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The Hospitalist

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Talk the Talk, Bill the Bill: Navigating Advance Care Discussion Billing

By Arunab Mehta, MD, MEd, FHM

A 75-year-old woman with a previous medical history of high blood pressure, diabetes mellitus, stage 4 chronic kidney disease, and lung cancer was admitted to the hospital with chest pain and shortness of breath at home. On an echocardiogram, she was found to have a pericardial effusion, which you think is from worsening malignancy. You treat her appropriately with cardiology on consult. You visit her in the afternoon after rounds to ask if she would want to talk about her goals of care, especially in the setting of this disease. After getting permission, you talk about code status and healthcare-power-of-attorney options while clarifying the state laws that apply if none is chosen. You document these findings in a note as a separate encounter and spend 40 minutes in this meeting.

What billing does this qualify for?

This can qualify for an advance care planning (ACP) billing code (99497). ACP includes the explanation and discussion of advance directives such as standard forms (with completion of such forms, when performed), by the physician or other qualified healthcare professional, face-to-face with the patient, family member(s), and/or surrogate. The first 30 minutes qualify for a 99497 code, while each additional 30 minutes qualify for a 99498 code.

Here is a quick table to help you understand how to bill these by time. You must document the following for each visit:

- The voluntary nature of the visit
- The explanation of advance directives
- Who was present
- The time spent discussing ACP during the face-to-face encounter
- Any change in health status or healthcare wishes if the patient becomes unable to make their own decisions

Note: You cannot bill for ACP on a day that you bill 99291 (critical care service). ■

Dr. Mehta is the vice-chair of inpatient clinical affairs, medical director, and assistant professor of medicine in the clinical core faculty for program valuation and improvement at the University of Cincinnati Medical Center in Cincinnati.

ADVANCE CARE PLANNING MINUTES	CPT CODE AND UNITS
Less than 15	Don't bill any ACP services
16-45	CPT code 99497 (1 unit)
46-75	CPT code 99497 (1 unit) and CPT code 99498 (1 unit)
76-105	CPT code 99497 (1 unit) and CPT code 99498 (2 units)

SHM Launches 2025 State of Hospital Medicine Survey

The 2025 State of Hospital Medicine (SoHM) survey opens on January 13 and runs through February 24, 2025. Data from your group is critical to the quality and accuracy of benchmarks and trends calculated in the 2025 SoHM report, which helps leaders make strategic and day-to-day decisions for their groups. This year's survey and report will include expanded questions on nurse practitioners and physician assistants, co-management models, and hospital medicine evaluation and management codes.

As a benefit to completing the survey, you will receive complimentary and early access to the electronic version of the report and discounts on additional copies. To register for the survey, visit hospitalmedicine.org/sohm. ■

THE Hospitalist®

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Veklury®
remdesivir 100 MG FOR INJECTION

LEADING THE WAY

THE ONLY COVID-19 ANTIVIRAL WITH
OUTCOMES ACROSS 3 KEY TREATMENT GOALS:

DISEASE PROGRESSION, RECOVERY TIME, AND READMISSION[1-3]

INDICATION

VEKLURY is indicated for the treatment of COVID-19 in adults and pediatric patients (birth to <18 years of age weighing ≥1.5 kg), 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.

THE ONLY NIH RECOMMENDED COVID-19 TREATMENT OPTION
included for adult patients hospitalized for COVID-19[4]

- Not requiring supplemental O_2 and
- Requiring low- or high-flow O_2

Turn the page for details

IMPORTANT SAFETY INFORMATION

Contraindication

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

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

VEKLURY® REDUCED DISEASE PROGRESSION AND RECOVERY TIME, AND DEMONSTRATED READMISSION OUTCOMES ACROSS A BROAD RANGE OF COVID-19 SEVERITY[1-3]

Disease progression[2]

10% **Absolute reduction in incidence of new mechanical ventilation or ECMO with VEKLURY in ACTT-1** (13%, n=402) vs placebo (23%, n=364) in patients who did not receive either at baseline (95% CI, -15 to -4)

Recovery time[1,2]

5 **Days shorter recovery time with VEKLURY in the ACTT-1 overall study population**

Median 10 days with VEKLURY vs 15 days with placebo; recovery rate ratio: 1.29 (95% CI, 1.12 to 1.49), $P < 0.001$

Adverse reaction frequency was comparable between VEKLURY and placebo–any adverse reactions (ARs), Grades ≥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%).[1]

ACTT-1 study design: a randomized, double-blind, placebo-controlled, phase 3 clinical trial in hospitalized adult 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. Disease progression was a secondary endpoint. Recovery was defined as patients who were no longer hospitalized or hospitalized but no longer required ongoing COVID-19 medical care.[1,2]

Real-world readmission data[3]

40% reduced likelihood of 30-day, COVID-19–related readmission was observed with VEKLURY; aOR: 0.60 (95% CI, 0.58 to 0.62), $P < 0.0001$

- In the overall cohort, 10,396 out of 191,816 (5.4%) non-VEKLURY patients compared to 7,453 out of 248,785 (3%) VEKLURY patients

27% reduced likelihood of 30-day, all-cause readmission was observed with VEKLURY; aOR: 0.73 (95% CI, 0.72 to 0.75), $P < 0.0001$

- In the overall cohort, 17,437 out of 191,816 (9.1%) non-VEKLURY patients compared to 15,780 out of 248,785 (6.3%) VEKLURY patients

A large, real-world, retrospective observational study examined 30-day COVID-19–related‡ and all-cause§ readmission to the same hospital after being discharged alive from the index hospitalization for COVID-19 in adult patients (≥18 years of age) who were treated with VEKLURY vs those not treated with VEKLURY across variant periods: pre-Delta, Delta, and Omicron, from 5/2020-4/2022. Data were examined using multivariate logistic regression.‖

- **Data Source:** PINC AI™ Healthcare Database
- This study was sponsored by Gilead Sciences, Inc.
- The study included index patients on room air, low- and high-flow supplemental oxygen, and IMV/ECMO
- VEKLURY-treated patients received at least 1 dose of VEKLURY during the index COVID-19 hospitalization¶

Study population and select characteristics[3]

- **440,601 patients** with a primary diagnosis of COVID-19 and who were discharged alive
- **248,785 VEKLURY patients** were compared to **191,816 non-VEKLURY patients**

Compared to nonreadmitted patients, readmitted patients:

- **Were older:** median 71 years vs 63 years
- **Had more comorbidities:** CCI ≥4: 36% vs 16%
- **Were more likely to have NSOc** (42% vs 39%) and **less likely to be on low-flow oxygen** (40% vs 42%)
- **Were less likely to be treated with VEKLURY:** 48% vs 57%
- **Were more likely to have received corticosteroid monotherapy during index hospitalization:** 38% vs 29%

Compared to non-VEKLURY patients, VEKLURY patients:

- **Were younger:** median 62 years vs 64 years
- **Were more likely to have received some level of supplemental oxygen support (any supplemental oxygen support, 1-NSOc):** 70% vs 48%

Study considerations[3]

Real-world studies should be interpreted based on the type and size of the source datasets and the methodologies used to mitigate potential confounding bias. Real-world data should be considered in the context of all available data. Results may differ between studies.

Strengths: This large study population enabled subgroup analyses across variant periods and supplemental oxygen requirements and considered a well-defined cohort of patients hospitalized for COVID-19.

Limitations: There exists a potential for residual confounding due to unmeasured variables, including differences in groups that could not be accounted for. The database did not capture data relating to time from symptom onset, infecting viral lineages, and prehospital care such as other treatments. Some patients who received supplemental oxygen could be misclassified as NSOc due to the absence of billing charges for supplemental oxygen.

*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).
‡Defined as a readmission with a primary or secondary discharge diagnosis of COVID-19.
§Defined as readmission to the same hospital within 30 days of being discharged alive from the hospitalization for COVID-19.
‖The model adjusted for age, corticosteroid use, variant era, Charlson Comorbidity Index, maximum oxygenation requirements, and ICU admission during COVID-19 hospitalization.
¶Refer to the VEKLURY Prescribing Information for dosing and administration recommendations.

Veklury® remdesivir 100 MG FOR INJECTION | LEADING THE WAY

IMPORTANT SAFETY INFORMATION (cont'd)

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 >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

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

Dosage and administration

— Administration should take place under conditions where management of severe hypersensitivity reactions, such as anaphylaxis, is possible.

- **Treatment duration:**
  - — For patients who **are hospitalized**, 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 hospitalized and require invasive mechanical ventilation and/or ECMO, the recommended total treatment duration is 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 for outpatient use.
- **Testing prior to and during treatment:** Perform hepatic laboratory and prothrombin time testing prior to initiating VEKLURY and during use as clinically appropriate.
- **Renal impairment:** No dosage adjustment of VEKLURY is recommended in patients with any degree of renal impairment, including patients on dialysis. VEKLURY may be administered without regard to the timing of dialysis.

Pregnancy and lactation

- **Pregnancy:** A pregnancy registry has been established for VEKLURY. Available clinical trial data for VEKLURY in pregnant women have not identified a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes following second- and third-trimester exposure. There are insufficient data to evaluate the risk of VEKLURY exposure during the first trimester. Maternal and fetal risks are associated with untreated COVID-19 in pregnancy.
- **Lactation:** VEKLURY can pass into breast 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 an underlying maternal condition. 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 last page.

Learn more at vekluryhcp.com

aOR=adjusted odds ratio; CCI=Charlson Comorbidity Index; ECMO=extracorporeal membrane oxygenation; IMV=invasive mechanical ventilation; NSOc=no supplemental oxygen charges.

PINC AI™ is a trademark of Premier, Inc. (formerly Premier Healthcare Database).

References: 1. VEKLURY. Prescribing Information. Gilead Sciences, Inc.; 2024. **2.** Beigel JH, Tomashek KM, Dodd LE, et al; ACTT-1 Study Group Members. Remdesivir for the treatment of COVID-19 — final report. *N Engl J Med*. 2020;383(19):1813-1826. doi:10.1056/NEJMoa2007764 **3.** Mozaffari E, Chandak A, Gottlieb RL, et al. Treatment of patients hospitalized for COVID-19 with remdesivir is associated with lower likelihood of 30-day readmission: a retrospective observational study. *J Comp Eff Res*. 2024;13(4):e230131. doi:10.57264/cer-2023-0131. **4.** National Institutes of Health. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. Updated February 29, 2024. Accessed March 25, 2024. https://www.covid19treatmentguidelines.nih.gov

GILEAD

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 (birth to <18 years of age weighing ≥1.5 kg), 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.

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: No dosage adjustment of VEKLURY is recommended in patients with any degree of renal impairment, including patients on dialysis. VEKLURY may be administered without regard to the timing of dialysis.

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, one Phase 3 study in 279 non-hospitalized adult and pediatric subjects (12 years of age and older weighing at least 40 kg) with mild to moderate 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). Study GS-US-540-9012 included non-hospitalized subjects, who were symptomatic for COVID-19 for ≤7 days, had confirmed SARS-CoV-2 infection, and had at least one risk factor for progression to hospitalization treated with VEKLURY (n=279; 276 adults and 3 pediatric subjects 12 years of age and older weighing at least 40 kg) for 3 days.

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.

Remdesivir and its metabolites are in vitro substrates and/or inhibitors of certain drug metabolizing enzymes and transporters. Based on a drug interaction study conducted with VEKLURY, no clinically significant drug interactions are expected with inducers of cytochrome P450 (CYP) 3A4 or inhibitors of Organic Anion Transporting Polypeptides (OATP) 1B1/1B3, and P-glycoprotein (P-gp).

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

Pregnancy

Risk Summary: A pregnancy registry has been established for VEKLURY. Available clinical trial data for VEKLURY in pregnant women have not identified a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes following second- and third-trimester exposure. There are insufficient data to evaluate the risk of VEKLURY exposure during the first trimester. Maternal and fetal risks are associated with untreated COVID-19 in 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

Risk Summary: A published case report describes the presence of remdesivir and active metabolite GS-441524 in human milk. Available data (n=11) from pharmacovigilance reports do not indicate adverse effects on breastfed infants from exposure to remdesivir and its metabolite through breastmilk. There are no available data on the effects of remdesivir 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

No dosage adjustment of VEKLURY is recommended for patients with any degree of renal impairment, including those on dialysis.

