

THE Hospitalist

shm
the-hospitalist.org



Pictured (from left) are Lorraine Porcaro, RN, diabetes clinical manager; pediatric nurses Vickie Monti, RN; and Karen Hansen, RN, around the glycemic improvement "bus" at Orange Regional Medical Center, Middletown, N.Y.

COURTESY ORANGE REGIONAL MEDICAL CENTER

Hospitalists target inpatient glycemic control

SHM benchmarks provide 'objective format' for improving outcomes

By Larry Beresford

Physicians are trained to manage their patients' diabetes and often do a meticulous job – one on one. But in order

to maximize glycemic control outcomes throughout the hospital, you need a kind of diabetic epidemiology team to focus on the data, said Andjela Drincic, MD, an endocrinologist at Nebraska Medicine, the

clinical partner of the University of Nebraska Medical Center in Omaha.

As medical director for diabetes stewardship, Dr. Drincic serves as the epidemiologic lead for her hospital.

Continued on page 11

LEGACIES

Ron Greeno, MD, MHM

p8

SHM is seen as an 'honest broker' on Capitol Hill.

PRESIDENT'S DESK

Nasim Afsar, MD, MBA, SFHM

p31

Crystal ball: Predicting the future of hospital medicine.

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A POWERFUL CHOICE

For patients with cUTIs and, in combination with metronidazole, cIAls caused by designated pathogens

ZERBAXA – a novel cephalosporin combined with a proven beta-lactamase inhibitor

Inhibits select
P. aeruginosa and *E. coli*
penicillin-binding proteins

Ceftolozane

Tazobactam

Irreversibly
inhibits some
beta-lactamases

Proven clinical efficacy against some of the most common Gram-negative pathogens, including *E. coli*, *K. pneumoniae*, and *P. aeruginosa*

Adverse reactions profile: The most common adverse reactions occurring in $\geq 5\%$ of patients were headache (5.8%) in the cUTI trial, and nausea (7.9%), diarrhea (6.2%), and pyrexia (5.6%) in the cIAI trial

In vitro activity against select ESBL-producing *E. coli* and *K. pneumoniae* and *P. aeruginosa* with certain mechanisms of resistance

The clinical significance of in vitro data is unknown.

Indications

ZERBAXA is indicated in adult patients for the treatment of complicated urinary tract infections (cUTI), including pyelonephritis, caused by the following Gram-negative microorganisms: *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, and *Pseudomonas aeruginosa*.

ZERBAXA used in combination with metronidazole is indicated in adult patients for the treatment of complicated intra-abdominal infections (cIAI) caused by the following Gram-negative and Gram-positive microorganisms: *Enterobacter cloacae*, *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Bacteroides fragilis*, *Streptococcus anginosus*, *Streptococcus constellatus*, and *Streptococcus salivarius*.

Usage

To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZERBAXA and other antibacterial drugs, ZERBAXA should be used only to treat infections that are proven or strongly suspected

to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

Important Safety Information

- **Patients with renal impairment:** Decreased efficacy of ZERBAXA has been observed in patients with baseline CrCl of 30 to ≤ 50 mL/min. In a clinical trial, patients with cIAls with CrCl > 50 mL/min had a clinical cure rate of 85.2% when treated with ZERBAXA plus metronidazole vs 87.9% when treated with meropenem. In the same trial, patients with CrCl 30 to ≤ 50 mL/min had a clinical cure rate of 47.8% when treated with ZERBAXA plus metronidazole vs 69.2% when treated with meropenem. A similar trend was also seen in the cUTI trial. Monitor CrCl at least daily in patients with changing renal function and adjust the dose of ZERBAXA accordingly.

ESBL= extended-spectrum beta-lactamase.



Visit ZERBAXA.com to see how ZERBAXA may be able to help your appropriate patients with cUTI or cIAI

Important Safety Information (continued)

- **Hypersensitivity:** ZERBAXA is contraindicated in patients with known serious hypersensitivity to ceftolozane/tazobactam, piperacillin/tazobactam, or other members of the beta-lactam class. Serious and occasionally fatal hypersensitivity (anaphylactic) reactions have been reported in patients receiving beta-lactam antibacterials. Before initiating therapy with ZERBAXA, make careful inquiry about previous hypersensitivity reactions to cephalosporins, penicillins, or other beta-lactams. If an anaphylactic reaction to ZERBAXA occurs, discontinue use and institute appropriate therapy.
- ***Clostridium difficile*-associated diarrhea (CDAD),** ranging from mild diarrhea to fatal colitis, has been reported with nearly all systemic antibacterial agents, including ZERBAXA. Careful medical history is necessary because CDAD has been reported to occur more than 2 months after the administration of antibacterial agents.


If CDAD is confirmed, antibacterial use not directed against *C. difficile* should be discontinued, if possible.

- **Development of drug-resistant bacteria:** Prescribing ZERBAXA in the absence of a proven or strongly suspected bacterial infection is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria.
- **Adverse reactions:** The most common adverse reactions occurring in $\geq 5\%$ of patients were headache (5.8%) in the cUTI trial, and nausea (7.9%), diarrhea (6.2%), and pyrexia (5.6%) in the cIAI trial.

Before prescribing ZERBAXA, please read the adjacent Brief Summary of the Prescribing Information.



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zerbaxa.com

 **ZERBAXA**[®]
ceftolozane and tazobactam
for injection (1.5 g)

ZERBAXA® (ceftolozane and tazobactam) for injection, for intravenous use
BRIEF SUMMARY OF PRESCRIBING INFORMATION

INDICATIONS AND USAGE

ZERBAXA® (ceftolozane and tazobactam) for injection is indicated for the treatment of patients 18 years or older with the following infections caused by designated susceptible microorganisms.

Complicated Intra-abdominal Infections ZERBAXA used in combination with metronidazole is indicated for the treatment of complicated intra-abdominal infections (cIAI) caused by the following Gram-negative and Gram-positive microorganisms: *Enterobacter cloacae*, *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Bacteroides fragilis*, *Streptococcus anginosus*, *Streptococcus constellatus*, and *Streptococcus salivarius*.

Complicated Urinary Tract Infections, including Pyelonephritis ZERBAXA is indicated for the treatment of complicated urinary tract infections (cUTI), including pyelonephritis, caused by the following Gram-negative microorganisms: *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, and *Pseudomonas aeruginosa*.

Usage To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZERBAXA and other antibacterial drugs, ZERBAXA should be used only to treat infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

CONTRAINDICATIONS

ZERBAXA is contraindicated in patients with known serious hypersensitivity to the components of ZERBAXA (ceftolozane and tazobactam), piperacillin/tazobactam, or other members of the beta-lactam class.

WARNINGS AND PRECAUTIONS

Decreased Efficacy in Patients with Baseline Creatinine Clearance of 30 to ≤50 mL/min

In a subgroup analysis of a Phase 3 cIAI trial, clinical cure rates were lower in patients with baseline creatinine clearance (CrCl) of 30 to ≤50 mL/min compared to those with CrCl >50 mL/min (see table below). The reduction in clinical cure rates was more marked in the ZERBAXA plus metronidazole arm compared to the meropenem arm. A similar trend was also seen in the cUTI trial. Monitor CrCl at least daily in patients with changing renal function and adjust the dosage of ZERBAXA accordingly.

Clinical Cure Rates in a Phase 3 Trial of cIAI by Baseline Renal Function (MITT Population)

Baseline Renal Function	ZERBAXA plus metronidazole n/N (%)	Meropenem n/N (%)
Normal/mild impairment (CrCl >50 mL/min)	312/366 (85.2)	355/404 (87.9)
Moderate impairment (CrCl 30 to ≤50 mL/min)	11/23 (47.8)	9/13 (69.2)

Hypersensitivity Reactions Serious and occasionally fatal hypersensitivity (anaphylactic) reactions have been reported in patients receiving beta-lactam antibacterial drugs. Before initiating therapy with ZERBAXA, make careful inquiry about previous hypersensitivity reactions to other cephalosporins, penicillins, or other beta-lactams. If this product is to be given to a patient with a cephalosporin, penicillin, or other beta-lactam allergy, exercise caution because cross sensitivity has been established. If an anaphylactic reaction to ZERBAXA occurs, discontinue the drug and institute appropriate therapy.

***Clostridium difficile*-associated Diarrhea** *Clostridium difficile*-associated diarrhea (CDAD) has been reported for nearly all systemic antibacterial agents, including ZERBAXA, and may range in severity from mild diarrhea to fatal colitis. Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of *C. difficile*.

C. difficile produces toxins A and B which contribute to the development of CDAD. CDAD must be considered in all patients who present with diarrhea following antibacterial use. Careful medical history is necessary because CDAD has been

reported to occur more than 2 months after the administration of antibacterial agents.

If CDAD is confirmed, discontinue antibacterials not directed against *C. difficile*, if possible. Manage fluid and electrolyte levels as appropriate, supplement protein intake, monitor antibacterial treatment of *C. difficile*, and institute surgical evaluation as clinically indicated.

Development of Drug-Resistant Bacteria Prescribing ZERBAXA in the absence of a proven or strongly suspected bacterial infection is unlikely to provide benefit to the patient and risks the development of drug-resistant bacteria.

ADVERSE REACTIONS

The following serious reactions are described in greater detail in the Warnings and Precautions section:

- Hypersensitivity reactions
- *Clostridium difficile*-associated diarrhea

Clinical Trial Experience Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and also may not reflect rates observed in practice.

ZERBAXA was evaluated in Phase 3 comparator-controlled clinical trials of cIAI and cUTI, which included a total of 1015 patients treated with ZERBAXA and 1032 patients treated with comparator (levofloxacin 750 mg daily in cUTI or meropenem 1 g every 8 hours in cIAI) for up to 14 days. The mean age of treated patients was 48 to 50 years (range 18 to 92 years), across treatment arms and indications. In both indications, about 25% of the subjects were 65 years of age or older. Most patients (75%) enrolled in the cUTI trial were female, and most patients (58%) enrolled in the cIAI trial were male. Most patients (>70%) in both trials were enrolled in Eastern Europe and were White.

The most common adverse reactions (5% or greater in either indication) occurring in patients receiving ZERBAXA were nausea, diarrhea, headache, and pyrexia. The table below lists adverse reactions occurring in 1% or greater of patients receiving ZERBAXA in Phase 3 clinical trials.

Adverse Reactions Occurring in 1% or Greater of Patients Receiving ZERBAXA in Phase 3 Clinical Trials

Preferred Term	Complicated Intra-abdominal Infections		Complicated Urinary Tract Infections, Including Pyelonephritis	
	ZERBAXA ^a (N=482) n (%)	Meropenem (N=497) n (%)	ZERBAXA ^a (N=533) n (%)	Levofloxacin (N=535) n (%)
Nausea	38 (7.9)	29 (5.8)	15 (2.8)	9 (1.7)
Headache	12 (2.5)	9 (1.8)	31 (5.8)	26 (4.9)
Diarrhea	30 (6.2)	25 (5)	10 (1.9)	23 (4.3)
Pyrexia	27 (5.6)	20 (4)	9 (1.7)	5 (0.9)
Constipation	9 (1.9)	6 (1.2)	21 (3.9)	17 (3.2)
Insomnia	17 (3.5)	11 (2.2)	7 (1.3)	14 (2.6)
Vomiting	16 (3.3)	20 (4)	6 (1.1)	6 (1.1)
Hypokalemia	16 (3.3)	10 (2)	4 (0.8)	2 (0.4)
ALT increased	7 (1.5)	5 (1)	9 (1.7)	5 (0.9)
AST increased	5 (1)	3 (0.6)	9 (1.7)	5 (0.9)
Anemia	7 (1.5)	5 (1)	2 (0.4)	5 (0.9)
Thrombocytosis	9 (1.9)	5 (1)	2 (0.4)	2 (0.4)
Abdominal pain	6 (1.2)	2 (0.4)	4 (0.8)	2 (0.4)
Anxiety	9 (1.9)	7 (1.4)	1 (0.2)	4 (0.7)
Dizziness	4 (0.8)	5 (1)	6 (1.1)	1 (0.2)
Hypotension	8 (1.7)	4 (0.8)	2 (0.4)	1 (0.2)
Atrial fibrillation	6 (1.2)	3 (0.6)	1 (0.2)	0
Rash	8 (1.7)	7 (1.4)	5 (0.9)	2 (0.4)

^aThe ZERBAXA for injection dose was 1.5 g intravenously every 8 hours, adjusted to match renal function where appropriate. In the cIAI trials, ZERBAXA was given in conjunction with metronidazole.

Treatment discontinuation due to adverse events occurred in 2.0% (20/1015) of patients receiving ZERBAXA and 1.9% (20/1032) of patients receiving comparator drugs. Renal impairment (including the terms renal impairment, renal failure, and renal failure acute) led to discontinuation of treatment in 5/1015 (0.5%) subjects receiving ZERBAXA and none in the comparator arms.

Increased Mortality

In the cIAI trials (Phase 2 and 3), death occurred in 2.5% (14/564) of patients receiving ZERBAXA and in 1.5% (8/536) of patients receiving meropenem. The causes of death varied and included worsening and/or complications of infection, surgery and underlying conditions.

Less Common Adverse Reactions

The following selected adverse reactions were reported in ZERBAXA-treated subjects at a rate of less than 1%:

Cardiac disorders: tachycardia, angina pectoris

Gastrointestinal disorders: gastritis, abdominal distension, dyspepsia, flatulence, ileus paralytic

General disorders and administration site conditions: infusion site reactions

Infections and infestations: candidiasis including oropharyngeal and vulvovaginal, fungal urinary tract infection

Investigations: increased serum gamma-glutamyl transpeptidase (GGT), increased serum alkaline phosphatase, positive Coombs test

Metabolism and nutrition disorders: hyperglycemia, hypomagnesemia, hypophosphatemia

Nervous system disorders: ischemic stroke

Renal and urinary system: renal impairment, renal failure

Respiratory, thoracic and mediastinal disorders: dyspnea

Skin and subcutaneous tissue disorders: urticaria

Vascular disorders: venous thrombosis

DRUG INTERACTIONS

No significant drug-drug interactions are anticipated between ZERBAXA and substrates, inhibitors, and inducers of cytochrome P450 enzymes (CYPs).

