2020 Feb 17;180(4):552-60.

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5 Acid suppression therapy increases intestinal colonization of MDROs

CLINICAL QUESTION: Is acid suppression therapy associated with an increased risk of intestinal colonization with multidrug-resistant microorganisms (MDROs)?

BACKGROUND: Acid suppressants inhibit gastric acid secretion and disrupt the intestinal microbiome, but whether that facilitates colonization and infection with MDROs is unclear.

STUDY DESIGN: Systematic review and meta-analysis.

SETTING: Observational studies searched from database through July 2019.

SYNOPSIS: A total of 26 observational studies published during 1996-2019 with 29,382 patients were included in this meta-analysis. Of those, 24 studies directly measured intestinal MDRO carriage and 2 used urinary tract infections (UTIs) as the outcome measure, since most UTIs are caused by bacteria that colonize the intestinal tract. Target MDROs included multidrug-resistant Enterobacteriaceae (MRD-E) and vancomycin-resistant enterococci (VRE). Meta-analysis demonstrated that acid suppression is associated with increased odds of intestinal MDRO colonization (MDR-E: odds ratio, 1.60; 95% confidence interval, 1.33-1.92; VRE: OR, 1.97; 95% CI, 1.49-2.60), in both community and health care settings. The risk was similar for colonization with MDR-E and VRE. Regarding the effect of acid suppression by drug class, results were mixed with some studies demonstrating increased risk of MDRO in PPI users only while others reported increased risk only with H₂-receptor antagonists.

BOTTOM LINE: Acid suppression therapy is associated with increased odds of MDRO colonization. While observational studies cannot prove causation, it is wise to avoid excessive use of acid suppressants.

CITATION: Willems RPJ et al. Evaluation of the association between gastric acid suppression and risk of intestinal colonization with multidrug-resistant microorganisms: A systematic review and meta-analysis. *JAMA Intern Med.* 2020 Feb 24;180(4):561-71.

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By Rahul Mehta, MD

6 Aspirin efficacious and safe for VTE prophylaxis in total hip and knee replacement

CLINICAL QUESTION: Is aspirin effective and safe for VTE prophylaxis in patients undergoing total hip and knee replacement?



Dr. Mehta

BACKGROUND:

Most patients undergoing total hip replacement (THR) and total knee replacement (TKR) require anticoagulant therapy to reduce venous thromboembolism (VTE) risk. Compared with injectable low-molecular-weight heparin (LMWH), warfarin, and newer oral agents, aspirin is easily administered, inexpensive, and well tolerated and requires no monitoring. There are observational data to support aspirin as VTE prophylaxis after THR and TKR. However, high-quality randomized, clinical trials (RCT) in favor of aspirin have been limited. Recently, a large RCT (n = 3,224) that compared aspirin to rivaroxaban after THR and TKR has been published that supports aspirin use for VTE prophylaxis.

STUDY DESIGN: Systematic review and meta-analysis.

SETTING: Seven studies from North America, four from Asia, and two from Europe.

SYNOPSIS: In a meta-analysis comprising 13 RCT including 6,060 participants (2,969 aspirin and 3,091 comparator), there was no statistically significant difference in the risk of venous thromboembolism (including deep-vein thrombosis and pulmonary embolism) when comparing aspirin with other anticoagulants (LMWH, rivaroxaban) in patients undergoing THR and TKR. Also, there were no differences in the risk of adverse events, such as bleeding, wound complications, MI, and death, when aspirin was compared with other anticoagulants.

This systematic review and meta-analysis included trials from around the world, including the most recent and largest in this area. However, because of the heterogeneity and high risk of bias encountered in most RCTs included in this analysis, additional large, well-designed RCTs are needed to validate findings of this review.

BOTTOM LINE: Findings of the current meta-analysis support the use of aspirin for VTE prophylaxis after

THR and TKR, in line with the 2012 recommendations of the American College of Chest Physicians.