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.

214787-GS-017

GILEAD

Starting the Year with Gratitude

By Flora Kisuule, MD, MPH, SFHM

Kamik - StockAdobe.com

Reflecting on the past year as we begin a new one, I am grateful. Don't get me wrong—there has been so much to knock me down over the last several months: personal loss, the seemingly endless roller coaster ride that sometimes describes our work, and remaining global and national conflict, to name a few. These are still disruptive times. But to balance out the things that weigh on us, I wanted to highlight a few things that I am grateful for to carry the gratitude we feel at the holidays into the new year.

Connections: In the global sense of the word "family," I am grateful for my blood family and chosen family. Sharing experiences as mundane as driving together or wonderous as discovering new corners of this world together, I am reminded that I am not alone. I am reminded that someone always has my back. I am reminded that someone cares whether I get home tonight.

I have traveled to local SHM chapters and laughed, with mirth, sharing experiences such as axe throwing with the Minnesota chapter, a glass of wine and friendship with the Maryland chapter, and delightful beignets at the Southern Hospital Medicine Conference. I have enjoyed lovely sunsets and learned more about leadership against the breathtaking backdrop of the Pacific at Rancho Palos Verdes in California, mingling with today's and tomorrow's leaders of our specialty at SHM Leadership Academy. I enjoyed watching the tango in Buenos Aires with international hospitalists, as well as friends of our specialty, from Argentina, Germany, Spain, Portugal, and even Russia—where science and shared learning prevailed, friendship was nurtured, and we all bonded over our shared humanity as well as a love of (and intrigue in) hospital medicine.

I am grateful for SHM's monthly virtual "Prez Room," where like-minded hospitalists pause and take time to muse over today's challenges and tomorrow's solutions with colleagues from across the country and the globe. Every month, I wonder who has traveled the farthest: From Spain? Argentina? China? Japan?

Every day, I am also grateful for the team I serve with at my home base. My work family, who give their best and go the extra mile, not because it is easy, but because that is the calling of hospital medicine. These are the types of connections we foster and embrace at SHM—from Chapters to Special Interest Groups to in-person meetings like SHM Converge. No matter what it is about hospital medicine that drives your passion, we have a place for you.

Life: I know I am borderline cliché here, but I have to say it. I am grateful for life. We are not too far away from living through a pandemic that took so much life. It is not an exaggeration that we all lost at least one person we know. As you read this, there are corners of the globe where life is being lost on a daily basis. If we stand on the side of humanity, then we moan this ongoing loss of life and simultaneously, are thankful that we are still here … in this space and at this time.

By extension, I am grateful for health. It is so easy to take waking up for granted. Our work as hospitalists means we face loss, pain, and depravity almost daily. We serve and perpetuate hope for the many lives we encounter, particularly those in the hospital bed before us. We are able to do what we do because we are here (alive) and because we are healthy enough to do the work that we do.

Disruptors: I remain grateful for all of you who have refused to embrace the status quo and continue to work to solve our big and small problems in innovative ways. SHM is a haven for disruptors of all kinds. Months through this presidency, I am so grateful for this opportunity, and it remains the experience of a lifetime. Connecting with hospitalists (and those interested in our field) who are disrupting nationally and internationally and working to realize initiatives like SHM's Global and Rural Health Foundation are, for me, a dream come true. SHM launched the Global and Rural Health Foundation in service of its mission to promote high-value care and optimal outcomes for acutely ill patients. The Foundation offers small travel and equipment grants to hospital-based clinicians and practice administrators involved in this work. Hospitalists are working to improve the care of people in the U.S. and around the world. Our specialty has called us to help one patient at a time, but also to improve health systems so that we can contribute in big and small ways to helping thousands at a time. SHM is a partner in this work, seeking to support those whose calling has taken them to resource-limited settings. Applications are open through February 15, and awardees will be acknowledged at SHM Converge 2025. Scan the QR code at the end for more information about the grants and to apply.

As I reflect on this past year, despite the disruptive times, I am deeply grateful. I am also reminded of the article in *The Hospitalist* by our colleague Dr. Leif Hass, "Gratitude is Good for Us." His ways to find more gratitude at work have helped me find gratitude, even when it is elusive. As a reminder, they are:

- Appreciate all that is going right
- Slow down for just a few seconds
- Say thanks like you mean it
- See medicine as sacred work
- Prescribe it!

I am grateful for the life and health that has allowed me to make meaningful connections this year. I am grateful for the amazing disruptors that I have met. I am grateful for SHM and am really excited about the Global and Rural Health Foundation, our annual reunion at SHM Converge in Las Vegas, and meeting you at upcoming Chapter meetings, in the "Prez Room," and in more places.

Dr. Kisuule

Dr. Kisuule is director of the division of hospital medicine at Johns Hopkins Bayview Medical Center in Baltimore and president of SHM.

Looking at the year ahead, I am reminded of the words of Max Ehrmann, who penned the famous poem, "Desiderata": "With all its sham, drudgery and broken dreams, it is still a beautiful world. Be cheerful. Strive to be happy." May we carry these words with us as we begin 2025 and continue to feed off the collective energy of our community to make connections and innovate, ultimately helping the patients we care for and making our community stronger. Happy New Year! ■

In the Literature

Icahn Mount Sinai School of Medicine Medical Research Reviews

By Forough Hakimzada, MD, MA, Matthew Kerwin, MD, Krystle Hernandez, MD, Natalie Cedeno, MD, Denny Kim, MD, Jung Eun Ha, MD, MPH, Ekaterina Sokolova, MD, Ashwin Sawant, MD, Jose Luis Alcaraz Alvarez, MD, and Olga Prystupa, MD

Icahn Mount Sinai School of Medicine, New York

IN THIS ISSUE

By Forough Hakimzada MD, MA

1 Efficacy of AI models in Detecting Clinical Deterioration

CLINICAL QUESTION: Can an artificial intelligence (AI) enabled intervention model reduce the risk of clinical deterioration and subsequent care escalation in hospitalized patients?

Dr. Hakimzada

BACKGROUND: Clinical deterioration in hospitalized patients poses a significant risk of morbidity and mortality but identification by clinicians may be delayed. Automated early warning systems have been developed to help clinicians recognize these patients. Epic Deterioration Index (EDI)—an ordinal logistic regression model that predicts the risk of composite outcome of Rapid Response Team (RRT) activation, intensive care unit (ICU) transfer, cardiopulmonary arrest, or death—is the most frequently used of these systems. However, its efficacy remains unproven.

STUDY DESIGN: Retrospective cohort study using regression discontinuity design (RDD)

SETTING: Stanford University Hospital

SYNOPSIS: A total of 9,938 patients were included from January 2021 to November 2022. EDI scores were calculated every 15 minutes from 31 clinical measures captured by the electronic health record. A score of 65 (range 0 to 100) was used as the threshold for high risk of clinical deterioration, which triggered an alert sent to the patient's nurse and physician to initiate collaborative measures, including a structured huddle and checklist.

The primary outcome was escalation in care, including RRT activation, ICU transfer, or cardiopulmonary arrest. The secondary outcome was a composite of RRT, ICU transfer, cardiopulmonary arrest, and death. RDD analysis showed an absolute risk reduction of 10.4% (95% confidence interval [CI], –20.1 to –0.8; *P*=0.03) in the primary outcome.

LIMITATIONS: While the study showed a significant reduction in escalation of care, there was no reduction in mortality. The study did not assess the impact of the AI-enabled intervention model in isolation, but rather as a step in a cascade of interventions that included a collaborative workflow between the nurse and physician. Generalizability may be limited since the study was conducted at a single academic hospital.

BOTTOM LINE: An AI-enabled deterioration model can significantly reduce the risk of escalation in care for hospitalized patients. This study provides much-needed evidence for continued development and study of such early warning systems.

CITATION: Gallo RJ, et al. Effectiveness of an Artificial Intelligence-Enabled Intervention for Detecting Clinical Deterioration. *JAMA Intern Med*. 2024;184(5):557-62.

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By Matthew Kerwin, MD

2 Metronidazole-Related Encephalopathy and Neuropathy Associated with IV Administration, Liver Cirrhosis, and CKD

CLINICAL QUESTION: What is the prevalence of metronidazole-related neurologic adverse events and what are the risk factors associated with these events?

Dr. Kerwin

BACKGROUND: A 2021 study reported neurologic events occurring in 0.25% of patients aged 65 or older who received metronidazole. Effects associated with metronidazole include polyneuropathy, dysarthria, ataxia, and encephalopathy. A prior review reported that peripheral neuropathy was more common in patients receiving metronidazole for more than four weeks or total doses over 42 g. Little is known about other risk factors.

STUDY DESIGN: Case-control study

SETTING: 2,400-bed tertiary care hospital in South Korea

SYNOPSIS: Case patients were those diagnosed with metronidazole-associated encephalopathy or peripheral neuropathy. Control patients were those prescribed metronidazole who did not develop neurologic adverse events.

Between January 2006 and July 2021, 61,158 patients were treated with metronidazole for at least five days. Of these, 54 patients (0.09%) developed metronidazole-associated encephalopathy or peripheral neuropathy. These patients were significantly older and received metronidazole for a significantly longer duration (51 days) compared to those who did not develop neurologic adverse events (10 days).

After matching for age, duration of therapy, and cumulative dose, the authors conducted conditional logistic regression analysis. Liver cirrhosis, chronic kidney disease (CKD), IV administration, and lower body weight were associated with metronidazole-associated neurologic adverse events in the multivariable analysis.

The incidence of metronidazole-associated neurologic adverse events was lower in this study (0.09%) than in a prior study of older patients (0.25%), possibly due to stricter diagnostic criteria or a younger patient population. Limitations of the study included its being conducted at a single center. As this was a case-control study, there was a risk of assessor bias and confounding.

BOTTOM LINE: IV administration, liver cirrhosis, CKD, and lower body weight were associated with metronidazole-associated encephalopathy

or peripheral neuropathy. The overall incidence of neurologic events was low.

CITATION: Lee SJ, et al. Frequency and risk factor analysis for metronidazole-associated neurologic adverse events. *J Gen Intern Med*. 2024;39(6):912-20.

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By Krystle Hernandez, MD

3 Comparison of Hospital Mortality and Readmission Rates by Physician and Patient Sex

CLINICAL QUESTION: Are hospital mortality and readmission rates associated with physician sex, and do these associations vary by patient sex?

Dr. Hernandez

BACKGROUND: Prior studies indicate that physician practice patterns vary by provider sex. However, evidence is limited as to whether the effect of physician sex on clinical outcomes varies by patient sex.

STUDY DESIGN: Retrospective observational study

SETTING: Medicare claims data

SYNOPSIS: A 20% random sample of Medicare beneficiaries hospitalized from 2016 to 2019 was analyzed. Primary outcomes were 30-day mortality and readmission rates, adjusted for patient and physician characteristics. Of the 776,927 patients, 31.1% of female and 30.6% of male patients were treated by female physicians. Both female and male patients had a lower 30-day mortality rate when treated by a female physician. For female patients, the difference between female and male physicians was statistically significant (8.15% versus 8.38%; average marginal effect (AME), −0.24%, 95% CI, −0.41 to −0.07). Both female and male patients had a lower adjusted readmission rate when treated by a female physician, which was statistically significant only for female patients (15.51% versus 16.01%; AME, −0.48%, CI, −0.72 to −0.24). One limitation is that sex was defined as a binary construct using the sex variable in the electronic databases and may not align with the gender identity of gender minority (transgender or nonbinary) patients and providers. Moreover, the results are limited to patients aged 65 or older and may not be generalizable to younger patients.

BOTTOM LINE: Although exact mechanisms are unclear, both female and male hospitalized patients had lower mortality and readmission rates when treated by female physicians. The benefit of receiving care from a female physician was larger for female patients than for male patients.

CITATION: Miyawaki A, et al. Comparison of hospital mortality and readmission rates by physician and patient sex. *Ann Intern Med*. 2024;177(5):598-608.