USE IN SPECIFIC POPULATIONS

Pregnancy - Pregnancy Category B. There are no adequate and well-controlled trials in pregnant women with either ceftolozane or tazobactam. Because animal reproduction studies are not always predictive of human response, ZERBAXA should be used during pregnancy only if the potential benefit outweighs the possible risk. Embryo-fetal development studies performed with intravenous ceftolozane in mice and rats with doses up to 2000 and 1000 mg/kg/day, respectively, revealed no evidence of harm to the fetus. The mean plasma exposure (AUC) values associated with these doses are approximately 7 (mice) and 4 (rats) times the mean daily human ceftolozane exposure in healthy adults at the clinical dose of 1 gram thrice-daily. It is not known if ceftolozane crosses the placenta in animals. In a pre-postnatal study in rats, intravenous ceftolozane administered during pregnancy and lactation (Gestation Day 6 through Lactation Day 20) was associated with a decrease in auditory startle response in postnatal

Day 60 male pups at maternal doses of greater than or equal to 300 mg/kg/day. The plasma exposure (AUC) associated with the NOAEL dose of 100 mg/kg/day in rats is approximately 0.4 fold of the mean daily human ceftolozane exposure in healthy adults at the clinical dose of 1 gram thrice-daily. In an embryo-fetal study in rats, tazobactam administered intravenously at doses up to 3000 mg/kg/day (approximately 19 times the recommended human dose based on body surface area comparison) produced maternal toxicity (decreased food consumption and body weight gain) but was not associated with fetal toxicity. In rats, tazobactam was shown to cross the placenta. Concentrations in the fetus were less than or equal to 10% of those found in maternal plasma. In a pre-postnatal study in rats, tazobactam administered intraperitoneally twice daily at the end of gestation and during lactation (Gestation Day 17 through Lactation Day 21) produced decreased maternal food consumption and body weight gain at the end of gestation and significantly more stillbirths with a tazobactam dose of 1280 mg/kg/day (approximately 8 times the recommended human dose based on body surface area comparison). No effects on the development, function, learning or fertility of F1 pups were noted, but postnatal body weights for F1 pups delivered to dams receiving 320 and 1280 mg/kg/day tazobactam were significantly reduced 21 days after delivery. F2-generation fetuses were normal for all doses of tazobactam. The NOAEL for reduced F1 body weights was considered to be 40 mg/kg/day (approximately 0.3 times the recommended human dose based on body surface area comparison).

Nursing Mothers It is not known whether ceftolozane or tazobactam is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when administering ZERBAXA to a nursing woman.

Pediatric Use Safety and effectiveness in pediatric patients have not been established.

Geriatric Use Of the 1015 patients treated with ZERBAXA in the Phase 3 clinical trials, 250 (24.6%) were 65 years or older, including 113 (11.1%) 75 years or older. The incidence of adverse events in both treatment groups was higher in older subjects (65 years or older) in the trials for both indications. In the cIAI trial, cure rates in the elderly (age 65 years and older) in the ceftolozane and tazobactam plus metronidazole arm were 69/100 (69%) and in the comparator arm were 70/85 (82.4%). This finding in the elderly population was not observed in the cUTI trial.

ZERBAXA is substantially excreted by the kidneys and the risk of adverse reactions to ZERBAXA may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection and it may be useful to monitor renal function. Adjust dosage for elderly patients based on renal function.

Patients with Renal Impairment Dosage adjustment is required in patients with moderate (CrCl 30 to 50 mL/min) or severe (CrCl 15 to 29 mL/min) renal impairment and in patients with ESRD on HD.

OVERDOSAGE


In the event of overdose, discontinue ZERBAXA and provide general supportive treatment. ZERBAXA can be removed by hemodialysis. Approximately 66% of ceftolozane, 56% of tazobactam, and 51% of the tazobactam metabolite M1 were removed by dialysis. No information is available on the use of hemodialysis to treat overdosage.

For more detailed information, please read the full Prescribing Information, available at ZERBAXA.com.

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 **ZERBAXA**
ceftolozane and tazobactam
for injection (1.5 g)

 **MERCK**

SHM expresses support for Fairness for High-Skilled Immigrants Act

Without immigrant hospitalists, health care accessibility would decrease tremendously

The Society of Hospital Medicine recently expressed its support for the Fairness for High-Skilled Immigrants Act (H.R. 392). This legislation will ensure that highly skilled medical professionals and their families will not be turned away from working in the United States based on per-country limitations.



Dr. Vashist

Dr. Vashist is a member of SHM's Public Policy Committee (PPC), which was instrumental in providing guidance for SHM's letter of support, and he was the recipient – as project leader – of SHM's Award of Excellence for Teamwork in Quality Improvement in 2017.

What inspired the PPC – and more broadly, SHM – to express support for this bill?

SHM and the PPC have always taken pride in assuming a leadership role when it comes to policy issues affecting hospitalists and the patients they serve, ranging from observation status to addressing the opiate epidemic and now, immigration reform. We are one of the first medical societies to support this bill.

What inspired us to take action is that there are country-specific caps when applying for a green card for those immigrants currently in the United States on an H1B visa. In the current green card pool, no country can occupy more than 7% of applications. For more populated countries like India and China, two significant countries of origin for hospitalists practicing in the United States, this creates a significant backlog. At the

moment, the projected wait time for applicants from countries in this situation to receive their green cards could easily exceed 25 years.

What impact would this have on hospital medicine providers and patients?

The number of hospitalists trained in the U.S. who have come on visas from other countries is astounding. By virtue of what we do as hospital medicine providers, we are leaders in health care. We own major QI initiatives across the hospital and oversee health care outcomes that many other providers never become involved with. By stifling the ability of people to enter the country and stay here long-term, it would have a devastating impact on our communities. A large chunk of hospitalist staffing companies employ providers who are international medical graduates who completed their residencies in the United States. Without them, health care accessibility would decrease tremendously – especially in rural areas like those in which I work.

This is more than just an issue of citizenship – these caps have a major impact on quality of life and morale for those affected by them. The high level of uncertainty surrounding the current process affects large-scale decision-making. For example, people who are waiting to be approved for their green cards often ask questions like, "Should I buy a house?" and "Can I visit my family abroad and still be able to get back into the United States. without any unwarranted delays or hassles?" This demoralizes quality providers personally, and if they feel this way, I can't see how it wouldn't affect their performance professionally as hospital medicine providers.

How have the existing restrictions affected you?

I graduated from medical school in India and came to the United States initially as a student and eventually

Continued on following page

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Join an SHM committee!

Opportunities to develop new mentoring relationships

By Christopher S. Bartlett, MD, MPH, and
Aram A. Namavar, MS

Society of Hospital Medicine committee participation is an exciting opportunity available to all medical students and resident physicians. Whether you are hoping to explore new facets of hospital medicine, or take the next step in shaping your career, committee involvement creates opportunities for individuals to share their insight and work collaboratively on key SHM priorities to shape the future of hospital medicine.

If you are interested, the application is short and straightforward. Requisite SHM membership is free for students and discounted for resident members. And the benefits of committee participation are far reaching.

SHM committee opportunities will cater to most interests and career paths. Our personal interest in academic hospital medicine and medical education led us to the Physicians in Training (PIT) committee, but 17 committees are available (see the complete list below). Review the committee descriptions online and select the one that best aligns with your individual interests. A mentor's insight may be valuable in determining which committee is the best opportunity.

SHM Committee Opportunities:

- Academic Hospitalist Committee
- Annual Meeting Committee
- Awards Committee
- Chapter Support Committee
- Communications Strategy Committee
- Digital Learning Committee
- Education Committee
- Hospital Quality and Patient Safety Committee
- Membership Committee
- Patient Experience Committee
- Performance Measurement & Reporting Committee
- Physicians in Training Committee
- Practice Analysis Committee
- Practice Management Committee
- Public Policy Committee
- Research Committee
- Special Interest Group Support Committee

The most rewarding aspect of committee membership has been the opportunity to make contributions to the growth of SHM, and the advancement of hospital medicine. As members of the PIT committee, which has been charged with developing a trainee pipeline for future hos-

pitalists, we have been fortunate to play roles in the creation of a Student and Resident Executive Council. This group of young hospital medicine leaders will seek to identify strategies to engage medical students and resident physicians in SHM. We had the opportunity to lead the first Student and Resident Interest Forum at the 2018 annual meeting, have contributed to the development of a national research study identifying qualities interviewers are looking for in hospital medicine job candidates, and are helping to craft the young hospitalist track offerings. Medical students and resident physicians are encouraged to take advantage of similar opportunities present in each of the committees.

Membership is a boon. While opportunities for personal and professional growth are less tangible than committee work products, they remain vitally important for trainees. Through their engagement, medical students and resident physicians will have the opportunity to develop new mentoring relationships beyond the confines of their training site. We believe that committee engagement offers a "leg up" on the competition for residency and fellowship applications. Moreover, networking with hospital medicine leaders from across the country has allowed us to meet and engage with current and future colleagues, as well as potential future employers. In the long term, these experiences are sure to shape our future careers. More than a line on one's curriculum vitae, meaningful contributions will open doors to new and exciting opportunities at our home institutions and nationally through SHM.

Balancing your training requirements with committee involvement is feasible with a little foresight and flexibility. Committee participation typically requires no more than 3-5 hours per month. Monthly committee calls account for 1 hour. Time is also spent preparing for committee calls as well as working on the action items you volunteered to complete. Individual scheduling is flexible, and contributions can occur offline if one is temporarily unavailable because of training obligations. Commitments are for at least 1 year and attendance at the SHM annual conference is highly encouraged but not required. Akin to other facets of life, the degree of participation will be linked with the value derived from the experience.

SHM committees are filled by seasoned hospitalists with dizzying accomplishments. This inherent strength can lead to feelings of uncertainty among newcomers (i.e., impostor syn-



Dr. Bartlett



Mr. Namavar

Dr. Bartlett is a hospitalist at the University of New Mexico Hospital, Albuquerque. Mr. Namavar is a medical student at Stritch School of Medicine, Loyola University Chicago.

drome). What can I offer? Does my perspective matter? Reflecting on these fears, we are certain that we could not have been welcomed with more enthusiasm. Our committee colleagues have been 110% supportive, receptive of our viewpoints, committed to our professional growth, and genuine when reaching out to collaborate. Treated as peers, we believe that members are valued based on their commitment and not their level of training or experience.

Committees are looking for capable individuals who have a demonstrated commitment to hospital medicine, as well as specific interests and value-added skills that will enhance the objectives of the committee they are applying for. For medical students and resident physicians, selection to a committee is competitive. While not required, a letter of support from a close mentor may be beneficial. Experience has demonstrated time and again that SHM is looking to engage and cultivate future hospital medicine leaders. To that end, all should take advantage.

Ultimately, we believe that our participation has helped motivate and influence our professional paths. We encourage all medical students and resident physicians to take the next step in their hospital medicine career by applying for committee membership. Our voice as trainees is one that needs further representation within SHM. We hope this call to action will encourage you to apply to a committee. The application can be found at the following link: https://www.hospitalmedicine.org/membership/committees/#Apply_for_a_Committee.

Continued from previous page

transitioned to an H1B visa. After waiting for many years and having participated in numerous QI initiatives, I was fortunate enough to have my green card petition approved under a higher application category termed "Aliens of Extraordinary Ability" with a lesser wait time. However,

by the nature of the work that they perform, most hospitalists usually are eligible to apply for their green cards under the "Exceptional Ability" or "Advanced Degree" category, the wait times of which are excruciatingly long, and that is what we at the PPC and at the SHM level are striving to address and correct.

If someone is reading and says, "I want to do more and help advocate," what can they do?

You don't have to be a member of the PPC to have an impact on policy. Every member of SHM can contact their local representatives and be informed using SHM's Grassroots Net-

work. I have even gone so far as to meet and talk with local representatives to help them understand how policy issues affect both me and my patients. It is imperative that we are on the right side of history for those affected by this bill, and all bills affecting our fellow providers in the future.

Positive change through advocacy

SHM seen as an 'honest broker' on Capitol Hill

By Ron Greeno, MD, FCCP, MHM

Editor's note: The "Legacies of Hospital Medicine" is a recurring opinion column submitted by some of the best and brightest hospitalists in the field, who have helped shape our specialty into what it is today. It is a series of articles that reflect on Hospital Medicine and its evolution over time, from a variety of unique and innovative perspectives.

Medical professional societies have many goals and serve numerous functions. Some of these include education and training, professional development, and shaping the perception of their specialty both in the medical world and the public arena. Advocacy and governmental affairs are also on that list. SHM is no exception to that rule, although we have taken what is clearly an unorthodox approach to those efforts and our strategy has resulted in an unusual amount of success for a society of our size and age.

As my contribution to the "Legacies" series, I am calling upon my 20-year history of participation in SHM's advocacy and policy efforts to describe that approach, recount some of the history of our efforts, and to talk a bit about our current activities, goals, and strategies.

In 1999 the leadership of SHM decided to create the Public Policy Committee and to provide resources for what was, at the time, a single dedicated staff position to support the work of the committee. As nascent as our efforts were, the strategy for entering into the Washington fray was clear. We decided our priorities were first and foremost to educate our "targets" on exactly what a hospitalist was and on the increasing role hospitalists were playing in the American health care system.

The target audience was (and has remained) Congress, the Centers for Medicare & Medicaid Services, and the Medicare Payment Advisory Committee, which is the advisory board tasked to recommend to Congress how Medicare should spend its resources. The goal of this education was to establish our credibility and to advance the notion that we were the experts on care design for acutely ill patients in the inpatient setting. To this end, we decided that, when we met with folks on the Hill,

we would ask for nothing for ourselves or our members, an approach that was virtually unheard of in the halls of Congress.

When responding to questions as to why we were not bringing "asks" to our Hill meetings, we would simply comment that we were only offering our services and that, whenever they decided to try to make the health care system better and expertise was required regarding redesign of care in the hospital, they should think about us. Our stated goal: Improve the delivery system and provide better and more cost-effective care for our patients.

We also exercised what I will call "issue discipline." With very limited resources it was critical that we limit our issues to ones on which we could have significant impact, and had enough expertise to shape an effective argument. In addition, as we were going to be operating within a highly partisan system and representing members with varying political views, it was highly important that we did not approach issues in a way that resulted in our appearing politically motivated.

That approach took a lot of time and patience. But as a small and relatively under-resourced organization, we saw it as the only way that we could eventually have our message heard. So for many years the small contingent of SHM staff and the members of the Public Policy Committee (PPC) worked quietly to have our specialty and society recognized by policy makers in Washington and Baltimore (where CMS resides). But in the years just prior to and since the passage of the Affordable Care Act, when serious redesign of the American health care system began, our patience started to pay dividends and policy makers actually reached out for our input on issues related to the care of patients admitted to acute care hospitals. In addition, our advocacy efforts started to gain more traction.