CITATION: Matharu GS et al. Clinical effectiveness and safety of aspirin for venous thromboembolism prophylaxis after total hip and knee replacement. *JAMA Intern Med.* 2020 Feb 3;180(3):376-84.

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By Alexander S. Millard, MD

7 Antibiotic prophylaxis to prevent spontaneous bacterial peritonitis may not be effective

CLINICAL QUESTION: In patients with cirrhosis, is antibiotic prophylaxis beneficial to prevent spontaneous bacterial peritonitis?



Dr. Millard

BACKGROUND:

Spontaneous bacterial peritonitis is common and is associated with significant short-term mortality. Antibiotic prophylaxis is the mainstay preventive treatment,

but there is concern about development of drug resistance and other adverse events. There is uncertainty regarding relative efficacy and optimal combination of the different available prophylactic treatments.

STUDY DESIGN: 29 randomized clinical trials.

SYNOPSIS: Across 29 randomized clinical trials (total of 3,896 participants) looking at nine different antibiotic regimens for prophylaxis of spontaneous bacterial peritonitis, there was no evidence of differences between any of the antibiotics and no intervention in terms of mortality or serious adverse events, though there was very low certainty of evidence. The authors felt only two small studies were conducted without flaws. There was no difference between any of the antibiotics and no intervention in the proportion of people who developed spontaneous bacterial peritonitis. Overall, 10% of trial participants developed spontaneous bacterial peritonitis and 15% of trial participants died. The lack of effectiveness of across several outcomes may be because of sparse data and selective reporting bias.

BOTTOM LINE: Whether antibiotics are effective prophylaxis to prevent spontaneous bacterial peritonitis and which antibiotics should

be used is still uncertain; future well-designed studies are needed.

CITATION: Komolafe O et al. Antibiotic prophylaxis to prevent spontaneous bacterial peritonitis in people with liver cirrhosis: A network meta-analysis. *Cochrane Database Syst Rev.* 2020 Jan 16;1:CD013125. doi: 10.1002/14651858.CD013125.pub2.

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By Bahnsen P. Miller, MD

8 Accelerated surgery for hip fracture did not lower risk of mortality or major complications

CLINICAL QUESTION: In patients with hip fracture, does surgery within 6 hours of diagnosis improve outcomes versus standard care?

BACKGROUND: Patients diag-



Dr. Miller

nosed with a hip fracture are at substantial risk of major complications and mortality. Observational studies have suggested that accelerated surgery for a hip fracture is associated with

lower risk of mortality and major complications.

STUDY DESIGN: International, randomized, controlled trial (RCT).

SETTING: 69 hospitals in 17 countries.

SYNOPSIS: This RCT enrolled 2,970 patients with a hip fracture, aged 45 years and older. The median time from hip fracture diagnosis to surgery was 6 h in the accelerated surgery group (n = 1,487) and 24 h in the standard-care group (n = 1,483). A total of 140 (9%) patients assigned to accelerated surgery and 154 (10%) assigned to standard care died at 90 days after randomization (P = .40). Composite of major complications (mortality, nonfatal MI, stroke, venous thromboembolism, sepsis, pneumonia, life-threatening bleeding, and major bleeding) occurred in 321 (22%) patients assigned to accelerated surgery and 331 (22%) assigned to standard care at 90 days after randomization (p = .71). However, accelerated surgery was associated with lower risk of delirium, urinary tract infection, and moderate to severe pain and resulted in faster mobilization and shorter length of stay.

Practical limitations include the additional resources needed for an accelerated surgical pathway such

as staffing and operating room time. Furthermore, this study included only patients diagnosed during regular working hours.

BOTTOM LINE: Among patients with a hip fracture, accelerated surgery did not lower the risk of the coprimary outcomes of mortality or a composite of major complications at 90 days compared with standard care.

CITATION: Borges F et al. Accelerated surgery versus standard care in hip fracture (HIP ATTACK): An international, randomised, controlled trial. *Lancet*. 2020 Feb 29; 395(10225), 698-708.