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By Natalie Cedeno, MD

4 Inhaled Amikacin in the First 72 Hours of Mechanical Ventilation Reduced the Incidence of VAP

CLINICAL QUESTION: Does inhaled amikacin reduce the incidence of ventilator-associated pneumonia (VAP) in critically ill patients?

Dr. Cedeno

BACKGROUND: VAP is a common and serious complication in patients on mechanical ventilation, linked to increased morbidity, mortality, and healthcare costs. Despite various commonly employed preventive measures, the incidence of VAP remains high. This study investigated whether inhaled amikacin can effectively reduce rates of VAP.

STUDY DESIGN: Investigator-initiated, multicenter, double-blinded, randomized, controlled, superiority trial

SETTING: 19 ICUs in France

SYNOPSIS: Between July 2017 and March 2021, 850 patients on mechanical ventilation for at least 72 hours were randomized to receive inhaled amikacin (20 mg/kg of ideal body weight) or placebo (inhaled 0.9% sodium chloride) once daily for three days. The trial excluded patients on mechanical ventilation for more than 96 hours, those with suspected or confirmed VAP, severe acute kidney injury without renal-replacement therapy, chronic kidney disease (eGFR <30 mL/min), tracheostomy tube, or planned extubation within the next 24 hours, and those receiving systemic aminoglycoside therapy. The primary outcome was a first episode of ventilator-associated pneumonia during 28 days of follow-up. At 28 days, 15% of the amikacin group and 22% of the placebo group developed VAP (difference in mean survival time to VAP, 1.5 days; 95% CI, 0.6 to 2.5; *P*=0.004). An infection-related ventilator-associated complication occurred in 18% of patients in the amikacin group and 26% of patients in the placebo group (hazard ratio [HR], 0.66; 95% CI, 0.50 to 0.89). Limitations of the study include the extensive exclusion criteria, which make it challenging to generalize the results.

BOTTOM LINE: A three-day course of inhaled amikacin significantly reduced the incidence of VAP in critically ill patients undergoing mechanical ventilation. Further studies are warranted to assess long-term outcomes and broader patient benefits.

CITATION: Ehrmann S, et al. Inhaled amikacin to prevent ventilator-associated pneumonia. *N Engl J Med*. 2023;389(22):2052-62.

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By Denny Kim, MD

5 90-Day Mortality Among Septic Patients Given Piperacillin-Tazobactam Versus Cefepime

CLINICAL QUESTION: In patients with undifferentiated sepsis without an indication for anaerobic coverage, is there increased mortality with the combined use of vancomycin/piperacillin-tazobactam versus vancomycin/cefepime?

BACKGROUND: Guideline-recommended treatment of sepsis entails a combination regimen of either vancomycin/piperacillin-tazobactam or vancomycin/cefepime. Studies have suggested that empiric treatment of sepsis with anti-anaerobic antibiotics, such as piperacillin-tazobactam, is associated with more adverse outcomes compared to anaerobe-sparing antibiotics, such as cefepime. A recent trial (ACORN) showed no difference in 14-day mortality between the two drugs. ACORN, however, was limited by analyzing only short-term outcomes.

Dr. Kim

STUDY DESIGN: Retrospective cohort study

SETTING: University of Michigan Medical Center emergency department (ED)

SYNOPSIS: The study involved 7,569 adult patients (median age, 63 years) who were admitted to the ED from 2014 through 2018 with undifferentiated suspected sepsis who had: blood samples drawn for cultures upon arrival to the ED; evidence of acute organ dysfunction in the first 24 hours after ED presentation; and treatment with antibiotics for at least one day upon ED arrival. Patients who were treated with vancomycin/piperacillin-tazobactam were compared with those who received vancomycin/cefepime. Patients with clear indications for anaerobic coverage were excluded. The primary outcome was 90-day mortality. Secondary outcomes included organ failure-free, ventilator-free, and vasopressor-free days. Piperacillin/tazobactam was associated with an absolute mortality increase of 5.0% at 90 days (95% CI, 1.9 to 8.1); 2.1 (95% CI, 1.4 to 2.7) fewer organ failure-free days; 1.1 (95% CI, 0.57 to 1.62) fewer ventilator-free days, and 1.5 (95% CI, 1.01 to 2.01) fewer vasopressor-free days. The nonrandomized design is the study's primary limitation. Generalizability is a further limitation, as the study was conducted at a single academic medical center.

BOTTOM LINE: Among patients with undifferentiated sepsis without an indication for anaerobic coverage treated with vancomycin, the addition of piperacillin-tazobactam was associated with a higher 90-day mortality than cefepime, suggesting that empiric anaerobic coverage in sepsis may be harmful.

CITATION: Chanderraj R, et al. Mortality of patients with sepsis administered piperacillin-tazobactam vs cefepime. *JAMA Intern Med*. 2024;184(7):769-77.

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By Jung Eun Ha, MD, MPH

6 Hydrocortisone Plus Fludrocortisone for CAP-Related Septic Shock

CLINICAL QUESTION: Does hydrocortisone and fludrocortisone reduce all-cause mortality among patients with septic shock due to community-acquired pneumonia (CAP)?

Dr. Ha

BACKGROUND: A meta-analysis of 17 studies looking at corticosteroids in CAP suggested the effects of corticosteroids varied with the severity of CAP. A trial of 795 adults with severe CAP without shock found that IV

hydrocortisone reduced 28-day all-cause mortality, the incidence of intubation, and the need for vasopressor therapy compared with placebo.

STUDY DESIGN: A priori, planned, exploratory, subgroup analysis of the phase 3 double-blinded, randomized, controlled trial.

SETTING: 34 centers in France

SYNOPSIS: 562 adults with septic shock from CAP were randomized to receive corticosteroids (279 patients) or placebo (283 patients). 648 patients with non-CAP-related septic shock were randomized to receive corticosteroids (319 patients) or placebo (329 patients). The treatment involved seven days of IV hydrocortisone 50 mg every six hours and oral fludrocortisone 50 mcg every 24 hours.

For CAP patients, the treatment group had fewer deaths at day 90 compared to the placebo group (39% versus 51%, odds ratio [OR] 0.60; 95% CI, 0.43 to 0.83). There was no difference in death for non-CAP patients (OR, 0.95; 95% CI, 0.70 to 1.29). Among patients with CAP, fewer deaths occurred in the treatment group at day 28 (OR, 0.60; 95% CI, 0.43 to 0.87) and day 180 (OR, 0.59; 95% CI, 0.42 to 0.83). Significant differences were also seen in ICU discharge (OR, 0.64; 95% CI, 0.46 to 0.90), and hospital discharge (OR, 0.62; 95% CI, 0.44 to 0.87).

The primary limitation of the study was that a large subset of patients with CAP-related septic shock also met the criteria for acute respiratory distress syndrome (ARDS), but the subgroup analysis was underpowered to discriminate between ARDS and CAP.

BOTTOM LINE: Hydrocortisone plus fludrocortisone reduced mortality among patients with CAP-related septic shock but did not benefit patients with non-CAP-related septic shock.

CITATION: Heming N, et al. Hydrocortisone plus fludrocortisone for community-acquired pneumonia-related septic shock: a subgroup analysis of the APROCCHSS phase 3 randomised trial. *Lancet Respir Med*. 2024; 12:366-74.

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By Ekaterina Sokolova, MD

7 Empagliflozin After Acute Myocardial Infarction (EMPACT-MI)

CLINICAL QUESTION: Does starting empagliflozin for patients with acute myocardial infarction (AMI) and new onset systolic heart failure (HF) or congestive symptoms reduce the risk of first hospitalization for heart failure or death from any cause?

Dr. Sokolova

BACKGROUND: After AMI, patients are at increased risk for HF and death, especially if they present with congestive symptoms or a decreased left ventricular ejection fraction (LVEF). Empagliflozin improves cardiovascular outcomes for patients with type 2 diabetes, chronic kidney disease, and HF. The empagliflozin in acute myocardial infarction (EMMY) trial showed that in patients with a recent MI, empagliflozin was associated with a reduction in natriuretic peptide and improvement in echocardiographic parameters. The EMPACT-MI trial assessed whether empagliflozin lowers the risk of first hospitalization for HF and all-cause mortality in patients with AMI.

STUDY DESIGN: International, event-driven, double-blind, randomized, and placebo-controlled

SETTING: 451 sites in 22 countries in North America, Latin America, Europe, and Asia from December 2020 to March 2023

SYNOPSIS: EMPACT-MI enrolled patients with AMI, either ST elevation myocardial infarction (75%) or non-ST elevation myocardial infarction (25%), with new onset LVEF <45% or treatment for congestion. Patients with prior chronic HF or already on sodium-glucose transport protein 2 inhibitor therapy were excluded. Participants had to have more than one additional risk factor for HF hospitalization or death, such as age ≥65, LVEF <35%, 3-vessel coronary artery disease, prior MI, atrial fibrillation, or type 2 diabetes.

Within 14 days of the AMI, patients were randomized to empagliflozin versus placebo (3,260 versus 3,262). During a median follow-up of 17.9 months, the incidence of first hospitalization for HF or all-cause mortality (primary outcome) was 5.9 versus 6.6 events per 100 patient-years for empagliflozin and placebo groups, respectively (HR, 0.9; 95% CI, 0.76 to 1.06; *P*=0.21). Of the components of the primary outcome, first hospitalization for HF was decreased in the empagliflozin group (3.6% versus 4.7%; HR, 0.77; 0.95% CI, 0.6 to 0.98). There was no difference in all-cause mortality (5.2% versus 5.5%; HR, 0.96; 95%CI, 0.78 to 1.19). Limitations included the timing of the study during the COVID-19 pandemic when HF hospitalizations were substantially lower.

BOTTOM LINE: Early initiation of empagliflozin after AMI with new-onset systolic HF or signs and symptoms of congestion did not reduce a composite outcome of first hospitalization for HF or death from any cause.

CITATION: Butler J, et al. Empagliflozin after acute myocardial infarction. *N Engl J Med*. 2024;390(16):1455-66.

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By Ashwin Sawant, MD

8 Clinical Risk Score Predicts Arterial Thrombosis in Survivors of ICH

CLINICAL QUESTION: Among survivors of hemorrhagic stroke, who is at high long-term risk of arterial thrombosis?

Dr. Sawant

BACKGROUND: Patients who survive intracerebral hemorrhage (ICH) are at increased risk of recurrent bleeding and arterial thrombotic events, including ischemic stroke (IS) and myocardial infarction (MI). The identification of a subset of these patients who may be at the highest risk of arterial thrombosis may help target secondary preventive therapy.

STUDY DESIGN: Prospective, hospital-based, multicenter, observational study of patients with ICH who survived 30 days. The primary endpoint was a composite of IS, MI, or other arterial thrombotic events. Secondary endpoints included major hemorrhage and recurrent ICH.

SETTING: 13 centers from the MUCH-ITALY (multicenter study on cerebral hemorrhage in Italy) group of hospitals, from January 2002 to July 2014.

SYNOPSIS: Of the 2,864 patients enrolled in the study, 347 were lost to follow up and 788 died in the first 30 days, leaving 1,729 participants for the analysis. The median follow-up was 43 months. The primary endpoint occurred in 169 patients (9.7%), of whom 108 had IS and 39 had MI. Major hemorrhage, of which 219 were recurrent ICH, occurred in 231 patients.

In multivariable, proportional, hazard regression analysis, the risk of the primary outcome was increased for male sex, diabetes, hypercholesterolemia, atrial fibrillation, history of coronary artery disease, use of statins, and use of antithrombotic medications. The MUCH score was generated using these covariates and had moderate discrimination for the risk of long-term arterial thrombosis (areas under the curve were 0.716, 0.672, and 0.744 at one, five, and 10 years, respectively). The risk of major hemorrhagic events was predicted by age, lobar location of hematoma, and hematoma expansion.

Limitations of the study included the lack of information on how effectively risk factors were controlled during the follow-up period and the lack of validation in an independent cohort.

BOTTOM LINE: The MUCH score may be a useful tool to help guide secondary prevention with antithrombotic agents in survivors of ICH.

CITATION: Pezzini A, et al. Long-term risk of arterial thrombosis after intracerebral hemorrhage: MUCH-Italy. *Stroke*. 2024;55(3):634-42.