Today, our specialty and society are well known by the key health care policymakers at CMS, MedPAC, and the Center for Medicare and Medicaid Innovation (CMMI). In Congress, especially with the staff for the committees of jurisdiction for federal health care legislation, our society is seen as an "honest broker," committed not just to the issues that impact our members, but one that has the improvement of

the entire health care system at the top of its priority list. We have been told that this perception gives us a voice that is much more influential than would be expected for a society of our age, size, and resources.

Along the way, the PPC has grown to a committee of 20 select members led by committee chair Joshua Lenchus, DO, RPh, SFHM. The PPC is among the most difficult committees to get on, and members commit to hours of work monthly to support our efforts. Our government relations staff in Philadelphia is still small at just three, but they are extremely bright and productive. Recently, my role evolved from being the long-term chairman of the PPC to one of volunteer staff, as the senior adviser for government relations. In this role I hope to support our full-time staff, especially in our Washington-facing efforts.

The SHM staff has brought several systemic improvements to our advocacy work, including execution of several highly successful "Hill Days" and the establishment of our "Grassroots Network" that allows a wider swath of our membership to get involved in the field. The Hill Days occur when the SHM Annual Conference is in Washington, and one of the days includes busing hundreds of hospitalists to Capitol Hill for meetings with their representatives to discuss our advocacy issues.

The success of our advocacy can be seen in several high-level "wins" over the last few years:

- Successful application to CMS for a specialty code for Hospital Medicine (the C6 designation), so that performance data for hospitalists will be fairly compared with other hospitalists and not with our outpatient colleagues' performance.
- Successful support of risk adjustment of readmission rates for safety net hospitals.
- Creation of a hardship exemption of Meaningful Use penalties for hospitalists, an initiative that saved our membership approximately \$37 million of unfair penalties per year; this ensured a permanent exemption from these penalties within the Medicare Access and CHIP Reauthorization Act.
- Implementation of Advanced Care Planning CPT codes to encourage appropriate use of "end of life" discussions.
- Establishment of a Hospitalist Measure set with CMS.



"The success of our advocacy can be seen in several high-level 'wins' over the last few years."

Dr. Greeno is senior advisor for government affairs and past president of SHM.

- Repeal of the Independent Advisory Board earlier this year.
- Creation of the "Facility Based Option" to replace Merit-Based Incentive Payment System reporting for hospital-based physicians including hospitalists. This voluntary method to replace MIPS reporting was first suggested to CMS by SHM, was developed in partnership with CMS, and will be available in 2019.

SHM continues to take the lead on issues that impact the U.S. health care system and our patients. For several years we have been explaining to CMS and Congress the complete dysfunction of observation status, and its negative impact on elderly patients and hospitals. More recently, SHM released a consensus statement on the use of opioids in the inpatient setting, along with a policy statement on opioid abuse.

As the U.S. health care system undergoes a necessary transformation to one in which value creation is tantamount, hospitalists are in a propitious position to guide the development of better federal policy. We still must be judicious in the use of our limited resources and circumspect in our selection of issues. And we must jealously guard the reputation we have cultivated as a medical society that is looking out for the entire health care system and its patients, while we also support our members and their work.

Q&A

Leadership 101: Learning to trust

Dr. Ramin Yazdanfar grows into the role of medical director

By Felicia Steele

Editor's note: This month, *The Hospitalist* spotlights Ramin Yazdanfar, MD, hospitalist and Harrisburg (Pa.) site medical director at UPMC Pinnacle. Dr. Yazdanfar has been a member of SHM since 2016, has attended two annual conferences as well as Leadership Academy, and together with his team received SHM's Award of Excellence in Teamwork.

How did you learn about SHM and why did you become a member?

I first heard about SHM during my initial job out of residency. Our medical director encouraged engagement in the field of hospital medicine, and he was quite involved in local meetings and national conferences. I became a member because I felt it would be a good way to connect with other hospitalists going through similar experiences and struggles, and in the hopes of

gaining something I could take back to use in my daily practice.



Dr. Yazdanfar

Which SHM conferences have you attended?

I have attended two national conferences thus far. The first was the 2016 SHM Annual Conference in San Diego, where our

hospitalist team won the Excellence in Teamwork and Quality Improvement Award for our active bed management program under Mary Ellen Pfeiffer, MD, and William "Tex" Landis, MD, among others. I also attended the 2017 Leadership Academy in Scottsdale, Ariz. As a new site director for a new hospitalist group, I thought it would be a valuable learning experience, with the goal of improving my communication as a leader. I also will be attending the

2018 SHM Leadership Academy in Vancouver. I am excited to reconnect with peers I met last year and to advance my leadership skills further.

What were the main takeaways from Leadership: Mastering Teamwork, and how have you applied them in your practice?

My most vivid and actionable memory of Leadership: Mastering Teamwork was the initial session around the five dysfunctions of a team and how to build a cohesive leadership team. Allowing ourselves to be vulnerable and open creates the foundation of trust, on which we can build everything else, such as handling conflict and creating commitment, accountability, and results. I have tried to use these principles in our own practice, at UPMC Pinnacle Health in Harrisburg, Pa. We have an ever-growing health system with an expanding regional leadership team. We base our foundation on trust in one another, and in our vision, so

the rest follows suit.

As a separate takeaway, I really enjoyed sessions with Leonard Marcus, PhD, on SWARM Intelligence and Meta-Leadership. He is a very engaging speaker whom I would recommend to anyone considering the Mastering Teamwork session.

What advice do you have for early-career hospitalists looking to advance their career?

My advice to early-career hospitalists is to be open to opportunity. There is so much change and development in the field of hospital medicine. While the foundation of our job is in the patient care realm, many of us find a niche that interests us. My advice is pursue it and be open to what follows, without forgetting that we do this for our patients and community.

Ms. Steele is a marketing communications specialist at the Society of Hospital Medicine.



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Sneak Peek: *The Hospital Leader*

A systems-based charter on physician well-being

Don't blame the burned-out clinician

By Christopher Moriates, MD, SFHM

“You can teach a canary in a coal mine to meditate, but it is still going to die.”

I have seen the canary sentiment above – used as a metaphor for health care and burnout – pop up a few times on Twitter, attributed to a few different thoughtful doctors, including Jenny Ramsey, MD, of the Cleveland Clinic (at Hospital Medicine 2018); Lucy Kalanithi, MD, a clinical assistant professor of medicine at Stanford (Calif.) University and widow of Paul Kalanithi, MD, of “When Breath Becomes Air” fame; and Stuart Slavin, MD, associate dean for curriculum and a professor of pediatrics at Saint Louis University.

To be honest, I am rather burned out on reading about physician burnout at this point. Nevertheless, I love the canary idea; it is such a

“It is not the fault of the burned-out physician who apparently just needs to be hammered over the head with better coping skills.”

perfect visual of the current problem facing physicians.

I was thinking about the meditating canary when I read the new “Charter on Physician Well-Being,” published in JAMA and already endorsed by most major medical organizations/acronyms, including SHM, ACP, SGIM, AMA, AAMC, AAIM, ABIM, ACCME, APA, and the IHI. This physician well-being charter was created by the Collaborative for Healing and Renewal in Medicine, a group that includes leading medical centers and organizations.

What makes this different from previous attempts at addressing burnout? The charter takes a systems-based approach to physician well-being. Aha, of course! As the patient safety movement realized

more than 2 decades ago, real progress would only be made when we stopped focusing our attention, blame, and interventions on individuals and instead looked at systems; now, the physician well-being movement has officially made the same bold proclamation.

It is not the fault of the burned-out physician who apparently just needs to be hammered over the head with better coping skills – just as the majority of medical errors would not be fixed by continuing to tell physicians that they screwed up and should figure out how not to do that again!



Dr. Moriates

We need to make real changes to the system. For example, one of the charter’s authors, Colin P. West, MD, PhD, highlighted why it is important that organizations commit to optimizing highly functioning interprofessional teams: “Can you imagine @King-James [LeBron James] or @Oprah applying their unique skills AND personally seating the crowd, collecting stats, assessing satisfaction, etc.? So why do we?”

The authors also call for organizations to commit to reducing time spent on documentation and administration. Hallelujah!

Now the question is whether this charter will actually have any teeth or whether it will have the same fate as our canary, slowly fading away, never to be heard from again?

Read the full post at hospitalleader.org.

Dr. Moriates is the assistant dean for health care value and an associate professor of internal medicine at the University of Texas, Austin.

Also in *The Hospital Leader*

- “What’s a Cost, Charge, and Price?” by Brad Flansbaum, DO, MPH, MHM
- “There Is a ‘You’ in Team,” by Tracy Cardin, ACNP-BC, SFHM
- “‘Harper’s Index’ of Hospital Medicine 2018,” by Jordan Messler, MD, SFHM

Glycemic control

Continued from page 1

tal, which has worked systematically to improve inpatient glycemic control since 2012 – with help from the Society of Hospital Medicine.

“You need a team and to set up a system that works, with protocols and some way of knowing if the protocols are succeeding,” Dr. Drincic said. “Quality improvement targets are never static.”

She credited SHM’s glycemic control eQUIPS (Electronic Quality Improvement Program), an online quality improvement resource and collaborative of 104 participating hospitals, for providing the support and the data needed to drive glycemic QI efforts at Nebraska Medicine. SHM provided reporting metrics, quarterly benchmarking reports, a library of tools and resources, an implementation guide, educational webinars on demand and, for some participants, mentored implementation with the advice of a leading expert in the field.

One big reason for giving more attention to glycemic control in the hospital is patient safety, said Gregory Maynard, MD, MHM, clinical professor and chief quality officer at the University of California–Davis Medical Center and SHM’s project team leader for eQUIPS.

“Hyperglycemia in hospitalized patients is an extraordinarily common and growing problem, affecting up to 40%-50% of patients in the hospital,” he said. In 2012, 7.7 million hospital stays involved patients with diabetes, the seventh leading cause of death in the United States.¹

Hyperglycemia is linked to elevated rates of medical complications, infections, wound complications, hospital mortality, length of stay, readmissions, and ICU admissions, along with other outcomes not directly related to diabetes. Hyperglycemia in hospitalized patients who have not been given a diagnosis of diabetes is, if anything, more dangerous. Add the related risk for hypoglycemia, and clinicians are challenged to keep their patients controlled within the zone between the extremes of hyper- and hypoglycemia. The American Diabetes Association recently issued recommendations with more relaxed glucose targets between 140 and 180 mg/dL for most patients in non-intensive care settings.²

“To not have a standardized way of managing hyperglycemia for your hospital seems like an enormous missed opportunity,” Dr. Maynard said. “If someone comes into the hospital with a chronic condition, just sending them back into the world without addressing the underlying condition is not good care. You have missed an important opportunity.”

Dr. Maynard said SHM recognized this opportunity when it established eQUIPS. “Hospitalists are often tasked with taking care of patients with glycemic issues because there may not be an endocrinologist readily accessible in the hospital,” he said. “We have seen through our benchmarking in eQUIPS incredible variability – with 10-fold differences in hyperglycemia and hypoglycemia rates between the best- and worst-performing sites. The biggest variable is whether the hospital systematically manages glycemic control. We have also shown that achieving high levels of glycemic control and low hypoglycemia rates concurrently is very possible.”

Reliable benchmarks

Nebraska Medicine enrolled in eQUIPS in 2012.

“We utilize SHM’s glucometrics [standardized analyses of inpatient glycemic control data].”³ said Dr. Drincic. “I was looking for a reliable glucometric system and some way to make comparisons with other hospitals when I came across the data Dr. Maynard published about SHM via a PubMed search. We needed outcomes that are validated in the literature and comparison groups.”

Nebraska Medicine has also received a certificate of distinction for inpatient diabetes care from the Joint Commission, and Dr. Drincic is active in PRIDE (Planning Research in Inpatient Diabetes), a national consortium of leading investigators in inpatient diabetes care formed to promote collaborative research. The PRIDE group meets yearly at the ADA conference, communicates regularly by email, and publishes articles.

“Once a year I present our glycemic control data to our administration and to the quality and safety committees at the hospital. I have been pleased with the level of support we have received,” Dr. Drincic said. “We needed a mandate to do this, but when I reported the impact on readmissions and other outcomes, I got the full support of administration. This would have been a lot harder without SHM.”

Engagement with hospitalists is another key to the glucose management project’s success. “We as endocrinologists think we know how to manage diabetes, but hospitalists have the daunting task of dealing with all of the patient’s medical issues. If we don’t have a strong collaboration, how can we change practice hospitalwide?” Rachel Thompson, MD, SFHM, Nebraska Medicine’s chief of hospital medicine, participates in the glucose management project, Dr. Drincic said.

“We occasionally are guests at hospitalist meetings to share new glucose treatment algorithms,” she said. “We’re also looking at collaborating on other quality initiatives, for example, studying how perioperative dexamethasone affects glycemic control. We built this relationship with hospitalists by establishing trust while trying to shed a reputation as ‘sugar police.’ I don’t want hospitalists saying ‘There she goes again’ whenever I come on the unit. We have tried to establish personal relationships and figure out what the hospitalists need, especially relative to EPIC [the hospital’s electronic medical record software].”

Dr. Thompson said her group’s recent growth to nearly 70 clinicians has increased its footprint hospitalwide and given hospitalists a greater

opportunity to influence glycemic control. “We see up to a third of the patients in the hospital outside of the ICU. Glycemic control is something you learn as a hospitalist – it’s a very important frontline quality issue. In the patient list on EPIC every morning we have a field highlighting all patients with glycemic control issues,” she said.

“Poor glucose control is associated with poor outcomes. We need the right systems in place for patient safety. If we are ignoring glycemic control when the patient is in the hospital, we’re sending the wrong message and setting a bad example for our patients when they return home.”

Lack of clear metrics

A significant defect in the infrastructure of many glucose management programs is the lack of clear metrics for outcomes, Dr. Maynard said. Nearly one-third of U.S. hospitals have no standardized metric to track the quality of their inpatient glycemic management, a sobering statistic considering that the first step in any QI initiative is to define and measure the problem at hand.

“I believe the main

reason that glycemic control has been left off hospitals’ radar screens is that we still have not adopted national, publicly reported quality measures for glycemic control, although those were proposed recently by a government interagency work group,” Dr. Maynard said. “Until that happens, we’ll continue to see uneven response.”

The first step for frontline hospitalists is to learn and understand the basics of glucose control, for example, basal bolus insulin administration, and to stop writing orders for sliding scale insulin as the sole means of controlling hyperglycemia.