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By Glenn Moulder, MD

9 No prehydration prior to contrast-enhanced CT in patients with stage 3 CKD

CLINICAL QUESTION: What is the renal safety of omitting prehydration with sodium bicarbonate prior to iodine-based contrast media in patients with stage 3 chronic kidney disease (CKD)?

BACKGROUND: Postcontrast acute kidney injury (PC-AKI) is known to have a mild, often self-limiting, clinical course. Despite this, preventative measures are advised by international guidelines in high-risk patients.

STUDY DESIGN: The Kompas trial was a multicenter, open-label, non-inferiority randomized clinical trial in which 523 patients with stage 3 CKD were randomized to receive no hydration or prehydration with 250 mL of 1.4% sodium bicarbonate in a 1-hour infusion before undergoing elective contrast-enhanced CT. The primary endpoint was the mean relative increase in serum creatinine 2-5 days after contrast administration, compared with baseline.

SETTING: Six hospitals in the Netherlands during April 2013–September 2016.

SYNOPSIS: Of the 523 patients, (median age, 74 years), the mean relative increase in creatinine level 2-5 days after contrast administration compared with baseline was 3.0% in the no-prehydration group vs. 3.5% in the prehydration group. This demonstrates that withholding prehydration is noninferior to administering prehydration. PC-AKI occurred in 7 of 262 patients in the no-prehydration group and 4 of 261 patients in the prehydration group and no patients required dialysis or

developed heart failure. These results reassure us that prehydration with sodium bicarbonate can be safely omitted in patients with stage 3 CKD who undergo contrast-enhanced CT.



Dr. Moulder

BOTTOM LINE: Prehydration with sodium bicarbonate is not needed to prevent additional renal injury in patients with CKD stage 3 undergoing contrast-enhanced CT imaging.

CITATION: Timal RJ et al. Effect of no prehydration vs sodium bicarbonate prehydration prior to contrast-enhanced computed tomography in the prevention of postcontrast acute kidney injury in adults with chronic kidney disease: The Kompas Randomized Clinical Trial. *JAMA Intern Med*. 2020 Feb 17. doi: 10.1001/jamainternmed.2019.7428.

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By Benjamin P. Sneed, MD

10 Unclear benefit to home NIPPV in COPD

CLINICAL QUESTION: Are better outcomes achieved with use of home NIPPV for patients with COPD and hypercapnia?

BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a prevalent condition that is associated with significant mortality, morbidity, and health care utilization. Use of noninvasive positive-pressure ventilation (NIPPV) in acute hypercapnic respiratory failure caused by COPD exacerbations is well established. However, the benefits of in-home NIPPV for COPD with chronic hypercapnia is unclear.

STUDY DESIGN: Systematic review and meta-analysis.

SETTING: Multicenter catchment of 21 randomized control trials (RCTs) and 12 observational studies involving more than 51,000 patients during 1995-2019.

SYNOPSIS: Patients included were those with COPD and hypercapnia who used NIPPV for more than 1 month. Home bilevel positive airway pressure (BiPAP), compared to no device use was associated with lower risk of mortality, all-cause hospital admission, and intubation, but no significant difference in quality of life. Noninvasive home mechani-

cal ventilation, compared with no device was significantly associated with lower risk of hospital admission, but not a significant difference in mortality. Of note, there was no statistically significant difference in any outcome for either BiPAP or home mechanical ventilation if evidence was limited to RCTs. Importantly, on rigorous measure, the evidence was low to moderate quality or insufficient, and some outcomes analysis was based on small numbers of studies.

BOTTOM LINE: While there is suggestion of benefit on some measures with the use of home NIPPV, the evidence is not robust enough to clearly guide use.

CITATION: Wilson et al. Association of home noninvasive positive pressure ventilation with clinical outcomes in chronic obstructive pulmonary disease. *JAMA*. 2020 Feb 4;323(5):455-65.

