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For patients hospitalized with COVID-19,<sup>1</sup>

# HELP REDUCE DISEASE PROGRESSION AND SHORTEN RECOVERY TIME<sup>1,2</sup>

## INDICATION

VEKLURY is indicated for the treatment of COVID-19 in adults and pediatric patients ( $\geq 28$  days old and weighing  $\geq 3$  kg) with positive results of SARS-CoV-2 viral testing, who are:

- Hospitalized, or
- Not hospitalized, have mild-to-moderate COVID-19, and are at high risk for progression to severe COVID-19, including hospitalization or death.

## IMPORTANT SAFETY INFORMATION

### Contraindication

- VEKLURY is contraindicated in patients with a history of clinically significant hypersensitivity reactions to VEKLURY or any of its components.

### Warnings and precautions

- **Hypersensitivity, including infusion-related and anaphylactic reactions:** Hypersensitivity, including infusion-related and anaphylactic reactions, has been observed during and following administration of VEKLURY; most reactions occurred within 1 hour. Monitor patients during infusion and observe for at least 1 hour after infusion is complete for signs and symptoms of hypersensitivity as clinically appropriate. Symptoms may include hypotension, hypertension, tachycardia, bradycardia, hypoxia, fever, dyspnea, wheezing, angioedema, rash, nausea, diaphoresis, and shivering. Slower infusion rates (maximum infusion time of up to 120 minutes) can potentially prevent these reactions. If a severe infusion-related hypersensitivity reaction occurs, immediately discontinue VEKLURY and initiate appropriate treatment (see Contraindications).
- **Increased risk of transaminase elevations:** Transaminase elevations have been observed in healthy volunteers and in patients with COVID-19 who received VEKLURY; these elevations have also been reported as a clinical feature of COVID-19. Perform hepatic laboratory testing in all patients (see Dosage and administration). Consider discontinuing VEKLURY if ALT levels increase to  $>10\times$  ULN. Discontinue VEKLURY if ALT elevation is accompanied by signs or symptoms of liver inflammation.
- **Risk of reduced antiviral activity when coadministered with chloroquine or hydroxychloroquine:** Coadministration of VEKLURY with chloroquine phosphate or hydroxychloroquine sulfate is not recommended based on data from cell culture experiments, demonstrating potential antagonism, which may lead to a decrease in the antiviral activity of VEKLURY.

### Adverse reactions

- The most common adverse reaction ( $\geq 5\%$  all grades) was nausea.
- The most common lab abnormalities ( $\geq 5\%$  all grades) were increases in ALT and AST.

### Drug interactions

- Drug interaction trials of VEKLURY and other concomitant medications have not been conducted in humans.

### Dosage and administration

- **Dosage:**
  - For adults and pediatric patients weighing  $\geq 40$  kg: 200 mg on Day 1, followed by once-daily maintenance doses of 100 mg from Day 2, administered only via intravenous infusion.
  - For pediatric patients  $\geq 28$  days old and weighing  $\geq 3$  kg to  $<40$  kg: 5 mg/kg on Day 1, followed by once-daily maintenance doses of 2.5 mg/kg from Day 2, administered only via intravenous infusion.

ECMO=extracorporeal membrane oxygenation.





In the ACTT-1 overall  
study population,  
patients experienced

**5** DAYS SHORTER  
RECOVERY TIME  
WITH VEKLURY<sup>1</sup>

**Median 10 days with VEKLURY vs 15 days with placebo; recovery rate ratio: 1.29 (95% CI, 1.12 to 1.49),  $p < 0.001$ <sup>1,2</sup>**

- Recovery was defined as patients who were no longer hospitalized or hospitalized but no longer required ongoing COVID-19 medical care

**Significantly greater likelihood of improvement in clinical status, a key secondary endpoint<sup>1</sup>**

- Patients were 54% more likely to have improved clinical status on Day 15 vs placebo; odds ratio for improvement: 1.54 (95% CI, 1.25 to 1.91)

**Helped reduce progression to more severe disease, an additional secondary endpoint<sup>1-3</sup>**

- 7% absolute reduction in incidence of new noninvasive ventilation or high-flow oxygen with VEKLURY (17%,  $n=307$ ) vs placebo (24%,  $n=266$ ) in patients who did not receive either at baseline (95% CI, -14 to -1)
- 10% absolute reduction in incidence of new mechanical ventilation or ECMO with VEKLURY (13%,  $n=402$ ) vs placebo (23%,  $n=364$ ) in patients who did not receive either at baseline (95% CI, -15 to -4)

**Adverse reaction frequency was comparable between VEKLURY and placebo<sup>1</sup>**

- All adverse reactions (ARs), Grades  $\geq 3$ : 41 (8%) with VEKLURY vs 46 (9%) with placebo; serious ARs: 2 (0.4%)\* vs 3 (0.6%); ARs leading to treatment discontinuation: 11 (2%)+ vs 15 (3%)

ACTT-1 was a randomized, double-blind, placebo-controlled, phase 3 clinical trial in hospitalized patients with confirmed SARS-CoV-2 infection and mild, moderate, or severe COVID-19. Patients received VEKLURY ( $n=541$ ) or placebo ( $n=521$ ) for up to 10 days. The primary endpoint was time to recovery within 29 days after randomization. Secondary endpoints included clinical status of patients on Day 15 as assessed on an 8-point ordinal scale and incidence of new high-flow oxygen requirement or new mechanical ventilation or ECMO.<sup>1</sup>

\*Seizure ( $n=1$ ), infusion-related reaction ( $n=1$ ).

+Seizure ( $n=1$ ), infusion-related reaction ( $n=1$ ), transaminases increased ( $n=3$ ), ALT increased and AST increased ( $n=1$ ), GFR decreased ( $n=2$ ), acute kidney injury ( $n=3$ ).

## IMPORTANT SAFETY INFORMATION (cont'd)

### Dosage and administration (cont'd)

#### • Treatment duration:

- For patients who are hospitalized and require invasive mechanical ventilation and/or ECMO, the recommended total treatment duration is 10 days. VEKLURY should be initiated as soon as possible after diagnosis of symptomatic COVID-19.
- For patients who are hospitalized and do not require invasive mechanical ventilation and/or ECMO, the recommended treatment duration is 5 days. If a patient does not demonstrate clinical improvement, treatment may be extended up to 5 additional days, for a total treatment duration of up to 10 days.
- For patients who are not hospitalized, diagnosed with mild-to-moderate COVID-19, and are at high risk for progression to severe COVID-19, including hospitalization or death, the recommended total treatment duration is 3 days. VEKLURY should be initiated as soon as possible after diagnosis of symptomatic COVID-19 and within 7 days of symptom onset.

#### • Testing prior to and during treatment: Perform eGFR, hepatic laboratory, and prothrombin time testing prior to initiating VEKLURY and during use as clinically appropriate.

#### • Renal impairment: VEKLURY is not recommended in individuals with eGFR $< 30$ mL/min.

#### • Dose preparation and administration:

- There are two different formulations of VEKLURY: VEKLURY for injection (supplied as 100 mg lyophilized powder in vial), the only approved dosage form of VEKLURY for pediatric patients weighing 3 kg to  $< 40$  kg; and VEKLURY injection (supplied as 100 mg/20 mL [5 mg/mL] solution in vial). See full Prescribing Information.
- Administration should take place under conditions where management of severe hypersensitivity reactions, such as anaphylaxis, is possible.

### Pregnancy and lactation

- **Pregnancy:** A pregnancy registry has been established. There are insufficient human data on the use of VEKLURY during pregnancy. COVID-19 is associated with adverse maternal and fetal outcomes, including preeclampsia, eclampsia, preterm birth, premature rupture of membranes, venous thromboembolic disease, and fetal death.
- **Lactation:** It is not known whether VEKLURY can pass into breast milk. Breastfeeding individuals with COVID-19 should follow practices according to clinical guidelines to avoid exposing the infant to COVID-19.

**Please see Brief Summary of full Prescribing Information on the following page.**

**References:** 1. Veklury. Prescribing Information. Gilead Sciences, Inc.; 2022. 2. Beigel JH, Tomashek KM, Dodd LE, et al; ACTT-1 Study Group. Remdesivir for the treatment of COVID-19—final report. *N Engl J Med*. 2020;383(19):1813-1826. doi:10.1056/NEJMoa2007764 3. Beigel JH, Tomashek KM, Dodd LE, et al; ACTT-1 Study Group. Remdesivir for the treatment of COVID-19—final report. Supplementary appendix. *N Engl J Med*. 2020;383(19):1813-1826. Accessed May 24, 2022. [https://www.nejm.org/doi/suppl/10.1056/NEJMoa2007764/suppl\\_file/nejmoa2007764\\_appendix.pdf](https://www.nejm.org/doi/suppl/10.1056/NEJMoa2007764/suppl_file/nejmoa2007764_appendix.pdf)



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**VEKLURY® (remdesivir)**

**Brief summary of full Prescribing Information. Please see full Prescribing Information. Rx Only.**

**INDICATIONS AND USAGE**

VEKLURY is indicated for the treatment of COVID-19 in adults and pediatric patients (≥28 days old and weighing ≥3 kg), with positive results of SARS-CoV-2 viral testing, who are:

- Hospitalized, or
- Not hospitalized, with mild-to-moderate COVID-19, and at high risk for progression to severe COVID-19, including hospitalization or death.

**DOSAGE AND ADMINISTRATION** [*Also see **Warnings and Precautions, Adverse Reactions, and Use in Specific Populations**:*]

**Testing Before Initiation and During Treatment:** Perform eGFR, hepatic laboratory, and prothrombin time testing prior to initiating VEKLURY and during use as clinically appropriate.

**Recommended Dosage in Adults and Pediatric Patients ≥28 Days Old and Weighing ≥3 kg:**

- For adults and pediatric patients weighing ≥40 kg: 200 mg on Day 1, followed by once-daily maintenance doses of 100 mg from Day 2, administered only via intravenous infusion.
- For pediatric patients ≥28 days old and weighing ≥3 kg: 5 mg/kg on Day 1, followed by once-daily maintenance doses of 2.5 mg/kg from Day 2, administered only via intravenous infusion.

**Treatment Duration:**

- For patients who are hospitalized and require invasive mechanical ventilation and/or ECMO, the recommended total treatment duration is 10 days. VEKLURY should be initiated as soon as possible after diagnosis of symptomatic COVID-19.
- For patients who are hospitalized and do not require invasive mechanical ventilation and/or ECMO, the recommended treatment duration is 5 days. If a patient does not demonstrate clinical improvement, treatment may be extended up to 5 additional days, for a total treatment duration of up to 10 days.
- For patients who are not hospitalized, diagnosed with mild-to-moderate COVID-19, and at high risk for progression to severe COVID-19, including hospitalization or death, the recommended total treatment duration is 3 days. VEKLURY should be initiated as soon as possible after diagnosis of symptomatic COVID-19 and within 7 days of symptom onset.

**Renal Impairment:** VEKLURY is not recommended in individuals with eGFR <30 mL/min.

**Dose Preparation and Administration** [*See full **Prescribing Information** for complete instructions on dose preparation, administration, and storage*]:

VEKLURY must be prepared and administered under supervision of a healthcare provider and must be administered via intravenous infusion only, over 30 to 120 minutes. Do not administer the prepared diluted solution simultaneously with any other medication.

- VEKLURY for injection (supplied as 100 mg lyophilized powder in vial) must be reconstituted with Sterile Water for Injection prior to diluting in a 100 mL or 250 mL 0.9% sodium chloride infusion bag.
- Care should be taken during admixture to prevent inadvertent microbial contamination; there is no preservative or bacteriostatic agent present in these products.

*Dosage Preparation and Administration in Pediatric Patients ≥28 Days of Age and Weighing 3 kg to <40 kg:*

The only approved dosage form of VEKLURY for pediatric patients ≥28 days of age and weighing 3 kg to <40 kg is VEKLURY for injection (supplied as 100 mg lyophilized powder in vial). Carefully follow the product-specific preparation instructions.

**CONTRAINDICATIONS** [*Also see **Warnings and Precautions**:*]

VEKLURY is contraindicated in patients with a history of clinically significant hypersensitivity reactions to VEKLURY or any of its components.

**WARNINGS AND PRECAUTIONS** [*Also see **Contraindications, Dosage and Administration, Adverse Reactions, and Drug Interactions**:*]

**Hypersensitivity, Including Infusion-related and Anaphylactic Reactions:** Hypersensitivity, including infusion-related and anaphylactic reactions, has been observed during and following administration of VEKLURY; most reactions occurred within 1 hour. Monitor patients during infusion and observe for at least 1 hour after infusion is complete for signs and symptoms of hypersensitivity as clinically appropriate. Symptoms may include hypotension, hypertension, tachycardia, bradycardia, hypoxia, fever, dyspnea, wheezing, angioedema, rash, nausea, diaphoresis, and shivering. Slower infusion rates (maximum infusion time ≤120 minutes) can potentially prevent these signs and symptoms. If a severe infusion-related hypersensitivity reaction occurs, immediately discontinue VEKLURY and initiate appropriate treatment.

**Increased Risk of Transaminase Elevations:** Transaminase elevations have been observed in healthy volunteers and in patients with COVID-19 who received VEKLURY; the transaminase elevations were mild to moderate (Grades 1-2) in severity and resolved upon discontinuation. Because transaminase elevations have been reported as a clinical feature of COVID-19, and the incidence was similar in patients receiving placebo versus VEKLURY in clinical trials, discerning the contribution of VEKLURY to transaminase elevations in patients with COVID-19 can be challenging. Perform hepatic laboratory testing in all patients.

- Consider discontinuing VEKLURY if ALT levels increase to >10x ULN.
- Discontinue VEKLURY if ALT elevation is accompanied by signs or symptoms of liver inflammation.

**Risk of Reduced Antiviral Activity When Coadministered With Chloroquine or Hydroxychloroquine:** Coadministration of VEKLURY with chloroquine phosphate or hydroxychloroquine sulfate is not recommended based on data from cell culture experiments, demonstrating potential antagonism which may lead to a decrease in the antiviral activity of VEKLURY.

**ADVERSE REACTIONS** [*Also see **Warnings and Precautions**:*]

**Clinical Trials Experience:** The safety of VEKLURY is based on data from three Phase 3

studies in 1,313 hospitalized adult subjects with COVID-19, four Phase 1 studies in 131 healthy adults, and from patients with COVID-19 who received VEKLURY under the Emergency Use Authorization or in a compassionate use program. The NIAID ACTT-1 study was conducted in hospitalized subjects with mild, moderate, and severe COVID-19 treated with VEKLURY (n=532) for up to 10 days. Study GS-US-540-5773 (Study 5773) included subjects hospitalized with severe COVID-19 and treated with VEKLURY for 5 (n=200) or 10 days (n=197). Study GS-US-540-5774 (Study 5774) was conducted in hospitalized subjects with moderate COVID-19 and treated with VEKLURY for 5 (n=191) or 10 days (n=193).