“Develop and adopt standards of practice for insulin administration in your hospital,” Dr. Maynard said. “Be part of the solution, not the problem. Once you get into the weeds – patients on steroids or on total parenteral nutrition – it can get tricky. But it’s important to get the basics right and move beyond inertia on this topic.”

The glycemic team at Nebraska Medicine includes, in addition to Dr. Drincic and Dr. Thompson, an endocrinology fellow, diabetes case managers, resource nurses, nurse leadership, pharmacists, inpatient care transitions coordinators, and representatives from pediatrics and critical care, all working to impact the overall quality of glycemic management in the hospital.

Jon Knezevich, PharmD, is diabetes stewardship pharmacy coordinator, and Shelly Lautenbaugh, RN, CDE, is diabetes lead care manager and diabetes coordinator for the Joint Commis-

Continued on page 14



Dr. Andjela Drincic



Dr. Thompson



Ms. Lautenbaugh



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Continued from page 11

sion certificate program. Diabetes stewardship also includes online and live training courses and a class in acute glucose management for the diabetes resource nurses, who bring the knowledge back to their units.

The glucose team's job is to make sure patients are cared for safely, using appropriate policies and procedures, education, and training, Ms. Lautenbaugh said. "We have a mission as a hospital to transform people's lives. We try to live our values, and everything follows from the focus on patient safety," she added. "If our patients can receive extraordinary care and leave better informed about their condition than when they came in, and then we don't see them again, we've achieved our ultimate goal."

Hyperglycemia is most often not the primary reason why patients are hospitalized, Ms. Lautenbaugh said. "But we need to give them appropriate glucose management regardless. We've worked with bedside staff, nurse leadership, and teams to develop plans to raise our outcome scores. We have a lot of different outcomes we examine, and it's always evolving."

Quality metrics are incorporated into the electronic medical record, but those reports are not timely enough for day-to-day management, Dr. Knezevich said. "So we created a diabetes dashboard, constantly updated in real time to identify patients who are out of glycemic control." The measures tracked include a mean patient day glucose score, percentage of readings within recommended limits, mean time between measured

low readings and next documented reading or resolution of hypoglycemia, readmission rates, and diabetes nutrition assessments.

For hospitals with diabetes certificates, the Joint Commission also requires that every patient with hyperglycemia receives a clinic visit 30 days after discharge to make sure they are receiving appropriate follow-up care. Other facets of the Nebraska glycemic initiative include utilizing the hospital's voluntary "Meds to Beds" program, which brings prescribed medications to the patient's room at discharge. "We offer a diabetes discharge kit for patients who are self-pay, with all of the insulin and medical supplies they will need to get to the 30-day follow-up visit," Dr. Knezevich said. "We can dream up amazing treatment regimens, but if they can't afford the medications, what have we accomplished?"

SHM's external benchmarks have provided an objective format for comparing and improving outcomes, Ms. Lautenbaugh said. "We like to see where we are and use the data to make significant improvements, but we're also focused on internal assessments. If we make changes for a given metric, how does it affect performance in other areas?" One important metric is percentage of glucose readings within target range hospital-wide. "Our overall goal is 75%. It was 72% in April 2018, and we've raised it to 74.4%. It's a small gain but it shows steady progress. Little steps make small but steady improvement," she said.

"One area where we were not pleased was the occurrence of hypoglycemia," Ms. Lautenbaugh said. "We did a root cause analysis of every hy-



Ms. Porcaro



Dr. Paraschiv

poglycemic event, including several reports for patients who didn't have diabetes at all. We had to weed out some that weren't pertinent to our quality questions, but for those that are, the diabetes case manager calls the provider to make sure they were aware of the incident. We were able to identify the outliers in noncritical care, which we're now able to tackle using a systematic approach."

Get on the bus

Hospitalists are also integrally involved in a hospital glycemic improvement initiative at Orange Regional Medical Center (ORMC) in Middletown, N.Y.

The Glycemic Improvement Team (GIT) was formed in 2012 when a new hospital campus opened and EPIC was implemented as the hospital's EMR. But glycemic control has taken on greater focus since 2015, when ORMC enrolled in eQUIPS, said Lorraine Porcaro, RN, the hospital's diabetes clinical manager. The glycemic control team includes representatives from medicine, nursing, case management, laboratory, nutrition,

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Implementing the new EMR offered the opportunity to track a number of medical values in real time, Ms. Porcaro said. ORMC has focused its glycemic quality improvement efforts on hypoglycemia and hyperglycemia, with a recent emphasis on the need for improvements related to glucose reassessment 15 minutes post hypoglycemia treatment. More than a hundred “Diabetes Champions” have completed 16 hours of advanced training in diabetes and provide in-unit mentorship for other staff.

The ORMC team’s glycemic improvement “bus” is a rolling cart that goes from unit to unit supplying nurse education, reminders, copies of department-specific policies and protocols, and treats for staff. “It’s what we’re known for,” Ms. Porcaro said. Pens with the motto: “Don’t Miss the Bus! Retest in 15!” summarize the GIT’s current focus on post-hypoglycemia treatment retesting.

Hospitalists were part of the glycemic improvement process at ORMC from the beginning and are still involved, said Adrian Paraschiv, MD, FHM, a hospitalist and assistant director of the medical center, as well as the ORMC director of clinical information technology. ORMC initiated hospitalist coverage in 1998 and now has three HM groups, two of them represented on the glycemic improvement team.

“Like any hospital, we feel we should minimize hypoglycemic events,” Dr. Paraschiv explained. “This became important for other hospital de-

partments, and we recognized we needed a major QI initiative to improve our outcomes hospital-wide. In the process, we noticed what other people were saying: Results from improving glycemic control included reduced length of stay, cost, and infections. That provided motivation for the hospital to support our initiative.”

Glucose management isn’t only about blood sugar, but whether the patient ate or not, their

“We were able to identify the outliers in noncritical care, which we’re now able to tackle using a systematic approach.”

other blood work, the level of education for patient and staff, and a variety of other inputs, Dr. Paraschiv said. “All of these things were in the EMR, but EPIC had an incipient structure for pulling the data together, and we modified it to show everything that’s going on with the patient’s glycemic control on a single screen. We can build order sets and issue different reports.”

Today at ORMC, hypoglycemia is reassessed within 30 minutes more than 50% of the time. “It will never be at 100%, but we wanted to at least be at the national mean for eQUIPS hospitals. Our stretch goal was to be in the top quartile, and by the end of 2017, we realized that goal,” Ms. Porcaro said. Sometimes, because of changes in patients and staff, the GIT needs to repeat the education and review policies. “Since then, it’s been a matter of continuing staff education; sharing

glucose data with stakeholders; talking about goals for ICU and non-ICU units; and, when needed, rolling out the bus.”

Participation in eQUIPS has made it possible to gather this information in one place and present it in a way that makes sense to physicians, Dr. Paraschiv said. “Using these tools, we started looking at our processes, what needed to change, and what we are able to change. Can we use the electronic system to automatically alert physicians to make changes to the treatment regimen in real time? We continue to improve using upgrades to our EMR, such as an alert system with best practice advisories

for the clinician. We now think we can actually achieve what we set out to achieve,” he said.

“Our idea was to market this program throughout the hospital – from the kitchen, meal delivery, IT, laboratory, to the medical and nursing staff,” Ms. Porcaro said. “The issue is multifactorial – it’s for the entire hospital. My heart is warmed when I see the woman who delivers the meals asking the patient: ‘Have you gotten your insulin shot?’”

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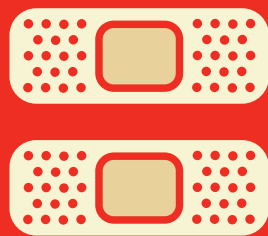
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Medication Reconciliation

Clinician reviews of HM-centric research

By Agnes Libot, MD; Margaret Tsien, MD; Antony Agith, MD; Anthi Katsouli, MD, MPH; Tiffany White, MD; and Paula Marfia, MD

Division of hospital medicine in the department of medicine at Loyola University Chicago, Maywood, Ill.

IN THIS ISSUE

1. Palliative care consultations reduce hospital costs
2. Hospital-level care coordination strategies and the patient experience
3. Predicting failure of nonoperative management of spinal epidural abscess
4. Perioperative diabetes and HbA1C in mortality
5. Procalcitonin not helpful in critically ill COPD
6. Perioperative gabapentin's effect on postoperative opioid use
7. Association between hospice length of stay and health care costs
8. Smoking cessation drugs do not increase CV risk
9. Readmissions after GI bleeds

By Agnes Libot, MD

1 Palliative care consultations reduce hospital costs

CLINICAL QUESTION: Are direct hospital costs for patients with serious illnesses affected by palliative care consultations (PCC)?

BACKGROUND: Health care costs are on the rise, and previous studies have found that PCC can reduce hospital costs. Timing of consultation and allocation of palliative care intervention to a certain population of patients may reveal a more significant cost reduction.

STUDY DESIGN: Meta-analysis.

SETTING: English peer reviewed articles.

SYNOPSIS: A systematic search was performed for articles that provided economic evaluation of PCC for adult inpatients in acute care hospitals. Patients were included if they had least one of seven conditions: cancer, heart failure, liver failure, kidney failure, chronic obstructive pulmonary disease, AIDS/HIV, or neurodegenerative conditions. Six data sets were reviewed, which included 133,118 patients altogether. There was a significant reduction in costs with PCC within 3 days of admission, regardless of the diagnosis ($-\$3,237$; 95% confidence interval, $-\$3,581$ to $-\$2,893$). In the stratified analysis, the pooled meta-analysis suggested a statistically significant reduction in costs for both cancer ($-\$4,251$; 95% CI, $-\$4,664$ to $-\$3,837$; P less than .001) and noncancer ($-\$2,105$; 95% CI, $-\$2,698$ to $-\$1,511$; P less than .001) subsamples. In patients with cancer, the treatment effect was greater for patients with four or more comorbidities than it

was for those with two or fewer.

Only six samples were evaluated, and causation could not be established because all samples had observational designs. There also was potential interpretation bias because the private investigator for each of the samples contributed to interpretation of the data and participated as an author. Overall evaluation of the economic value of PCC in this study was limited because analysis was focused to a single index hospital admission rather than including additional hospitalizations and outpatient costs.

BOTTOM LINE: Acute care hospitals might reduce hospital costs by increasing resources to allow palliative care consultations in patients with serious illnesses.

CITATION: May P et al. Economics of palliative care for hospitalized adults with serious illness. *JAMA Intern Med.* 2018;178(6):820-9.

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By Margaret Tsien, MD

2 Hospital-level care coordination strategies and the patient experience

CLINICAL QUESTION: Does patient experience correlate with specific hospital care coordination and transition strategies, and if so, which strategies most strongly correlate with higher patient experience scores?

BACKGROUND: Patient experience is an increasingly important measure in value-based payment programs. However, progress has been slow in

improving patient experience, and little empirical data exist regarding which strategies are effective. Care transitions are critical times during a hospitalization, with many hospitals already implementing measures to improve the discharge process and prevent readmission of patients. It is not known whether those measures also influence patient experience scores, and if they do improve scores, which measures are most effective at doing so.

STUDY DESIGN: An analytic observational survey design.

SETTING: Hospitals eligible for the Hospital Readmissions Reduction Program (HRRP) between June 2013 and December 2014.

SYNOPSIS: A survey was developed and given to chief medical officers at 1,600 hospitals between June 2013 and December 2014; the survey assessed care coordination strategies employed by these institutions. 992 hospitals (62% response rate) were subsequently categorized as “low-strategy,” “mid-strategy,” or “high-strategy” hospitals. Patient satisfaction scores from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey in 2014 were correlated to the number of strategies and the specific strategies each hospital employed. In general, the higher-strategy hospitals had significantly higher HCAHPS survey scores than did low-strategy hospitals (+2.23 points; P less than .001). Specifically, creating and sharing a discharge summary prior to discharge (+1.43 points; P less than .001), using a discharge planner (+1.71 points; P less than .001), and calling patients 48 hours post discharge (+1.64 points; P less than .001) all resulted in overall higher hospital ratings by patients.

One limitation of this study is that no causal inference can be made between the specific strategies associated with higher HCAHPS scores and care coordination strategies.

BOTTOM LINE: Hospital-led care transition strategies with direct patient interactions led to higher patient satisfaction scores.

CITATION: Figueroa JF et al. Hospital-level care coordination strategies associated with better patient experience. *BMJ Qual Saf.* 2018 Apr 4. doi: 10.1136/bmjqs-2017-007597.

3 Predicting failure of nonoperative management of spinal epidural abscess

CLINICAL QUESTION: Can one predict whether nonoperative management of spinal epidural abscesses will fail?

BACKGROUND: Even though spinal epidural abscesses have a low incidence and nonspecific presentation, a delay in treatment can lead to significant morbidity. Previously, operative management was the preferred treatment; however, improvements in imaging and timing of diagnosis have led to an increased interest in nonoperative management. Few studies have identified possible predictors of failure for nonoperative management, and no algorithm exists for weighing the different possible predictors with the outcome of nonoperative management failure.

STUDY DESIGN: Retrospective cohort study.

SETTING: A Massachusetts hospital system with two tertiary academic medical centers and three regional community hospitals.

SYNOPSIS: The study evaluated 1,053 patients admitted with a spinal epidural abscess during 1993-2016. Of these, 432 patients were managed nonoperatively, and 367 were included in the analysis. Failure of nonoperative management occurred in 99 patients (27%). These patients were compared with 266 patients with successful nonoperative management with more than 60 days of follow-up. Six independent factors were associated with failure of nonoperative management including motor deficit at presentation (odds ratio, 7.85), pathological or compression fractures (OR, 6.12), active malignancy (OR, 3.32), diabetes (OR, 2.92), sensory



Dr. Tsien

Antibiotic therapy for sinusitis routinely too long

Observational study on the length of antibiotic therapy for uncomplicated acute sinusitis found that the median duration of antibiotic therapy was 10 days, which is higher than the recommendation of 5-7 days in patients with low risk of antibiotic resistance. Overall this duration accounted for more than two-thirds of all antibiotic courses.

CITATION: King LM et al. Antibiotic therapy duration in US adults with sinusitis. *JAMA Intern Med.* 2018;178(7):992-4.

changes at presentation (3.48), and location of the abscess dorsal to the thecal sac (OR, 0.29). Subsequently, a clinical algorithm was created to predict the likelihood of failure of nonoperative management.