11 Early transition to oral beta-lactams for low-risk S. aureus bacteremia may be acceptable

CLINICAL QUESTION: Is early switch to oral antibiotics safe in low-risk *Staphylococcus aureus* bacteremia (LR-SAB)?

BACKGROUND: There is consensus that LR-SAB can be safely treated with 14 days of antibiotic therapy, but the use of and/or proportion of duration of oral antibiotics is not clear. There is evidence that oral therapy has fewer treatment complications, compared with IV treatments. Objective of this study was to assess the safety of early oral switch (EOS) prior to 14 days for LR-SAB.

STUDY DESIGN: Retrospective cohort study.

SETTING: Single institution tertiary care hospital in Wellington, New Zealand.

SYNOPSIS: Study population included adults with health care-

associated SAB deemed low risk (no positive blood cultures >72 hours after initial positive culture, no evidence of deep infection as determined by an infectious disease consultant, no nonremovable prosthetics). The primary outcome was occurrence of SAB-related complication (recurrence of SAB, deep-seated infection, readmission, attributable mortality) within 90 days.

Of the initial 469 episodes of SAB, 100 met inclusion, and 84 of those patients had EOS. Line infection was the source in a majority of patients (79% and 88% in EOS and IV, respectively). Only 5% of patients had MRSA. Overall, 86% of EOS patients were treated with an oral beta-lactam, within the EOS group, median duration of IV and oral antibiotics was 5 and 10 days, respectively. SAB recurrence within 90 days occurred in three (4%) and one (6%) patients in EOS vs. IV groups, respectively ($P = .64$). No deaths within 90 days were deemed attributable to SAB. Limitations include small size, single center, and observational, retrospective framework.

BOTTOM LINE: The study suggests that EOS with oral beta-lactams in selected patients with LR-SAB may be adequate; however, the study is too small to provide robust high-level evidence. Instead, the authors hope the data will lead to larger, more powerful prospective studies to examine if a simpler, cheaper, and in some ways safer treatment course is possible.

CITATION: Bupha-Intr O et al. Efficacy of early oral switch with beta-lactams for low-risk *Staphylococcus aureus* bacteremia. *Antimicrob Agents Chemother*. 2020 Feb 3;AAC.02345-19. doi: 10.1128/AAC.02345-19.

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SHORT TAKES

Beta-lactam plus standard therapy for MRSA bacteremia did not improve outcomes

In a randomized, controlled trial, the addition of beta-lactam antibiotics to standard therapy (daptomycin or vancomycin) for treatment of methicillin-resistant *Staphylococcus aureus* did not improve patient outcomes. There was a statistically significant increase in acute kidney injury in patients receiving combination therapy causing the trial to be terminated early.

CITATION: Tong SYC et al. Effect of vancomycin or daptomycin with vs without a antistaphylococcal B-lactam on mortality, relapse, or treatment failure in patients with MRSA bacteremia; A randomized clinical trial. *JAMA*. 2020 Feb 11;323(6):527-37.

Analysis

The third surge: Are we prepared for the non-COVID crisis?

Innovative thinking from hospital leaders is required

By **Rupesh Prasad, MD, SFHM, FACP;**
Venkataraman Palabindala, MD, MBA,
SFHM

Over the last several weeks, hospitals and health systems have focused on the COVID-19 epidemic, preparing and expanding bed capacities for the surge of admissions both in intensive care and medical units. An indirect impact of this has been the reduction in outpatient staffing and resources, with the shifting of staff for inpatient care. Many areas seem to have passed the peak in the number of cases and are now seeing a plateau or downward trend in the admissions to acute care facilities.

second surge of COVID-19 cases, health systems would do well to be prepared for the “third surge,” consisting of patients coming in with chronic medical conditions for which they have been, so far, avoiding follow-up and managing at home, and acute medical conditions with delayed diagnoses. The impact could likely be more in the subset of patients with limited access to health care, including medications and follow-up, resulting in a disproportionate burden on safety-net hospitals.

