After witnessing more than 300,000 patients perish from COVID-19, including thousands of our health care colleagues, and despite record-setting hospitalizations in December, 2020 ended with a glimmer of hope: On Dec. 11, 2020, the Food and Drug Administration (FDA) granted emergency use authorization (EUA) for the Pfizer-BioNTech mRNA coronavirus vaccine, followed one week later by an EUA for Moderna’s version of the vaccine. At the time of this writing (Dec. 28), the Oxford-Coronavirus Vaccinations Begin Among Frontline Workers

We answer common questions about the Pfizer-BioNTech and Moderna vaccines

Editors’ Note: This article was accepted on Dec. 28, 2020, and was accurate at that time. Because information about SARS-CoV-2 and COVID-19 is evolving rapidly, please verify these recommendations and information.

Are virtual conferences a blessing for women?

Since the pandemic began, virtual meetings have become the new normal. As a mother of two children under five years of age (and one on the way), I have been reflecting on changes to both department meetings and national conferences.

Attending conferences is an important part of professional development. Conferences offer opportunities to speak in public, present research, chair committees, and network.

Being away from home to attend a multiday conference has always been a challenge. Women have unique responsibilities to their families, especially when their children are young. It can be even tougher if you are the primary caretaker and perhaps also the nutritional source for your child if you are nursing. Research specifically identifies barriers to conference attendance as a factor that contributes to gender promotion gap.1 In the article

CONTINUED on page 22

CONTINUED on page 17
NEWS FROM THE COLLEGE

UPDATES AND ALERTS FROM ACEP

Seeking ACEP Now Resident Fellow

ACEP Now has a new opportunity for a resident on its editorial team! Open to any PGY-2–4 EM resident physician in an ACGME-accredited program, the Resident Fellow would coordinate magazine content, including full oversight of content for the Resident Voice column, and promote ACEP Now’s published articles on social media. The position includes a $1,000 stipend. Find a full job description at www.acepnow.com/resident-fellow. Applications are due Feb. 16, 2021, for a year-long term that would formally begin July 1. To apply, send your résumé and a letter of interest to acepnow@acep.org.

COVID-19 Vaccine Resources and More

The COVID-19 Vaccine Resource Center (www.acep.org/covid-19) has a new section dedicated to relevant COVID-19 vaccine resources, toolkits, and more. Find the latest at www.acep.org/covid-19-alert.

Nominations Open for ACEP Board, Council

The ACEP Nominating Committee is accepting individual and component body recommendations for Board of Directors, Council Speaker, and Council Vice Speaker candidates. Nominations are due March 21, 2021, and qualifications and application details are available at www.acep.org/board-nominations. Nominations for the Board of Directors and Council officers will be held Oct. 24, 2021, during the ACEP Council meeting.

New Online Resource: Conversations with Industry

ACEP’s Conversations with Industry initiative is a new way for ACEP members to learn about industry products, services, and treatments in a free and interactive setting. Find more information at www.acepnow.com/conversations.

Virtual Grand Rounds Scheduled Through May

ACEP’s monthly Virtual Grand Rounds, one of the most popular features of ACEP Now, is back by popular demand. Scheduled Through May, the series is a new way for ACEP members to learn about industry products, services, and treatments in a free and interactive setting. Find more information at www.acepnow.com/vgr.

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Check Out ACEP Now Podcasts

Did you know that ACEP Now has a monthly podcast? In ACEP Nowcast, Medical Editor in Chief Dr. Jeremy Faust highlights can’t-miss articles from the latest issues of ACEP Now. Listen to the current installment and past podcasts at www.acepnow.com/podcast or subscribe through your favorite podcast service.

E-QUAL 2021 Enrollment Open for Opioid, Stroke Collaboratives

E-QUAL 2021 enrollment is open. Emergency departments can enroll for free. This year’s Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.

NEWS FROM THE COLLEGE

Visit ACEPNow.com for These Online-Only Articles

• COVID-19 Hospitalization in Heart Failure Patients Linked to Poor Outcomes, Death
• Vitamin D Fails to Help in Severe COVID-19
• Range of COVID-19 Neurological Complications Seen in Kids
• Few Patients Recall Gun Safety Discussions
• Racial Disparities in Atrial Cardiopathy
• Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or non-fatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Learn more at www.acep.org/equal and read more about this and other quality initiatives on page 15.
CONTRAINDICATIONS

• Active pathological bleeding
• Severe hypersensitivity reaction to ELIQUIS (e.g., anaphylactic reactions)

SELECTED IMPORTANT SAFETY INFORMATION

INDICATION
ELIQUIS is indicated to reduce the risk of stroke and systemic embolism in patients with nonvalvular atrial fibrillation (NVAF).