Because of its retrospective design, the study was unable to assess the efficacy of surgery versus nonoperative management.

BOTTOM LINE: Specific measures of general health, neurologic status at presentation, and anatomical data of a patient with a spinal epidural abscess have led to the development of a clinical algorithm to determine the risk of failure in nonoperative management of spinal epidural abscesses. **CITATION:** Shah AA et al. Nonoperative management of spinal epidural abscess: Development of a predictive algorithm for failure. *J Bone Joint Surg Am.* 2018;100(7):546-55.

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By Antony Agith, MD

4 Perioperative diabetes and HbA1c in mortality

CLINICAL QUESTION: Do preoperative hemoglobin A_{1c} (HbA_{1c}) and perioperative glucose predict outcomes in patients undergoing noncardiac and cardiac surgeries?

BACKGROUND: Hyperglycemia in the perioperative period has been associated with infection, delayed wound healing, and postoperative mortality. Studies have investigated the effects of HbA_{1c} or hyperglycemia on postoperative outcomes, but none have been performed to assess the effect of one while controlling for the other.

STUDY DESIGN: Retrospective analysis.

SETTING: Single-center, Duke Uni-

versity Health System.

SYNOPSIS: Using a database of electronic health records at Duke University Health System, Durham, N.C., investigators reviewed 13,077 surgeries (6,684 noncardiac and 6,393 cardiac)

to determine the association of preoperative HbA_{1c} with perioperative glucose and 30-day mortality. For noncardiac surgery, increased average perioperative glucose was associated with increased mortality ($P = .04$). In cardiac surgery both low and high average glucose was associated with increased mortality ($P = .001$). By contrast, HbA_{1c} was not a significant predictor of postoperative mortality in cardiac surgery ($P = .08$), and in noncardiac surgery, HbA_{1c} was negatively associated with 30-day mortality ($P = .01$). Overall, perioperative glucose was predictive of 30-day mortality, but HbA_{1c} was not associated with 30-day mortality after researchers controlled for glucose.

Because the study is retrospective, no causal relationship can be established. Hospitalists involved in perioperative care should aim for optimization of glucose control regardless of preoperative HbA_{1c}.

BOTTOM LINE: Perioperative glucose is related to surgical outcomes, but HbA_{1c} is a less useful indicator of 30-day postoperative mortality.

CITATION: Van den Boom W et al. Effect of A1C and glucose on postoperative mortality in noncardiac and cardiac surgeries. *Diabetes Care.* 2018 Feb;41:782-8.

5 Procalcitonin not helpful in critically ill COPD

CLINICAL QUESTION: Can a procalcitonin (PCT)-guided strategy safely reduce antibiotic exposure in patients admitted to the ICU with severe acute exacerbations of chronic obstructive pulmonary disease (COPD) with or without pneumonia?

BACKGROUND: Studies have demonstrated PCT-based strategies can safely reduce antibiotic use in patients without severe lower respiratory tract infections, community-acquired pneumonia, or acute exacerbations of COPD. The data on safety of PCT-based strategies in critically ill patients is limited.

STUDY DESIGN: Prospective, multicenter, randomized, controlled trial.

SETTING: ICUs of 11 hospitals in France, including 7 tertiary care hospitals.



Dr. Agith

SYNOPSIS: In this study 302 patients admitted to the ICU with severe exacerbations of COPD with or without pneumonia were randomly assigned to groups with antibiotic therapy guided by a PCT protocol or standard guidelines. Overall, the study failed to demonstrate noninferiority of a PCT-based strategy to reduce exposure to antibiotics. Specifically, the adjusted difference in mortality was 6.6% higher (90% confidence interval, 0.3%-13.5%) in the intervention group with no significant reduction in antibiotic exposure.

One limitation of this study was that it was an open trial in which clinicians were aware that their management was being observed.

BOTTOM LINE: A PCT-based algorithm was not effective in safely reducing antibiotic exposure in patients with acute exacerbations of COPD admitted to the ICU.

CITATION: Daubin C et al. Procalcitonin algorithm to guide initial antibiotic therapy in acute exacerbations of COPD admitted to the ICU: A randomized multicenter study. *Intensive Care Med.* 2018 Apr;44(4):428-37.

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By Anthi Katsouli, MD, MPH

6 Perioperative gabapentin's effect on postoperative opioid use

CLINICAL QUESTION: Does perioperative gabapentin decrease the time to pain resolution and opioid cessation in patients undergoing eligible surgery?

BACKGROUND: Previous studies have shown that perioperative gabapentin has no effect on remote pain cessation but have not linked it with effects on remote opioid cessation. Also, most trials were limited to immediate postoperative use during hospital admission; limited data were available with extensive postoperative longitudinal follow-up.

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

SETTING: Tertiary referral teaching hospital.

SYNOPSIS: A randomized, double-blind trial including a total of 1,805 patients aged 18-75 years who were scheduled for eligible surgery was conducted at a single-center, tertiary referral teaching hospital. The treatment group received 1,200 mg of gabapentin preoperatively followed by 600 mg 3 times a day postoperatively. Meanwhile, the placebo

group received lorazepam 0.5 mg preoperatively followed by inactive placebo postoperatively for 72 hours. With use of intention to treat analysis, this study showed that perioperative gabapentin did not affect time to postoperative pain resolution. However, a modest increase in the rate of opioid cessation was uncovered. Specifically, there was a 24% increase in the rate (hazard ratio, 1.24; 95% confidence interval, 1.00-1.54; $P = .05$) of opioid cessation after hospital discharge, with a median time of 25 days in the gabapentin group versus 32 days in the placebo group.

One caveat to the outcomes is that use of a gabapentin regimen may have increased after discharge date, which could have biased the outcome.

BOTTOM LINE: Perioperative gabapentin may promote opioid cessation and prevent the development of chronic opioid use after surgery.

CITATION: Hah J et al. Effect of perioperative gabapentin on postoperative pain resolution and opioid cessation in a mixed surgical cohort. *JAMA Surg.* 2018;153(4):303-11.



Dr. Katsouli

7 Association between hospice length of stay and health care costs

CLINICAL QUESTION: Does increasing the length of hospice stays lead to decreased utilization and costs in patients on maintenance dialysis?

BACKGROUND: Early hospice referral among Medicare patients is associated with lower rates of hospital admission, intensive care unit admission, and in-hospital death. However, it is not known whether there is association between early hospice referral and health care costs among patients with maintenance hemodialysis.

STUDY DESIGN: Cross-sectional observational study.

SETTING: Using the United States Renal Data System registry.

SYNOPSIS: With the use of data from the United States Renal Data System from 2000-2014, the study examined the relationship between health care utilization during the last month and that of the last week of life among patients with maintenance hemodialysis. The investigators used patients who had renal failure as a primary hospice diagnosis regardless of the decision to dis-

Continued on following page

Pediatric ITL

Comparison of analgesia methods for neonatal circumcision

Multiple pain management interventions exist

By Samuel C. Stubblefield, MD

Clinical question

What is the optimal way to manage analgesia during neonatal circumcision?

Background

Neonatal circumcision is one of the most commonly performed surgical procedures. The American Academy of Pediatrics in 2012 noted that the health benefits outweigh the minor risks of the procedure, but that parents should make the decision to circumcise based on their own cultural, ethical, and religious beliefs.

One of the primary risks of neonatal circumcision is pain during and after the procedure. Multiple methods for managing analgesia exist, but it is unknown what combination of methods is optimal. Usual analgesia techniques include: local anesthetic cream composed of lidocaine and prilocaine (EMLA) applied to the skin prior to the procedure; oral sucrose solution given throughout the procedure; dorsal penile nerve block (DPNB); and penile ring block (RB).

Study design

Single-center, double-blinded, randomized, controlled trial.

Setting

Multispecialty freestanding hospital.

Synopsis

Parents of infant boys born at 36-41 weeks' gestation who chose to have their children circumcised were offered participation in the study. Of 83 eligible participants, 70 were randomized, with 10 in the control group (EMLA only) and 20 in each intervention (EMLA + sucrose, EMLA + sucrose + RB, EMLA + sucrose + DPNB). A single pediatric urologist performed all circumcisions using the Gomco clamp technique.

A video camera recorded the infant's face and upper torso during the procedure. Two researchers, who were blinded to the analgesia plan, scored these videos using a modified Neonatal Infant Pain Scale (NIPS). The NIPS used ranged from 0 to 6, with 6 considered severe pain. For rating purposes, the procedure was divided into 6 stages with a NIPS score assigned at each stage. There were no significant differences in baseline characteristics among the groups; no significant differences in the duration of the procedure by intervention; and there were no complications. Interrater reliability for the NIPS was good (κ , 0.84).

All interventions were superior to EMLA alone, with significantly decreased NIPS for all stages of the procedure. No significant differences in NIPS were found among the following:

EMLA + sucrose.

EMLA + sucrose + RB.

EMLA + sucrose + DPNB (for any stage of the procedure).

The one exception was that following lysis of foreskin adhesions, EMLA + sucrose + RB was superior (NIPS 2.25 for EMLA + sucrose + RB vs. NIPS 4.4 for EMLA + sucrose + DPNB vs. NIPS 4.3 for EMLA + sucrose vs. NIPS 5.8 for EMLA alone). In terms of crying time during the procedure, all interventions were significantly superior to EMLA alone. Of the interventions, crying time was statistically and clinically significantly shorter with EMLA + sucrose + RB (5.78 seconds vs. 11.5 for EMLA + sucrose + DPNB vs. 16.5 for EMLA + sucrose vs. 45.4 for EMLA alone). This was a single-center study and the procedures were performed by a pediatric urologist rather than by a general pediatrician, which potentially limits applicability.

Bottom line

All tested analgesia modalities for



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neonatal circumcision were superior to EMLA alone. The most effective analgesia of those tested was EMLA + sucrose + penile ring block.

Citation

Sharara-Chami R et al. Combination analgesia for neonatal circumcision: a randomized controlled trial. *Pediatrics*. 2017. doi: 10.1542/peds.2017-1935.

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continue hemodialysis before death. Hospital admission, ICU admission, death in the hospital, and one or more inpatient intensive procedures were used as measures for health care utilization.

Among 154,186 (20%) patients receiving hospice service at the time of death, 41.5% enrolled in hospice within 3 days of death. Because more patients were referred to hospice very close to the time of death, the Medicare cost for hospice patients was similar to those patients not referred to hospice (\$10,756 vs. \$10,871; $P = .08$). Longer lengths of stay in hospice beyond 3 days were associated with lower rates of health care utilization and costs. Late hospice referral was also associated with inadequate pain control and emotional needs.

The study was not able to capture patients who had end-stage renal disease but were on hemodialysis. Patients with private insurance or those covered by Veterans Affairs were not included.

BOTTOM LINE: Half of hospice referrals among patients with maintenance hemodialysis occur within the last 3 day of life, which has no significant effect on end-of-life costs and health care utilization.

CITATION: Wachterman MW et al. Association between hospice length of stay, health care utilization, and Medicare costs at the end of life among patients who received maintenance hemodialysis. *Jama Intern Med*. 2018;178(6):792-9.

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By Tiffany White, MD

Smoking cessation drugs do not increase CV risk

CLINICAL QUESTION: Do pharmacotherapies used in tobacco cessation treatment significantly increase the risk of cardiovascular events?

BACKGROUND: Although it is known that smoking cessation is the most beneficial enhancement of cardiovascular health, many clinicians may be hesitant to prescribe pharmacotherapies because of concerns regarding adverse events. This study reports the cardiovascular safety findings from EAGLES (Evaluating Adverse Events in a Global Smoking Cessation Study) and its nontreatment extension trial.

STUDY DESIGN: Double-blind, randomized, triple-dummy, placebo- and active-controlled trial and its

nontreatment extension trial.

SETTING: Conducted by 140 multinational centers, EAGLES was a trial in cohorts of smokers with and without psychiatric disease that assessed the safety and efficacy of pharmacotherapies used for smoking cessation.

The EAGLES extension trial is a nontreatment extension of EAGLES. It began with the first dose of medication and included those who completed an additional 28 weeks of observation.

SYNOPSIS: The study included approximately 8,000 participants aged 18-75 years who smoked 10 or more

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Dr. White

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cigarettes per day and were interested in quitting. The study monitored the development of a major adverse cardiovascular event (MACE), such as cardiovascular death, nonfatal myocardial infarction, or nonfatal stroke, during treatment with varenicline, bupropion hydrochloride, nicotine replacement therapy, and placebo therapy. Other end points included determining the occurrence of MACE along with other peripheral vascular disease that required either intervention, coronary revascularization, or hospitalization for unstable angina (MACE+).

There were no significant differences in time to MACE or MACE+ overall across all observation periods.

Possible limitations of the study were its exclusion criteria and baseline characteristics of participants. The study excluded participants with unstable psychiatric illness, active substance abuse, clinically significant cardiovascular disease in the 2 months prior to the study entry (MI or coronary artery bypass graft), clinically significant cerebrovascular disease in the 2 months prior to study entry (stroke or documented transient ischemic attack), or inadequate control of hypertension as judged by

investigators at screening and baseline. Of the included participants, greater than 66% of the participants were in the low risk (less than 10%) cardiovascular risk category, less than 10% had diabetes, less than 5% had coronary heart disease, and less than 1% had carotid artery disease.

BOTTOM LINE: The findings provide evidence that, in a general population of smokers, smoking cessation medications do not increase the risk of serious cardiovascular events.

CITATION: Benowitz N et al. Cardiovascular safety of varenicline, bupropion, and nicotine patch in smoker. *JAMA Intern Med.* 2018 May;178(5):622-31.

9 Readmissions after GI bleeds

CLINICAL QUESTION: What is the rate of hospital readmission within 30 days of nonvariceal upper GI hemorrhage, and what are its effects on mortality, morbidity, and health care use in the United States?

BACKGROUND: Nonvariceal upper GI hemorrhage is the most common GI emergency that leads to hospital admission (approximately 300,000 admissions/year in the United States). Because of the advances in

endoscopic therapy and overall medical care, associated in-hospital mortality has been steadily decreasing. As a result of Medicare and Medicaid shifts toward an alternative payment model, quantifying hospital readmission rate after an episode of nonvariceal upper GI hemorrhage and measuring its effects on patient outcomes and resource use have become a key step in both improving treatment outcomes and health care reimbursement.

STUDY DESIGN: Retrospective study. **SETTING:** The Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project Nationwide Readmission Database for the year 2014.