Compounding this issue would be the economic impact of the current crisis on health systems, their staffing, and resources. Several major organizations have already proposed budget cuts and reduction of the work force, raising significant

concerns about the future of health care workers who put their lives at risk during this pandemic.⁴ There is no guarantee that the federal funding provided by the stimulus packages will save jobs in the health care industry. This problem needs new leadership thinking, and every organization that puts employees over profit margins will have a long-term impact on communities.

Another area of concern is a shift in resources and work flow from ambulatory to inpatient settings for the COVID-19 pandemic, and the need for revamping the ambulatory services with reshifting the work force. As COVID-19 cases plateau, the resurgence of non-COVID-related admissions will require additional help in inpatient settings. Prioritizing the ambulatory services based on financial benefits versus patient outcomes is also a major challenge to leadership.⁵

Lastly, the current health care crisis has led to significant stress, both emotional and physical, among frontline caregivers, increasing the risk of burnout.⁶ How leadership helps health care workers to cope with these stressors, and the resources they provide, is going to play a key role in long term retention of their talent, and will reflect on the organizational culture. Though it might seem trivial, posttraumatic stress disorder related to this is already obvious, and health care leadership needs to put every effort in providing the resources to help prevent burnout, in partnership with national organizations like the Society of Hospital Medicine and the American College of Physicians.

During this period, there has been a noticeable downtrend in patients being evaluated in the ED, or admitted for decompensation of chronic conditions like heart failure, chronic obstructive pulmonary disease (COPD), and diabetes mellitus, or such acute conditions as stroke and MI. Studies from Italy and Spain, and closer to home from Atlanta and Boston, point to a significant decrease in numbers of ST-elevation myocardial infarction (STEMI) admissions.¹ Duke Health saw a decrease in stroke admissions in their hospitals by 34%.²

One could argue that these patients are in fact presenting with COVID-19 or similar symptoms as is evidenced by the studies linking the severity of SARS-CoV-2 infection to chronic conditions like diabetes mellitus and obesity.² On the other hand, the message of social isolation and avoidance of nonurgent visits could lead to delays in care resulting in patients presenting sicker and in advanced stages.³ Also, this has not been limited to the adult population. For example, reports indicate that visits to WakeMed’s pediatric emergency rooms in Wake County, N.C., were down by 60%.²

We could well be seeing a calm before the storm. While it is anticipated that there may be a



Dr. Prasad



Dr. Palabindala

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The expansion of telemedicine has provided a unique opportunity to address several of these issues while maintaining the nonpharmacologic interventions to fight the epidemic, and keeping the cost curve as low as possible.⁷ Extension of these services to all ambulatory service lines, including home health and therapy, is the next big step in the new health care era. Virtual check-ins by physicians, advance practice clinicians, and home care nurses could help alleviate the concerns regarding delays in care of patients with chronic conditions, and help identify those at risk. This would also be of help with staffing shortages, and possibly provide much-needed support to frontline providers.

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Cambridge Health Alliance (CHA), a well-respected, nationally recognized and award-winning public healthcare system, is recruiting for **part time and full time** hospitalists/nocturnists. CHA is a teaching affiliate of Harvard Medical School (HMS) and Tufts University School of Medicine. Our system is comprised of 3 campuses and an integrated network of primary and specialty outpatient care practices.

- Schedule will consist of daytime and nighttime shifts, nocturnist positions are available
- Academic Appointment at Harvard Medical School
- Opportunity to teach medical students and residents
- Two coverage locations approximately 5 miles apart
- Physician assistant support at both locations
- CHA's hospitalist department consists of 25+ clinicians

Ideal candidates will be Board Certified, patient centered and demonstrate a strong commitment to work with a multicultural, underserved patient population. Experience and interest in performing procedures and community ICU coverage preferred. We offer a supportive and collegial environment, strong infrastructure, fully integrated electronic medical record system (EPIC) and competitive salary/benefits package.