WARNING: (A) PREMATURE DISCONTINUATION OF ELIQUIS INCREASES THE RISK OF THROMBOTIC EVENTS,
(B) SPINAL/EPIDURAL HEMATOMA

(A) Premature discontinuation of any oral anticoagulant, including ELIQUIS, increases the risk of thrombotic events. If anticoagulation with ELIQUIS is discontinued for a reason other than pathological bleeding or completion of a course of therapy, consider coverage with another anticoagulant.

(B) Epidural or spinal hematomas may occur in patients treated with ELIQUIS who are receiving neuraxial anesthesia or undergoing spinal puncture. These hematomas may result in long-term or permanent paralysis. Consider these risks when scheduling patients for spinal procedures. Factors that can increase the risk of developing epidural or spinal hematomas in these patients include:
• use of indwelling epidural catheters
• concomitant use of other drugs that affect hemostasis, such as nonsteroidal anti-inflammatory drugs (NSAIDs), platelet inhibitors, other anticoagulants
• a history of traumatic or repeated epidural or spinal punctures
• a history of spinal deformity or spinal surgery
• optimal timing between the administration of ELIQUIS and neuraxial procedures is not known

Monitor patients frequently for signs and symptoms of neurological impairment. If neurological compromise is noted, urgent treatment is necessary.

Consider the benefits and risks before neuraxial intervention in patients anticoagulated or to be anticoagulated.

CONTRAINDICATIONS

• Active pathological bleeding
• Severe hypersensitivity reaction to ELIQUIS (e.g., anaphylactic reactions)

Please see additional Important Safety Information and accompanying Brief Summary of Full Prescribing Information, including Boxed WARNINGS, on the adjacent pages.
**ARISTOTLE study design**

A phase III, double-blind, randomized trial designed to compare the effects of ELIQUIS 5 mg twice daily* (n=9120) and warfarin (n=9081) (target INR range: 2.0-3.0) in reducing the risk of stroke and systemic embolism in 18,201 patients with NVAF and ≥1 additional risk factor for stroke: prior stroke or transient ischemic attack (TIA); prior systemic embolism; age ≥75 years; arterial hypertension requiring treatment; diabetes mellitus; heart failure ≥New York Heart Association (NYHA) Class 2; or left ventricular ejection fraction (LVEF) ≤40%. Patients were followed for a median of 1.7 years. The 2 treatment groups were well balanced with respect to baseline characteristics, including age, stroke risk at entry as measured by CHADS 2 score, † and prior use of a VKA within 30 days before screening. The mean follow-up period was approximately 1.1 years. The primary efficacy endpoint was stroke/systemic embolism, and the primary safety endpoint was major bleeding. Patients who needed aspirin >165 mg/day or needed aspirin plus a thienopyridine (eg, clopidogrel) were excluded from ARISTOTLE.

**AVERROES study design**

AVERROES was a phase III, double-blind, randomized trial designed to compare the effects of ELIQUIS 5 mg twice daily* (n=2807) and aspirin (81 mg–324 mg once daily) (n=2791) in reducing the risk of stroke and systemic embolism in 5598 patients with NVAF thought not to be candidates for warfarin therapy, and with ≥1 additional risk factor for stroke: prior stroke or TIA; age ≥75 years of age; arterial hypertension (receiving treatment); diabetes mellitus (receiving treatment); heart failure (≥NYHA Class 2 at the time of enrollment); LVEF ≤35%, or documented peripheral artery disease. Patients could not be receiving VKA therapy (eg, warfarin), either because it had already been demonstrated to be or was expected to be unsuitable for them. The 2 treatment groups were well balanced with respect to baseline characteristics, including age, stroke risk at entry as measured by CHADS 2 score, † and prior use of a VKA within 30 days before screening. The mean follow-up period was approximately 1.1 years. The primary efficacy endpoint was stroke/systemic embolism, and the primary safety endpoint was major bleeding.

---

**SELECTED IMPORTANT SAFETY INFORMATION**

**WARNINGS AND PRECAUTIONS**

- **Increased Risk of Thrombotic Events after Premature Discontinuation**: Premature discontinuation of any oral anticoagulant, including ELIQUIS, in the absence of adequate alternative anticoagulation increases the risk of thrombotic events. An increased rate of stroke was observed during the transition from ELIQUIS to warfarin in clinical trials in atrial fibrillation patients. If ELIQUIS is discontinued for a reason other than pathological bleeding or completion of a course of therapy, consider coverage with another anticoagulant.