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By Jose Luis Alcaraz Alvarez, MD

9 Implementing and Evaluating a DBN Initiative in a Large Tertiary Care Urban Hospital

CLINICAL QUESTION: What is the impact of implementing discharge before noon (DBN) initiatives on discharge time and other factors such as length of stay (LOS), 30-day readmission, and ED boarding time?

Dr. Alcaraz Alvarez

BACKGROUND: Discharging clinically ready patients before noon on their discharge day may influence the quality of the discharge process, ED boarding times, and LOS.

STUDY DESIGN: Retrospective pre/post-intervention analysis

SETTING: Maimonides Medical Center's hospital medicine units in Brooklyn, N.Y.

SYNOPSIS: Initiatives aimed at facilitating DBN were refined or added during this pilot project, including incorporating the DBN process into daily rounds, an electronic tracking system, transportation when appropriate, expedited processing of laboratory tests, and physical therapy consults. Kaplan-Meier estimates and a log-rank test characterized and compared the discharge time probabilities between the pre- and post-intervention groups. Log-logistic accelerated failure time (AFT) analysis assessed the influence of DBN on discharge time. Secondary analyses examined the impact of DBN on LOS and 30-day readmission due to any cause. Post-intervention, DBNs increased from 5.0% to 11.4% (*P* <0.001), and overall discharge times were 41.5% earlier (*P*

<0.001). DBN as an independent factor was not associated with LOS or subsequent readmissions within 30 days for any cause. Despite an increase in the percentage of patients admitted during the daytime (8:00 a.m. to 5:00 p.m.), the median ED boarding time increased by 41 minutes in the post-intervention group (*P* <0.001). The study was conducted in a single medical center, which limits generalizability.

BOTTOM LINE: DBN initiatives were associated with an increased percentage of patients discharged before noon but did not reduce ED boarding time or readmissions at 30 days.

CITATION: Kausar K, et al. Implementing and evaluating a discharge before noon initiative in a large tertiary care urban hospital. *Jt Comm J Qual Patient Saf*. 2024;50(2):127-38.

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By Olga Prystupa, MD

10 Understanding Potentially Preventable 7-Day Readmission Rates in Medical Oncology Patients

CLINICAL QUESTION: What are the rates and the underlying risk factors for seven-day, unplanned, potentially preventable re-admission (PPR), among solid tumor patients in a medical oncology ward?

Dr. Prystupa

BACKGROUND: The rate of unplanned 30-day readmissions at tertiary cancer centers has been estimated to be 22%, with a median time to readmission of nine to 10 days. Some studies have found that the frequency of PPRs is higher within seven days of discharge compared to those occurring between eight and 30 days post-discharge.

STUDY DESIGN: Retrospective cohort study

SETTING: MD Anderson Cancer Center, Houston, Texas

SYNOPSIS: The hospital medicine department at MD Anderson Cancer Center admits adult patients with solid tumors. This study was performed from September 1, 2020, to February 28, 2021. Readmissions were independently analyzed by two randomly assigned providers. Of 138 unplanned readmissions within seven days, 22 (15.9%) were deemed preventable. The median age was 62.5 years and 52.9% were female. The most common cancer type was non-colon GI, liver, or pancreatic cancer (34.06%), followed by colorectal and lung cancer. Most patients had stage 4 cancer (69.6%) and were discharged to home (64.9%).

The most commonly cited reasons for potential preventability were possible premature discharge, followed by missed opportunities for goals-of-care discussion, lack of one-week outpatient follow-up, and discharge medication errors. Reviewers attributed possible premature discharges to incomplete evaluation and management of medical problems and uncontrolled symptoms such as pain or recurrent ascites. Decreasing the 30-day readmission rate in cancer patients may be challenging due to new or worsening symptoms related to cancer progression or treatment. There may be more opportunities to prevent seven-day unplanned readmissions.

BOTTOM LINE: Premature discharge followed by missed opportunity for goals-of-care discussions were the most common reasons for potentially preventable seven-day readmissions.

CITATION: Leung CK, et al. Understanding potentially preventable 7-day readmission rates in hospital medicine patients at a comprehensive cancer center. *American College of Medical Quality* 2024; 39(1):14-20.

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SHORT TAKES

Clinical Reasoning: Man Versus Machine

By Forough Hakimzada, MD, MA

Comparison of the data processing ability and clinical reasoning of large language models (LLMs) with internal medicine residents and attendings showed that LLMs performed better than physicians in some outcome measures, on par with physicians in others, and worse than physicians in certain other outcome measures. The study highlights the need for further study of LLM-physician interactions prior to their integration into clinical practice. LLMs will likely enhance rather than replace physicians' clinical reasoning.

CITATION: Cabral S, et al. Clinical reasoning of a generative artificial intelligence model compared with physicians. *JAMA Intern Med*. 2024;184(5):581-3.

Beta-Blockers After MI and Preserved Ejection Fraction

By Denny Kim MD

This prospective, randomized, open-label, parallel-group trial found that in patients with acute myocardial infarction (MI) who underwent early coronary angiography and had a preserved left ventricular ejection fraction, long-term oral beta-blocker treatment did not lead to lower mortality than no beta-blocker use.

CITATION: Yndigegn T, et al. Beta-blockers after myocardial infarction and preserved ejection fraction. *N Engl J Med*. 2024;390(15):1372-81. ■

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SHM Hill Day 2024

Members ask legislators for support on key issues

By Lisa Casinger

On September 26, 2024, SHM's Public Policy Committee (PPC) and SHM Chapter members visited Washington, D.C. for SHM's annual Hill Day. Participants educated legislators and their staff about hospital medicine and advocated for some of the issues important to hospitalists and their patients.

Rick Hilger, MD, SFHM, SHM, PPC chair, and the system utilization and care management medical director at HealthPartners in Minneapolis, said. "It's imperative that SHM maintains a presence on the Hill to keep front and center issues most important to patients and the hospitals that care for them. Even politicians and their healthcare aides who are most knowledgeable about the healthcare system benefit from the first-hand experience that hospitalists bring to discussions."

Hospitalist advocates voiced their support for issues like increasing access to skilled nursing facilities (SNFs), streamlining prior authorization requirements under Medicare Advantage, and improving protections from workplace violence within the hospital.

"Being part of the PPC is very meaningful; our colleagues are inspiring!" said Claudia Geyer, MD, SFHM, past system chief of hospital medicine, hospital medicine fellowship senior advisor, and post-acute care and hospital medicine physician at Central Maine Healthcare in Lewiston, Maine. "I again learned a great deal and was glad to have a rural, community hospital-based viewpoint to share as we all recognized the value of diverse input."

Dr. Geyer says it's important to attend Hill Day because interacting with lawmakers on "inpatient issues creates the opportunity to share our patients' stories and particularly discuss how our system impacts patients and requires improvements to safely and fairly serve their healthcare needs." And, she said, "Connecting with other hospitalists from across the nation is an invaluable means of gaining insight and learning from a variety of perspectives and experiences."

Members of SHM met with legislators and staff to discuss important issues affecting hospitalists and their patients during SHM's annual Hill Day in September

Access to SNF

SHM supports the Improving Access to Medicare Coverage Act (H.R. 5138/S. 4137). This legislation will help ensure patients get necessary medical care in the appropriate setting. It will empower clinicians and patients to focus on the clinical needs of patients rather than adhering to outdated observation policies. Specifically, this legislation will count all days spent under observation toward Medicare's three-day inpatient stay requirement, allowing patients to qualify for SNF coverage.

Why this bill matters: To qualify for Medicare SNF coverage, a patient must be admitted to the hospital as an inpatient for three consecutive midnights, and time spent under observation doesn't count toward this requirement. When SNF coverage is denied, patients often have to decide between foregoing clinically necessary care or incurring significant out-of-pocket costs.

Observation care is classified as an outpatient service even though the care is often indistinguishable from inpatient care, and it's billed under Medicare Part B, meaning out-of-pocket costs can be higher, and more variable, than similar care provided to patients admitted as inpatients. Beneficiaries in the most disadvantaged communities are more likely to have an observation stay, have a repeated observation stay within 30 days, and experience long-term re-observation.[1]

Waivers of the three-day inpatient stay requirement during the COVID-19 Public Health Emergency did not increase SNF use, demonstrating the current three-day stay requirement is an unnecessary impediment to SNF coverage.[2]

SHM members' advocacy efforts have made a difference on this front as Representative Jamie Raskin (D-MD-8) cosponsored the Improving Access to Medicare Coverage Act (H.R. 5138) the day after the SHM delegation met with him.

Prior authorization reform

SHM also supports the Improving Seniors' Timely Access to Care Act (S. 4532/H.R. 8702). This legislation will help reduce prior authorization delays under Medicare Advantage (MA) by streamlining the prior authorization process and encouraging plans to align their prior authorization decisions with evidence-based guidelines.

Specifically, this legislation would establish an electronic prior authorization process; require the U.S. Department of Health & Human Services to establish a process for "real-time decisions" for items and services routinely approved; and improve transparency by requiring MA plans to report the extent of their use of prior authorization and the rate of approvals or denials to the Centers for Medicare and Medicaid Services (CMS).

Why this bill matters: Prior authorization processes under MA plans contribute to significant care delays and denials of clinically appropriate care. These processes create an appreciable administrative burden and redirect valuable time and resources away from direct patient care. While hospitalists want to spend their time caring for patients, prior authorization submissions and appeals are administrative tasks with no clinical benefit.

Hospitalists see real-life consequences of current prior authorization delays including longer than medically necessary hospital stays, which increases cost and the risk for hospital-acquired infections and conditions; delayed discharges, which contribute to existing inpatient bed shortages; delayed or denied rehabilitation services, medications, and necessary care, which can negatively affect patient outcomes; increased out-of-pocket costs for patients; and opaque and ill-defined prior authorization rules that frustrate patients and hospitalists.

The clinical needs of patients should be the top priority. Patients deserve physician-recommended care when and where they need it, without untimely delays.

Protecting healthcare workers from workplace violence

SHM supports the Safety from Violence for Healthcare Employees Act (H.R. 2584/S. 2768) to address the growing problem of violence against healthcare workers.

This legislation, modeled after existing federal protections for airport and aircraft workers, would create legal penalties for individuals who intentionally assault or intimidate any hospi-

tal workers on site, regardless of how they are employed; and establish enhanced penalties for acts that involve weapons, result in serious bodily injury, or occur during a public health emergency, with exceptions for individuals who may be mentally incapacitated due to illness or substance use.

Why this bill matters: As front-line physicians in U.S. acute care hospitals, hospitalists face increasing levels of violence in the workplace. Unfortunately, the full scope of workplace violence is likely underestimated, as estimates suggest up to 88% of incidents go unreported.[3]

Healthcare workers are at disproportionate risk of violence, being five times more likely to experience workplace violence than employees in all other industries. They saw a 63% increase in injuries resulting from violent attacks between 2011-2018, according to the U.S. Bureau of Labor Statistics.[4,5]

Violence against healthcare workers has increased significantly since the COVID-19 pandemic. The number of injuries that require days away from work has nearly doubled, and approximately 43% of healthcare workers reported experiencing some form of violence during this time.[6,7]

Unsafe workplaces hurt physician retention efforts and compound national healthcare practitioner shortages. Individuals who experience violence feel less motivated, are more dissatisfied with their jobs, and consider quitting following an event.

The September Hill Day—during pre-election time—was "very active and energized," Dr. Geyer said, but "participants in our discussions were engaged, supportive, and appreciative of hearing about our patients' experiences. One of the meetings was my third over five years with the same healthcare-focused staffer, and at this visit, the Senator had signed on to all three bills we were advocating for."

Another attendee, Naveen Baskaran, MD, MSHI, CPHIMS, a hospitalist and assistant professor of medicine at the University of Florida in Gainesville, agrees and said, "Meeting with Representative John Rutherford and the staff of Representatives Kat Cammack and Senator Marco Rubio allowed us to highlight the importance of bills. These discussions were well-received, and seeing the interest and engagement from the policymakers and their teams was encouraging. Collaborating with Dr. Jennifer Cowart and other seasoned physicians on the advocacy committee further enriched the experience, emphasizing the collective commitment to advancing healthcare."