**Adverse Reactions:** The most common adverse reaction (≥5% all grades) was nausea.

**Less Common Adverse Reactions:** Clinically significant adverse reactions reported in <2% of subjects exposed to VEKLURY in clinical trials include hypersensitivity reactions, generalized seizures, and rash.

**Laboratory Abnormalities:** In a Phase 1 study in healthy adults, elevations in ALT were observed in 9 of 20 subjects receiving 10 days of VEKLURY (Grade 1, n=8; Grade 2, n=1); the elevations in ALT resolved upon discontinuation. No subjects (0 of 9) who received 5 days of VEKLURY had graded increases in ALT.

Laboratory abnormalities (Grades 3 or 4) occurring in ≥3% of subjects receiving VEKLURY in Trials NIAID ACTT-1, Study 5773, and/or Study 5774, respectively, were ALT increased (3%, ≤8%, ≤3%), AST increased (6%, ≤7%, n/a), creatinine clearance decreased, Cockcroft-Gault formula (18%, ≤19%, ≤5%), creatinine increased (15%, ≤15%, n/a), eGFR decreased (18%, n/a, n/a), glucose increased (12%, ≤11%, ≤4%), hemoglobin decreased (15%, ≤8%, ≤3%), lymphocytes decreased (11%, n/a, n/a), and prothrombin time increased (9%, n/a, n/a).

**DRUG INTERACTIONS** [*Also see **Warnings and Precautions**:*]

Due to potential antagonism based on data from cell culture experiments, concomitant use of VEKLURY with chloroquine phosphate or hydroxychloroquine sulfate is not recommended.

Drug-drug interaction trials of VEKLURY and other concomitant medications have not been conducted in humans. Remdesivir and its metabolites are in vitro substrates and/or inhibitors of certain drug metabolizing enzymes and transporters. The clinical relevance of these in vitro assessments has not been established.

**USE IN SPECIFIC POPULATIONS** [*Also see **Dosage and Administration and Warnings and Precautions**:*]

**Pregnancy**

**Risk Summary:** There are insufficient human data on the use of VEKLURY during pregnancy to inform a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. COVID-19 is associated with adverse maternal and fetal outcomes, including preeclampsia, eclampsia, preterm birth, premature rupture of membranes, venous thromboembolic disease, and fetal death.

**Lactation**

**Risk Summary:** There are no available data on the presence of remdesivir in human milk, the effects on the breastfed infant, or the effects on milk production. In animal studies, remdesivir and metabolites have been detected in the nursing pups of mothers given remdesivir, likely due to the presence of remdesivir in milk. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for VEKLURY and any potential adverse effects on the breastfed child from VEKLURY or from the underlying maternal condition. Breastfeeding individuals with COVID-19 should follow practices according to clinical guidelines to avoid exposing the infant to COVID-19.

**Pediatric Use**

The safety and effectiveness of VEKLURY for the treatment of COVID-19 have been established in pediatric patients ≥28 days old and weighing ≥3 kg. Use in this age group is supported by the following:

- Trials in adults
- An open-label trial (Study GS-US-540-5823) in 53 hospitalized pediatric subjects

**Geriatric Use**

Dosage adjustment is not required in patients over the age of 65 years. Appropriate caution should be exercised in the administration of VEKLURY and monitoring of elderly patients, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of potential concomitant disease or other drug therapy.

**Renal Impairment**

All patients must have an eGFR determined before starting VEKLURY and while receiving VEKLURY as clinically appropriate. VEKLURY is not recommended in patients with eGFR less than 30 mL/min.

**Hepatic Impairment**

Perform hepatic laboratory testing in all patients before starting VEKLURY and while receiving VEKLURY as clinically appropriate.

**OVERDOSAGE**

There is no human experience of acute overdosage with VEKLURY. Treatment of overdose with VEKLURY should consist of general supportive measures including monitoring of vital signs and observation of the clinical status of the patient. There is no specific antidote for overdose with VEKLURY.

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Hospitalists are charged with treating individuals at their most vulnerable moments, when being respected as a whole person is crucial to advancing patients' healing and wellness. Within our workforce, diversity is a strength in all its forms, which helps us learn about the human experience, grow as leaders, and ultimately create a respectful environment for all regardless of age, race, religion, national origin, gender identity, sexual orientation, socioeconomic status, appearance, or ability. To this end, the Society of Hospital Medicine will work to eliminate health disparities for our patients and foster inclusive and equitable cultures across our care teams and institutions with the goal of moving medicine and humanity forward.

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# Movers and Shakers

**Chase Coffey, MD, MS, FACP, SFHM**, has been appointed chief quality officer at Los Angeles County+USC Medical Center in Los Angeles.

Dr. Coffey will continue to serve as the associate chief medical officer for LAC+USC.

He graduated from the University of Chicago Pritzker School of Medicine and completed his residency at the University of California, Los Angeles. He also completed the Academic Hospitalist Medicine Fellowship at the University of California, San Francisco.

Dr. Coffey is an associate professor of medicine at the University of Southern California Keck School of Medicine.

### Amira del Pino-Jones, MD,

associate professor of medicine at the University of Colorado School of Medicine in Aurora, Colo., has been named the CU School of Medicine's associate dean for diversity, equity, and inclusion (DEI).

In this role, Dr. del Pino-Jones will provide leadership in all aspects of the school's DEI programs.

She is also the director of DEI for the division of hospital medicine in the department of medicine. She's a founding member of the University of Colorado Organization for Racial and Ethnic Support, a mentor for pre-health students through the Mile High Medical Society, the recipient of SHM's 2022 Award of Excellence: Diversity, Equity, and Inclusion, and the inaugural chair of SHM's DEI Committee.

Dr. del Pino-Jones earned her medical degree and completed her residency at the CU School of Medicine.

### Lee Dossett, MD, FHM, has been

appointed the chief medical officer at Baptist Health Lexington, in Lexington, Ky.

Dr. Dossett joined Baptist Health Lexington in 2009 and has served as a hospitalist and in many leadership roles including director of hospital medicine, chair of the department of medicine, president of the medical staff, chair of the credentials committee, and vice

chair of the hospitalist service line.

He is also a Board of Health member for Lexington-Fayette County and president-elect of the Lexington Medical Society.

Dr. Dossett received both his undergraduate and medical degrees from the University of Kentucky, in Lexington, Ky., and completed his residency at Ohio State University, in Columbus, Ohio.

### Sarah Johnson Conway, MD, has been recog-

nized as a Rising Star by Becker's Hospital Review and named as a 40 Under 40 in the Baltimore Business

Journal. Dr. Conway is chief medical officer, Johns Hopkins Clinical Alliance, senior medical director, physician alignment and integration, Johns Hopkins Physicians, and an assistant professor of medicine at Johns Hopkins University School of Medicine in Baltimore.

Dr. Conway recently led the transition of one of the largest primary care sites to a federally qualified health center, bringing together resources and skills of Johns Hopkins Medicine and Baltimore Medical System to offer expanded health care access and services to the East Baltimore community.

She graduated Harvard University with a BA in economics and earned her medical degree from the Perelman School of Medicine at the University of Pennsylvania. Dr. Conway serves on SHM's Public Policy Committee.

### Mike Bohlin, MD, has been

appointed as the chief medical officer at Franciscan Health Crown Point in Crown Point, Ind. Dr. Bohlin joined Franciscan Health in

2006 as a hospitalist at Franciscan Health Lafayette East, where he later served as chief of medicine and president of the medical staff. He most recently served as a medical director of Franciscan Health's Accountable Care Organization in Lafayette, Ind.

Dr. Bohlin earned his medical degree at Indiana University School of Medicine in Indianapolis. He completed his residency at Ascension St. Vincent Hospital in Indianapolis and earned his MBA at the Indiana University Kelley School of Business in Indianapolis.

Dr. Bohlin is board-certified in internal medicine as well as health care quality and management. ■



Dr. Coffey



Dr. del Pino-Jones



Dr. Conway



Dr. Bohlin



Dr. Dossett



# SHM News

X-Waiver, Converge 2023, National Hospitalist Day, UM Documentation Program, SoHM Survey, and JHM

**Breaking news:**  
**X-waiver is eliminated**

On January 12, 2023, the U.S. Drug Enforcement Administration (DEA) and the Substance Abuse and Mental Health Services Administration (SAMHSA) announced the immediate elimination of the X-waiver for prescribing buprenorphine, as required by the omnibus bill passed in December 2022. SHM celebrates this change as a major victory for our collective advocacy efforts and for improving the care of patients with opioid use disorder (OUD).

The removal of the X-waiver requirement has been one of SHM's top policy priorities since 2018, as we viewed the X-waiver as an inappropriate and outdated barrier to treating OUD. Over the past five years, SHM's Public Policy Committee educated congressional leaders on Capitol Hill about the safety and efficacy of buprenorphine, addressed their misconceptions and concerns about abuse and diversion, and encouraged them to support the passage of the Mainstreaming Addiction Treatment (MAT) Act to eliminate the X-waiver.

Hospitalists around the country joined us in that effort, sending messages to Congress through SHM's Legislative Action Center. Together, we helped ensure the MAT Act's inclusion in last year's omnibus bill, leading to the DEA/SAMHSA announcement. Thank you for helping secure the passage of this lifesaving legislation.

What does this mean for hospitalists?

All clinicians with a current DEA registration that includes Schedule III authority (the ability to prescribe narcotics) can prescribe buprenorphine to treat OUD. The X-waiver is no longer required to prescribe buprenorphine for OUD treatment. Additionally, there are no caps or limitations on the number of patients a prescriber can treat at one time. This fundamentally shifts care strategies for patients with OUD. Over time, we hope the elimination of the X-waiver reduces stigma and creates an expectation that medication-assisted treatment with buprenorphine is normal care that can be delivered throughout the health care system.

SHM Public Policy Committee member Dr. Suparna Dutta said "As hospitalists, we see the impact OUD has on our communities daily. The elimination of the X-waiver is a huge step forward in improving the equity and access to care that we can provide for this population. The X-waiver was never created because of the dangers of



buprenorphine nor the complexity of administering this medication. Rather, this policy reflected stigma around the diagnosis of opioid use disorder and was not congruent with the tenets of modern addiction treatment. We are so grateful to have been able to contribute to this important policy achievement on behalf of our patients and SHM and look forward to continuing to advocate for this population and the work that remains to be done."

As the opioid epidemic continues to impact communities throughout the U.S., SHM remains committed to advocating for policies to help patients and providing education and resources to hospitalists as they implement this historic change to addiction treatment and bring this therapy into mainstream use.

Look for the full report on this issue, including how this will affect hospitalists, in the next issue of *The Hospitalist*.

**SHM Converge 2023**  
**keynote announced**

Los Angeles-based comedian, musician, and U.S. military veteran and advocate Thom Tran started his career as a standup comic after a combat injury ended his career as a soldier.



Thom Tran

Post-combat, Mr. Tran found standup comedy as the only real release.

He created the GIs of Comedy tour in 2008, a group of combat veterans turned standup comedians who perform for soldiers all over the world. The group has raised more than \$30,000 for the Special Operations Warrior Foundation, a charity that provides

scholarships for children of fallen U.S. special operations personnel.

Mr. Tran's SHM Converge 2023 keynote will be March 27, 1:45 p.m.

**Save the date! Celebrate the future of hospital medicine on National Hospitalist Day**

National Hospitalist Day is almost here! Add a reminder in your calendar now to celebrate this annual tradition with us on Thursday, March 2, 2023.

This year's celebration is focused on The Future of Hospital Medicine, including:

- Mentorship in the field
- Medical students and residents invested in a career in hospital medicine
- Hospitalists advancing the ever-evolving specialty to meet the challenges and opportunities that lie ahead

Leading up to March 2, look for special National Hospitalist Day member spotlights in next month's issue of *The Hospitalist*, downloadable graphics, and templates

for use on social media or at your institution, and our annual #HowWeHospitalist social media photo contest.

We're excited to introduce another component to this year's celebration—a narrative and graphic medicine competition! Last year, *The Hospitalist* introduced an online-only section, "HM Voices." This is meant to give members like you an outlet to share creative writing ("In Your Words") and art related to hospital medicine ("In Your Eyes").

Whether you want to recognize a mentee who represents the future of the field, a mentor who has given you invaluable advice as you advanced in your career, or an innovator in the field who is laying the foundation for the future, we invite you to mark this special occasion on Thursday, March 2.

Ready to celebrate now? Learn more at [hospitalmedicine.org/hospitalistday](https://hospitalmedicine.org/hospitalistday) and show the world #HowWeHospitalist!

**SHM's UM and Clinical Documentation Program**

Start 2023 with additional expertise in coding and documentation. Regardless of your level of experience, the addition of new standards and policies, in both number and complexity, calls for continued education.

SHM's Utilization Management (UM) and Clinical Documentation program for adult and pediatric hospitalists can help keep you up to date. Due to the essential information contained in this program, some institutions have made the program a required part of their onboarding experience.

Frontline hospitalists, practice administrators, and residents/fellows will find the program useful for understanding how payors audit their notes, knowing common pitfalls to avoid, and







ensuring reimbursement is at the appropriate level for provided services. These series are developed by and for hospitalists and focus on what every hospitalist should know.

There's one series for adult hospitalists and one for pediatric hospitalists. Both series include modules on the basics of UM and clinical documentation and case studies.

SHM members receive a discounted rate. To learn more, visit [hospitalmedicine.org/umcd](https://hospitalmedicine.org/umcd).

### SHM's 2023 SoHM survey open until Feb. 10

The State of Hospital Medicine Survey takes a snapshot of what is happening in hospital medicine groups around the country. The results provide critical information for groups to make informed

decisions about practice structure, scheduling, compensation plans, and more in our State of Hospital Medicine Report. Your group's data is critical to helping the entire field of hospital medicine.

Also new for the 2023 Survey, topics will include:

- Burnout and well-being questions
- Employee benefits and support
- Benefits of completing the Survey:
- Representation of your group's data in the premier resource in the field of hospital medicine nationwide
- Helping make the 2023 State of Hospital Medicine (SoHM) Report the most comprehensive and accurate snapshot of hospital medicine nationwide
- Complimentary and exclusive early access to the electronic version of the 2023 SoHM Report, making you the first to get the latest insights into the industry for 2023
- Discounts on print copies and/or additional electronic access to the Report

Visit <https://www.hospitalmedicine.org/practice-management/shms-state-of-hospital-medicine-survey-2023/> for more information.

### Connect with us

There are myriad ways to access *The Hospitalist's* content—print, website, and enewsletter.

There are also myriad ways to connect with us and your fellow SHM members to discuss, not only the articles and topics we cover, but also SHM news and information.

You'll find SHM on Twitter, Facebook, LinkedIn, and Instagram at @SocietyHospMed.

Join the conversation! If you have ideas for future articles or feedback you'd like to share, email Lisa Casinger at [lcasinger@wiley.com](mailto:lcasinger@wiley.com).