- **Bleeding Risk**: ELIQUIS increases the risk of bleeding and can cause serious, potentially fatal, bleeding.
  - Concomitant use of drugs affecting hemostasis increases the risk of bleeding, including aspirin and other antiplatelet agents, other anticoagulants, heparin, thrombolytic agents, SSRI, SNRI, and NSAIDs.
  - Advise patients of signs and symptoms of blood loss and to report them immediately or go to an emergency room. Discontinue ELIQUIS in patients with active pathological hemorrhage.
  - The anticoagulant effect of apixaban can be expected to persist for at least 24 hours after the last dose (i.e., about two half-lives). An agent to reverse the anti-factor Xa activity of apixaban is available. Please visit www.andexxa.com for more information on availability of a reversal agent.

- **Spinal/ Epidural Anesthesia or Puncture**: Patients treated with ELIQUIS undergoing spinal/epidural anesthesia or puncture may develop an epidural or spinal hematoma which can result in long-term or permanent paralysis. The risk of these events may be increased by the postoperative use of indwelling epidural catheters or the concomitant use of medicinal products affecting hemostasis. Indwelling epidural or intrathecal catheters should not be removed earlier than 24 hours after the last administration of ELIQUIS. The next dose of ELIQUIS should not be administered earlier than 5 hours after the removal of the catheter. The risk may also be increased by traumatic or repeated epidural or spinal puncture. If traumatic puncture occurs, delay the administration of ELIQUIS for 48 hours. Monitor patients frequently and if neurological compromise is noted, urgent diagnosis and treatment is necessary. Physicians should consider the potential benefit versus the risk of neuraxial intervention in ELIQUIS patients.

- **Prosthetic Heart Valves**: The safety and efficacy of ELIQUIS have not been studied in patients with prosthetic heart valves and is not recommended in these patients.

- **Acute PE in Hemodynamically Unstable Patients or Patients who Require Thrombolysis or Pulmonary Embolectomy**: Initiation of ELIQUIS is not recommended as an alternative to unfractionated heparin for the initial treatment of patients with PE who present with hemodynamic instability or who may receive thrombolysis or pulmonary embolectomy.

- **Increased Risk of Thrombosis in Patients with Triple Positive Antiphospholipid Syndrome (APS)**: Direct-acting oral anticoagulants (DOACs), including ELIQUIS, are not recommended for use in patients with triple-positive APS. For patients with APS (especially those who are triple positive [positive for lupus anticoagulant, anticardiolipin, and anti–β2-glycoprotein I antibodies]), treatment with DOACs has been associated with increased rates of recurrent thrombotic events compared with vitamin K antagonist therapy.

**ADVERSE REACTIONS**

- The most common and most serious adverse reactions reported with ELIQUIS were related to bleeding.

**TEMPORARY INTERRUPTION FOR SURGERY AND OTHER INTERVENTIONS**

- ELIQUIS should be discontinued at least 48 hours prior to elective surgery or invasive procedures with a moderate or high risk of unacceptable or clinically significant bleeding. ELIQUIS should be discontinued at least 24 hours prior to elective surgery or invasive procedures with a low risk of bleeding or where the bleeding would be noncritical in location and easily controlled. Bridging anticoagulation during the 24 to 48 hours after stopping ELIQUIS and prior to the intervention is not generally required. ELIQUIS should be restarted after the surgical or other procedures as soon as adequate hemostasis has been established.

**DRUG INTERACTIONS**

- **Combined P-gp and Strong CYP3A4 Inhibitors**: Inhibitors of P-glycoprotein (P-gp) and cytochrome P450 3A4 (CYP3A4) increase exposure to apixaban and increase the risk of bleeding. For patients receiving ELIQUIS doses of 5 mg or 10 mg twice daily, reduce the dose of ELIQUIS by 50% when ELIQUIS is coadministered with drugs that are combined P-gp and strong CYP3A4 inhibitors (eg, ketoconazole, itraconazole, or ritonavir). In patients already taking 2.5 mg twice daily, avoid coadministration of ELIQUIS with combined P-gp and strong CYP3A4 inhibitors.