Dr. Hilger said he thought the day went extremely well. "We emphasized the ongoing epidemic of violence against healthcare workers (which seemed to surprise many staff members). Many offices also were surprised to hear that, overall, the boarding crisis has not truly been resolved with the end of the pandemic. We also prioritized discussions around the challenges of rural hospitals, and the longstanding need to bring stability to Medicare physician reimbursement. Another topic included the ongoing high denial rates for medical necessity and SNF prior authorization from for-profit Medicare Advantage plans. Hospitalists live these issues each day, which allows them to not only provide facts, but meaningful stories that drive home how patients and families are impacted by them."

"Besides sharing gratitude [for legislative support so far], we were able to get key insights into other healthcare priorities as well as the likelihood of success for seeing some of the efforts come to fruition," Dr. Geyer said. "We were also fortunate to have dinner with a physician congressperson who openly shared ongoing challenges and gains in healthcare policy over the past decade and the need for persistent hard work to influence change for the better." ■

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Global Hospital Medicine

Opportunity for adventure and meaningful contributions

By Larry Beresford

How do U.S. hospitalists find their way into international hospital medicine and global health care—and what have they learned on the journey? Several hospitalist leaders in global health care contacted for this article shared very different paths to their international connections. They said it's important to enjoy working overseas, with all its challenges and its opportunities for personal fulfillment, while making meaningful contributions to the health care of other countries. But also, it's essential to be clear on one's motivations. Don't expect to save the world.

Dr. Ajala

For Khaalisha Ajala, MD, MBA, FHM, a hospitalist at Emory University School of Medicine in Atlanta, her father was born in Nigeria and she often traveled there when she was young. Her mother, a nurse, inspired her and her siblings to pursue medicine as a career. "I was born and raised in Baltimore, and saw that in this country, with such great resources, many people still struggle with chronic health issues and lower life expectancy." Nigeria struggles in different ways with limitations in what its health care system can do for its people, she explained.

"That experience of seeing the parallels for those who do not have access, whether in Nigeria or the U.S., made me want to do something about it."

In 2013, Dr. Ajala created a nonprofit organization called A Tribe Called Health. "We work in urban communities in this country focusing on health education, with pop-up classes and panels and talks at high schools, helping those who may not have the access they should," she said.

"Then I thought, well, if I'm doing that here, and I know there's a need abroad because I've seen it in person, why can't I just do the same thing somewhere else?" When she joined Emory after completing her medical training, Dr. Ajala realized that opportunities in global health didn't require her to look very far.

She volunteered with Emory Health Against Human Trafficking, annually visiting a children's orphanage in northern Thailand with Emory medical students. They provide health screenings for the children, many of whom might be considered stateless or at high risk for human trafficking.

She also volunteered with Emory's Global Health Scholars Residency Program for residents and trainees in internal medicine who are on a global health track and want to work abroad. In the students' third year they travel to Ethiopia for a month of inpatient work at Black Lion Hospital in Addis Ababa and to volunteer at its clinic. "I teach as medical faculty for the Emory residents and Ethiopian residents," Dr. Ajala said. In addition to those regular visits to Ethiopia, she has also worked at Accra, Ghana; and at Dharamsala, India, home to Tibetan spiritual leader the Dalai Lama.

There is a history of colonialist attitudes by the developed world relative to the idea of global health care in lower-income and developing countries, Dr. Ajala noted. "Many of the practitioners in those countries understand this history, but they don't hold any resentment. They look forward to partnering with those who care about caring for people all over the world."

PHOTOS: KHAALISHA AJALA

Dr. Ajala worked at the Tibetan School of Medicine in Dharamsala, India, where she shadowed the Dalai Lama's personal physician

She said the way to build a global connection is to perceive it as a welcome partnership, not as Western doctors telling the locals how to do things. "Many of us can tell stories about what we've learned to do in another country, at a hospital that did not have all the resources we enjoy. I have been able to bring back to my U.S. hospitalist work some of their ideas."

A path to pediatrics

Dr. Hickson

For Meredith R. Hickson, MD, MSc, assistant clinical professor of pediatrics at Michigan State University and partner in the pediatric hospital medicine group at Helen DeVos Children's Hospital, both in Grand Rapids, her journey into global medicine began before medical school. She grew up in a Quaker community in Maryland, where she learned an expansive sense of personal responsibility for other human beings. Right out of college in 2011 she joined the Peace Corps.

"That had been a childhood dream of mine. I got posted to Senegal, where I worked on a public-health project, training community health workers on topics like diet and nutrition. We lived in a village in a rural area. That experience is the reason I decided to pursue medicine, and pediatrics specifically," she said.

Dr. Hickson's medical school, the University of Michigan, is part of a global health consortium called the Fogarty International Center, run by the National Institutes of Health, with research partnerships in many different countries around the world. She spent a year working on a pediatric malaria research project in Uganda while rounding on the inpatient pediatric wards at the local community hospital that was hosting the study. "That was definitely a formative experience for me. The hospital doesn't have a lot of resources, but the doctors I worked with were brilliant and exceptional clinicians."

In April of 2021, Dr. Hickson was accepted into a dedicated academic global health fellowship through the Children's Hospital of Philadelphia. That brought her to Botswana for three years, working half-time clinically at Princess Marina Hospital in the pediatric, neonatal, and ICU wards as well as pursuing research and teaching medical students.

Her partner, Cantor Rick Lawrence, was able to join her overseas, working as a chaplain at the hospital where she taught. "And then we had a child while we were over there. So, I had a whole life there, and that life came home with me when I returned to Michigan in April of this year."

Overall, Dr. Hickson said, her fellowship in Botswana was an incredible learning experience. "I think the breadth of things I learned, how to manage a case, how to diagnose, is wider than it would have been if I hadn't left the U.S. I got incredible hands-on training in managing patients with socioeconomic disparities or who came from different cultures," she said. "That has helped me show compassion and empathy to patients who are recent arrivals to the U.S."

Dr. Hickson's current research is looking at how, with limited electronic monitoring and other techniques that hospitals in the U.S. take for granted, nurses in Botswana are able to take vital signs with a stopwatch, stethoscope, paper, and pencil, using a system first developed in Latin America. "Our research is aimed at helping nurses do that to monitor patients more carefully and then alert doctors when these kids are getting sicker before something serious happens. There have been changes in clinical outcomes, but staff tell me this intervention feels like it has made an incredible difference."

She encourages other hospitalists interested in global medicine to look first at what their own university or institution has already developed, rather than trying to blaze new trails. "Always try to work within the frameworks that already exist, building on relationships that are already there." Or, she adds, network with colleagues from other institutions or medical societies.

EPHRATAH NAHABWE

Dr. Hickson conducting malnutrition screenings in Uganda in 2018

BENJAMIN BODNAR

Dr. Bodnar introducing his son, James, to the "neighbors," (circa 2016) when he worked with Partners in Health in northeastern Rwanda

Not just health tourism

Global health is a broad concept, sometimes referred to as humanitarian health care. It includes work led by non-governmental organizations like Doctors without Borders. "Global health describes the work of physicians who come from higher-income countries to developing countries in order to volunteer and collaborate with others in those settings, with the goal of learning from each other but also improving health in the local community," Dr. Ajala said.

International medicine can also mean taking a paying job in a hospital in another country. There's a great need to educate doctors-in-training, and even a contingent of U.S. physicians who aim to fully relocate and practice careers in other countries, with credentialing to meet local standards.

Benjamin Bodnar, MD, a med-peds hospitalist and assistant professor of medicine and pediatrics at Johns Hopkins School of Medicine in Baltimore, grew up in a family that did a lot of traveling, although more in familiar settings like Western Europe. "But I was always interested in branching out to the less familiar."

Dr. Bodnar

As an undergraduate at Stanford University in California, he did a several-week volunteer placement at a children's hospital in Kathmandu, Nepal. "I learned quickly that a lot of international health opportunities, especially for students, are more what I would call health tourism. That caused me a lot of introspection, but it didn't turn me off to the idea of global health."

Between his third and fourth years of medical school at Columbia University, Dr. Bodnar took a year off to pursue medical research and got connected with the Earth Institute, which is a sustainable development academic institution associated with the Millennium Villages Project. That led him to spend a year in rural Ghana and Tanzania. "And that's when I really learned what it was like to live and work in those environments." He found it a fascinating, positive experience but also a difficult one, living in the bush in Sub-Saharan Africa.

Dr. Bodnar's combined med-peds residency was at Yale New Haven Hospital, which has an established global health care program called Johnson & Johnson Clinical Scholars, with well-established bidirectional exchanges in a number of sites in developing nations. That landed him at their site in Kampala, Uganda, where he came to recognize his fascination with medical quality improvement.

Today he works part-time as a med/peds hospitalist but also pursues a portfolio of research in quality and safety, which he directs for the adult hospitalist division at Johns Hopkins in Baltimore. In his Ugandan work experiences, "I learned a lot, and also saw how many things were dysfunctional in its health care system."

One of his mentors at Yale recognized his interest and encouraged him to consider specializing in medical quality improvement in developing and resource-limited countries as a career path. "It is true that the way we do things in the West is not always right. Physiology is the same, so medicine at the core is the same. But what you realize doing global hospital medicine is how, for many of the things we do in a resource-rich environment, we never think about them as optional, just expected and assumed."

Going into environments where the lack of resources doesn't permit that approach offers a perspective on what is a privilege versus a

PHOTOS: Dr. Gordon Johnson

ABOVE: Dr. Johnson teaches point-of-care ultrasound at the University of Ghana

RIGHT: Dr. Johnson provides medical consultations in Ghana

right and habit versus necessity, he said. "I think people who have experience in global medicine often have a more flexible mindset about problem-solving and risk tolerance."

For two years starting in 2014, Dr. Bodnar and his wife, Alia, who is a primary care and addiction medicine physician, worked together in Rwanda with the non-profit Partners in Health, founded by the inspirational infectious disease doctor, Paul Farmer, while holding part-time appointments as hospitalists at Harvard and Brigham and Women's Hospital in Boston. They would pile up intensive night shifts in Boston to make it possible to go back overseas.

"After we had babies, we came back and settled in Baltimore. But since I've been back, I've tried to maintain my international portfolio with the same partners I've worked with in Uganda for the past 12 or 13 years." Their son lived with them in Rwanda for four months when he was four months old, but in the end, the family's back-and-forth travel from the U.S. to Africa wasn't sustainable for them.

Global special interest

SHM's Global Hospital Medicine Special Interest Group (SIG) has some 250 members. It was formed in 2021 by combining the Global Health and Human Rights SIG with the International Medicine SIG. It hosts hospitalists from other countries who visit the U.S., tries to promote bi-directional partnerships between countries, and presents forums at SHM conferences.

"We want to encourage people to have these experiences and learn about the world, but also try to be sensitive to not have this be medical colonialism," Dr. Ajala said. "We need to normalize the idea of shared partnerships, not charity care. We should be learning from each other."

Gordon Johnson, MD, a hospitalist at Legacy Health in Portland, Ore., said he was always interested in global health, spending six months of his medical training in Delhi, India. Along the way, he developed a deep interest in point-of-care ultrasound (POCUS) and especially its applications in resource-limited settings where there may not be access to more intensive scanning technologies.

Dr. Johnson

"You can really see its benefit in developing countries," he said. "Fortunately, POCUS devices have become much cheaper." Now he hosts personal fund-raising rooftop parties for his friends and colleagues to raise enough money to purchase a POCUS wand that he can leave behind when he returns from his international trips.

Currently, Dr. Johnson works 80% as an academic hospitalist at Legacy Health, leaving 20% of his schedule for global and humanitarian work. He has partnered with Isaac Armstrong, a tech professional from Portland who founded the Rural Health Foundation to support health care development in his native Ghana. Dr. Johnson, its medical director, goes there regularly to teach POCUS—to share Western medical techniques at the grassroots level with villages in Ghana. He typically spends about six to eight weeks a year in global health postings.

"Like a lot of hospitalists, I can work really hard, take a lot of shifts, and then take longer periods off, which I can use to come to Ghana and other places. Some of the work I do virtually." Hospitalists have a gift with their specialty in that they can visit many countries and find local health providers with whom to work.