### JHM's January issue

*The Hospitalist's* sister publication, the *Journal of Hospital Medicine (JHM)* is a peer-reviewed, monthly journal.

*JHM* publishes manuscripts that address the care of hospitalized adults or children. Areas of interest include: treatments for common inpatient conditions; ways to improve perioperative care; improving care for hospitalized patients with geriatric or pediatric vulnerabilities; evaluation of innovative health care delivery or educational models; ways to improve quality, safety, and value of health;

care across continuum of care; and evaluation of policy and payment changes that affect hospital and post-acute care.

### The January issue features:

- Trust in Healthcare: A new column that fosters discussion and investigation of the role that trust plays in medicine
  - Implementation of the I-PASS handoff program in diverse clinical environments
  - Bone marrow biopsies: A hospitalist bedside procedure service's 5-year experience
  - Impact of the COVID-19 pandemic on hospitalizations of children with neurologic impairment
  - The intensity of anticoagulant dosing in hospitalized patients with COVID-19: An observational, comparative effectiveness study
  - Financial outcomes of high-flow nasal cannula use for bronchiolitis on the general pediatric floor
- And much, much more. ■



# SAVE THE DATE!

**National Hospitalist Day is Thursday, March 2, 2023.**



**#HowWeHospitalist**

Celebrating the future of hospital medicine  
[hospitalmedicine.org/hospitalistday](https://hospitalmedicine.org/hospitalistday)

**shm**  
Society of Hospital Medicine

# SHM Converge 2023—Reconnect Again!

By Christopher Whinney, MD, FACP

**G**et ready for an exciting, dynamic, inspiring event in the Lone Star State's capital!

We're truly excited to see you all again, following our grand collective reconnection in Nashville, Tenn. for a stellar SHM Converge 2022. What better place to do this in 2023 than in a city that boasts 300 days of sunshine a year, an average temperature of 71 degrees in November, amazing outdoor activities, and hundreds of live music venues? Yes—it's Austin, Texas, the live music capital of the world!

The Annual Conference Committee has once again put in a tremendous amount of time and energy to bring you an outstanding collection of topics relevant to hospitalist practice in many domains. We appreciate all your feedback and have made substantive changes to the format of the meeting to ensure that we make this even more valuable and engaging going forward.

## What to expect for Converge 2023

We'll have 106 didactic sessions, 19 workshops, and four advanced learning courses, formerly known as pre-courses.

The meeting will be two and a half days with breakfast at 7:30 a.m. and content kicking off at 8:30 a.m., giving those of you reconnecting with your colleagues from across the globe late at night some wiggle room!

You asked for more networking, and we obliged. There will be dedicated times with hosted networking and social events that won't conflict with clinical sessions, so you can reconnect with your friends and colleagues who share the passions, engagement, and challenges we all face in hospital-medicine circles.

The last day of Converge will end at 1 p.m. to accommodate those traveling long distances, which means you won't miss out on any content if you need to leave.

The clinical content will be

## shm. CONVERGE BY THE NUMBERS

106 didactic sessions

19 workshops

4 advanced learning courses, formerly known as pre-courses

2½ days

17 educational tracks (including the new vulnerable populations track)

31 special interest forums

presented by some of the best in the field and will be just what any practicing hospitalist needs, spanning topics as diverse as emerging infections, ketamine use in hospitalized patients, blood product stewardship, inpatient sickle cell management, and management of patients with injection drug use-related infections.

We're proud to offer a new curricular track on vulnerable populations, which will include sessions dealing with patients with medical complexity, social instability, language barriers, and transgender and nonbinary patients.

You can also join in engaging discussions on point-of-care ultrasound versus a physical exam, the perioperative "Great Debate," which was a tremendous draw in past years, and Things We Do For No Reason in the perioperative milieu, as well as the value of the inpatient daily physical examination. We hope these sessions will challenge your perspectives on practice efficiencies and value-added care. The always dynamic "Medical Jeopardy" session will return this year as well, with stellar faculty who will be ready to answer challenging questions and expand our knowledge base.

We have an amazing academic Leadership Summit where hospital medicine leaders in academic venues will share ideas, network, and innovate solutions to continuing challenges in the spaces where we teach trainees and grow our fields of amazing clinicians.

New and experienced hospitalists alike will also benefit from our early- and mid-career speed mentorship sessions to provide you with an opportunity to develop, refine, or realign your careers.

Interested in innovation? Don't miss the Shark Tank session, where candidates will present novel hospital-medicine-related proposals to senior research and innovation leaders in hospital medicine; this will help with generating new ideas as to how to deliver optimal care in hospital medicine!

If you have the bandwidth to join us before the main meeting, consider attending the excellent advanced learning courses where you can choose to learn from national experts about point-of-care ultrasound, critical care, ultrasound-based procedures, and a novel course on the spectrum of hospitalist finances and value entitled "From the Bedside to the C Suite."



Dr. Whinney

*Dr. Whinney is the chairman of the department of hospital medicine at the Cleveland Clinic Foundation and oversees over 160 hospitalist physicians and 40+ advanced practice providers in seven hospitals throughout Northeast Ohio. He is a clinical assistant professor of medicine at the Cleveland Clinic Lerner College of Medicine (CCLCM) and a frequent lecturer and preceptor on inpatient teaching services for students and residents; he cofounded the CCLCM Acute Care Preceptorship for second-year medical students. He is currently the course director for SHM Converge and has served as a member of the SHM Annual Meeting Committee and the SHM Perioperative Task Force.*

It's impossible to sum up the unforgettable experience we have in store for you next month. We invite you to join us to learn some amazing content specifically for hospital medicine professionals, leverage great networking opportunities, contribute to your professional development, and improve selected skills in hospital-based care. You'll make lifelong memories, optimize your course in your hospital medicine career, and enjoy a few tunes from an amazing musical city! Please visit [shmconverge.org](http://shmconverge.org) to register, if you haven't already, and to view the most up-to-date conference schedule. We hope to see you in Austin, on March 26-29! ■



# Status of Split Billing

How it could affect hospitalists

By Lisa Casinger

Last summer, the Centers for Medicare and Medicaid Services (CMS) proposed to extend the transition year from 2023 to 2024 for the split-billing rule. The delay was finalized in its November release of the calendar year (CY) 2023 Physician Fee Schedule.

While SHM's director of government relations and chief legal officer, Josh Boswell, and director of policy and practice management, Josh Lapps, are pleased with the extension, they know SHM's work on this issue isn't done.

Before we get into that, let's take a look at how we got here.

In 2021, CMS published the CY 2022 Physician Fee Schedule rule, which included a time-based policy for billing a split visit. CMS defined a split visit as an "E/M [evaluation and management] visit in the facility setting that is performed in part by both a physician and an NPP [non-physician practitioner] who are in the same group, in accordance with applicable laws and regulations." Under the finalized policy, only the provider who performs a "substantive portion [of the visit]" would be able to bill for the entire visit, which, beginning in 2023, was defined as more than half of the total distinct and qualifying time associated with the visit. This split-billing rule caused concern among hospitalists and other health care professionals practicing inpatient medicine.

"There had been an existing rule that had been on the books for a couple of decades," said Mr. Lapps. "CMS decided it had to update the rule for what they thought was happening on the ground and to try to address what they thought were current, modern-day issues with shared billing."

With the new rule, 2022 and 2023—the transition years—CMS allowed time, MDM (medical decision making), or history and physical to be used to determine which provider performed the "substantive portion." Unless there's a subsequent change, that will now end in January 2024 when



Mr. Boswell



Mr. Lapps



the mandated time-based billing takes effect.

In response, SHM submitted comments and letters that explained why split billing isn't realistic for hospitalists and how it could affect the progress that's been made in team-based care.

Mr. Boswell and Mr. Lapps, along with members of SHM's Public Policy Committee and a small coalition of like-minded societies, have also been working with CMS behind the scenes in meetings to discuss the repercussions this new rule will have. They've raised concerns about the implementation of the policy and shared on-the-ground perspectives from hospital medicine groups as they work to comply with the regulation.

While extending the transition year is a plus, it doesn't change the problems the split-billing process will bring. The main issue is time.

"We're obviously very supportive of the extension," Mr. Lapps said. "But the time-based rule is already really disruptive [for those institutions that have started implementation]."

As SHM has pointed out in all its letters and comments, hospitalists generally don't use time as a measure.

"Their work is too fluid," said Mr. Boswell.

The split-billing policy risks drastically disrupting team-based care and interfering with the way care is delivered in the hospital setting.

Hospitalists are longstanding proponents of team-based care, working hand-in-hand with nurse practitioners (NPs) and physician assistants (PAs) to care for hospitalized patients. Physicians, NPs, and PAs have distinct training and skill sets. When working together, their skills complement each other, enabling hospital medicine

teams to meet the needs of their patients efficiently and effectively. However, billing based on time will discourage the continuation of these care relationships.

CMS's point is that time is easier to audit compared to other measures.

"And that makes a lot of sense in the outpatient setting," said Mr. Boswell. "But not for hospitalists. We're trying to work with CMS to give them something auditable that doesn't force hospitalists and other hospital-based providers to rely only on time."

Time is rarely used to bill for visits in an inpatient setting where the nature of care includes balancing multiple patients, working with different professionals across specialties and provider types, and seeing patients at multiple points throughout the day. And the time physicians and NPs/PAs spend on any given case shouldn't be equally weighted, as they possess different skill sets, expertise, and training.

Lengths of visits can vary significantly based on the elements of the visit and the level of training and expertise of the physician and NP/PA. The medical decision making directing the management of the patient's care determines the course of treatment for the patient, but it typically does not require the most time.

The alternative? Possibly an attestation process. CMS has a long history of auditing evaluation and management services based on documentation in the medical record substantiating appropriate billing based on history, exam, and medical decision making.

There's a precedent for not using time-based billing, as emergency medicine doesn't use it and CMS recognizes that. And hospital

medicine is a similar environment in that hospitalists go where and when they're needed.

As hospitalist groups have begun to implement the split-billing policy this year, these three issues have emerged:

- NPs/PAs become increasingly delegated to non-revenue producing roles or are limited to performing scribe-like functions, not working at the top of their license.
- Shift towards greater, fully independent practice for NPs/PAs (where possible), limiting the amount of collaborative, team-based work with physicians.
- Shift away from the use of NPs/PAs to focus instead on physician-level care.

These outcomes adversely alter the team-based approach hospitalists and NPs/PAs have worked years to develop and will negatively affect patient care.

Early efforts at implementation are varied but many have led to drastic changes in team-based care, upended physician/NP/PA relationships, and contributed to significant new administrative burdens, all of which are to the detriment of care for hospitalized patients.

While SHM supports the extra year of transition, it urges CMS to use this time to work with stakeholders to develop a more appropriate and improved solution that reflects the reality of team-based care in the hospital.

A time-based definition dramatically disrupts team-based care in the hospital, upends long-established billing and documentation systems, and creates significant new administrative burdens. ■





Medical simulations allow health care professionals to practice and hone skills in a low-risk environment, enabling them to better handle real-life emergencies.

# Escape Room Medical Simulations

An ultimate team-building exercise for health care professionals

By Isha Puri MD, MPH, FHM

Medical simulation has come a long way in recent years, providing a safe and controlled environment in which health care professionals can practice and improve their skills.<sup>1</sup> Gone are the days of simple mannequin simulations. Today’s medical simulations are highly realistic and interactive, using advanced technology such as virtual reality and high-fidelity mannequins that can mimic real human physiology including bleeding and crying.

Medical simulations allow health care professionals to practice and hone their skills in a low-risk environment, making them better prepared to handle real-life medical emergencies. They are also a great way to test and evaluate new protocols and procedures before implementing them in a real-life setting.

Escape rooms have become a popular form of entertainment in recent years, challenging players to solve puzzles and riddles to “escape” a themed room. But did you know that escape rooms can also be a valuable tool in medical education? Escape-room-style medical simulations are becoming increasingly popular in medical

schools and hospitals as a training tool, and for good reason.<sup>2</sup> Not only are they a fun and engaging way to learn, but they also provide a safe, controlled environment for team-building exercises and improving clinical skills.

At Texas Health Harris Methodist in Fort Worth, Texas, we designed and implemented escape-room-style simulations to teach and test clinical skills in a high-stakes, time-sensitive environment.

In these simulations, internal-medicine residents are placed in simulated medical scenarios and must work together to diagnose and treat the patient, all while being timed and facing various challenges and obstacles. Working under pressure and in a high-stakes environment can help residents learn to think on their feet and make quick, accurate decisions.

The combination of escape-room-style simulations and traditional high-fidelity simulations at our facility is intended to facilitate learning using realism, reflection, practice, and feedback. A vast majority of medical errors occur due to a lack of communication and teamwork. Our overarching goal is to bring about improvements in patient-care safety<sup>2,3</sup> and reduce

medical errors after internal medicine residents practice critical skills in a controlled environment.

### How it works

Our residents participate in these escape room sessions and are asked to complete a survey and knowledge assessment test before and after each session.<sup>4</sup> The survey consists of Likert-scale and open-text-style questions that address the Accreditation Council for Graduate Medical Education (ACGME) core competencies including patient care, medical knowledge, professionalism, interpersonal and communication skills, practice-based learning and improvement, and system-based practice.

Pre-work for the escape room session is provided via email to the internal medicine residents one week before the session. Pre-work contains reading material including evidence-based review articles and current guidelines about the topics covered in the simulations. A pre-brief is given before beginning the simulation sessions. The pre-brief includes a description of the event and escape-room activities. Goals, objectives, roles, and responsibilities are discussed during the pre-brief.

Each escape-room session is



Dr. Puri is a hospitalist and the director of quality and scholarly activity for the internal medicine residency program at Texas Health Fort Worth Harris Methodist Hospital in Fort Worth, Texas.

followed by a post-brief that includes a review of the event and the effectiveness of the simulation session. During the post-brief, residents identify challenges and unexpected events and discuss areas for improvement based on the outcomes of the simulation.

Board-style questions relevant



to the escape-room scenarios (from The Medical Knowledge Self-Assessment Program developed by the American College of Physicians)<sup>4</sup> were used for pre-and post-tests to assess improvement in knowledge and understanding of a specific medical topic acquired during these sessions. All internal medicine residents agreed that the questions asked were appropriate for the setting. This testing was used to evaluate the effectiveness of our sessions and determine if the physician gained new knowledge and skills.

### Rating our success

Our objective was to shorten learning curves and improve competency.<sup>5</sup> Based on our Likert survey, which was used to assess residents' knowledge, skills, and behavior, 90% of the residents felt they learned from their peers during simulation sessions. Most residents said they would recommend this activity to others. All residents had participated in traditional simulation sessions during medical school, however, none of them had participated in escape rooms during simulation sessions.