SYNOPSIS: The study collected data on hospital readmissions for 203,220 adults who were hospitalized for urgent nonvariceal upper gastrointestinal hemorrhage and discharged. The primary outcome was rate of all-cause readmission within 30 days of discharge. Secondary outcomes were reasons for readmission, readmission mortality rate, morbidity (shock and prolonged mechanical ventilation), and resource use (length of stay and total hospitalization costs and charges).

The rate of readmission was de-

termined to be 13%, with only 18% caused by recurrent nonvariceal upper gastrointestinal bleeding. The rate of death among readmissions was higher than that among index admissions, and a higher proportion of readmitted patients had morbidities requiring prolonged mechanical ventilation. The total economic in-hospital burden was \$30.3 million in costs and \$108 million in charges over the span of readmission-associated 133,368 hospital days. Independent predictors of readmission were having Medicaid insurance, having a higher comorbidity score, having a lower income, residence in a metropolitan area, hemorrhagic shock, and longer stays in the hospital.

BOTTOM LINE: Readmissions within 30 days of discharge for upper GI hemorrhage are associated with higher morbidity and mortality and lead to higher resource use.

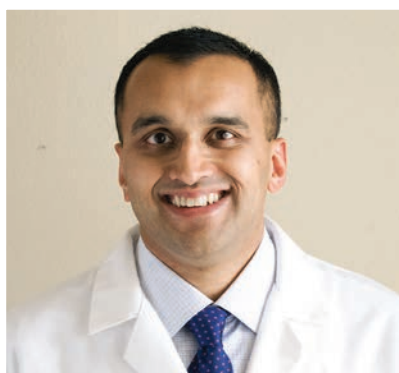
CITATION: Abougergi M et al. Thirty-day readmission among patients with nonvariceal upper gastrointestinal hemorrhage and effects on outcomes. *Gastroenterology.* 2018 Jul;155(1):38-46.

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Product Theater Reporter

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Reducing the Risk of Overt Hepatic Encephalopathy (HE) Recurrence and HE-Related Hospitalizations in Adults



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Topics include:

- The various stages of HE
- The burden of HE and hospital readmission rates
- A medication for overt HE management

This supplement can be found on The Hospitalist website or directly at

www.the-hospitalist.org/Hospitalist/HE

XIF.0093.USA.18

Key Clinical Question

Replacing warfarin with a NOAC in patients on chronic anticoagulation therapy

Hospitalists must consider clinical factors and patient preferences

By Benjamin P. Geisler MD, MPH; Jeff E. Liao, MD; and Farrin A. Manian MD, MPH

Massachusetts General Hospital, Boston

Clinical Case

A 70-year-old woman with hypertension, diabetes, nonischemic stroke, moderate renal insufficiency (creatinine clearance [CrCl] 45 mL/min), heart failure, and non-valvular atrial fibrillation (AF) on warfarin is admitted because of a very supratherapeutic INR. She reports labile INR values despite strict adherence to her medication regimen. Her cancer screening tests had previously been unremarkable. She inquires about the risks and benefits of switching to a novel oral anticoagulant (NOAC) as advertised on television. Should you consider it while she is still in the hospital?



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Brief overview of the issue

Lifelong anticoagulation therapy is common among patients with AF or recurrent venous thromboembolism (VTE). Until the advent of NOACs, a great majority of patients were prescribed warfarin, the oral vitamin K antagonist that requires regular blood tests for monitoring of the international normalized ratio. In contrast to warfarin, NOACs are direct-acting agents (hence also known as “direct oral anticoagulants” or DOACs) that are selective for one specific coagulation factor, either thrombin (e.g., dabigatran) or factor Xa (e.g., rivaroxaban, apixaban, and edoxaban, all with an “X” in their names).

NOACS have been studied and approved by the Food and Drug Administration for nonvalvular AF, i.e., patients without rheumatic mitral stenosis, mechanical or bioprosthetic heart valve, or prior mitral valve repair. Compared with warfarin, NOACS have fewer drug or food interactions, have more predictable pharmacokinetics, and may be associated with reduced risk of major bleeding depending on the agent. The latter is a particularly attractive feature of NOAC therapy, especially when its use is considered among older patients at risk of intracranial

hemorrhage (ICH), such as those with previous strokes, ICH, or reduced renal function. Unfortunately, data on the efficacy and safety of the use of NOACs in certain patient populations (e.g., those with severe renal insufficiency, active malignancy, the elderly, patients with suboptimal medication adherence) are generally lacking.

Overview of the data

There are no randomized controlled trials (RCTs) addressing the clinical benefits of switching from warfarin to NOAC therapy. However, based on a number of RCTs comparing warfarin to individual NOACs and their related meta-analyses, the following conclusions may

be made about their attributes:

1. Noninferiority to warfarin in reducing the risk of ischemic stroke in AF.
2. Association with a lower rate of major bleeds (statistically significant or trend) and a lower rate of ICH and hemorrhagic strokes, compared with warfarin.
3. Association with a higher rate of gastrointestinal bleeding, compared with warfarin (except for apixaban, low-dose dabigatran, and edoxaban¹).
4. Association with a decreased rate of all stroke and thromboembolism events, compared with warfarin.
5. Association with a slightly decreased all-cause mortality in AF, compared with warfarin in many studies,²⁻⁸ but not all.¹⁹
6. Noninferiority to warfarin in all-cause mortality in patients with VTE and for its secondary prevention.¹⁴

NOACS should be used with

caution or avoided altogether in patients with severe liver disease or renal insufficiency (see Table 1).

Potential advantages and disadvantages of NOAC therapy are listed in Table 2.

It should be emphasized that in patients with cancer or hypercoagulable state, no clear efficacy or safety data are currently available for the use of NOACs.

The 2016 CHEST guideline on antithrombotic therapy for VTE recommends NOACs over warfarin.¹⁰ The 2012 European Society of Cardiology AF guidelines also recommend NOACs over warfarin.¹¹ However, the 2014 American College of Cardiology/American Heart Association/Heart Rhythm Society guidelines on AF state that it is not necessary to change to a NOAC when patients are “stable, easily controlled, and satisfied with warfarin therapy.”¹²

Data from a relatively small, short-term study examining the

Table 1. Dosing of NOACs according to renal function

	Normal renal function	Renal dysfunction	Age	Liver dysfunction
Dabigatran	150 mg b.i.d.*	Not studied in CrCl ≤30 mL/min	Use with caution in >75-year-olds	Not available
Rivaroxaban	AF: 20 mg nightly	AF: CrCl 15-50 mL/min, 15 mg nightly, reassess renal function	Consider dose adjustment in ≥65-year-olds with CrCl 30-50 mL/min	Avoid use in moderate to severe impairment (Child-Pugh B/C) or in hepatic coagulopathy
	VTE: 15 mg b.i.d. × 21 days, followed by 20 mg daily	VTE: Avoid if CrCl ≤30 mL/min; consider dose adjustment in ≥65-year-olds with CrCl 30-50 mL/min		
Apixaban	AF: 5 mg b.i.d. Reduce to 2.5 mg b.i.d. in the presence of two or more of the following: age ≥80 years, weight ≤60 kg, Cr ≥1.5 mg/dL. Not studied well in patients with serum Cr >2.5 mg/dL or CrCl <25 mL/min.			Use caution in moderate (Child-Pugh B) and avoid use to severe (Child-Pugh C) impairment
	VTE: 10 mg b.i.d. × 7 days, followed by 5 mg b.i.d.	No dose adjustment; not studied when serum Cr >2.5 mg/dL or CrCl <25 mL/min	No recommendation	
Edoxaban	60 mg daily*; 30mg daily if weight ≤60 kg	CrCl 15-50 mL/min, 30 mg daily; not studied when CrCl <30 mL/min; avoid if CrCl <15 mL/min	No restrictions	Avoid use in moderate to severe impairment (Child-Pugh B/C)

* Manufacturer recommends bridging patients with VTE

Notes: CrCl = creatinine clearance; VTE = venous thromboembolism; AF = atrial fibrillation.

MD/EDGE NEWS

Table 2. Potential advantages and disadvantages of NOACs

Potential advantages	Potential disadvantages
Lower rates of intracranial bleed and hemorrhagic strokes than warfarin	Higher drug cost; may require prior insurance approval
No need for routine lab monitoring	Lack of availability of a reversal agent
Fewer drug or food interactions than warfarin	Increased risk of gastrointestinal bleeding
	Higher rebound rate of VTE events in patients with poor adherence
	No clear efficacy data in certain patient populations (e.g., patients with malignancy)

safety of switching patients from warfarin to a NOAC suggest that although bleeding events are relatively common (12%) following such a switch, major bleeding and cardiac or cerebrovascular events are rare.¹⁰

Application of the data to our original case

Given a high calculated CHADS-2VASC score of 8 in our patient, she has a clear indication for anticoagulation for AF. Her history of labile INRs, ischemic stroke, and moderate renal insufficiency place her at high risk for ICH.

A NOAC may reduce this risk but possibly at the expense of an increased risk for a gastrointestinal bleed. More importantly, however, she may be a good candidate for a switch to a NOAC because of her labile INRs despite good medication adherence. Her warfarin can be held while hospitalized and a NOAC may be initiated when the INR falls below 2.

Prior to discharge, potential cost of the drug to the patient should be explored and discussed. It is also important to involve the primary care physician in the decision-making process. Ultimately, selection of an appropriate NOAC should be based on a careful review of its risks and benefits, clinical factors, patient preference, and shared decision making.

Bottom line

Hospitalists are in a great position to discuss a switch to a NOAC in selected patients with history of good medication adherence and labile INRs or ICH risk factors.



Dr. Geisler

Dr. Geisler, Dr. Liao, and Dr. Manian are hospitalists at Massachusetts General Hospital in Boston.



Dr. Liao



Dr. Manian

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Key Points

- NOACs represent a clear advancement in our anticoagulation armamentarium.
- Potential advantages of their use include lower rates of intracranial bleed and hemorrhagic strokes, fewer drug or food interactions, and lack of need for routine lab monitoring.
- Potential disadvantages of their use include increased rates of gastrointestinal bleed with some agents, general lack of availability of reversal agents, higher drug cost, unsuitability in patients with poor medication compliance, and lack of efficacy data in certain patient populations.
- Decision to switch from warfarin to a NOAC should thoroughly consider its pros and cons, clinical factors, and patient preferences.

Quiz



From warfarin to a NOAC

When considering a switch from warfarin to a NOAC, all the following factors should be considered a potential advantage, except:

- No need for routine lab monitoring.
- Lower risk of gastrointestinal bleeding.
- Fewer drug interactions.
- Lower rates of intracranial bleed and hemorrhagic stroke.

The correct answer is B. NOACs have been associated with lower risk of intracranial bleed and hemorrhagic stroke but not gastrointestinal bleed. Routine lab monitoring is not necessary during their use and they are associated with fewer drug interactions, compared with warfarin.

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Documentation and billing: Tips for hospitalists

Is it AMS, delirium, or encephalopathy?

By David Tong, MD, and Bonnie Epps, MSN, RN

During residency, physicians are trained to care for patients and write notes that are clinically useful. However, physicians are often not taught about how documentation affects reimbursement and quality measures. Our purpose here, and in articles to follow, is to give readers tools to enable them to more accurately reflect the complexity and work that is done for accurate reimbursements.

If you were to get in a car accident, the body shop would document the damage done and submit it to the insurance company. It's the body shop's responsibility to record the damage, not the insurance company's. So while documentation can seem onerous, the insurance company is not going to scour the chart to find diagnoses missed in the note. That would be like the body shop doing repair work without documenting the damage but then somehow expecting to get paid.

For the insurance company, "If you didn't document it, it didn't happen." The body shop should not under-document and say there were only a few scratches on the right rear panel if it was severely damaged. Likewise, it should not overbill and say the front bumper was damaged if it was not. The goal is not to bill as much as possible but rather to document appropriately.

Table 1

Primary diagnosis	Acute renal failure	ARF	ARF
Medicare Severity Diagnosis Related Group	ARF without CC/MCC 684	ARF with CC 683	ARF with MCC 682
Relative weight	0.6285	0.9293	1.4865
Secondary diagnoses	Altered mental status Coronary artery disease Benign hypertension Type 2 diabetes Hyperlipidemia Morbid obesity	Delirium CAD Benign HTN T2DM Hyperlipidemia Morbid obesity	Encephalopathy CAD Benign HTN T2DM Hyperlipidemia Morbid obesity
Range of motion	2	2	2
Severity of illness	2	2	2
Length of stay	2.8	4.1	5.8
Reimbursement	\$2,979	\$4,035	\$5,980

Note: CC = complications or comorbidities; MCC = major complications or comorbidities.
Source: Dr. Tong, Ms. Epps

Terminology

The expected length of stay (LOS) and the expected mortality for a particular patient is determined by how sick the patient appears to be based on the medical record documentation. So documenting all the appropriate diagnoses makes the LOS index (actual LOS divided by expected LOS) and mortality index

Key take-home points for hospitalists

- 1 Document accurately, including any CCs and MCCs that are applicable.
- 2 Altered mental status is a sign/symptom complex.
- 3 Delirium is an acute change in attention, cognition, or perception (primarily a mental/psychiatric diagnosis). It can be caused by a general medical condition, substance intoxication or withdrawal, exposure to a toxin, or a combination.
- 4 Encephalopathy is any diffuse disease of the brain that alters brain function or structure (primarily due to a medical etiology). The hallmark of encephalopathy is an altered mental state, but it requires a causative agent.
- 5 Differentiating between delirium and encephalopathy can be tricky at times. Don't stress too much about getting them exactly right; document as accurately as you can, and your coding department should help with the rest.

Source: Dr. Tong, Ms. Epps

more accurate as well. It is particularly important to document when a condition is (or is not) "present on admission."

While physician payments can be based on evaluation and management coding, the hospital's reimbursement is largely determined by physician documentation. Hospitals

are paid by Medicare on a capitated basis according to the Acute Inpatient Prospective Payment System. The amount paid is determined by the base rate of the hospital multiplied by the relative weight (RW) of the Medicare Severity Diagnosis Related Group (MS-DRG).

The base rate is adjusted by the wage index of the hospital location. Hospitals that serve a high proportion of low-income patients receive a Disproportionate Share Hospital adjustment. The base rate is not something hospitalists have control over.

The RW, however, is determined by the primary diagnosis (reason for admission) and whether or not there are complications or comorbidities (CCs) or major complications or comorbidities (MCCs). The more CCs and MCCs a patient has, the higher the severity of illness and expected increased resources needed to care for that patient.