"Really, the most effect we have as foreign doctors is not coming in, seeing patients, and then flying home. It's teaching our skills to the local physicians, giving them the support they need, and then getting out of their way and letting them do the work," Dr. Johnson said.

A magical experience

Dr. Johnson said his family wasn't always pleased about how much time he spends overseas. "I understand; when I'm taking all my free time and going to places that aren't exactly tourist destinations. When I was allowed to, I would bring my kids with me and try to get them involved. I think they would say those were good experiences for them, as well."

But he advised hospitalists interested in international experiences to try to do some of that exploring before they have children, even though it is possible to bring them on international adventures. His international work has also brought him to Norway, Thailand, Haiti, South Sudan, and Uganda.

Dr. Johnson emphasized not taking unappealing assignments. "When you volunteer, do it in a place you'd like to go. I've certainly been in war-torn areas and deserts and places with strict curfews, and that's important work. But you don't have to do that or apologize for going someplace where you'd rather be," he explained.

"I want to be clear. I do this work because I love it. I don't think I'm going to change the world or anything. But I'd much rather do this work than go sit on a beach somewhere. Sometimes you go on vacation and find that you've only spoken to waiters," he said.

In Ghana, where he was stationed when *The Hospitalist* caught up with him, he said he feels like he's working in partnership with the local doctors. "They sometimes say, 'Hey, Gordy, we'd like to take you out for music tonight.' You learn a lot about the culture, and the next thing you know, you're having dinner with somebody's grandmother or learning to cook Ghanaian food out in a village with your friend's mom. I mean, the experience is magical!" ■

Larry Beresford is an Oakland, Calif.-based freelance medical journalist, and long-time contributor to The Hospitalist.

Illicit Medetomidine Use with Fentanyl

Recognizing an emerging public health crisis

By Nikhil Sood, MD, and Gagandeep Dhillon, MD

Medetomidine is a non-opioid veterinary anesthetic drug and a synthetic alpha-2-adrenoceptor agonist that is not approved for human use. Increasingly, it's being used with illicitly manufactured fentanyl, xylazine (another, similar, non-opioid, animal sedative), heroin, and other street drugs in several parts of the U.S.[1] Because it's an emerging adulterant, the Centers for Disease Control is closely monitoring it.[2]

Medetomidine is more potent than xylazine. It may produce longer-lasting sedation, has approximately 200-fold higher potency, and is 10 times more selective.[3] Several media reports about overdoses from cities including St. Louis, Pittsburgh, San Francisco, Philadelphia, Toronto, and Chicago, have appeared in the last few months. The fentanyl-medetomidine combination has triggered a new wave of overdoses this year, prompting states to issue alerts.[4,5] With the rising number of medetomidine-induced seizures in the U.S., it has become an urgent public health issue, and we aim to raise awareness among hospitalists regarding this growing crisis.

The illegal use of medetomidine was initially discovered in Maryland but has been found in toxicology specimens of suspected opioid overdose patients in multiple states, including Missouri, Colorado, Maryland, Pennsylvania, and California. In December 2023, the Center for Forensic Science Research & Education issued an alert that medetomidine was detected in overdoses in St. Louis and clandestine laboratory seizures in Ohio, Florida, and Canada.[6] The emergence of medetomidine across the country appears to be following the same path as xylazine and fentanyl, beginning in the Northeast, spreading to the South, and moving westward. This pattern indicates that the use of medetomidine as an adulterant will likely increase in the future and is likely to be encountered in the illicit fentanyl supply.

Key Takeaways

- Medetomidine is a non-opioid animal sedative increasingly used with fentanyl in illicit drug mixtures.
- It causes overdose similar to xylazine and other opioids but with prolonged sedation and bradycardia.
- Its effects are not reversed by naloxone.
- While responding to a medetomidine drug overdose, essential life support is essential, similarly to any other overdose.

Adverse effects and testing

Medetomidine use among humans is not well described, and most of the data currently is based on veterinary studies. Prolonged sedation, peripheral vasoconstriction, bradycardia, and hypotension have been reported adverse effects in humans.[1,3] Peripheral vasoconstriction caused by medetomidine may impact wounds and healing, as seen in xylazine. It is unclear if the wounds caused by medetomidine are similar to those that occur with xylazine.[7] In veterinary literature, it has been reported that medetomidine causes vasoconstriction, which could impact wound healing or wounds caused by intravenous drug use. Other symptoms include several adverse gastrointestinal effects, such as vomiting, decreased gastric motility, and bloody diarrhea.[7] The risk of extreme drowsiness and sedation is increased when medetomidine and dexmedetomidine are used in combination with high-potency opioids, benzodiazepine-related drugs, and xylazine. Testing for medetomidine is challenging because of the lack of available testing techniques. Unlike xylazine, testing strips are not yet available to detect medetomidine. Different states use methods ranging from the Rapid Analysis of Drugs, or RAD, program to Community Drug Checking and Rapid Drug Analysis and Research, or RaDAR.[1,5] These programs focus on rapidly identifying illicit substances in high-risk individuals.

> *"The emergence of medetomidine across the country appears to be following the same path as xylazine and fentanyl, beginning in the Northeast, spreading to the South, and moving westward. This pattern indicates that the use of medetomidine as an adulterant will likely increase in the future..."*

Management of overdose and withdrawals

The first step for hospitalists in responding to a medetomidine drug overdose is to do essential life support, similarly to any other overdose. Since medetomidine is a non-opioid sedative, its effects are not reversed by naloxone, which is the first response to drug overdose

While atipamezole or yohimbine can reverse the effects of medetomidine, similar to xylazine, these medications are not approved for use in humans.[8] Atipamezole and yohimbine can cause harmful alpha-2-agonist withdrawal symptoms, including hypertension, agitation, and tachycardia.[9] Patients who suffer from severe bradycardia and hypotension due to medetomidine can benefit from evidence-based medicine, including airway management and cardiopulmonary support. Medetomidine, like xylazine, can cause prolonged sedation. This emphasizes the importance of protecting the airway, which may be compromised with prolonged sedation.

The symptoms of medetomidine withdrawal are not well-known, but they may be similar to those of dexmedetomidine, with hypertension, tachycardia, and agitation. For patients who are experiencing withdrawal symptoms from opioids, clonidine is both an effective treatment in the management of dexmedetomidine withdrawal and an adjunctive treatment for opioid withdrawal management. If the patient is hemodynamically stable but still experiencing withdrawal symptoms after optimizing opioid agonist treatment, consider using clonidine as early as possible in the withdrawal management process and titrating the dose.

Conclusion

Medetomidine's increased prevalence in illicit drug supplies, especially when combined with fentanyl, poses an acute public health threat. Medetomidine's potency as a powerful sedative compound magnifies overdose risks with severe consequences, including prolonged sedation and compromised airway management, further compounded by the absence of human-specific antidotes. This has prompted healthcare providers and public health officials to develop strategies aimed at decreasing harm from overdose incidents by simultaneously raising awareness, improving testing methods, and developing effective public-health strategies against them to address this emerging crisis effectively. ■

Dr. Sood

Dr. Dhillon

Dr. Sood is a hospitalist at Banner Gateway Medical Center in Gilbert, Ariz., affiliated with MD Anderson Cancer Center in Houston. Dr. Dhillon is an assistant medical director and hospitalist with Adfinitas Health at the University of Maryland Medical Center, in Glen Burnie, Md.

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Running Dry: How Hospitalists Can Conquer the IV Fluid Crisis

By Mihir H Patel, MD, MPH, MBA, FACP, CLHM, SFHM

Intravenous fluids are undeniably essential in modern medicine, acting as a critical conduit for delivering hydration, electrolytes, medications, and nutrition to patients. They are vital for resuscitation, maintenance, and replacement therapies. However, the increasing prevalence of IV fluid shortages is a growing concern for healthcare systems worldwide. This scarcity often disproportionately impacts essential fluids like sodium chloride (normal saline) and dextrose solutions, which are fundamental to a wide range of medical interventions. The consequences of these shortages are widespread, affecting patient care, disrupting hospital operations, and straining healthcare budgets. Recent events, such as the damage inflicted by Hurricane Helene on the Baxter manufacturing plant in North Carolina, have further exacerbated the situation. As a major supplier of IV fluids in the U.S., the significant reduction in Baxter's production capacity triggered widespread shortages, serving as a stark reminder of the healthcare system's vulnerability to supply chain disruptions. This underscores the urgent need for robust contingency plans to ensure continued access to these essential medical resources.[1]

Underlying causes of the shortage

The current IV fluid shortage is a multifaceted problem with a complex web of contributing factors. Natural disasters, such as hurricanes and earthquakes, can severely disrupt manufacturing processes, especially considering the specialized nature of IV fluid production facilities. Furthermore, shortages of raw materials, including plastics for IV bags and sterile water, coupled with global supply chain delays, create bottlenecks in the production process. Increased demand during public health emergencies, such as pandemics or large-scale infectious outbreaks, can further strain the system. The concentration of IV fluid manufacturing in a limited number of companies and the stringent regulatory requirements for production add further complexity to the issue, making it challenging to increase production quickly or diversify supply sources in response to shortages.

Challenges faced by hospitalists

Hospitalists, who are at the forefront of inpatient care, face unique challenges in the context of IV fluid shortages. The limited availability of IV fluids necessitates a more judicious approach to fluid management, requiring clinicians to dedicate more time and effort to patient assessments, exploring alternative therapies, and making frequent adjustments to treatment plans. In severe shortage situations, health professionals may be forced to make difficult ethical decisions regarding fluid rationing and the prioritization of patients based on individual needs and the likelihood of benefiting from the limited resources. Effectively communicating the rationale for fluid conservation measures to patients and their families can be challenging, requiring clear and empathetic communication to alleviate concerns and ensure understanding. Staying abreast of the latest fluid management guidelines and recommendations during a shortage demands continuous learning and adaptation to evolving best practices. Also, the use of alternative fluids and adjusted medication regimens, particularly in the context of fluid conservation, increases the risk of medication errors and potential adverse patient outcomes, necessitating heightened vigilance and careful monitoring. Effective communication and collaboration with the entire healthcare team, including nursing staff, pharmacists, and supply chain managers, are also crucial to ensure that fluid conservation efforts are consistently applied and understood across all levels of patient care.

Strategies for managing IV fluid shortages

Optimizing fluid management: Care providers must adopt a meticulous approach to fluid management, beginning with thorough patient assessments to accurately determine the type and volume of IV fluids required. This includes avoiding unnecessary or excessive fluid administration. Exploring and using alternative therapies when clinically appropriate is essential. This may involve oral rehydration solutions and enteral hydration. Minimizing waste using smaller IV fluid bags and avoiding the disposal of partially used bags is another important conservation strategy. Continuous monitoring of patients' fluid status and electrolyte balance is crucial, with treatment plans adjusted as needed to ensure optimal hydration. Incorporating standardized order sets and protocols into daily workflows can streamline fluid management and facilitate conservation efforts.[2,3]

Leveraging technology and

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clinical competency: Clinicians should utilize available technology to support fluid-management decisions. Electronic health record (EHR) systems can be used to implement alerts and reminders for appropriate fluid prescribing, alternative therapies, and conservation strategies. Integrating clinical decision support tools into EHR systems can provide real-time guidance and recommendations for fluid management. Staying informed about the latest guidelines, best practices, and research related to fluid management during shortages requires continuous learning and engagement in continuing medical education activities.[2,4]

Enhancing patient and family education: Open and transparent communication with patients and their families is crucial. Healthcare providers should clearly explain the reasons for IV fluid conservation efforts and emphasize the importance of oral hydration for patients who can tolerate it. Addressing any questions or anxieties that patients may have regarding their treatment and fluid management plan with patience and empathy can help alleviate concerns and foster trust.