**Clarithromycin**

Although clarithromycin is a combined P-gp and strong CYP3A4 inhibitor, pharmacokinetic data suggest that no dose adjustment is necessary with concomitant administration with ELIQUIS.
FOR PATIENTS WITH NVAF

ARISTOTLE: ONLY ELIQUIS demonstrated superiority in BOTH stroke/systemic embolism and major bleeding vs warfarin¹

- Superiority to warfarin was primarily attributable to a reduction in hemorrhagic stroke and ischemic strokes with hemorrhagic conversion compared to warfarin. Purely ischemic strokes occurred with similar rates on both drugs¹
- In another clinical trial (AVERROES), ELIQUIS was associated with an increase in major bleeding compared with aspirin that was not statistically significant (1.41%/yr vs 0.92%/yr, HR=1.54 [95% CI: 0.96–2.45]; P=0.07)¹
- The most common reason for treatment discontinuation in both ARISTOTLE and AVERROES was bleeding-related adverse reactions; in ARISTOTLE, this occurred in 1.7% and 2.5% of patients treated with ELIQUIS and warfarin, respectively, and in AVERROES, in 1.5% and 1.3% on ELIQUIS and aspirin, respectively⁴

Major bleeding was defined as clinically overt bleeding accompanied by ≥1 of the following¹: A decrease in hemoglobin of ≥2 g/dL over 24 hours; transfusion of 2 or more units of packed red blood cells; bleeding that occurred in at least one of the following critical sites: intracranial,⁵ intraspinal, intraocular, pericardial, intra-articular, intramuscular with compartment syndrome, retroperitoneal; and fatal bleeding.

ELIQUIS increases the risk of bleeding and can cause serious, potentially fatal, bleeding³:

- Superiority to warfarin was primarily attributable to a reduction in hemorrhagic stroke and ischemic strokes with hemorrhagic conversion compared to warfarin. Purely ischemic strokes occurred with similar rates on both drugs¹

Drug Interactions (cont’d)

- Combined P-gp and Strong CYP3A4 Inducers: Avoid concomitant use of ELIQUIS with combined P-gp and strong CYP3A4 inducers (e.g., rifampin, carbamazepine, phenytoin, St. John’s wort) because such drugs will decrease exposure to apixaban.

- Anticoagulants and Antiplatelet Agents: Coadministration of antiplatelet agents, fibrinolitics, heparin, aspirin, and chronic NSAID use increases the risk of bleeding. APPRAISE-2, a placebo-controlled clinical trial of apixaban in high-risk post-acute coronary syndrome patients treated with aspirin or the combination of aspirin and clopidogrel, was terminated early due to a higher rate of bleeding with apixaban compared to placebo.

Pregnancy

- The limited available data on ELIQUIS use in pregnant women are insufficient to inform drug-associated risks of major birth defects, miscarriage, or adverse developmental outcomes.

SELECTED IMPORTANT SAFETY INFORMATION

- Breastfeeding is not recommended during treatment with ELIQUIS.

Treatment may increase the risk of bleeding during pregnancy and delivery, and in the fetus and neonate.

- Labor or delivery: ELIQUIS use during labor or delivery in women who are receiving neuraxial anesthesia may result in epidural or spinal hematomas. Consider use of a shorter acting anticoagulant as delivery approaches.

LACTATION

- Breastfeeding is not recommended during treatment with ELIQUIS.


Please see accompanying Brief Summary of Full Prescribing Information, including Boxed WARNINGS, on the adjacent pages.

ELIQUIS and the ELIQUIS logo are trademarks of Bristol-Myers Squibb Company. © 2020 Bristol-Myers Squibb Company. All rights reserved. 432US2001707-02-01 07/20
ELIQUIS® (apixaban) tablets, for oral use

**INDICATIONS AND USAGE**

**Reduction of Risk of Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation—**

ELIQUIS is indicated to reduce the risk of stroke and systemic embolism in patients with nonvalvular atrial fibrillation.

**Prophylaxis of Deep Vein Thrombosis Following Hip or Knee Replacement Surgery—**

ELIQUIS is indicated for the prophylaxis of deep vein thrombosis (DVT) which may lead to pulmonary embolism in adult patients undergoing elective hip or knee replacement surgery.

**Dosage and Administration**

**1.0 mg per dose administered 12 to 24 hours post-surgery**

**2.5 mg twice daily administered 12 to 24 hours post-surgery**

**5 mg twice daily administered 12 to 24 hours post-surgery**

**Temporary Interruption for Surgery and Other Interventions**

ELIQUIS should be discontinued at least 24 hours prior to elective surgery or other procedures that can increase the risk of developing urologic or spinal hematomas in those patients:

- in which the benefits and risks before neuraxial intervention in patients anticoagulated or to be anticoagulated (see Warnings and Precautions).