Our survey also showed that 81% of residents preferred visual or kinesthetic tools for learning, and 92% of residents identified that simulation scenarios were able to successfully test their ability to communicate effectively as a team. Most of the residents felt that escape rooms on critical-care scenarios helped them identify knowledge gaps, and 81% of residents strongly agreed that escape rooms appropriately reinforced their knowledge and were an appropriate medium for teaching new information.

Simulation is a valuable tool to help trainees acquire the skills to provide high-value care. Team-based learning is evidence-based and multiphasic and requires active engagement and participation of the learner. These sessions encourage interprofessional learning and emphasize team-based learning to learn core concepts related to patient safety.<sup>6</sup>

Escape-room-style medical simulations are also a great way to foster teamwork and communication. In a real-life medical emergency, it's essential for health care professionals to work together and communicate effectively to provide the best possible care for the patient.

While the Institute of Medicine recognizes that patient care is a "team sport," medical training still focuses on individual performance. Integration of simulation can help prepare residents to function as a team in complex situations. Escape rooms can be used as a tool to assess trainees' competency and knowledge, and they can help identify areas that



The combination of escape-room and traditional simulations at Texas Health Harris Methodist improves patient care.

### need improvement.

Several scales can be used to assess the effectiveness of simulations for medical residents. One commonly used scale, the Objective Structured Clinical Examination, can help assess communication and interpersonal skills. It provides a standardized, objective assessment of clinical skills. Global rating scales have also been used as assessment tools in different specialties. One study used scenario-specific checklist items based on individual milestones for emergency-medicine residents, chosen and reviewed by experienced emergency-medicine physicians.<sup>7</sup>

Medical simulation is an essential part of modern health care and will continue to play a vital role in the training and development of health care professionals. Integrating escape rooms and traditional high-fidelity simulations has the potential to enhance learning while achieving ACGME competencies. Overall, escape-room-style medical simulation is a valuable addition to medical education, providing a unique and engaging way to teach and test clinical skills. ■

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## Document with Improved Accuracy & Quality

### SHM's Utilization Management and Clinical Documentation for Hospitalists

*"This is a great course; the teachers were engaging, the lectures kept my attention, and the content was well laid out and useful. Taking this course made me realize how important good documentation is to our quality metrics and how our hospital is reimbursed."*

— Jacob Alexander, MD

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# Our 2023 Must-attend SHM Converge 2023 Sessions

Recommendations from *The Hospitalist's* editorial board

SHM Converge 2023 offers world-class education for hospitalists, led by award-winning faculty. Engage with your global hospitalist community March 26-29, 2023, in Austin, Texas.

With more than 150 learning and networking opportunities—ranging from sessions, workshops, advanced learning courses, and special interest forums—spread across two and a half days, there's a lot to be excited about at this year's annual meeting.

Members of *The Hospitalist's* editorial board share some of their top picks for must-attend sessions.

**Amanda Green, MD, FACP, HMDC, CPPS, FHM**, chief medical officer, Paris Regional Medical Center, Paris, Texas

Clinical updates are always favorite SHM sessions for me. Two updates in which I have particular interest include Dr. Dawn Sears' session, "Updates in Gastroenterology," March 29, 10:30 a.m. I've been entertained, educated, and impressed by her talks in the past—she is clear and engaging while covering gastrointestinal topics important and relevant to hospitalists. I'm also excited for Dr. Lillian Lien's review of diabetes on March 27, 2:40 p.m. She's a friend from Duke residency, she is covering a topic that applies to most of our admissions, and the title of the talk is fun—"Sweet Tea: Inpatient Diabetes Management."

I'll have a hard time deciding between the sessions dedicated to communication, utilization, quality, equity, and leadership. "Are You In or Out?: Demystifying Hospital Admission Status, Navigating Medical Necessity and Winning Insurance Peer-to-Peers," March 29, 12:15 p.m. is very relevant and I'm interested in any good answers to the moving target of what insurances are calling an observation admission. The panels on workplace violence, anti-racism, and the transfer center are also directly relevant to my daily clinical and administrative work. This is one of the many times that I feel like I need a clone—in this case to send to more than one session at a time.

**James Kim, MD**, assistant professor of medicine, Emory University School of Medicine and Emory University Hospital, Atlanta

James Pile's session "Monkeys and Bats and Bugs and Drugs: ID Update," March 27, 10:10 a.m. I had the pleasure of working with Jim for the infectious disease precourse of SHM last year, and I'm sure that he can make a topic as disparate as monkeys, bats, and drugs engaging and relevant for hospitalists.

Annie Massart's session "Breathless and Nauseated: The Symptom Management Primer We All Need," March 28, 10:30 a.m. I've had the pleasure of working with Annie for several years and have heard this talk a few times. It's all really applicable to the day-to-day management of patients and their comfort.

Ethan Cumbler's session "Out of My Head: Delirium Updates," March 29, 8:30 a.m. Delirium is a problem that all hospitalists have dealt with. Having heard Dr. Cumbler speak a few years ago, I'm sure this will have high-yield information and will be a fun show.

**Isha Puri, MD, MPH, FHM**, hospitalist, Texas Health Harris Methodist Hospital, Fort Worth, Texas

One of my favorite sessions is "High Reliability in Healthcare: From Zero-Harm to High-Value Care," presented by Daniel Steinberg and Elham Yousef, March 29, 11:30 a.m. Health care is evolving from causing "no harm" to providing our patients the best possible care. High-value care aims at improving overall quality of health care and reduced health care cost. The goal is to minimize waste and complications and improve patient outcomes and satisfaction.

Another session I am particularly interested in attending is "Great Debate: POCUS Versus the Physical Exam: The Volume Volume," presented by Ria Dancel and Michael Janjigian, March 28, 4:30 p.m. POCUS can provide more detailed and specific information in some cases. Reviewing real-time images of a patient's internal structures can provide valuable information. Having said that, ultimately the best approach depends on the situation and the provider's assessment. This debate raises questions about the accuracy and efficacy of point-of-care ultrasound as compared to traditional physical examination while taking care of patients.

"Don't Get L-Austin (Lost in) the Crowd: Faculty Development for Hospitalists" presented by Gopi Astik, Reena Hamrajani, Annie Massart, and Aditi Puri, March 28, 5:00 p.m. will be an interesting session as well. Faculty development includes important topics like medical education teaching, leadership development, and research mentoring. Faculty needs to stay up to date with evidence-based medicine to provide and teach high-value care.

**Tanveer Singh, MD, MBBS**, hospitalist, Cleveland Clinic, Cleveland

"Use of Machine Learning to Predict Patient Deterioration," presented by Nidhi Goel and Mangla Gulati, March 27, at 10:10 a.m.

I'm looking forward to attending SHM Converge 2023. It's full of exciting topics but I feel this particular topic is unique to Converge this time around. Machine learning is going to be the future, and I'm very excited about that. There have been multiple machine-learning models that are being developed and the application of this technology ranges from early detection of cancers, like in lung nodules, to early detection of biomarkers for sepsis, and so on. The machine-learning models are also being designed to facilitate early and safe patient discharge from the hospital. I am looking forward to learning from Drs. Goel and Gulati from the University of Maryland.

"Monkeys and Bats and Bugs and Drugs: ID Update," presented by James Pile, March 27 at 10:10 a.m.

Infectious diseases are an essential part of the practice of hospital medicine. On any given day of my practice, there are at least three or four patients on my census who have infection as a primary reason for admission. As a hospitalist, my role ranges from starting empiric antibiotics on admission to deciding the dose, route, and duration of antibiotics at the time of discharge. Not only that, but the pandemic has also incorporated an equal role of multiple antivirals in our daily practice.

"Navigating Interhospital Transfers: Communicate and Triage for Success," presented by Christopher Whinney, Andrew Dunn, Stephanie Mueller and Jessica Dekhtyar, March 27 at 2:40 p.m.

As a hospitalist working in a tertiary care center, I routinely accept patient transfers from neighboring hospitals, freestanding emergency departments, and sometimes directly from physician offices. For a safe patient transfer, it's critical to triage the patients appropriately and communicate clearly with the transferring physician and transfer center. There are plenty of things to keep in mind while accepting or rejecting the transfer and I am excited to attend this workshop.

"Immigrants in Hospital Medicine: Challenges and Success Stories," presented by Manpreet Malik, Benji Mathews, and Rachel Thompson, March 27 at 11:10 a.m.

As an immigrant myself, I've faced multiple challenges throughout my career. Getting used to a new culture, moving away from family, and dealing with visa issues are a common theme for all immigrant physicians. Personally, my biggest challenge was worrying about the health and safety of family members back home during the pandemic.

During residency and while working as a hospitalist I've worked with colleagues from all over the world and I have really enjoyed learning about other cultures. Also, I was immensely supported by my coworkers and friends during difficult times thus I am elated to see this topic presented at Converge 2023.

"Making Choices: Hematologic Stewardship for Hospitalists," presented by Moises Auron, March 29 at 11:30 a.m.

We're facing a national blood crisis due to shortage of blood products and hematologic stewardship is critical in this environment. The pandemic-related shortage of blood products is still going on. As hospitalists we need to use blood products judiciously, especially when there's a critical nationwide shortage. Learning about latest guidelines related to blood product transfusion and alternatives to blood transfusion is why I will be attending this session.

**Anika Kumar, MD**, clinical assistant professor of pediatrics, Cleveland Clinic Lerner College of Medicine at Case Western Reserve University, pediatric hospitalist, Cleveland Clinic Children's Hospital, pediatric editor of *The Hospitalist*

During the 2023 Converge Meeting in Austin I am most looking forward to three sessions.

- "High Value Care/Things We Do For No Reason", presented by Vivian Lee, March 28, 11:30 a.m.



Dr. Green



Dr. Puri



Dr. Kim



Dr. Singh



- “The Great Debate”, presented by JoAnna Leyenaar and Corrie McDaniel, March 28, 4:30 p.m.

- “Building Health Equity into Rounds: From the Bedside to the Auditorium”, presented by Vignesh Doraiswamy, Carin Powell, Amit Sing, and myself, March 29, 8:30 a.m.



Dr. Kumar

The High Value Care/Things We Do for No Reason pediatric session is always a great opportunity to review evidence-based medicine and ask questions about the value of the care we provide to hospitalized pediatric patients. This year’s Pediatric High Value Care session will be presented by Dr. Vivian Lee, one of the 2021 Choosing Wisely for Pediatric Hospital Medicine authors.

The Great Debate pediatric session will feature a common debate in many pediatric hospital medicine groups—should patients be admitted directly from their primary care physician’s office, or should they be triaged through the emergency department? This presentation will review family experience, length of stay, cost, and standardization in an evidence-informed manner.

The Building Health Equity into Rounds: From the Bedside to the Auditorium workshop will be a unique session on how to facilitate discussions of health equity in different educational venues. Determining how to educate on health equity may pose a challenge for many clinicians. In this workshop, the presenters will share models to implement health equity discussions and allow participants to practice facilitating health equity discussions.

#### Weijen W. Chang, MD, FAAP, SFHM,

pediatric and adult hospitalist, Baystate Medical Center and Baystate Children’s Hospital, Springfield, Mass., associate professor of pediatrics, University of Massachusetts Medical School Baystate, chief of pediatric hospital medicine and vice-chair for clinical affairs, Baystate Children’s Hospital, physician editor of *The Hospitalist*

“Ikigai—Finding Joy/Purpose in Medicine,”

presented by Sanjay Patel, Ethan Molitch-Hou, Bruno Alvarez Concejo, and You Mee Shin, March 27, 10:10 a.m. After successive pandemics, we’re all reassessing our priorities in life and work. I have no idea what ikigai means, but I hope to find out!



Dr. Chang

“Lover or Liver? Inpatient Management of Decompensated Cirrhosis,” presented by Suchita Sata, March 27, 4:40 p.m. Okay, this has to be the best session title ever, and makes my list for this reason alone.

“Things We Do For No Reason—Periop,” presented by Sunil Sahai and Dennis Chang, March 27, 4:40 p.m. I love TWDFNR in all its forms, and I’m especially weak on periop management. So, it’s a 2-for-1 for me.

**Ilaria Gadalla, DMSc, PA-C,** hospital medicine PA and physician assistant department chair, South University, West Palm Beach, Fla.

“Immigrants in Hospital Medicine: Challenges and Success Stories”, presented by Manpreet Malik, Benji Mathews, and Rachel Thompson, March 27, 11:10 a.m.

I’m looking forward to gaining insight from this session. Treating immigrants is a challenge not only with the language barrier, but certainly

ensuring continuous medical follow up. Some patients will remain in the U.S. while others will continue to commute periodically between countries. In addition, gaining access to resources is certainly a challenge.

“Dark Side of the Moon: Combating the Health Effects of Night Shift”, presented by Kathleen Atlas, Jessica Chambers, Rita Pandya, and Jennifer Post, March 28, 3:30 p.m.

Nocturnal hospitalists are typically strong, competent leaders supporting multiple departments. Varying from day shift to night shift impacts one’s physical health. I’m interested in exploring the health effects identified on nocturnists. Hospitals rely heavily on their night shift teams. Presenters will provide guidance in prioritizing and ensuring the wellness of these teams.

**Dileep Kumar, MD, MBA, FACP, FAAPL, CPE,** hospitalist, East Michigan Hospitalists, Port Huron, Mich.

Hospitalists are natural leaders. Understanding the basics of leadership and an interdisciplinary focus are necessary for the success of hospitalists in the future. There are a few sessions at Converge 2023 that will focus on these topics.

Two interesting sessions on the first day, March 27, are Evolution of Interdisciplinary Teams: Changing from Silo Mentality to High Reliable Teams, presented by Tulay Aksoy, Maura Porricolo, and Olena Slinchenkova at 10:10 a.m. and Building Financial Fluency: How to Develop Your Business Case, presented by Tulay Aksoy and Maura Porricolo at 2:40 p.m.

There are two sessions on March 28, both at 3:30 p.m.—What to Do When It’s Not Working: Strategies for Dysfunctional Teams and Groups, presented by Justin Boer and Christopher Russo and The Five Approaches to Change Management: A Primer on Leading Quality Initiatives, presented by Aziz Ansari and Thomas McIlraith. If you suspect your group is dysfunctional, you probably should attend the first session!

Two interesting topics on the last day, March 29, are Choose Your Own Adventure: How to Be an Advocate for Well-being in Your Organization, presented by Sarah Richards and Swati Mehta at 8:30 a.m. and AM) and Tradeoffs, Staffing Myths, and Business Theory: Measuring and Driving Hospitalist Value Beyond the wRVU, presented by Marisha Burden and Angela Keniston at 11:00 a.m. The first session hopefully will shed light on how to become an advocate for anything in your organization!

**Khaalisha Ajala, MD, FHM,** assistant professor of medicine, Emory University School of Medicine, Atlanta

I’m looking forward to sharing my talk, “Rounding While Black”, on March 27 at 2:30 p.m., which will examine evidence of structural racism in everyday clinical practice.