Focusing on patient-centered care: Patient-centered care remains paramount during IV fluid shortages. Attending physicians should actively engage patients in discussions about their fluid management plans, explaining the rationale behind conservation efforts and addressing their concerns. Using patient-reported outcome measures can help assess the effectiveness of fluid management strategies and tailor interventions accordingly.[5]

Promoting antimicrobial stewardship: Judicious antibiotic use is critical during IV fluid shortages. Hospitalists should adhere to evidence-based guidelines for antibiotic prescribing, including appropriate selection, dosage, and duration of therapy, to minimize the need for IV antibiotics and the associated fluid requirements. Transitioning patients to oral antibiotics as soon as clinically feasible is another key strategy to conserve IV fluids. Optimizing antibiotic dosing strategies to minimize the volume of IV fluids required for administration can further contribute to conservation efforts. To conserve IV fluids, consider IV push antibiotics when clinically appropriate. While pharmacists often manage this process, physicians should be aware of this strategy to help address IV fluid shortages.[2,6]

Addressing specific patient populations: Vulnerable patient populations, such as pediatric, geriatric, and critically ill patients, require special consideration. Clinicians should develop specific protocols for managing fluid balance in these populations, considering their unique needs and risks.

Analyzing economic implications: The economic impact of IV fluid shortages should not be overlooked. Care providers should explore cost-effective strategies for managing fluid resources, such as using smaller IV fluid bags and minimizing waste. Advocating for institutional policies that allocate budgets for backup supplies or alternative fluids can help ensure preparedness for future shortages.

Ethical frameworks for fluid rationing: In severe shortage situations, ethical considerations become paramount. Hospitalists should be involved in developing clear ethical guidelines for rationing IV fluids and prioritizing patients based on factors such as severity of illness, likelihood of benefit, and availability of alternative treatments.

Interdisciplinary approaches: Effectively managing IV fluid shortages requires a collaborative interdisciplinary approach. Hospitalists should foster collaboration across departments, including pharmacy, supply chain management, and nursing, to enhance fluid management strategies and ensure a coordinated response.

Impact on hospital culture and resilience: IV fluid shortages highlight the need for a culture of innovation, cross-training, and improved emergency preparedness within hospitals. Healthcare practitioners can play a key role in advocating for better supply chain preparedness and contingency planning at the institutional level.[7]

Future of fluid management

Artificial intelligence (AI): AI has the potential to revolutionize fluid management. AI-powered tools can predict IV fluid needs based on patient demographics, medical history, and real-time data, allowing for proactive planning and resource allocation. These algorithms can identify patients at higher risk of fluid overload or dehydration, enabling early interventions to prevent complications. AI can also tailor fluid-management strategies to individual patient characteristics and risk factors, helping to ensure resources are used efficiently.

AI-powered inventory management systems can also forecast IV fluid demand based on historical usage trends, patient profiles, and supply chain data, thus optimizing ordering and preventing future shortages.[8-11]

Telemedicine: Telemedicine provides a valuable platform for assessing and managing fluid needs, especially in stable patients or those in remote or resource-limited settings. Virtual monitoring can be conducted to evaluate patients' hydration status and determine the appropriateness of oral hydration or alternative therapies. Continuous monitoring of vital signs, fluid balance, and even biomarkers could allow for real-time adjustments to fluid administration, optimizing patient outcomes. This reduces the need for IV fluid administration and can help preserve supplies for acute cases. Additionally, telemedicine allows clinicians to monitor patients' responses to alternative therapies remotely, ensuring that fluid requirements are met without depleting critical IV resources.

Institutional responses to recent shortages

The recent IV fluid shortage crisis, exacerbated by events like Hurricane Helene, prompted a swift and coordinated response from various institutions:

- The FDA implemented temporary measures like compounding flexibilities, extended shelf-life for certain IV fluids, and facilitated importation to increase supply.[12]
- The Department of Health and Human Services (HHS) focused on information dissemination, collaboration with stakeholders, and supporting increased production.[12]
- Professional organizations like the American Society of Health-System Pharmacists, the Institute for Safe Medication Practices, and the United States Pharmacopeia provided guidance on conservation strategies, compounding practices, alternative therapies, and medication safety.
- State- and hospital-level emergency declarations, resource coordination, and hospital-level task forces were implemented to manage the crisis effectively.

These collective efforts highlight the importance of collaboration, proactive planning, and a multitiered approach in responding to public health emergencies like IV fluid shortages.

Conclusion

IV fluid shortages present a complex and evolving challenge for healthcare practitioners, demanding a multifaceted and adaptive approach to ensure the continuation of high-quality patient care. Hospitalists, with their central role in inpatient management, are uniquely positioned to lead the response to these shortages. By staying informed, optimizing fluid management strategies, promoting antimicrobial stewardship, educating patients, leveraging technology, harnessing the power of AI, advocating for system-level solutions, and fostering interdisciplinary collaboration, inpatient care providers can effectively navigate these challenges and ensure the best possible outcomes for their patients. While the issue of IV fluid shortages may persist, a proactive, collaborative, and innovative approach, informed by lessons learned from recent events and empowered by technological advancements, can help mitigate its impact and safeguard the delivery of optimal patient care.

**At the time we went to press, Baxter published a statement on its website saying it is increasing allocation levels for several IV product groups, effective November 26, 2024. The company will share details on planned, phased increases in allocations in mid-December and at year-end, to reach 100% allocation across several IV product codes by the end of 2024.* ■

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Residents Look Forward to a New Year

Sharing thoughts on challenges and hospital medicine field

By Lisa Casinger

The beginning of a new year is often a time of reflection and introspection as people make plans for the coming year and for their futures. Last month we enjoyed hearing from seasoned hospitalists, and to ring in 2025 we're looking to the next generation. We chatted with resident members of SHM and asked them the following questions: What's been your biggest challenge so far in your career? What surprises you most about hospital medicine? What are you looking forward to professionally in 2025? What's going to be the most important issue in hospital medicine in the coming years? Here's what they had to say.

Sahana Sinnarajah, MD

"Each day presents new challenges, and it is both rewarding and humbling to witness the immediate impact we can have on our patients' lives in acute settings."

Sahana Sinnarajah, MD, earned her medical degree from Ross University School of Medicine in North Brunswick, N.J., and is a PGY-2 family medicine resident at the University of Maryland in College Park

Biggest challenge: One of the most significant challenges I've faced during my residency is the inability to assist patients who lack resources or face barriers to healthcare access, particularly within the Baltimore community. The healthcare system's limited resources, coupled with insufficient empathy for resident struggles and the pressure from hospital management to address capacity issues, complicates the situation. As a resident, it often feels as though our voices are diminished in advocating for these vulnerable populations.

Surprised you most about hospital medicine: What surprises me most is the diversity of cases and the varying levels of patient acuity. Each day presents new challenges, and it is both rewarding and humbling to witness the immediate impact we can have on our patients' lives in acute settings.

Looking forward to in 2025: I'm eager to dedicate my skills to serving the immigrant population as I participate in an away elective in Accra, Ghana. This inpatient medicine rotation at the University of Ghana will allow me to apply my knowledge in a different context and contribute meaningfully to the care of this patient demographic.

Most important issue in hospital medicine in the future: Looking ahead, a critical issue will be the detrimental effects of economic and social marginalization on health outcomes. The disproportionate rates of hospitalization and mortality from COVID-19 among non-white Americans underscore the ongoing challenge the healthcare industry faces in providing equitable care. The Centers for Disease Control and Prevention (CDC) emphasizes that achieving health equity necessitates sustained societal efforts to dismantle barriers to care and confront long-standing injustices faced by patients based on race, gender, sexual orientation, disability status, and other factors. It is imperative that the healthcare industry plays a proactive role in this endeavor.

Stephen Wanjala, MD

"What surprises me most is the glaring gaps in access to primary care and preventive medicine, particularly for illnesses tied to lifestyle choices."

Stephen Wanjala, MD, earned his medical degree from Moi University School of Medicine in Eldoret, Kenya, a Master of Science in Health Economics and Policy from the University of Nairobi, and an MBA from Edinburgh Business School. He is a PGY-3 internal medicine resident at the KU School of Medicine-Wichita in Wichita, Kan. and serves as a resident champion with SHM's Kansas Chapter. Upon completing his residency, he'll begin his role as a rural hospitalist with HaysMed in Hays, Kan.

Biggest challenge: The journey into residency was particularly challenging for me, especially as I had been working as a physician in Kenya for several years. As an international medical graduate, I faced unique challenges such as juggling the demands of studying for steps while continuing to work to provide for my family and balancing my responsibilities as a good husband and father. Finding the right resources to prepare, raising the necessary finances, and finding people who believed in my potential were significant hurdles. However, I'm grateful all these challenges came to pass. My residency experience at the KU School of Medicine-Wichita has prepared me well for a career in internal medicine, and I am excited to embrace the next steps in my professional journey.

Surprised you most about hospital medicine: What surprises me most is the glaring gaps in access to primary care and preventive medicine, particularly for illnesses tied to lifestyle choices. Many of the conditions patients are admitted with are preventable, yet persist due to various disparities—economic, social, and racial—that hinder effective prevention. Additionally, there's a significant gap in health literacy, and even among those who are informed, achieving healthy behaviors remains a challenge. This ongoing struggle to bridge these gaps and disparities continues to be a profound revelation in my experience.

Looking forward to in 2025: I'm looking forward to completing my residency and starting my career as a hospitalist at HaysMed, which I felt would be a great fit during my interviews. I'm excited about the transition into life as an attending, establishing new connections, and navigating the new professional and social challenges. Additionally, I'm eager to see how the advancements in AI will shape the future of medicine, particularly hospital medicine, and

how these innovations will enhance patient care and improve outcomes.

Most important issue in hospital medicine in the future: It is likely to be the emphasis on evidence that drives quality care, how this quality is measured, and the shift toward outcome-based payments. AI is set to play a significant role in this evolution, enhancing the quality and safety of medical care while also alleviating some of the burdens on physicians. This technological integration promises not only to improve patient outcomes but also to streamline workflows, making hospital environments more efficient and effective.

Avery Pellnat, MD

"Differences in ideals and cultures are a beautiful thing and make the world such a rich place, but unfortunately, I've seen it become a barrier to high-quality medical care."

Avery Pellnat, MD, earned his medical degree from SUNY Upstate in Syracuse, N.Y., and is a PGY-1 resident at Maine Medical Center in Portland, Maine

Biggest challenge: So far, my biggest challenge has been imposter syndrome. When I say that, I mean when you start your intern year people start calling you "Doctor" and start asking you questions and asking you to make decisions about patient care. This was incredibly intimidating at first, and that helpless feeling made it very easy to doubt myself and worry if I was good enough to be able to take care of people. Fortunately, I'm in a program with excellent, compassionate, and personable mentors who answer my questions and never make me feel bad for not knowing anything. This positive environment has allowed me to grow, stifle the imposter syndrome, and gain the experience of knowing how to answer questions, knowing I'll never know everything, which is okay because no one knows everything.

Surprised you most about hospital medicine: What surprises me most is the number of social issues we do directly address with hospitalized patients. I feel like oftentimes people equate that "social" work with primary care physicians, but I genuinely find these social issues we tackle in hospital medicine to be just as rewarding as managing their medical problems. The sheer breadth of hospital medicine, which encompasses what our bodies are doing and what they're doing wrong, along with the social structures and factors that impact us are utterly fascinating, and both are rewarding to address.

Looking forward to in 2025: Professionally, I'm most looking forward to leading teams as a senior resident. I have loved being able to step back and see the bigger picture and steer the medical plans toward the best outcome. This has and will continue to allow me to have time to learn more about individual patients and their conditions. I also really like to create a positive, supportive environment on a medicine team and to reassure people who may also be struggling to find their confidence as a medical practitioner, just like I was.

Most important issue in hospital medicine in the future: I think the biggest issue will be healthcare inequity—this includes uninsured patients, unhoused patients, and even patients with cultural differences that become obstacles in the U.S. healthcare system. I truly worry about the uninsured. They will likely refrain from seeking care until their disease process is advanced, and even when they do come in, getting them the appropriate follow-up for their comorbidities has proved and will continue to prove very challenging. The same goes for those who are unhoused: discharging them to unstable or unsafe housing is far less than ideal and will likely only lead to poor health outcomes. I have already seen in residency how people from different cultural backgrounds are at a disadvantage. One obvious barrier is language. We're so fortunate to have in-person interpreters occasionally, but are often forced to use iPad interpreters, where things can be lost in interpretation. When things like this are lost, it's easier for other aspects of one's culture to be misunderstood or not considered. I have seen this a lot in my residency, especially with the large refugee population we have here. Differences in ideals and cultures are a beautiful thing and make the world such a rich place, but unfortunately, I've seen it become a barrier to high-quality medical care.