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Liz Mahan • (413) 395-7866

Emahan@bhs1.org

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THE Hospitalist

**To advertise in
The Hospitalist or the
Journal of Hospital Medicine**

CONTACT:

Heather Gonroski
973.290.8259
hgonroski@mdedge.com

or

Linda Wilson
973.290.8243
lwilson@mdedge.com



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or fax to: (516) 663-8964

Ph: (516) 663-8963

Attn: Vice Chairman, Dept of Medicine-Hospital Operations

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NYU Winthrop Hospital is located in the heart of Nassau County in suburban Long Island, 30 miles from NYC and just minutes from LI's beautiful beaches.



THE Hospitalist

**To advertise in
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Practice Management

The CDI APP adviser

A novel approach to APP documentation engagement

By Debra Anoff MD, FACP, FHM, and
Amanda Brill, MSN, ACNP-BC

As hospitals and clinicians, we are facing increased scrutiny of the care we provide to our patients. There is increased demand for more transparency of our outcomes and a need for increased efficiency of the care we provide in the setting of already significant documentation burden and its known impact on provider burnout.

Clinical documentation integrity (CDI) is an instrumental department which supports complete and accurate documentation, serving as a bridge between physicians and hospital coders such that hospital reimbursement is appropriate and quality metrics are attributed appropriately to the hospital, service lines, and individual providers. Complete and accurate documentation also leads to the submission of coded/claims-based data reflecting provider true intent and to clinically valid data for research and patient centric purposes. For this reason, the physician adviser role as a liaison between physicians and CDI and coding, in addition to utilization management and case management, has become more commonplace. The physician adviser role has been a mainstay of CDI programs across the United States since as early as 2012.

At the University of Colorado Health (UCHealth), the physician adviser role first began in 2015 at our major academic medical center, the University of Colorado Hospital (UCH). That physician adviser, after the additional physician adviser FTE at UCH, having established relationships with physicians across service lines, began to focus on CDI-related education and communication as it pertained to inpatient documentation.

At our institution we have approximately 500 advance practice providers (APPs). Approximately two-thirds of the APPs care for inpatients on a myriad of different service lines and, along with physician learners from interns to fellows, complete the bulk of the documentation in the electronic health record.

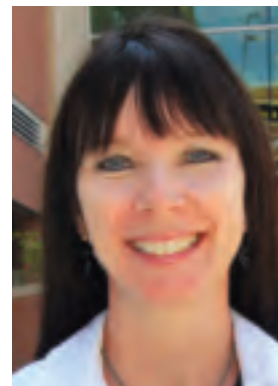
In early 2018, the UCHealth office of advanced practice collaborated with CDI in its mission to optimize documentation with the aim to have a positive impact on reimbursement and quality metrics while highlighting APP value. In the relatively early stages of the collaboration it became evident that an APP adviser could be an innovative and effective approach in engaging our many APPs with CDI as faculty members who are generally service line based and, as such, invested in hospital and service line outcomes.

A business case for a new position of APP adviser for CDI was formulated based on not only the number of APP faculty and learners at our institution, but also on the premise that the level of consistency APPs provide would increase reliability in the adoption and adaptation of documentation practices as medicine and coding rules

evolve. In addition, APP documentation can stand alone without physician attestation or signature, unlike physicians in training, further making them ideally suited collaborators. The position was approved by hospital leadership and the first APP adviser for CDI in the country (of whom we are aware) was hired at UCH in July 2019.

A dedicated APP CDI adviser facilitates the success of a CDI/APP collaboration through a better understanding of APP engagement needs largely by creating new and/or fostering existing relationships between the APP adviser and the APPs for each service line. The APP CDI adviser identifies the needs of the team in order to maximally enhance their documentation while illustrating how the work/collaboration can positively contribute to APP clinical and/or academic goals. The APP CDI adviser possesses a deeper knowledge of APP clinical work flow and how that work flow might be impacting the documentation. He or she utilizes information gathered from the APP team to create more efficient note templates, provide lunch and learns with different service line APPs, and offer 1:1 drop-in documentation support, allowing for more feedback flexibility in context of their clinical work flow.