I’m also looking forward to: “Hospitalists on the Hill: Learnings from a Year Spent Working on Capitol Hill”, presented by Ann Sheehy and Sarguni Singh, March 28 at 10:30 a.m. and “Beantown to Texas: CKD Update for the Hospitalist”, presented by Samira Farouk, March 29 at 12:30 p.m. ■



Dr. Gadalla



Dr. Kumar



Dr. Ajala

## sh<sup>m</sup> CONVERGE On Demand

If you can’t attend SHM Converge 2023 in Austin, Texas, or if you want to ensure you don’t miss a single session, Converge On Demand is the perfect option to soak up all the education and information at your own pace.

SHM Converge offers education and networking opportunities designed specifically for the hospitalist. You can re-energize and focus your practices with the latest research, best practices, and newest innovations in the field that can immediately be applied to improving patient care.

Learning Objectives:

- Describe current state-of-the-art, evidence-based, clinical practice for key topics in adult and pediatric hospital medicine.
- Implement system changes to promote quality and improve patient safety
- Address current challenges in academic and educational systems for improving hospital medicine
- Discuss new policy, financial, ethical, legal, and management trends impacting inpatient care

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Jefferson Antithrombotic Therapy Team. Front row L to R: Photi Galanis, MD, Julia Westfield, Heather Yenser, CRNP. Back row L to R: Lynda Thomson, PharmD, Dina Orapallo, CRNP, Geno Merli, MD, Tony Macchiavelli, MD, Walter Kraft, MD, Luis Eraso, MD

## FAST Program Implementation Guide Success

By Larry Beresford

Hospital clinicians know well that managing anticoagulation therapy for their patients with venous thromboembolism (VTE) and other thrombotic conditions can be a balancing act between preventing further life-threatening blood clots and avoiding dangerous bleeds—both high-risk adverse events leading to diminished quality of life, and worse, for patients.

These challenges are intensified at the time of hospital discharge, when poorly executed handoffs and transitions can lead to a variety of negative outcomes.<sup>1</sup> Meanwhile, the disruptions and additional clotting concerns imposed by the COVID-19 pandemic have further complicated this tightrope walk.

But hospitalists can now turn to the lessons from SHM's Facilitation of Anticoagulation for Safer Transitions (FAST) quality-improvement program, which ran for 20 months from 2019 to 2021. Seven hospitals of diverse sizes and settings were enrolled in FAST's Mentored Implementation program, receiving guidance from clinician experts in VTE and anticoagulation. The bundle of interventions implemented by the hospitals to improve transitions of care for VTE patients is summarized in the implementation guide and other SHM FAST resources posted on the Society's website at: <https://www.hospitalmedicine.org/clinical-topics/transitions-of-care-for-VTEpatients/>.

The statistics for acute VTE management are mindboggling, said Lynda Thomson, PharmD, an advanced practice clinical pharmacist at Philadelphia's Thomas Jefferson University Hospital (TJUH) and part of SHM's FAST faculty at TJUH. A million Americans each year experience VTEs

and a half-million are hospitalized for them, while acute VTE causes 100,000 deaths annually, most often due to pulmonary embolisms.<sup>2</sup>

"Anticoagulants are regularly listed in the top 10 drugs associated with medical errors. The DOACs [direct oral anticoagulants] were supposed to simplify that, with no intravenous administration or blood monitoring required," Dr. Thomson said. But they aren't simple, given the confusing variety of dosing schedules, durations, and other considerations, especially when not chosen wisely or administered correctly.

"Overall, DOACs have actually worsened rates of adverse events such as medication errors," she said. "So, you have this combination of a common disease state and a dangerous drug. When you add transitions of care, which are a high-risk time for patients, it's like a triple whammy."

Unsurprisingly, regulatory bodies are also paying attention, such as the Joint Commission's 2016 quality measure, *Anti-Coagulation Therapy Prescribed at Discharge*.<sup>3</sup> The Centers for Medicare and Medicaid Services are said to be considering an anticoagulation stewardship program for providers, making this a good time for hospitalists to start practicing more systematic approaches to safe management of anticoagulants, she said.



Dr. Thomson

### Anticoagulation for the hospitalist

In 2013 a clinical team at TJUH started a program called Jefferson Facilitating Anticoagulation for Safer Transitions (Jeff FAST),<sup>4</sup> aimed at

preventing adverse events and hospital readmissions for the large numbers of acute VTE patients seen in the emergency department (ED) and then discharged back to the community. Jeff FAST employed evidence-based guidelines to determine which patients could be safely discharged, rather than admitted to the hospital, with comprehensive patient education about the condition.<sup>5</sup>

Based on its positive outcomes, such as 100% of enrolled patients getting follow-up visits scheduled with their outpatient doctors and none reporting significant bleeds, the team was approached by SHM's Center for Quality Improvement to adapt its ED-based FAST intervention to hospital medicine and the needs of hospitalists. Pfizer, Inc., provided financial support for SHM FAST but did not have editorial control over development of implementation resources.

The project used SHM's Mentored Implementation approach for helping hospitalists improve the quality of hospital care.<sup>6</sup> Prior Mentored Implementation programs have focused on transitions of care, glycemic control for inpatients, medication reconciliation, handoffs of care, and opioid safety.

Key components of the Mentored Implementation model for improving hospital quality and safety include training physician expert mentors and pairing them with interdisciplinary hospital-based teams, often led by hospitalists. The mentor and team typically meet monthly via Zoom to review implementation strategies, impediments to improvement, and process and outcome data. The role of the four SHM FAST mentors, Drs. Anthony Macchiavelli, Andrew Miller, Catriona Harrop, and Chris Whinney, was cited as a mechanism for fostering accountabili-



ty and keeping the teams on track.

### SHM FAST approaches

“With the anticoagulants, you will still have bleeding events and clotting events, but you can limit those with appropriate follow-up,” Dr. Thomson said. “Part of the challenge with care transitions is that important details often aren’t communicated, patient education is not effective, patients don’t understand or follow up on their discharge instructions, or they take their medications incorrectly,” she said. That’s why it’s important to try to ensure that VTE patients get the right treatment from the outset and feel empowered to participate in their own care.

The SHM FAST core teams at participating sites typically included a lead hospitalist, a pharmacist, a nurse, an outpatient clinician, and an information technology specialist. The program followed a comprehensive, stepwise, quality-improvement approach to transitions of care for patients newly diagnosed with primary acute VTE, using evidence-based transitions incorporated into one of two bundles—either the standard SHM FAST bundle or a more comprehensive bundle with additional interventions for coordinating transitions. A standardized order set was entered into the electronic medical record (EMR) to cue clinicians for the recommended course of action.

Other priorities for improvement included appropriate patient selection and enrollment, verification of the drug’s availability and affordability, list of medications to avoid, assessment of the patient’s readiness for discharge, identification of the outpatient provider who will see the patient next, and confirmation of the patient’s comprehension of the education—using teach-back techniques for patients to demonstrate that they comprehend what they’ve been taught.

One of the important components of SHM FAST is to place a follow-up telephone call, guided by a written script, to the patient within two days of discharge from the hospital to reinforce education received in the hospital. Another is to make sure a follow-up appointment with an outpatient provider is scheduled within a week. “All of that closes the loop in their transition of care and gets them safely plugged in to what they need from the next provider,” Dr. Thomson said.

Making sure that the medication gets into patients’ hands before they go home was found to be so important that many of the sites opted to fill the prescription and deliver it by hand to the patient in the hospital prior to discharge.

### Outcomes from SHM FAST

Of a total of 1,995 referred VTE patients at the SHM FAST sites during the course of the project, 1,322 were identified as meeting criteria for admission and enrolled. Although this was not a randomized controlled trial but rather a multi-center, non-randomized, descriptive study, it generated important data on outcomes. The project evaluated both rates of 30-day hospital readmissions for thrombotic events or major bleeds following discharge, and the utilization of EDs for VTE emergency care.

The readmission rate was only 3.8%, despite the fact that patients admitted to the hospital for VTE are by definition high-risk. A slightly higher proportion, 4.8%, visited ED for recurrent VTE or bleeds.

Three main SHM FAST process measures were rates of medication reconciliation, documented

provision of patient education, and completion of follow-up phone calls within 48 hours of discharge. Medication reconciliation was successfully completed most often, at 89% for all of the sites, while 77% provided patient/family education, and 61% completed the post-discharge follow-up call within 48 hours.

The follow-up phone call from the SHM FAST team was described by some participants as tedious and difficult to complete, often because of the inability to reach the discharged patient by phone. Sufficient staffing for making these calls in the midst of the pandemic was also cited as a barrier, although the calls could be performed by a variety of staff including medical students or non-professional staff.

Some programs found that patients couldn’t be reached because they lived in shelters or group homes or just didn’t pick up their phones. But the data showed that failure to complete these calls was associated with higher rates of bleeds and ED visits.

### Standardized process

For Geno Merli, MD, division director of vascular medicine and associate chief medical officer at TJUH, the SHM FAST Mentored Implementation process helped standardize anticoagulation treatment. “I listened in on most of the meetings with the mentors, who also reported back to the SHM FAST project leadership team.” He added that the commitment of participating hospitals’ senior leadership was essential to the implementation of the SHM FAST program at each site. “The C-Suite has to be part of the team and to look at what resources need to be applied, despite resource limitations from other competing demands,” Dr. Merli said.

“All our sites have continued to implement the SHM FAST bundle during the pandemic, despite surges, and after the Mentored Implementation ended,” said Jenna Goldstein, SHM’s chief of staff and director of its Center for Quality Improvement. “Through the implementation of new interventions, they modified their practice in a sustained way. It is a solid modality for supporting implementation teams. We’re now asking the sites to do a deeper dive into the data, and in particular how COVID-19 impacted their work.”

### Good but not perfect

One of the participating sites, the University of Virginia (UVA) Charlottesville, found that its involvement in SHM FAST was strengthened by a broadly diverse interdisciplinary team of quality experts. “I was really excited by the group we were able to pull together, with participation from pharmacy, care management, nursing, patient education, and multiple medical specialties,” said SHM FAST participant Jessica Dreicer, MD, (@jessdreicer) a physician at UVA Health.

“I was also excited by how much enthusiasm there was. SHM FAST provided us with a framework, timeline, and structure to shape how we were able to make a difference with our patients, all of which was helpful.” But it allowed for flexibility of individual implementation reflecting the resources and expertise of

local experts.

“We developed a standardized workflow for making sure these patients received targeted education dedicated to their particular anticoagulant drug, using a variety of approaches,” said Angel Morvant, MD, assistant professor of medicine at UVA. Much of that education involved a dedicated pharmacist, although bedside nurses also delivered education. UVA used an existing program involving clinical and non-clinical staff to place the follow-up calls and found that the larger aims of patient safety could still be met even if the patient received the call outside of the target window, such as within 72 hours.

It was discovered that UVA Health already had a substantial library of patient education materials that many clinicians were not aware of, including for VTE. Use of an order set accessed through the EMR offered guidance on loading doses and duration and maintenance doses for the top five anticoagulants used at the institution. “With these resources we saw our rates of providing the needed patient education increased dramatically,” Dr. Morvant said.

Another key to success, said George Hoke, MD, a hospitalist and quality-improvement expert at UVA, was not to let the goal of perfection become the enemy of the good. “We could agree that best practice for patient education would be to have dedicated pharmacists with a sufficient amount of time to sit with the patient prior to discharge, regardless of the hour or day of the week, using a methodology to make sure the patient understood all of the components of the education.” That was not always possible to achieve during the pandemic, he said, but it doesn’t mean the program hasn’t made a big difference in quality outcomes.

“I am very happy we participated in this quality-improvement project. I think we made our care processes safer for anticoagulant treatment,” Dr. Hoke said. “We saw very low rates of readmissions. We benefitted patients, and we learned things that we can apply to other disease states.” ■

*Larry Beresford is an Oakland, Calif.-based freelance medical journalist.*



Dr. Morvant



Dr. Merli



Dr. Hoke



Dr. Dreicer

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# Doctors Should Play a Role in Preventing Climate-change-related Health Matters

By Thomas R. Collins

A 5-year-old with second-degree burns on their hands and thighs after playing on a playground with a metal structure in direct sunlight. A 7-year-old child presenting with altered mental status and a body temperature of 104 degrees, whose family tried to get to an air-conditioned library but couldn't because the power cables for the bus had melted. A 17-year-old receiving follow-up, gender-affirming care who is struggling to keep their estrogen patch on because it's been sweating off in a heat wave.

Presenters from Seattle Children's Hospital at Pediatric Hospital Medicine 2022 offered these examples of how climate-change-driven heat—which has generated record-breaking temperatures in the Northwest and across the U.S. recently—has made everyday life a struggle for children. And they described the need for change in a country where, too often, the effects of climate change are disproportionately harsh for Black people, indigenous people, and people of color.

"Climate change is real, and it causes global morbidity and mortality, particularly for children who are much more vulnerable than adults," said Julia Hadley, MD, a third-year resident at the hospital, who presented with Sruti Pisharody, MD, also a third-year resident.

The effects of climate change are wide-ranging, Drs. Hadley and Pisharody pointed out. Rising sea levels lead to changes in water quality that can help spread waterborne illnesses. Extreme weather events influence the ecology of vectors that can boost levels of malaria and dengue. Severe weather results in injuries and mental health problems. And all these threats have led to the forced migration of vulnerable populations.

"Climate change has even altered the nutritional content of our food, with decreased protein, iron, and zinc from crops grown in environments with higher carbon dioxide," Dr. Pisharody said.

"No other category of hazardous weather events in the United States has caused more fatalities in the last decade than extreme heat," Dr. Hadley said. And heat is the leading cause of morbidity in the summer, she said.

Audience members cited problems for their patients that include a lack of air conditioning, heat stroke, and canceled school activities.

Even within the same city, heat



can affect people very differently depending on where they live in that city, they said. In King County in Seattle, it can be 96 degrees in one neighborhood and 76 in another. These "heat islands" are wrought by an abundance of concrete that absorbs and retains heat in ways that green areas with tree cover do not. Heat-island neighborhoods tend to have higher populations of Black, indigenous, and people of color, Dr. Hadley said.

"Which neighborhoods have more trees is not random," she said.

Structural racism has helped sculpt a country with uneven effects of climate change along racial lines, they said.

Indigenous people were pushed off traditional and productive lands and were forced to settle in areas more vulnerable to climate change, Dr. Pisharody said. The Quileute people in La Push, Wash., have seen rising temperatures and sea levels and worsening storms, bringing flooding and destruction to their homes. In Newtok, Alaska, rising seas have thawed out the permafrost and caused erosion, forcing the Yup'ik people to abandon their village and move to higher ground.

In the 20th century, laws forbidding non-whites from owning land in certain areas—and, later, policies of refusing mortgages and insurance in predominantly Black neighborhoods—led to segregated enclaves.

Today, if you look at maps of Seattle side by side, it's easy to see that redlining, racial distribution, canopy cover, and temperatures follow a strikingly similar pattern, Dr. Pisharody said. The same can be seen in other cities, she said.