Diagnoses are currently coded using ICD-10 used by the World Health Organization. The ICD-10 of the primary diagnosis is mapped to an MS-DRG. Many, but not all, MS-DRGs have increasing reimbursements for CCs and MCCs. Coders map the ICD-10 of the principal diagnosis along with any associated CCs or MCCs to the MS-DRG code. The relative weights for different DRGs can found on Table 5 of the Medicare website (see reference 1).

Altered mental status versus delirium versus encephalopathy

As an example, let's look at the difference in RW, LOS, and reimbursement in an otherwise identical patient based on documenting altered mental status (AMS), delirium, or encephalopathy (see Table 1).

As one can see, RW, estimated LOS, and reimbursement would significantly increase for the patient with delirium (CC) or encephalopathy (MCC) versus AMS (no CC/MCC). A list of which diagnoses are considered CC's versus MCC's



Dr. Tong is an assistant professor of hospital medicine and an assistant director of the clinical research program at Emory University, Atlanta. Ms. Epps is director of clinical documentation improvement at Emory Healthcare, Atlanta.

are on tables 6J and 6I, respectively, on the same Medicare website as table 5.

The difference between AMS, delirium, and encephalopathy

AMS is a sign/symptom complex similar to shortness of breath before an etiology is found. AMS can be the presenting symptom; when a specific etiology is found, however, a more specific diagnosis should be used such as delirium or encephalopathy.

Delirium, according to the DSM-5, is an acute change in the level of attention, cognition, or perception from baseline that developed over hours or days and tends to fluctuate during the course of a day. The change described is not better explained by a preexisting or evolving neurocognitive disorder and does not occur in the context of a severely reduced level of arousal, such as coma. There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct consequence of a general medical condition, substance intoxication or withdrawal, exposure to a toxin, or more than one cause.

The National Institute of Neurological Diseases and Stroke defines

Continued on following page

Fluoroquinolones can cause fatal hypoglycemia

By Michele G. Sullivan

MDedge News

Fluoroquinolones have caused at least 67 cases of life-threatening hypoglycemic coma, including 13 deaths and 9 permanent and disabling injuries, according to an internal safety review by the Food and Drug Administration. Most cases (44) were associated with levofloxacin.

The review also found new neuro-psychiatric side effects associated with fluoroquinolones, including disturbances in attention, memory impairment, and delirium.

Considering these findings, the agency will strengthen warning labels on all fluoroquinolones, which already warn that the antibiotics may cause hypoglycemia and mental health issues, especially in older people, the FDA said in a press statement.

“Health care professionals should be aware of the potential risk of hypoglycemia, sometimes resulting in coma, occurring more frequently in the elderly and those with diabetes taking an oral hypoglycemic medicine or insulin,” the statement said. “Alert patients of the symptoms of hypoglycemia and carefully monitor blood glucose levels in these patients and discuss with them how to treat themselves if they have symptoms of hypoglycemia. Inform patients about the risk of psychiatric adverse reactions that can occur after just one dose. Stop fluoro-

quinolone treatment immediately if a patient reports any central nervous system side effects, including psychiatric adverse reactions, or blood glucose disturbances and switch to a non-fluoroquinolone antibiotic if possible. Stop fluoroquinolone treatment immediately if a patient reports serious side effects involving the tendons, muscles, joints, or nerves, and switch to a non-fluoroquinolone antibiotic to complete the patient’s treatment course.”

“Stop fluoroquinolone treatment immediately if a patient reports any central nervous system side effects.”

The statement also warned not to prescribe fluoroquinolones to patients who have other treatment options for acute bacterial sinusitis, acute bacterial exacerbation of chronic bronchitis, and uncomplicated urinary tract infections because the risks outweigh the benefits in these patients.

The FDA conducted the postmarketing review on all five of the fluoroquinolones (ciprofloxacin, gemifloxacin, levofloxacin, moxifloxacin, and ofloxacin). The newest fluoroquinolone, delafloxacin, approved a year ago, was not included in the class review.

However, the agency expects that similar adverse events will be associated with delafloxacin and labeling on that drug will include the new warnings.

The FDA previously warned about other adverse events associated with fluoroquinolones in May 2016, restricting use for certain uncomplicated infections; July 2016, for disabling side effects; August 2013, for peripheral neuropathy; and July 2008, for tendinitis and tendon rupture.

Continued from previous page

encephalopathy as “any diffuse disease of the brain that alters brain function or structure. Encephalopathy may be caused by an infectious agent, metabolic or mitochondrial dysfunction, brain tumor or increased intracranial pressure, prolonged exposure to toxic elements, chronic progressive trauma, poor nutrition, or lack of oxygen or blood flow to the brain. The hallmark of encephalopathy is an altered mental state.”

It is confusing since there is a lot of overlap in the definitions of delirium and encephalopathy. One way to tease this out conceptually is noting that delirium is listed under mental, behavioral, and neurodevelopmental disorders, while encephalopathy appears under disorders of the nervous system. One can think of delirium as more of a “mental/psychiatric” diagnosis, while encephalopathy is caused by more “medical” causes.

If a patient who is normally not altered presents with confusion because of an infection or metabolic derangement, one can diagnose and document the cause of an acute encephalopathy. However, let’s say a patient is admitted in the morning with an infection, is started on treatment, but is not initially confused. If he/she later becomes confused at night, one could err conservatively and document delirium caused by sundowning.

Differentiating delirium and encephalopathy can be especially difficult in patients who have dementia with episodic confusion when they present with an infection and confusion. If the confusion is within what family members/caretakers say is “normal,” then one shouldn’t document encephalopathy. As a provider, one shouldn’t focus on all the rules and exceptions, just document as specifically and accurately as possible and the coders should take care of the rest.

High risk of low glucose? Hospital alerts might help

By Randy Dotinga

MDedge News

ORLANDO – Researchers have been able to sustain a dramatic reduction in hypoglycemia incidents at nine St. Louis–area hospitals, thanks to a computer algorithm that warns medical staff when patients appear to be on the road to dangerously low blood sugar levels.

“Complex variables can be utilized in real time to make diabetic therapy safer,” said coauthor Garry S. Tobin, MD, director of the Washington University Diabetes Center at Barnes-Jewish Hospital in St. Louis. “It can be a useful tool, and it’s sustainable.”

The 6-year retrospective system-wide study, which was released at the annual scientific sessions of the American Diabetes Association, found that the use of the alert system lowered the annual occurrence of severe hypoglycemia events by 41% at the hospitals.

In at-risk patients – those with blood glucose levels under 90 mg/dL – the system considers several variables, such as their weight, creatinine clearance, insulin therapy, and basal insulin doses. If the algorithm considers that a patient is at high risk of a sub-40-mg/dL glucose level – dangerously low – it sends

a single alert to medical staff during the patient’s stay.

The idea is that the real-time alerts will go to nurses or pharmacists who will review patient charts and then contact physicians.

Earlier, Dr. Tobin and colleagues prospectively analyzed the alert system’s effectiveness at a single hospital for 5 months. The trial, a cohort intervention study, tracked 655 patients with a blood glucose level under 90 mg/dL.

In 2014, the researchers reported the results of that trial: The alert identified 390 of the patients as being at high risk for severe hypoglycemia (blood glucose under 40 mg/dL). The frequency of severe hypoglycemia events was just 3.1% in this population vs. 9.7% in unalerted patients who were also deemed to be at high risk (J Hosp Med. 2014[9]: 621-6).

For the new study, researchers extended the alert system to nine hospitals and tracked its use from 2011 to 2017. During all visits, the number of severe hypoglycemic events fell from 2.9 to 1.7 per 1,000 at-risk patient-days (*P* less than .001).

“The current data reflected in our poster show that the alert process is sustainable over a wide range of clinical settings,” Dr. Tobin said.

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More testing of febrile infants at teaching vs. community hospitals, but similar outcomes

By Debra L. Beck

MDedge News

AT PAS 18 / TORONTO / Febrile infants were less likely to undergo invasive diagnostic testing at community hospitals versus university-affiliated ones, but had similar outcomes, according to a study presented at the Pediatric Academic Societies annual meeting.

"The community hospitals are doing less procedures on the infants, but with basically the exact same outcomes," said Beth C. Natt, MD, MPH, director of pediatric hospital medicine at Bridgeport (Conn.) Hospital.

Babies who presented to university-affiliated hospitals were more likely to be hospitalized (70% vs. 67%; $P = .001$) than were those at community hospitals, but had a similar likelihood of being diagnosed with bacteremia, meningitis, or urinary tract infection. The rates of

missed bacterial infection were 0.8% for teaching hospitals and 1% for community hospitals ($P = .346$).

"There is some thought that in community settings, because we're not completing the workup in the standard, protocolized way seen at teaching hospitals, we might be doing wrong by the children, but these data show we're actually doing just fine," Dr. Natt said in an interview.

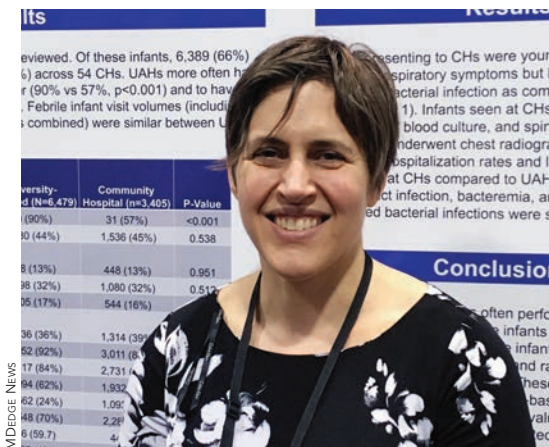
She and her colleagues reviewed 9,884 febrile infant evaluations occurring at 132 hospitals participating in the Reducing Excessive Variation in the Infant Sepsis Evaluation (RE-VERSE) quality improvement project. Two-thirds of the infants ($n = 6,479$) were evaluated across 78 university-affiliated hospitals and 3,405 (or 34%) were seen at 54 community hospitals. Hospital status was self-reported.

The teaching hospitals more often had at least one pediatric emergency medicine provider, compared

with community hospitals (90% vs. 57%; $P = .001$) and were more likely to see babies between 7 and 30 days old (90% vs. 57%; $P = .001$). They also were more likely to obtain urine cultures (92% vs. 88%; $P = 0.001$), blood cultures (84% vs. 80%; $P = .001$), and cerebral spinal fluid cultures (62% vs. 57%; $P = .001$).

On the other hand, community hospitals were significantly more likely to see children presenting with respiratory symptoms (39% vs. 36% for teaching hospitals; $P = .014$), and were more likely to order chest x-rays on febrile infants (32% vs. 24% for university-affiliated hospitals; $P = .001$).

"As a community hospitalist, the results weren't that surprising to me," said Dr. Natt. "If anything was surprising it was how often we were doing chest x-rays, but I think that had to do with the fact that we had more children with respiratory symptoms coming to community hospitals.



Dr. Beth C. Natt, director of pediatric hospital medicine at Bridgeport (Conn.) Hospital.

"The American Academy of Pediatrics guidelines for fever were written last in 1993, when I was in high school, so they are very due to be revised," said Dr. Natt. "I suspect the new guidelines will have us doing fewer spinal taps in children and more watchful waiting."

Pediatric inpatient seizures treated quickly

By Debra L. Beck

MDedge News

AT PAS 2018 / TORONTO / Researchers at UCSF Benioff Children's Hospital in San Francisco implemented a novel intervention that leveraged existing in-room technology to expedite antiepileptic drug administration to inpatients having a seizure.

With the quality initiative, they were able to decrease median time from seizure onset to benzodiazepine (BZD) administration from 7 minutes (preintervention) to 2 minutes (postintervention) and reduce the median time from order to administration of second-phase non-BZDs from 28 minutes to 11 minutes.

"Leveraging existing patient room technology to mobilize pharmacy to the bedside expedited non-BZD administration by 60%," reported principal investigator Arpi Bekmezian, MD, a pediatric hospitalist and medical director of quality and safety at Benioff Children's Hospital. She presented the findings at the Pediatric Academic Societies annual meeting.

"Furthermore, the rapid-response seizure rescue process may have

created an increased sense of urgency helping to expedite initial BZD administration by 70%. ... This may have prevented the need for second-phase therapy and progression to status epilepticus, potentially minimizing the risk of neuronal injury, and all without the additional resources of a Code team."

"Leveraging existing patient room technology to mobilize pharmacy to the bedside expedited non-BZD administration by 60%."

jury, and all without the additional resources of a Code team."

Early and rapid escalation of treatment is critical to prevent neuronal injury in patients with status epilepticus. Guidelines recommend initial antiepileptic therapy at 5 minutes, with rapid escalation to second-phase therapy if the seizure persists.

Preintervention baseline data from UCSF Benioff Children's indicated a 7-minute lag time from seizure onset to BZD therapy and a 28-minute lag from order to administration of non-BZDs (phenobarbital, phenytoin, levetiracetam, valproic acid). Other studies have shown significantly greater delays

to antiepileptic treatment.

"That was just too long, and it matched our clinical experience of being at the bedside of a seizing patient and wondering why the medication was taking so long to arrive from the pharmacy."

The researchers set out to reduce time to BZD administration from 7 minutes to 5 minutes or less and to reduce time to second-phase non-BZD administration to less than 10 minutes. To accomplish this, a multidisciplinary team that included leadership from physicians, pharmacy, and nursing defined primary and secondary drivers of efficiency, with interventions targeting both team communication and medication delivery.

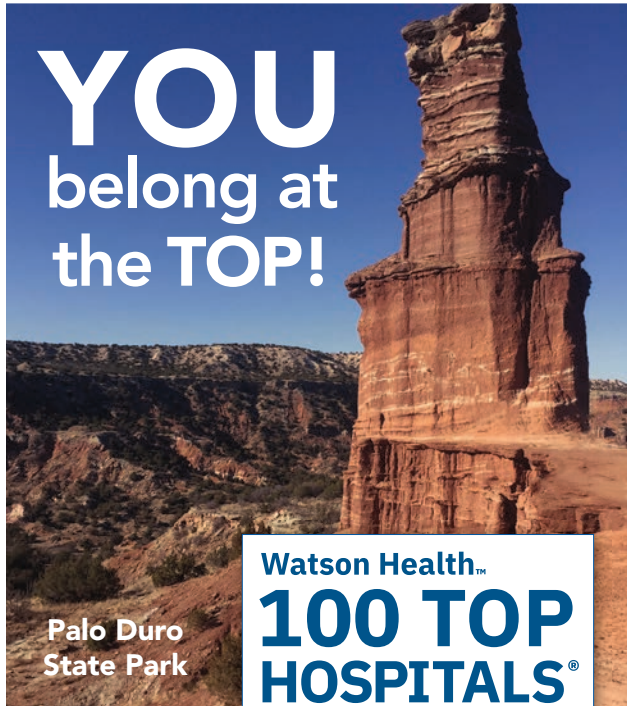
The intervention period lasted 16 months, during which time there were 61 seizure events requiring urgent antiepileptic treatment. Complete data were available for 57 seizures.