This real time input may be received more positively and be perceived as less intimidating in the peer-to-peer context. The APP adviser also attends various educational forums to which the physician advisers may not have access. For example, the APP adviser attends monthly APP orientation to meet new APPs for the institution, attends APP council, is a member of the APP steering committee, and provides documentation tips for the APP monthly newsletter.



Dr. Anoff



Ms. Brill

Dr. Anoff is associate professor of clinical practice in the division of hospital medicine and medical director of clinical documentation integrity at University of Colorado Health, Denver. Ms. Brill is senior instructor in the department of neurosurgery and APP adviser of clinical documentation integrity at UCHealth Denver Metro.

At this point we are in the process of collecting pre- and post data to illustrate the benefit of a CDI APP adviser (and the CDI APP collaboration as a whole) through metrics such as CC/MCC capture rate, case mix index, and mortality and length of stay as influenced by the level of complexity in documentation. We hope to add APPs as advisers across the UCHealth system over time and to continue to highlight and publish the experience and outcomes related to this innovative role as it evolves such that other institutions across the country will consider this type of collaboration.



Farewell to Larry Wellikson, MD, MHM

SHM cofounders praise the Society's outgoing CEO

Setting the table for over 2 decades

By Win Whitcomb, MD, MHM

I first met Larry in the spring of 1998 after I had made a presentation to the American College of Physicians' Board of Regents on the Society for Hospital Medicine's (then the National Association of Inpatient Physicians) new position statement that referral to hospitalists by primary care physicians should be voluntary. At the time, a number of managed care companies around the U.S. were compelling primary care physicians to use hospitalists to care for their hospitalized patients apparently because they felt hospitalists could do it more efficiently. SHM became the first professional society to voice the position which in turn was broadly endorsed by physician organizations, including the American Medical Association and the ACP.

Larry sought me out and seemed keen on becoming a part of the rapidly accelerating hospitalist movement and, in retrospect, putting his signature on it. He had recently built and exited from a large, successful independent physician association (IPA) during the heyday of California managed care and was eager for a new challenge.

Unlike me, who was just a few years out of residency, Larry was at the height of his professional powers, with the right blend of experience on the one hand and energy on the other to take on a project like SHM.

Larry's first contribution came in the form of facilitating a strategic planning meeting with the SHM board in the autumn of 1998. Dr. John Nelson had moved to Philadelphia for 3 months to establish the operational foundation of SHM and guide its first staff member, Angela Musial. Larry was a taskmaster, forcing us to make tough choices about what we wanted to accomplish and to establish concrete goals with timelines and milestones. The adult supervision Larry brought was a new and vital thing for us.

There was a lot at stake in '97, '98, and '99. The demand for hospitalists across the nation was skyrocketing and there was a strong need for leadership and bold direction. Academics, community-based hospitalists, pediatricians, entrepreneurs, nonphysician hospital team members, heads of organized medicine, and government and industry leaders were just some of the key stakeholders looking for a seat at the table that Larry would set for some 2 decades.

From the beginning, many observers remarked that SHM had established an aggressive agenda. There was an unrelenting need to erect a big tent as a home for diverse stakeholders. It was against this backdrop, in late 1999, while on a cross-country flight to promote SHM, that John; Dr. Bob Wachter (who had succeeded me and John as SHM president); and I decided we needed a full-time CEO. Each of us had spoken with Larry, and we decided, with buy-in from the board, that we would offer him the position. He accepted and became CEO in January 2000.

To list all of Larry's accomplishments since taking the helm would be impossible. Instead, I would like to note character traits Larry brought

to SHM that are a large part of the reason SHM has been so successful over the past 20 years:

Solution oriented. SHM's culture has always been to take conditions as they are and work to make things better. There is no place for excessively airing grievances and complaining about "what is being done to us."

Eschewing the status quo. We can do better. There is too much that needs to be done to wait.