"Although the racist policies of the 20th century have been removed from legislation, we can see that their legacy remains," she said. This is because the redlining meant devalued land, and more

investment in clustered buildings and industrial spaces, with decreased canopy cover, she said.

A 2020 study showed that 94% of neighborhoods that were historically redlined experienced higher temperatures than non-redlined neighborhoods.<sup>1</sup>

These disparities come at a high cost. In a 2008 study, researchers showed that an increase of 10 degrees is associated with increased mortality for infants less than a year old, adults over 65, and Black people. Part of this mortality risk for Black people is due to underlying illness but is also due to less access to air conditioning, she said. In 2010, the same researchers found that an 8.6% increase in preterm delivery was associated with a 10-degree increase in weekly temperatures.<sup>2,3</sup>

There is no validated tool for screening patients for climate change vulnerabilities, but a 2021 paper put forward a guide to providing primary care that considers climate change-related conditions. Drs. Hadley and Pisharody are hoping to work with others at Seattle Children's and community members to develop an easy-to-use screening tool that can be used in both the inpatient and outpatient settings.<sup>4</sup>

Clinicians can ask questions that include: Are there trees or areas of shade in the neighborhood? Do you have air conditioning, filters, or fans? In the past 12 months, have you had trouble paying your utility bills? Do you know how to identify heat-related illnesses? How do you store medications? These questions will help screen families who are vulnerable to extreme heat by evaluating energy insecurity, housing conditions, complex medical history, and familiarity with local climate patterns.

Doctors can also review how to use weather forecasts and indicators of air quality, identify places

where families can stay cool, and spend extra time with families new to the area.

Children, they said, should be taught about climate change, since it is a source of anxiety and uncertainty for them.

"It's important that we talk to kids directly about climate change," Dr. Hadley said.

Changes at the institutional level are important as well, they said, given that health care contributes 10% of the greenhouse gas emissions in the United States, and that hospitals are the second most energy-intensive facilities. Institutions should take steps to reduce single-use plastics, reduce food waste, and restore native plantings in their landscaping, among other steps, Dr. Pisharody said. Hospitals should also push for policy change, she said.

"Our institutions have a lot of power, and we should use this to guide legislators to prioritize climate justice-centered legislation." ■

*Tom Collins is a medical writer in South Florida, who has written about everything from lethal infections to thorny ethical dilemmas, runaway tumors to tornado-chasing doctors. He gathers health news from around the globe and lives in West Palm Beach, Fla.*

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# The Power of Emotional Intelligence for Hospitalists

By Farzana Hoque, MD, MRCP (UK), FACP

Emotions drive people, people drive performance. This oft-quoted expression provides a simplified explanation of emotional intelligence, but let's dive a little deeper and consider its importance to hospitalists.

It's a typical workday as a hospitalist. As you're talking with a sick patient and frustrated family members, your pager goes off, your employer-provided phone just gifted you a new admission in the emergency department, and secure chat messages are piling up in the electronic medical record as you struggle to keep up with the real world.

How do you control your emotions and stay composed during your super busy days?

As hospitalists, we treat a variety of patients in terms of disease processes, socioeconomic aspects, and health literacy. Although consultants are seeing patients, hospitalists are responsible for the holistic aspect of patient care. All hospitalists are leaders, irrespective of our formal roles and responsibilities, due to our remarkable impact on every aspect of inpatient care.

For human beings, emotions are inevitable. Our emotions have a significant impact on almost everything we say and do. Due to mirror neurons, our emotions are highly contagious. Both our positive and negative emotions have a profound impact on us and those around us. Some people are energy givers, and some are energy killers. As hospitalists, every day we take care of complex, sick patients and make crucial decisions that can be lifesaving or life-ending if not done correctly. For this reason, emotional intelligence is a powerful tool for hospitalists.

## What is emotional intelligence?

Emotional intelligence is our ability to identify, logically reason, and manage our emotions as well as those of others, rather than acting impulsively because of how we feel about a situation. Emotional intelligence is also known as emotional quotient or EQ.

EQ affects our ability to positively influence a negative situation toward a better outcome rather than making it worse. Sometimes, when we're emotional, our emotions can overpower our intelligence. We can say or do things we may forget, but others may remember that one incident for a lifetime, negatively affecting our potential and professional image. We cannot eliminate our emotions but we can use emotional intelligence to regulate them.

Emotional intelligence is associated with higher job satisfaction and lower burnout rates among internists.<sup>1</sup> It's also associated with a higher rate of recovery from stress among medical students on surgical rotations.<sup>2</sup> And research by a respected psychologist, Daniel Goleman, found that 90% of top performers in any field are high in emotional intelligence.<sup>3</sup>

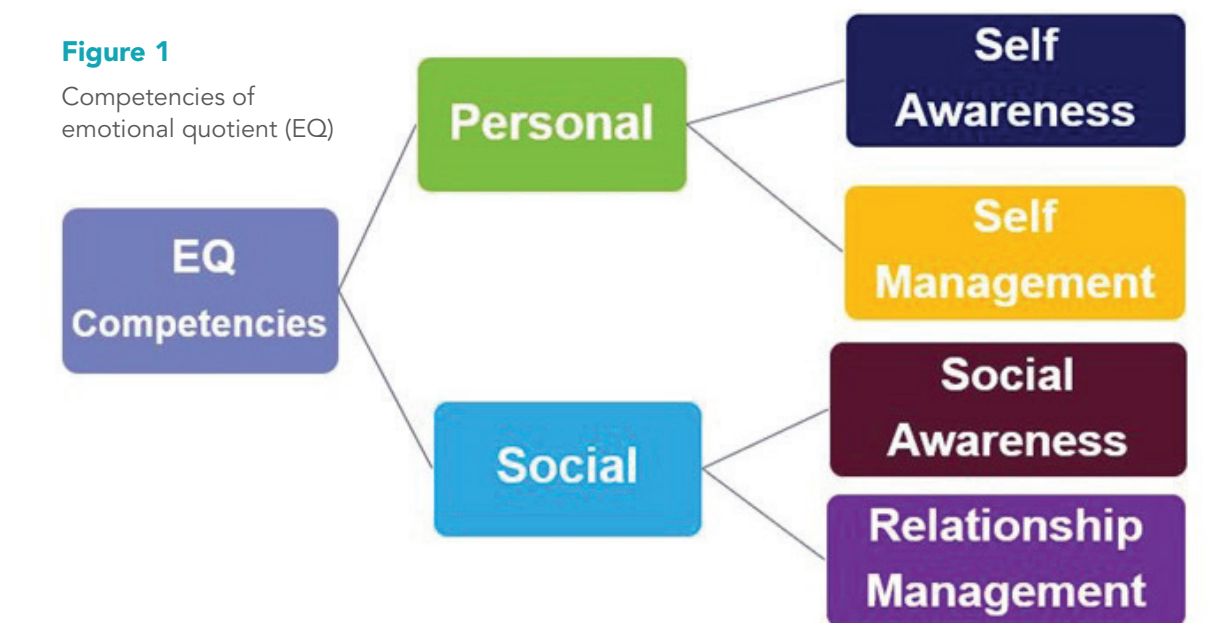
## EQ competencies

There are four competencies of emotional intelligence or our emotional quotient.

### 1. Self-awareness

"Knowing yourself is the beginning of all wisdom."—Aristotle

Self-awareness empowers us to self-reflect



by identifying our strengths and weaknesses, while being aware and looking for our biases. Every one of us has some sort of bias. Not only external biases but many times our internal biases can also hold us back. It's important to understand how we're affected by a situation, how a stressful situation affects our tone, body language, and decision-making capacity, and how we're impacting others and ultimately the whole environment. Self-awareness is critical for making the right decisions because it enables us to learn from our experiences.

Self-awareness is the main pillar of emotional intelligence, as the other competencies depend on it. Self-awareness continuously reminds us to have a fine balance of confidence and humility. Our self-awareness pushes us to hone our skills and knowledge to ensure high-quality patient care. It also reminds us of what is beyond our scope of training and when to call for specialist input. While it's often quite easy to find other people's faults, it's sometimes challenging to be aware of and acknowledge our own shortcomings, and to improve upon them. Self-awareness is an asset that allows us to excel both personally and professionally.

### 2. Self-management

Self-management is our ability to maintain our effectiveness by keeping our disruptive emotions in check during high-pressure situations. Self-management often differentiates outstanding hospitalists from those for whom work gives them nightmares.

When we face distressing emotions like anger, our brain's limbic system immediately generates a reaction. For example, you receive an email you don't agree with from your chief medical officer and that frustrates you. Your immediate reaction could be to send an email expressing your frustration. Or you could use your prefrontal cortex, the logical part of your brain providing emotional intelligence, to generate a response. Instead of reacting by writing a quick, angry reply, your response could be taking a brief pause that allows you to appreciate the long-term impact of a disruption in your professional relationship with your chief medical officer and other executive leadership.

Our reactions based on our emotions are usually shortsighted. On the other hand, our responses based on our knowledge and logical reasoning along with our emotions, help us to see the big picture. Our goal is to be proactive, not reactive. One of the most effective ways to self-manage, in my experience, is taking a pause even for a few seconds to recollect ourselves.



Dr. Hoque

Dr. Hoque is an assistant professor of medicine and acting internship codirector at Saint Louis University School of Medicine, Saint Louis, Mo. She is also the inaugural medical director of two inpatient units at SSM Health and president of SHM's St. Louis chapter.

Otherwise, we may say or do something that can destroy our reputation. As Warren Buffet said, "It takes 20 years to build a reputation and five minutes to ruin it." The physician community is closely connected in this modern digital era. It is a hard reality that stressful moments will come along the way. Self-management will be your essential tool to build and keep your reputation as a poised and collected hospitalist.

### 3. Social awareness

Social gatherings can trigger various emotions depending on each person's relationships and perceptions. To be fully socially aware, you must have answers to the following two crucial questions:

- How do people experience you?
- How do people experience themselves when they are with you?

Social awareness equips us to read the room or the situation and understand what's going on beneath the surface. For example: don't make requests when you know your boss is running late for a meeting. We need to be vigilant about others' tone and body language along with our own.

"There are three sides to every story: your side, my side, and the truth. And no one is lying."—Robert Evans

While it's crucial to speak the truth, we need to remember that our truth may not be the truth and that doesn't make others' statements false, because we all see life from our own perspectives. Rightly or wrongly, people's perceptions are their reality. There could be a huge discrepancy between our true intention and our impact on others without our even noticing a visible difference. Honing social awareness skills will give us a unique perspective to make decisions with more positive results.

### 4. Relationship management

"I suppose leadership at one time meant muscles, but today it means getting along with



people.”—Mahatma Gandhi

One of the most effective ways to build and maintain professional relationships is to address people by their names, preferably with their correct pronunciation. Nearly 100 years ago, Dale Carnegie mentioned in his book, “How to Win Friends and Influence People”, that a person’s name is the sweetest and most important sound in any language. This statement is still true 100 years later. For this compelling reason, Starbucks calls its customers by their names to create a sense of belonging, which drives its revenue and brand. In his bestselling health care leadership book “If Disney Ran Your Hospital: 9 1/2 Things You Would Do Differently” Fred Lee says patients value courtesy along with efficiency.

Our workforce is more diverse than ever. The cultural norms in the U.S. may not be acceptable in many parts of Asia. It is a myth that one person can do it all. As hospitalists, we take care of our patients through a multidisciplinary approach. Having a good professional relationship with the other specialties, care-coordination teams, nurses, and other ancillary staff can optimize our efficiency and quality of patient care.

**Is emotional intelligence a learnable skill?**

Unlike our intelligence quotient (IQ) which is our inborn ability, our emotional intelligence has remarkable growth capabilities. Emotional intelligence can be learned and polished through active practice like any other skill. Many reputable organizations like Google, the United Nations, and the U.S. Air Force have implemented emotional-intelligence learning modules for their employees.

Emotional intelligence is our core skill set to manage ourselves and our relationships effectively. In today’s fast-paced world, many aspects of our lives are beyond our direct control. So cultivating our emotional intelligence increases our ability to be the best version of ourselves while creating a safe, engaging environment for our patients and colleagues. ■

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The infographic is a 3D-style illustration of a large, white, stylized letter 'H' that serves as a central hub. Various professional development and community engagement opportunities are depicted as smaller scenes around and within the 'H'. These include: 'Advocacy' (people at a table), 'HMX' (a group of people), 'Live Chapter Meetings' (people in a meeting), 'Converge and Other Live Events' (a person at a presentation), '#JHMCat' (a smartphone screen), 'On-Demand Videos and Content' (a laptop screen), 'Clinical Quick Talks' (a person at a whiteboard), 'Learning Portal' (a person at a computer), 'Career Center' (a person at a desk), 'Fellows' (two people), 'Peer-Reviewed Journal' (a stack of books), and 'Webinars' (a person on a screen). The 'shm' logo for the Society of Hospital Medicine is at the bottom right.

# Things to Do in Austin

By Lisa Casinger

Austin, Texas is not only the Live Music Capital of the World, but also home to SHM Converge 2023, March 26-29 at the Austin Convention Center. Plan your conference experience and take advantage of everything Austin has to offer! From Lady Bird Lake to delicious dine-in opportunities, Austin is an incredible city to explore after a day of Converge, or to extend your trip post-conference.

**Outdoor activities**

There’s lots to do around Lady Bird Lake (also known as Town Lake), a river-like reservoir on the Colorado River in Austin. The Ann and Roy Butler Hike-and-Bike Trail surrounds the lake, offering a 10-mile trek with a great view of the city’s skyline. You can also rent kayaks, canoes, and stand-up paddleboards.

If you’re feeling really adventurous, you’ll find Texas Hill Country about 30 miles west outside of town.

Zilker Park, which butts up to Lady Bird Lake, has sports fields, cross-country courses, historical markers, concession stands, picnic areas, botanical gardens, a sculpture garden, and more. There’s even a mini railway that tours the park. You can also cool off in Barton Springs Pool in the heart of the park; it’s fed from underground springs and stays 68 degrees year-round.

The Umlauf Sculpture Garden, near Zilker Park, hosts Texas’s largest collection of touchable sculpture. The exhibits feature works from Charles Umlauf and other visual and performing artists.

The Lady Bird Johnson Wildflower Center at The University of Texas at Austin is the 284-acre botanical garden and arboretum of Texas. It’s home to more than 900 species of native Texas plants, nine acres of cultivated gardens, 70 species of native trees, and insects, birds, and mammals. Check out highly-acclaimed British artist Bruce Munro’s *Field of Light* immersive exhibition (open through May 2023); the 16-acre display showcases art, technology, and nature. The Wildflower Center is open late every Tuesday in the Spring and features live music, visual artists, food trucks, and adult beverages.

Waterloo Greenway is a public park in downtown Austin that

winds along the Waller Creek. This multi-stage project includes the Waterloo Park and Moody Amphitheater and Symphony Square, which are now open.