Among the interventions they implemented was to stock all medication-dispensing stations with intranasal/buccal BZD available on "nursing override" for easy access and administration.

Because non-BZDs require pharmacy compounding, and the main pharmacy receives many STAT orders with competing priorities, they developed a hospitalwide "seizure rescue" (SR) process by using patient-room staff terminals to activate a dedicated individual from the pharmacy, who would then report to the bedside with a backpack stocked with non-BZDs ready to compound. Nurses were trained to press the SR button for any seizure that may require urgent therapy.

"We didn't want nurses to waste time on the phone [calling pharmacy], and we considered calling a Code, but we couldn't really justify the resource utilization as most of these patients didn't have respiratory compromise, and they didn't need the whole Code team," said Dr. Bekmezian. "To our knowledge, this is the first study to report expediting antiepileptic drug delivery to patients in the hospital."

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ICU Hospitalist/Nocturnist CHA Everett Hospital

Cambridge Health Alliance (CHA) is a well-respected, nationally recognized and award-winning public healthcare system, which receives recognition for clinical and academic innovations. Our system is comprised of three hospital campuses in Cambridge, Somerville and Everett with additional outpatient clinic locations throughout Boston's Metro North Region. CHA is an academic affiliate of both Harvard Medical School (HMS) and Tufts University School of Medicine. We are a clinical affiliate of Beth Israel Deaconess Medical Center.

CHA is recruiting for an ICU Hospitalist/Nocturnist to cover Everett Hospital.

- Position requires PM shifts (7p-7a) plus weekend day shifts
- Work collaboratively with CHA's intensivist MDs to round on inpatients within the CHA Everett Hospital ICU
- Cross coverage of med/surg inpatient unit included as part of clinical responsibility (10% of total FTE)
- Applicants should be comfortable with procedures including central lines, vent management, intubation, etc.
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- Academic appointment is available commensurate with medical school criteria

Applicants should be trained and Board Certified in Internal Medicine or Family Medicine and possess excellent clinical and communication skills plus a demonstrated commitment to CHA's multicultural, underserved patient population.

At CHA, we have a supportive and collegial clinical environment with strong leadership, infrastructure. CHA has a fully integrated electronic medical record system (Epic) throughout our inpatient units and outpatient clinics. We offer a competitive, guaranteed base salary and comprehensive benefits package.

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We offer:

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- Attractive base compensation with incentive
- Excellent benefits, including malpractice, moving expenses, CME
- Moonlighting Opportunities within the Network

SLUHN is a non-profit network comprised of physicians and 10 hospitals, providing care in eastern Pennsylvania and western NJ. We employ more than 800 physician and 200 advanced practitioners. St. Luke's currently has more than 220 physicians enrolled in internship, residency and fellowship programs and is a regional campus for the Temple/St. Luke's School of Medicine. Visit www.slhn.org.

Our campuses offer easy access to major cities like NYC and Philadelphia. Cost of living is low coupled with minimal congestion; choose among a variety of charming urban, semi-urban and rural communities your family will enjoy calling home. For more information visit www.discoverlehighvalley.com

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The clinical duties will involve providing inpatient care both directly and during supervision of trainees at the University of Minnesota Medical Center. These duties will include evening, overnight and weekend responsibilities. There are also the following opportunities within our Hospital Medicine Program for those looking for a more focused practice: (1) Consult and Procedure Service, (2) Pulmonary Focused Service, (3) Hematology-Oncology Focused Service, (4) Med-Peds Service, and (5) Nocturnist.

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The candidate will have a commitment to clinical/QI/educational scholarship; advancement within the institution will depend on demonstration of clinical and scholarly achievement. The division has a mentoring program for all assistant professors to support them in their clinical, educational and scholarship pursuits.

Required Qualifications:

- MD or DO degree.
- Board eligibility or board certification in Internal Medicine or Internal Medicine/Pediatrics.
- Demonstrated excellence in patient care.
- Demonstrated enthusiasm for medical education and strong teaching skills.
- Must have or be able to attain a medical license in the state of MN.
- Must be able to pass credentialing at all applicable sites.
- Applicants must have the ability to receive work authorization in the United States from the U.S. Citizenship and Immigration Services and maintain legal status according to the requirements of VISA category while in the United States.

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St. Luke's University Health Network (SLUHN) is interviewing for Hospitalist Regional Medical Director Candidates for our growing 10-hospital network. This is an opportunity to lead a dynamic group of physicians at several campuses, engage them as a team and work to assure consistent high quality. All campuses have a closed ICU, strong advanced practitioner assistance and all specialty back up, in addition to an opportunity for upward mobility within the Network.

SLUHN is a non-profit network comprised of physicians and 10 hospitals, providing care in eastern Pennsylvania and western NJ. We employ more than 800 physician and 200 advanced practitioners. St. Luke's currently has more than 220 physicians enrolled in internship, residency and fellowship programs and is a regional campus for the Temple/St. Luke's School of Medicine. Visit www.slhn.org.

Our campuses offer easy access to major cities like NYC and Philadelphia. Cost of living is low coupled with minimal congestion; choose among a variety of charming urban, semi-urban and rural communities your family will enjoy calling home. For more information visit www.discoverlehighvalley.com

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 - o Geographic rounding model
 - o A closed ICU/CCU
 - o A full spectrum of Specialties to support the team
 - o A major teaching affiliate of the University of Massachusetts Medical School and University of New England College of Osteopathic Medicine
- 7 on/7 off 12 hour shift schedule

We understand the importance of balancing work with a healthy personal lifestyle

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Interested candidates are invited to contact:

Liz Mahan, Physician Recruitment Specialist, Berkshire Health Systems
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CONTACT:

Dr. Brad Evans @ evansb7@ucmail.uc.edu
Director, UC Health Hospitalist Group; 513-298-7325



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Contact:

Twyla Camp
Physician Recruiter
864-725-7029
tcamp@selfregional.org

ACADEMIC NOCTURNIST HOSPITALIST

The Division of General Internal Medicine at **Penn State Health Milton S. Hershey Medical Center**, Penn State College of Medicine (Hershey, PA) is seeking a BC/BE Internal Medicine **NOCTURNIST HOSPITALIST** to join our highly regarded team. Successful candidates will hold a faculty appointment to Penn State College of Medicine and will be responsible for the care in patients at Hershey Medical Center. Individuals should have experience in hospital medicine and be comfortable managing patients in a sub-acute care setting.

Our Nocturnists are a part of the Hospital Medicine program and will work in collaboration with advanced practice clinicians and residents. Primary focus will be on overnight hospital admission for patients to the Internal Medicine service. Supervisory responsibilities also exist for bedside procedures, and proficiency in central line placement, paracentesis, arthrocentesis, and lumbar puncture is required. The position also supervises overnight Code Blue and Adult Rapid Response Team calls. This position directly supervises medical residents and provides for teaching opportunity as well.

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<http://tinyurl.com/j29p3fz> Ref Job ID#4524

For additional information, please contact:

Brian Mc Gillen, MD — Director, Hospitalist Medicine
c/o Heather Peffley, PHR FASPR — Physician Recruiter
Penn State Health
hpeffley@pennstatehealth.psu.edu



PennState Health
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For more information, please contact:

Joan Humphries

Director, Physician Recruitment
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What we're seeking:

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- BC/BE in Internal or Family Medicine;
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For more information please contact: Heather Peffley, Physician Recruiter at: hpeffley@pennstatehealth.psu.edu



Penn State Health is committed to affirmative action, equal opportunity and the diversity of its workforce. Equal Opportunity Employer – Minorities/Women/Protected Veterans/Disabled.

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We understand the importance of balancing work with a healthy personal lifestyle

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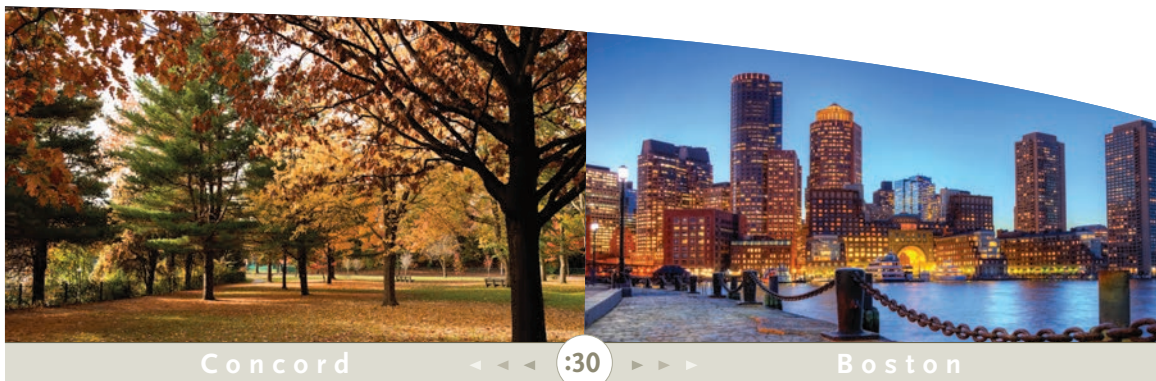


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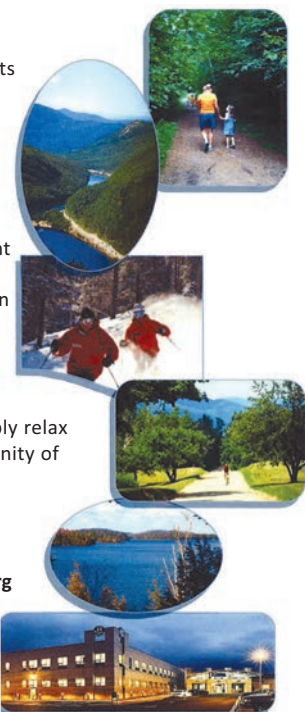
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518-897-2706
jjohnson@adirondackhealth.org
www.adirondackhealth.org



Crystal ball: The future of hospital medicine

Profound changes on the horizon

By Nasim Afsar, MD, MBA, SFHM

At HM18 in Orlando, the Society of Hospital Medicine's CEO Larry Wellikson, MD, MHM, challenged our thinking by sharing a slide with the attendees that effectively and accurately captured the current environment. Today's largest retailer, Amazon, owns no inventory; today's largest taxi company, Uber, owns no cars; and today's largest provider of accommodations, Airbnb, owns no real estate.

This powerful statement captures a transformative way of thinking, functioning, and thriving that has rapidly evolved over the past decade in the United States. And yet, health care fundamentally functions very similarly to how it did 10 years ago. For example, while we have implemented multimillion-dollar electronic health records (EHRs), most of us use the EHR and capture information in ways similar to how we use our paper charts. I think we can all acknowledge that this is not a sustainable way to advance.

With megamergers dominating the health care landscape in 2017, the industry has become consolidated to weather the economic challenges ahead. Hospital contribution margins have been declining, forcing systems to critically evaluate how they deliver value-based care. In addition, the joining of forces between Amazon, Berkshire Hathaway, and JPMorgan further illustrates the employers' impatience with inadequacies in health care.

What can we in hospital medicine do to proactively respond to, and shape, the evolving U.S. health care landscape?

If I had a crystal ball and could predict the future, I would say hospital medicine will be functioning very differently in 10 years to respond to today's challenges.

The acute becomes more acute

When I started working as a hospitalist more than a decade ago, in a tertiary/quaternary academic medical center, the patients were severely ill with multiple comorbidities. Yet, in the span of 10 years, we care for many of those diagnoses in the ambulatory setting.

Reflecting on the severity of

illness in my patients when I was recently on the medicine wards, I have to admit the patients now have a significantly higher burden of disease with many more comorbidities. As medicine has advanced and we have become more skilled at caring for patients, the acuity of patients has exponentially increased.

“Delivery systems will have to create robust networks of home health and home services to actively manage patients with accountability. This provides an opportunity for hospitalists...”

As this trend continues, hospitalists will need greater training in critical care components of hospital-based care. While we may comanage some of these patients with critical care, our skill sets need to intensify to address the growing needs of our patient population.

“Bread and butter” moves to lower-acuity settings and home
As our ability to manage patients

advances, and the existing inpatient beds are occupied by sicker patients, the common hospital medicine diagnoses will move to skilled nursing facilities, long-term acute care settings, and ultimately home.

Delivery systems will have to create robust networks of home health and home services to actively manage patients with accountability. This provides an opportunity for hospitalists to manage acutely ill patients in less-intense settings of care, and the advancements of telehealth will play a great role in this area.

In a Feb. 6, 2018, article in JAMA – “Is It Time for a New Medical Specialty?” – Dr. Michael Nochomovitz and Dr. Rahul Sharma argue that, with rapid advances in technology and the establishment of telemedicine, a new specialty – the virtualist – will need to formally emerge (JAMA. 2018;319[5]:437-8). While telehealth has been successfully utilized for the delivery of acute care in remote regions, as well as the delivery of basic services for common diagnoses, it is not robustly and broadly integrated into all aspects of care delivery.

As we move from the hospital setting to less acute settings of care and home-based care, providers need specific training and skill sets in how to manage and deliver care



Dr. Afsar is president of the Society of Hospital Medicine, and chief ambulatory officer and chief medical officer for accountable care organizations at UC Irvine Health.

without the patient in front of them. This includes knowledge of how to remotely manage acutely ill patients who are stable and do not require a hospitalization, as well as effectively managing day-to-day issues that arise with patients.

Translating our role in population health management

I have written previously about the expanding role of hospitalists in population health management. In addition to the transitions of care work that we are all involved in, hospitalists must actively partner with our ambulatory colleagues to identify and communicate key barriers to care.

Hospitalists are already instrumental in a number of institutions providing inpatient and ambulatory care for a select group of patients with high utilization. We have the ability to care for high utilizers and partner with ambulatory providers who can ensure we care for patients with high burdens of disease in the most appropriate settings of care. In the fall of 2018, SHM is convening a group of experts in population health to discuss the role of hospitalists in this area.

While, sadly, I don't have a crystal ball to predict the future, SHM is committed to proactively defining and advancing our specialty. I am confident that together we can find the solutions that will successfully advance us toward the future.



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