Dorothy Kenny, MD

"The diversity of conditions that medicine sees is what drew me to the specialty, but it's still impressive to see—even more so considering hospitalists at smaller hospitals may have to step up to the challenge of managing rare diagnoses with less subspecialist support."

Dorothy Kenny, MD, earned her medical degree from Creighton University School of Medicine in Omaha, Neb., and she's a PGY-2 internal medicine resident at the University of California Davis Medical Center in Sacramento

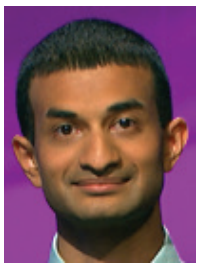
Biggest challenge: I think my biggest challenge so far has been adjusting to my new role as a senior resident and being in charge of managing or teaching our interns as well as the medical students. It's been a big change, but I've also been very excited to have more leadership and teaching opportunities!

Surprised you most about hospital medicine: As someone fairly new to the field, I've found the most surprising thing to be how broad the scope of hospital medicine is. Admitted patients can be very complex and can have anything from routine heart failure or chronic obstructive pulmonary disease to conditions we've never even heard of. The diversity of conditions that medicine sees is what drew me to the specialty, but it's still impressive to see—even more so considering hospitalists at smaller hospitals may have to step up to the challenge of managing rare diagnoses with less subspecialist support.

Looking forward to in 2025: I'm currently at a crossroads in my career where I'm trying to determine what path I want to pursue, i.e., if I want to pursue infectious disease as a career versus hospitalist versus perhaps a mix of both. I'm also deliberating if I would want to do a year as a chief resident. I'm in an information-gathering stage, but making those decisions will be coming up next year so I'm very excited to see where life takes me!

Most important issue in hospital medicine in the future: Equitable access to care. No matter how much care we're able to provide in the hospital, it won't help if patients are unable to access timely follow-ups with their primary care physicians or the necessary specialists.

Dhruv Srinivasachar, MD



"The biggest challenge in my career so far has been navigating the changing training landscape in pediatric hospital medicine as a med-peds trained physician, particularly the designation of pediatric hospital medicine as a subspecialty board requiring fellowship training for all residents graduating post-July 2019."

Dhruv Srinivasachar, MD, earned his medical degree from Virginia Commonwealth University in Richmond, Va., and is a PGY-4 internal medicine/pediatrics resident at Western Michigan University Homer Stryker MD School of Medicine in Kalamazoo, Mich.

Biggest challenge: The biggest challenge in my career so far has been navigating the changing training landscape in pediatric hospital medicine as a med-peds trained physician, particularly the designation of pediatric hospital medicine as a subspecialty board requiring fellowship training for all residents graduating post-July 2019. This also includes challenges with finding opportunities to get involved in research and quality improvement due to training at a smaller institution that is more community focused.

Surprised you most about hospital medicine: The biggest surprise is the wide array of people I get to interact with and the varying ways they have carved out niches in hospital medicine beyond direct patient care. Social media has been a big help in this regard.

Looking forward to in 2025: Looking forward to hopefully figuring out if and where I'll match for my PHM fellowship!

Most important issue in hospital medicine in the future: I think the most important issue is the continued need to define what we do and to get folks to see the specialty as more than just a steppingstone to fellowship, for instance. In addition, there should be a more defined role that we play when working with other services in co-management (surgical services, subspecialty, etc.). ■

Job Hunt Essentials for Hospitalists

How to optimize your CV for success

By Maria Maldonado, MD and Laura Paletta-Hobbs, MD

What is a curriculum vitae (CV) and why is it important? Much like a firm handshake, your CV serves as your initial introduction. It's often the first document potential employers review, making it crucial for opening doors to opportunities, whether in-person or virtual. Unlike résumés, which are concise and tailored to specific roles, CVs offer a comprehensive overview of your academic journey, including research, publications, presentations, and other scholarly pursuits. Keeping your CV current is vital, not just for potential career shifts, but also for seizing internal growth prospects within your organization, such as leadership roles in various divisions or departments. Moreover, it positions you for broader opportunities on a national scale, such as committee memberships or leadership positions, underscoring the importance of maintaining a current and reflective CV. A meticulously curated CV not only recounts your career path thus far but also hints at future achievements and highlights what you bring to the table as an applicant for any organization.

CV formatting

The goal of a CV is to encapsulate a person's educational journey, professional experiences, acquired skills, and notable achievements. While we'll provide a general overview of a typical CV format, it is important to note that various institutions, particularly academic institutions, may have their own prescribed templates or formatting guidelines, particularly for current employees. These internal standards should take precedence over any formatting suggestions offered here, ensuring alignment with organizational protocols and expectations. Using the QR code or the link in the reference here, please find a general example of a standard academic CV template.[1]

Preparing a CV requires strategic organization and attention to detail. It's far easier to record details proactively than to recall past activities later. Establishing a routine is beneficial. Consider scheduling a regular time in your calendar with reminders to update your CV, ideally monthly, but at the very least quarterly. One effective strategy for keeping your CV current includes creating an email folder dedicated to pertinent details of activities or awards, ensuring easy reference when updating your CV. Alternatively, consider using a phone note or document to quickly jot down accomplishments as they occur. Finally, keep your CV readily accessible, such as on cloud storage, ensuring your CV remains secure and available for quick updates. This consistent approach ensures that your CV remains a comprehensive reflection of your professional journey, ready to impress at any moment.

Often, the most recent experiences are listed first, providing a reverse chronological snapshot of your career progression, although this can vary and the key is keeping consistency in chronological order throughout the CV. Recognizing that applicant reviewers often sift through numerous CVs, it's crucial to omit trivial details or activities with limited time commitments. Instead, focus on highlighting substantial contributions and impactful endeavors. While a CV should offer sufficient depth about your experiences, it should also maintain conciseness. Rather than paragraphs of information, opt for concise descriptions, especially for significant activities like large research projects or grants. Using bullet points can facilitate quick comprehension, aiding reviewers in swiftly navigating your CV.

When it comes to style, simplicity reigns supreme. Employ a clean and consistent formatting style throughout the document to ensure easy skimming. Fonts like Arial or Times New Roman are commonly recommended, with headings possibly bolded for emphasis. Font size should be consistent throughout—size 12 is standard. Consistency in formatting throughout the CV, such as numbering, bullet points, and indentations, enhances readability. Dates should be listed uniformly for quick scanning when possible. To minimize formatting errors, convert your document to PDF format before submitting it to potential employers.

Furthermore, you ought to tailor your CV to the specific job you're targeting. This may involve reordering sections to highlight relevant experiences. For instance, if applying for an academic position with a significant teaching component, prioritize sections detailing teaching and medical education experiences over clinical roles.[2] Adapting your CV to align with the requirements and preferences of the desired position increases its relevance and enhances your chances of making a favorable impression on prospective employers.

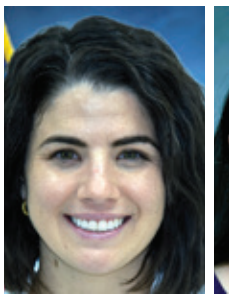
Ensuring your application materials are free of grammatical or spelling errors is paramount. Flawed submissions can raise concerns for potential employers, signaling a lack of attention to detail or professionalism.[3] Seeking feedback on your CV from diverse sources is invaluable. Consider involving a mentor, particularly someone experienced in reviewing applicants for roles similar to your interests. Reviews should encompass not only grammatical accuracy but also length and balance of information provided.

Being able to articulate your involvement in activities listed on your CV is crucial. Whether it's your role within a research team or the outcomes of a particular project, clarity and authenticity are key. Avoid embellishing your contributions, as this can be easily uncovered during interviews.

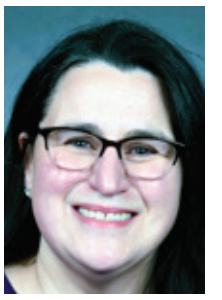
What to include with your CV

When preparing your job application, it's worth considering including a cover letter. The objective of this letter is to showcase succinctly why you would be a valuable addition to the organization or a great fit for the team. Ideally, your cover letter should be concise and easily digestible, typically less than a single page when double spaced. Begin by introducing yourself and articulating why you're the right candidate for the position, highlighting notable strengths relevant to the prospective job. Additionally, this is an opportune moment to mention briefly any personal circumstances, such as spouse or family location, that may tie into your interest in the region or healthcare system. Expressing a commitment to a long-term career can also be advantageous, as many institutions prioritize candidates who demonstrate openness to extended tenures, given the resource-intensive nature of interviewing, onboarding, and orientation processes.

If there have been significant gaps in your practice of medicine, take this opportunity to address them. Also highlight efforts you've undertaken to stay abreast of developments in the field, such as reading journals or participating in continuing medical education. In concluding your cover letter, convey enthusiasm for the opportunity and express hopefulness for further communication. Provide preferred



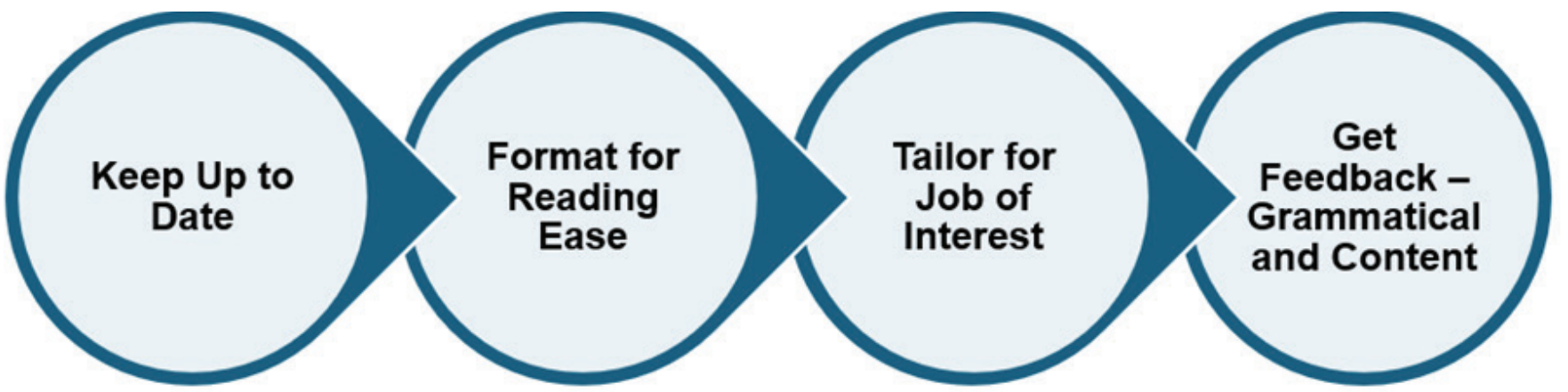
Dr. Maldonado



Dr. Paletta-Hobbs

Dr. Maldonado is an academic hospitalist and associate course director for the internal medicine sub-internship with Baylor College of Medicine at the Michael E. DeBakey VA Medical Center in Houston, Texas. Dr. Paletta-Hobbs is an academic hospitalist, an associate professor of internal medicine, associate program director for the internal medicine residency program, and the hospitalist pathway director at Virginia Commonwealth University in Richmond, Va.

Tips to Improve your CV



contact information, such as your cellphone number and email address, for ease of communication.

Additionally, take the time to curate a potential list of references that can be provided should an employer request. You can consider including a list of references, ensuring the references are aware that they may be contacted and feel comfortable speaking about your strengths. However, exercise caution when listing references: avoid including current employers if reaching out to them could potentially lead to issues. While potential employers should ideally notify you before contacting references, it's not always guaranteed, so it's wise to proceed with discretion.

A prepared CV helps seize future opportunities

A CV serves as more than just a professional document; it's your gateway to opportunities and a testament to your career journey. Acting as your initial introduction to potential employers, a well-crafted CV showcases your academic achievements and is essential for seizing local and national opportunities within your field. With the above strategies in mind, your application materials will stand out, setting the stage for success in your career endeavors. ■

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