You can’t leave Austin without viewing the bat cave...well, it’s really a bridge. The Congress Avenue Bridge (100 S. Congress Ave.) is home to the largest urban bat colony in North America. Beginning in late March through the early fall, starting at sunset, you can watch as hundreds of thousands of bats fly out from beneath the bridge.

**Music and entertainment**

It’s no joke, Austin truly is the live music capital of the world. From the moment you step off the plane and hear the live musicians in the terminal, to the performers on the streets, and in bars, coffeehouses, and parks, you’ll be surrounded by music.

Be sure to check out what’s happening in the outdoor music venues—Stubb’s Bar-B-Q (large outdoor amphitheater that also serves barbecue), Scoot Inn (one of Austin’s original venues), and the Far Out Lounge & Stage, to name just a few.

Sixth Street (6street.com) is a great place to discover Austin’s music scene—it’s been the hub since the 1970s and was saved by the National Register of Historic Places. It’s located between Congress Street and Interstate 35 (known as Dirty Sixth to locals). You’ll find live music, shops, restaurants, and bars. Some compare the area to Bourbon Street in New Orleans.

Austin is home to the nation’s largest University-owned collection on exhibit: Blanton Museum of Art, at the University of Texas at Austin. The first photograph and the Gutenberg Bible are at the Harry Ransom Center among the collection.

The museum is recognized for its modern and contemporary American and Latin American art, Italian Renaissance and Baroque paintings, an encyclopedic collection of prints and drawings, and Ellsworth Kelly’s *Austin*. The Blanton offers thought provoking, visually arresting, and personally moving encounters with art.

If you’re looking for something more hands-on, Wonderspaces might be up your alley. It features 12 immersive and interactive art installations from artists around the world, along with a full bar of signature cocktails.





Austin is also home to the LBJ Presidential Library, where you can learn about the 36<sup>th</sup> President, Lyndon Johnson. It includes a replica of the Oval Office and one of the current exhibitions is Lady Bird: Beyond the Wildflowers, a look at the life of Lady Bird Johnson.

The Texas Capitol is widely recognized as one of the nation's most distinguished state capitols. It was placed on the National Register of Historic Places in 1970 and designated a National Historic Landmark in 1986. The 22-acre grounds include the Capitol Extension, myriad monuments and memorials (including a mini-Statue of Liberty), a rose garden, and more.

The Museum of Ice Cream promises to help you rediscover the kid in you by bringing the universal power of ice cream to life. It's an experiential museum where you can learn about ice cream and its history across 12 multi-sensory installations, ride an animal cookie,

or take a dip in a pool of sprinkles. Think Willy Wonka but with all things ice cream. You can eat unlimited ice cream treats with global tastes, textures, and toppings.

## Food

Whether you're looking for Tex-Mex, BBQ, breakfast tacos (the debate is whether these tasty treats originated in Austin or San Antonio), food trucks, or something else, you're sure to find just the thing to tempt your tastebuds in Austin. Don't leave Austin without trying a breakfast taco and kolaches (buttery, hole-less donuts topped with fruit and cream cheese).

There are food-truck parks throughout the city—East Cesar Chavez park, The Picnic Food Trailer Park, South Austin Trailer Park & Eatery, South First Food Court, and Thicket Food Truck Park. You can sample everything from gourmet donuts (Gourdough's) and Filipino-American food (Tito

Adobo) to comfort food (Revolution Vegan Kitchen) and Thai food (Coat & Thai).

There are tons of top-rated restaurants as well:

- **Koriente**—offers vegan-friendly, Pan-Asian fare, run by a mother-daughter duo.
- **Lamberts**—barbecue, smoked meats, craft cocktails, live music—all in a refurbished general store.
- **Moonshine Patio Bar & Grill**—southern comfort food and yes, moonshine.
- **24 Diner**—all-night diner serving nostalgic brunch fare and American classics.
- **Vince Young Steakhouse**—sources its ingredients from farms and ranches in Austin or as local as possible.
- **Franklin Barbecue**—people travel from all over the country for pitmaster Aaron Franklin's wood-smoked fare.
- **Eddie V's**—prime seafood and

steak dishes, a raw bar and top-tier kitchen.

- **Curra's Grill**—known for its authentic, traditional Mexican cuisine and signature avocado margarita.
- **Emmer & Rye**—upscale contemporary farm-to-table restaurant.
- **La Condesa**—posh dining with the largest collection of 100% blue agave tequila and mezcal in the city; regional Mexican dishes and vegan or vegetarian options.
- **The Backspace**—rustic, Neapolitan-style pizza and seasonal antipasti, behind Parkside restaurant.
- **Tacodeli**—chef-driven, hand-crafted taco concept that blends Mexican flavors and Texan hospitality.

SHM Converge 2023 offers lots of opportunities to learn, engage, and network and Austin offers lots of opportunities for food, fun, and entertainment. Make sure to soak up all you can when you're in Texas next month. ■





# SIG Spotlight: Interdisciplinary Rounding

By Richard Quinn

**S**arah Horman, MD, helped lead the launch of interdisciplinary rounding at the University of California San Diego in 2017. But it wasn't until two years later that she found herself at the annual SHM national meeting, in a session with others who seemed as interested in the systematic approach to workflow as she was.



Dr. Horman

Toss in support from SHM and the Special Interest Group (SIG) on Interdisciplinary Rounding (IR) was born.

"Interdisciplinary rounding enforces a standard workflow around synchronized communication from multidisciplinary team members involved in the patient's care—in a reliable way," said Dr. Horman. "And it's really a vehicle for anything you design it for: patient safety, care utilization, patient experience, discharge planning, and readmission risk mitigation. Groups can customize it to fit their patient populations and organizational priorities."

To Dr. Horman, IR is a tool to streamline "a very chaotic and often inefficient care environment."

And who better to take a leading role in that system than a hospitalist, the proverbial quarterback of

the inpatient medical team?

"Hospitalists are subject-matter experts on how to get a patient in the hospital, treated in the hospital, and then discharged to a safe plan and follow up," Dr. Horman said. "And the ability to communicate with a lot of different team members—while keeping the patient in the loop—is a very natural rhythm for the hospitalist to fall into. These rounding models are really the car we drive. We understand the parts and the relationship between these parts."

Dr. Horman says having a SIG for practitioners to discuss the pearls and pitfalls of IR serves as a valuable resource, given the adage that anyone who has seen one hospitalist group has seen another hospitalist group.

"We have lots of different care environments that make up the membership for SHM," she said. "We have academic teaching hospitals, we have community hospitals, and we have critical-access hospitals. The one thing all those places have in common is chaotic communication pathways. IR streamlines this. But it can be daunting to get things started wherever you are and we all end up asking the same questions."

"How do you get leadership support? How do you recruit buy-in from hospitalists? How do you keep other disciplines engaged? How do you maintain fidelity over time? How can we measure success?"

Having a SIG dedicated to the

topic gives its members a chance to talk to like-minded folk—and usually, like-minded folk who have already solved similar problems.

"One of the biggest barriers that people talk about at the national level is the resource allocation toward dedicated care management and dedicated pharmacy support," Dr. Horman said. "We also talk about the role of geographic cohorting to maintain IR efficiency. We have had forums discussing how to negotiate with hospital leadership to advocate for IR. More recently we have shared ways to leverage the electronic medical record to monitor and track IR metrics and prove success."

"Our SIG helps members interested in IR forge this unity. The power comes when we're all doing IR the same way and collectively can say we found the same result. When things have so many different flavors, it becomes hard to compare and translate outcomes across the board. Standardizing processes and metrics helps us speak the same language, compare outcomes, and actually combine data toward a more powerful story."

Dr. Horman says she saw the heightened value of the SIG during COVID-19, which caused a lot of disruption in many IR programs.

"When care became more remote, especially in the early part of the pandemic, it was a little bit of an identity crisis for IR programs that prided themselves on bedside contact and in-person, multi-team-

member participation in small patient rooms," she said. "The pandemic challenged this mantra, and some programs went to operating in a remote form or just pausing for a while."

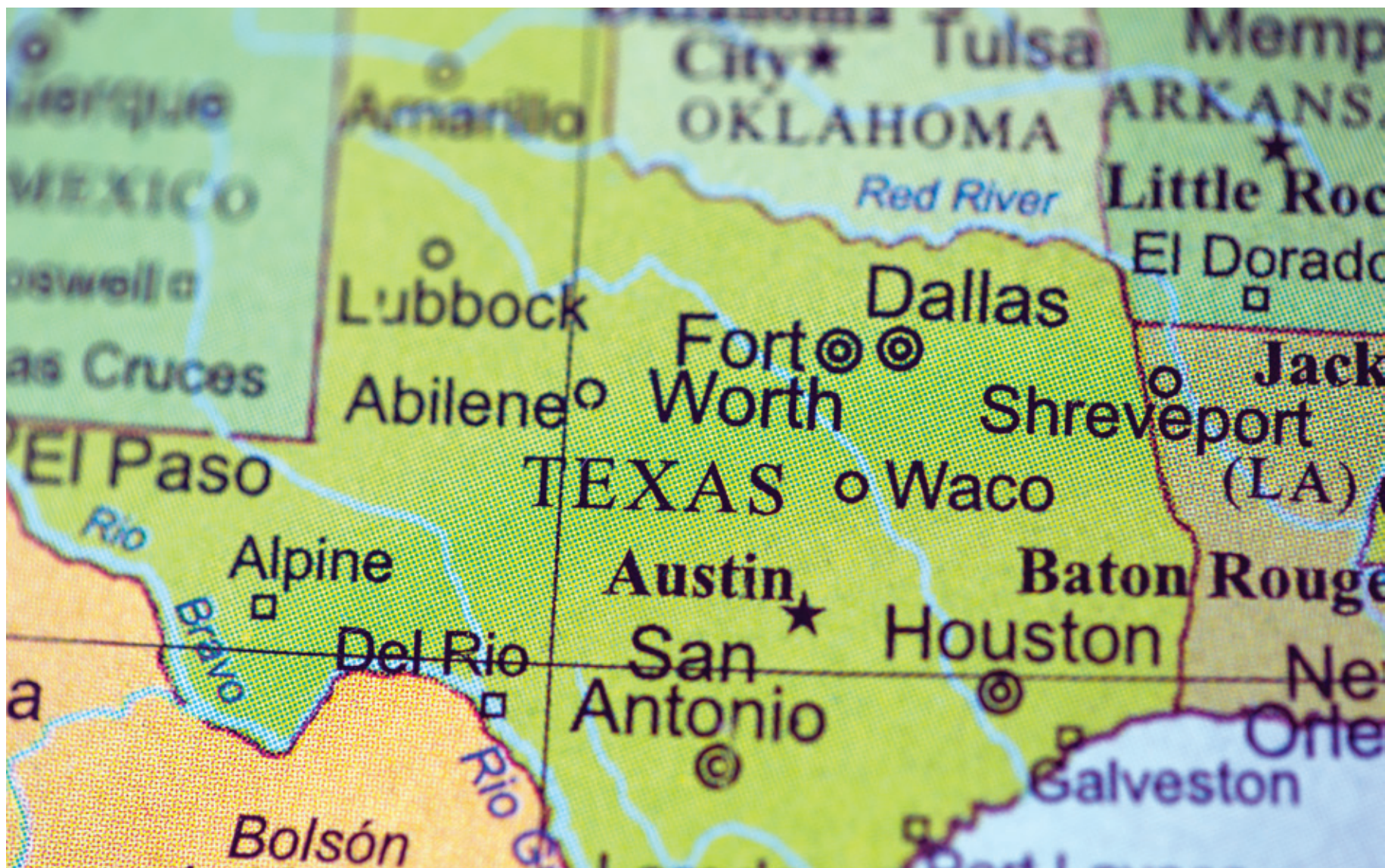
"There was a lot of camaraderie in our SIG during that time, where we would meet on a regular basis and share, 'How are you adapting your rounding model infection control policies and social distancing?' Comparing notes during that time was a real-life example of how you can lean on the SIG outside your organization to develop ideas and come back to your own work and improve it."

Dr. Horman says a unique feature of the IR SIG is that it serves as a mix of seasoned hands looking for solutions to complex problems—and IR rookies looking for a basic introduction.

"For example, this year we're planning a session on the taxonomy of IR and the definitions," she said. "We also offer content toward more advanced interdisciplinary-rounding leaders who already have their programs up and running. A hot topic this year is going to be how to leverage IR for improving length of stay and reducing readmissions. A lot of hospitals are experiencing census surges due to the pandemic and flu season, so implementing a team-rounding model to improve bed capacity can be impactful, and this is the time to do it." ■

*Richard Quinn is a freelance writer in New Jersey.*





# Chapter Spotlight: Central Texas

By Richard Quinn

**T**hey say everything is bigger in Texas—and it appears SHM chapters are no exception.

Take the Central Texas group, which stretches from Waco to San Antonio (anchored by Austin roughly halfway between). That's nearly 200 miles apart, or, put another way, roughly the length of New Jersey end to end.

"It's both challenging and fun," said chapter president Hameed Ali, DO, SFHM. "It's a real combination of urban, suburban, and even rural medicine."

At its most recent count, this collection of hospitalists treating everything from cowboys to CEOs had 367 members. Dr. Ali, a veteran hospitalist with Baylor, Scott & White Health, says that increasing membership is always a focal point of the chapter. In that regard, he's thankful for the Texas-sized academic institutions or health systems he can partner with, including Texas A&M University and Baylor University.

"We plug into those up and coming in hospital medicine," Dr. Ali said. The chapter held "a meeting in March [2022] with those residents in internal medicine who were interested in going into hospital medicine. It was a very fruitful consortium...[and] we had quite a few residents who came who were interested, and some medical students who were rotating with some of my colleagues."

"We had a panel discussion talking about our experiences from training all the way to being staff physicians and how things are changing in medicine. We got some new chapter members

out of that particular meeting. It's been a goal of ours to foster that interest. There's certainly always that subgroup of residents who will want to go specialize in cardiology, hematology, whatever it is. But there certainly are those that stay, especially in my institution. We have a good retention rate for those residents who are training in internal medicine, who want to stay on as hospitalists."

Dr. Ali recalls that during his residency training at Baylor Scott & White Medical Center in Dallas—where he's still practicing some 16 years later—there weren't a lot of hospitalists for medical students or residents to view as leaders or mentors.

"Back in the nineties, we had [so] few hospitalists who had that designation, and now we're seeing probably over 100,000 hospitalists nationwide," he said. "It's been a huge shift, and I think that speaks to the financial aspect of medicine."

Dr. Ali sees SHM's growth as something on which to build, not rest. So, the chapter is working hard to promote its regional meeting in August in San Antonio—the chapter's first in two years because of COVID-19 restrictions. The chapter also regularly meets with local residents—local is relative in Texas, where multi-hour drives are routine—with the long-term aim of building the next generation of both Central Texas chapter leaders and SHM members.