Appropriately irreverent of the norms of the medical establishment. Physicians are by nature careful, considered, cautious, and methodical. The velocity of change in HM called for a different approach in order to be relevant, one better characterized as the move-fast-and-break-things ethos of a Silicon Valley startup.

Bringing diverse stakeholders to the table. A signature move has been to assemble influential people to lay out the issues before setting a course of action.

Strong bias to action. There is a time to analyze and discuss, but all of this ultimately is in service of taking action to achieve a tangible result.

Working to achieve consensus, then moving forward. Considerable resources have been put into bringing stakeholders together, studying problems, and gaining a common understanding of issues. But never at the expense of taking bold action, even if controversial at times.

Involving industry in creative ways to the benefit of patients. SHM pioneered an approach to use resources gained through industry partnerships to perform national scale improvement activities with groups of hospitalist mentor-experts working with local teams to make care more reliable for patients.

Tirelessly connecting to frontline hospitalists. The lifeblood of SHM is frontline hospitalists. Larry has taken the time to develop relationships with as many as possible, often through personally visiting their communities.

Dr. Whitcomb is medical director of a COVID-19 surge unit in E. Longmeadow, Mass., and cofounder and past president of SHM.

Dynamism

By John Nelson, MD, MHM

You probably know a few people with a magnetic personality. Larry Wellikson is the neodymium variety. Boundless energy, confidence that he has the answer or knows exactly where to find it, and the ability to instantly recall every conversation he's had with you are traits that have energized his years leading SHM and have led countless people to regard him as friend and mentor.

Watch him at the SHM Annual Conference. There he goes, fast walking to his next commitment while facing backward to complete from a growing distance the conversation with a person

he just bumped into along the way. It is like this for Larry from 6 a.m. until midnight. Like Alexander Hamilton, "the man is nonstop."

Bill Campbell was the "Trillion Dollar Coach" who had success as a business leader but is best known for mentoring Steve Jobs and many others who went on to become titans of tech. Larry is hospital medicine's "Coach," and has inspired and guided the careers of so many clinicians, administrators, and entrepreneurs in hospital medicine and health care more broadly.

Larry is a great storyteller, and it doesn't take long for a conversation with him to arrive at the point where he cites the example of how issues faced by someone else have parallels to your situation, the advice he gave that person, and how things turned out. Mostly this advice is about navigating professional life, but he is also happy to share wisdom about parenting, marriage, money, and sports. And most any other topic.

Larry was very accomplished even prior to connecting with SHM. He had a thriving clinical career, and though he left practice long ago he has maintained a close connection with many people he first met when they were his patients. I was surprised years ago when he drove up in a new top-of-the-line Lexus – the two-seater with the solid convertible roof that folded into the trunk with the push of a button. I expressed surprise that he'd buy such a swanky car and he explained that a former patient, now long-time friend, was a Lexus distributor and arranged for Larry to drive it away for something like the cost of a Camry.

He also had terrific success forming and leading a large California IPA prior to connecting with SHM. Just ask him to show you the magazine with him on the cover and a glowing article detailing his accomplishments. Seriously, ask him, there's a good chance he'll have a copy with him.

When Dr. Win Whitcomb and I were trying to figure out how to start a new medical society and position our field to mature into a real specialty we were lucky enough to connect with many health care leaders who we thought could help. Most tended to pat us on the shoulder and say something along the lines of "good luck with your little hobby, now I have to get back to my important work." But here was Larry with his impressive resume, having served as one of the leaders who crafted the merger of two giant medical societies (ACP and the American Society of Internal Medicine), keenly interested in our tiny new organization, and excited to serve as facilitator for our first strategic planning session.

SHM got a turbocharger when Larry signed on. For me it has felt like speeding down a highway, top down, radio blasting great music, in happy anticipation of what is around the next corner. I have never been disappointed, and certainly don't plan to get out of Larry's car just because he's retiring as CEO.

Dr. Nelson is cofounder and past president of SHM and principal in Nelson Flores Hospital Medicine Consultants in La Quinta, Calif.



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