"We have a pretty good recruiting system for those students," Dr. Ali said. "They have a good meal, have a good speaker. [One recent Thursday] we had a nephrologist speaking on advances in chronic kidney disease. We try to change up topics and try not to keep them too monotone."

"We have a lot of good speakers who come in. If you have that reach, you can engage speakers to come in and that keeps these things interesting."

To that end, the Central Texas chapter kept active during the COVID-19 crisis with virtual meetings. But Dr. Ali says that those meetings—particularly after workdays filled with more Zooms, FaceTimes, and other digital faces—can end up fighting themselves.

"People were doing too many things on the computer while they were listening to a meeting, attending one of these meetings," he said. "The face-to-face, we're so happy to be back to doing that. It definitely was a challenge during COVID-19, but we're happy to be back doing live events and that we have the ability to read the room. To see if practitioners have questions if they're in the room when we're doing lectures with our great speakers."

Another advantage of a post-COVID-19 world for the Central Texas chapter? SHM Converge, which is set for March 26 through March 29, 2023, in Austin (roughly the midpoint of the chapter's geographic diaspora).

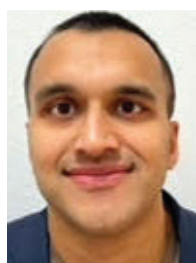
Dr. Ali is looking forward to taking advantage of having SHM's leaders—as well as much of its national membership—in town.

"I've always been impressed with the meetings SHM puts on," he said. "I know some of the lecturers who have been speaking at the national meetings, and having it here locally is going to be amazing for the chapter."

As anyone who's ever attended an SHM annual meeting knows, though, it's not just hearing the speakers. It's meeting them and setting up future meetings with them.

"The networking piece is a huge part of it," Dr. Ali said. "It's the mingling, networking aspect that is such a big part of SHM, and just making connections here locally and regionally, nationally, as well." ■

*Richard Quinn is a freelance writer in New Jersey.*



Dr. Ali



## Key Clinical Question

# How Does Thiamine Deficiency Result in an Elevated Lactate?

By Paula K. Skarda, MD and Lillian Meierhoff

### Case

A 50-year-old male with a medical history of severe alcohol use disorder and type 2 diabetes mellitus presented to the emergency department with shortness of breath and dry cough. Initial venous blood gases showed a pH of 7.06, anion gap of 41, and lactate of 5.19 mmol/L. After fluid resuscitation, glycemic control, and standard thiamine replacement, the patient's lactate remained elevated.

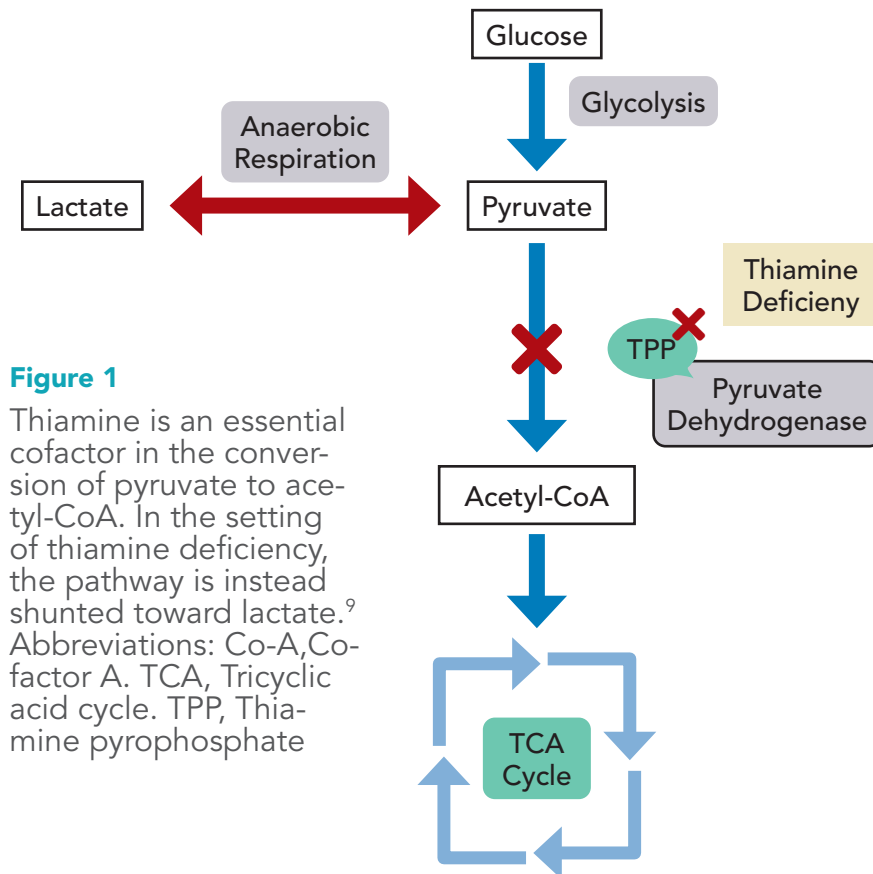
### Overview

Elevated lactate is a common finding in hospitalized patients.<sup>1</sup>

Hyperlactatemia is defined as a serum lactate level greater than 2 mmol/L. Lactic acidosis is elevated lactate in the setting of pH under 7.35.<sup>2</sup> The differential diagnosis for elevated lactate is exceedingly broad and thus finding a definitive diagnosis can be difficult, especially in patients with complex medical histories. Generally, high lactate levels can be grouped into two categories: hypoxia, and underlying disease (which can include sepsis, malignancy, thiamine deficiency, liver failure, diabetic ketoacidosis, and alcoholic ketoacidosis). Toxicities from a variety of substances and inborn errors of metabolism should also be considered.<sup>1</sup> In this case, the patient presented with

### Key Points

- Elevated lactate is associated with a higher mortality rate in hospitalized patients. Potential underlying causes of hyperlactatemia are numerous and can be difficult to determine in complex medical cases.
- Thiamine is necessary for aerobic metabolism of cells. In the setting of thiamine deficiency, cells undergo anaerobic metabolism which produces excess lactate.
- In the setting of severe alcohol use disorder, high-dose thiamine (500 mg daily) can help normalize lactate levels if standard thiamine dosing is not sufficient.



**Figure 1**

Thiamine is an essential cofactor in the conversion of pyruvate to acetyl-CoA. In the setting of thiamine deficiency, the pathway is instead shunted toward lactate.<sup>9</sup> Abbreviations: Co-A, Co-factor A. TCA, Tricyclic acid cycle. TPP, Thiamine pyrophosphate

lactic acidosis secondary to a variety of potential causes.

While the underlying cause of lactic acidosis affects the prognosis greatly, elevated lactate levels are associated with a poor prognosis. In one study, an initial lactate of 4 mmol/L or higher was associated with a 28% in-hospital mortality rate.<sup>3</sup> There is no specific timeframe or percentage decrease for normalizing lactate, but decreasing lactate concentrations are associated with improved mortality.<sup>2</sup> The definitive treatment for lactic acidosis is resolving the underlying cause. Volume resuscitation and adequate oxygenation are also important.<sup>1</sup>

One cause of elevated lactate is thiamine deficiency. Thiamine is an essential cofactor in the tricyclic acid (TCA) cycle, aiding in the conversion of pyruvate to acetyl CoA as thiamine pyrophosphate.<sup>4</sup> In the setting of thiamine deficiency, cells are unable to enter the TCA cycle and thus are shunted toward anaerobic metabolism, which produces excess lactate.<sup>2</sup> In the U.S., thiamine deficiency is primarily caused by chronic alcohol use or chronic illness. There are several mechanisms by which chronic alcohol use leads to thiamine deficiency, including inadequate nutritional uptake and impaired absorption of thiamine within the small intestine.<sup>5,6</sup> Unfortunately, there is no definitive diagnosis of thiamine deficiency and laboratory testing of thiamine

levels is not widely available.<sup>7</sup>

Treatment of thiamine deficiency involves supplementation. Typically, 100 mg is considered a standard treatment dose, however, in the setting of persistent hyperlactatemia, high-dose thiamine (250 to 500 mg) may be appropriate.<sup>8</sup>

### Back to the case

In the setting of multifactorial acidosis, it can be difficult to differentiate the main drivers of elevated lactate. In this case, the patient's fluid resuscitation, glycemic correction, and bicarbonate administration were not sufficient to lower



Dr. Skarda



Ms. Meierhoff

Dr. Skarda is a hospitalist and primary internist at HealthPartners and Regions Hospital in Saint Paul, Minn. She is also an associate program director for the University of Minnesota Internal Residency Program and chair of credentialing at Regions Hospital.

Lillian Meierhoff is a 4th-year medical student at the University of Minnesota in Minneapolis. She is hoping to match into emergency medicine this spring

the patient's lactate level. The patient's alcohol abuse disorder led him to be chronically thiamine deficient. His thiamine deficiency hindered metabolism through the TCA cycle (See Figure) leading to regular production of lactate, perpetuating hyperlactatemia and an acidotic state. While the patient was treated with a standard dose of thiamine 100 mg on admission, this proved insufficient to fulfill this patient's metabolic needs. High-dose thiamine, while not indicated in every patient with chronic alcohol use, should be considered as a treatment for persistent hyperlactatemia.<sup>8</sup> After a 500-mg dose of thiamine, the patient's lactate began to trend

### Quiz:

**A 76-year-old female with alcohol use disorder is admitted to the hospital for urosepsis with symptoms of confusion. Labs demonstrate positive urine cultures, lactate of 4.1 mmol/L, and venous blood gases showing pH of 7.35, PaCO<sub>2</sub> of 39 mm Hg, and HCO<sub>3</sub><sup>-</sup> of 24 mEq/L. In addition to appropriate antibiotics and alcohol withdrawal protocol, what additional therapies should be started?**

- a. Haloperidol
- b. 100 mg thiamine orally daily
- c. 500 mg thiamine, high-dose protocol three times daily
- d. Sodium bicarbonate

**Correct option: B.** While high-dose thiamine may be indicated for persistently elevated lactate levels, a standard dose of thiamine (100 mg daily) is recommended for a starting dose. Haloperidol and other antipsychotics may be indicated in the setting of agitation and aggression but are not used as first-line therapy for confusion or delirium. Sodium bicarbonate may be indicated in the setting of severe acidosis but is not necessary in this case, as the pH is within normal limits.



Additional Reading



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downward, with the hyperlactatemia eventually resolving.

Bottom line

Thiamine deficiency can cause production of lactate by shunting glycolysis away from aerobic metabolism. In some situations, high-dose thiamine replacement

is necessary to normalize lactate levels. ■

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Internal Medicine Hospitalist Opportunity

The University of Iowa Department of Internal Medicine is recruiting part-time and full-time BC/BE physicians for clinical faculty positions that offer a dynamic mix of activities within the Division of General Internal Medicine. We are looking for hospitalists who are interested in working in a stimulating environment and have a strong interest in professional development. We support faculty participation in medical education, quality improvement, and leadership/management hospitalist tracks. Hospitalists have many clinical opportunities, including resident teaching teams, attending-only teams, transition-of-care follow-up clinic, and a virtual hospitalist service. Hospitalist work at both the University of Iowa Hospitals and Clinics (UIHC) and the Iowa City VA Medical Center (VAMC). At UIHC, hospitalists can also lead Advanced Practice Provider (APP) inpatient teams, staff the APP run observation unit, or staff residents in the surgical co-management services. We recently opened the University of Iowa Health Network Rehabilitation Hospital, where our hospitalists co-manage patients with Physical Medicine and Rehabilitation staff. Additionally, general medicine hospitalists can rotate on a subspecialty cardiology service where they collaborate with cardiologists in taking care of post procedure patients, left ventricular assist devices, and a range of other cardiovascular conditions.

Candidates must have a M.D. degree or equivalent. Applications will be accepted for positions at the rank of Clinical Instructor, no track, Clinical Assistant Professor, Clinical Associate Professor, or Clinical Professor, commensurate with experience and training. Position requires completion of an ACGME-accredited Residency Program.

Primary practice sites are the University of Iowa Hospitals and Clinics (UIHC), which is consistently recognized as one of the top health care employers by *Forbes* and has consistently ranked as one of the top 15 medical centers in the U.S. by *US News and World Report*, and Iowa City VA Medical Center, and the University of Iowa Health Network Rehabilitation Hospital. Iowa City is a diverse and family-friendly community located in the heart of the Midwest. As the site of the University of Iowa, it combines access to many of the cultural amenities of a larger city with the ease of living in a smaller town.

For further information, contact Kristin Goedken at [kristin-goedken@uiowa.edu](mailto:kristin-goedken@uiowa.edu).

Interested candidates are invited to search the Jobs@UIOWA site: <https://jobs.uiowa.edu/content/faculty/> and search for requisition #74556

The University of Iowa is an equal opportunity/affirmative action employer. All qualified applicants are encouraged to apply and will receive consideration for employment free from discrimination on the basis of race, creed, color, national origin, age, sex, pregnancy, sexual orientation, gender identity, genetic information, religion, associational preference, status as a qualified individual with a disability, or status as a protected veteran. The University also affirms its commitment to providing equal opportunities and equal access to University facilities. Women and Minorities are encouraged to apply for all employment vacancies.

The Division of Hospital Medicine at Cooper University Hospital is offering the  
**2023-2024 Advanced Hospital Medicine Fellowship**  
July 1, 2023 to June 30, 2024

Cooper University Hospital is one of South Jersey's largest teaching hospitals affiliated with the Cooper Medical School of Rowan University.

The Advanced Hospital Medicine Fellowship (AHMF) is a one-year program which strives to train the future generation of leadership in clinical education programs, clinical operations, quality improvement, and patient safety. The AHMF is ideal for graduating Residents or early career Hospitalists who anticipate careers as clinician-educators and administrators in an academic tertiary care setting.

Choose Your Track

Hospital Administration • Medical Education • Medical Informatics • Clinical Research

Program Eligibility

Eligibility for the Advanced Hospital Medicine Fellowship Program requires a minimum of three years of ACGME accredited training in Internal Medicine or Family Medicine. Individuals accepted for a position in the Fellowship Program must be U.S. citizen, classified as a resident alien, or hold a J-1 visa.

Contact Information

Program Director: **Dorrie-Susan Barrington, MD**  
Program Contact: **Amy Welde, Sr. Practice Manager**  
Phone: **856-342.3150**  
E-mail: **welde-amy@cooperhealth.edu**  
Website: **cooperhealth.edu/hospitalmedicine**

How to Apply

Please submit the following information to Amy Welde (contact information below) before **March 31st, 2023** for application to the position:

- Current Curriculum Vitae
- Three (3) letters of recommendation (one of which must be from your current or most recent Training Director)
- Personal Statement describing your training goals and future career plans
- Complete Transcript
- ECFMG Certification (IMG only)
- USLME Reports (1, 2 and 3)







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