**Prescribing Information**

**Bleeding in Patients with Nonvalvular Atrial Fibrillation in AVERROES**

**Table 1: Bleeding Events in Patients with Nonvalular Atrial Fibrillation in AVERROES**

<table>
<thead>
<tr>
<th>Event</th>
<th>ELIQUIS (n=11,284)</th>
<th>Warfarin (n=22,947)</th>
<th>Hazard Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total bleeding</td>
<td>1,410</td>
<td>3,160</td>
<td>0.45 (0.39, 0.51)</td>
<td>0.001</td>
</tr>
<tr>
<td>Major bleeding</td>
<td>249</td>
<td>447</td>
<td>0.56 (0.46, 0.67)</td>
<td>0.001</td>
</tr>
<tr>
<td>Minor bleeding</td>
<td>1,161</td>
<td>2,713</td>
<td>0.43 (0.36, 0.53)</td>
<td>0.001</td>
</tr>
</tbody>
</table>
| Excludes patients with major bleeding who died during treatment or within 30 days post-surgery.

**Other Adverse Reactions**

Hypersensitivity reactions (including drug hypersensitivity, such as rash, and anaphylaxis) were rare in clinical trials. Serious hypersensitivity reactions were reported in 1% of patients receiving ELIQUIS.

**Drug Interactions**

**WARNINGS AND PRECAUTIONS**

**Contraindications**

ELIQUIS is contraindicated in the following conditions:

- active bleeding from a site that cannot be surgically corrected or in patients who require urgent treatment of an active site that cannot be surgically corrected.

**Warnings**

**Increased Risk of Thrombotic Events after Premature Discontinuation**

ELIQUIS is contraindicated in patients with the following conditions:

- prior stroke or transient ischemic attack (TIA).

**Clinical Trials Experience**

ELIQUIS is indicated to reduce the risk of stroke and systemic embolism in patients with nonvalvular atrial fibrillation.

**Conclusion**

The data obtained from the clinical trials that have been conducted in patients with nonvalvular atrial fibrillation have not been updated in patients with prosthetic heart valves. Therefore, use of ELIQUIS is not recommended in these patients.

**Figure 1: Major Bleeding Hazard Ratios by Baseline Characteristics – AVERROES Study**

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Hazard Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>0.69 (0.60, 0.80)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

**Table 2: Bleeding Events in Patients with Nonvalular Atrial Fibrillation in AVERROES**

**Table 2** shows the number of patients experiencing major bleeding during the treatment period and the bleeding rate per 100 patient-years in ELIQUIS and warfarin.

**Table 3: Bleeding During the Treatment Period in Patients Undergoing Elective Hip or Knee Replacement Surgery**

**Table 3** describes bleeding events in patients undergoing elective hip or knee replacement surgery.
Table 4: Adverse Reactions Occurring in >1% of Patients in Either Group Undergoing Hip or Knee Replacement Surgery

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>Placebo</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major + CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMPLIFY-EXT Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoptysis</td>
<td>32 (1.2)</td>
<td>31 (1.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilirubin increased</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver function test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal, blood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.0)</td>
<td>25 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.4)</td>
<td>10 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.7)</td>
<td>24 (2.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.7)</td>
<td>8 (1.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Bleeding Results in the AMPLIFY Study

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>Placebo</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major + CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMPLIFY Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoptysis</td>
<td>32 (1.2)</td>
<td>31 (1.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilirubin increased</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver function test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal, blood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.0)</td>
<td>25 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.4)</td>
<td>10 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.7)</td>
<td>24 (2.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.7)</td>
<td>8 (1.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Adverse Reactions Occurring in >1% of Patients Treated for DVT and PE in the AMPLIFY Study

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>Placebo</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major + CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMPLIFY Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoptysis</td>
<td>32 (1.2)</td>
<td>31 (1.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilirubin increased</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver function test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal, blood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.0)</td>
<td>25 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.4)</td>
<td>10 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.7)</td>
<td>24 (2.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.7)</td>
<td>8 (1.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Bleeding Results in the AMPLIFY Study

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>1.0 mg bid Arm</th>
<th>N (%)</th>
<th>Placebo</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major + CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMPLIFY Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoptysis</td>
<td>32 (1.2)</td>
<td>31 (1.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilirubin increased</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver function test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal, blood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.0)</td>
<td>25 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.4)</td>
<td>10 (2.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>26 (2.7)</td>
<td>24 (2.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>12 (2.7)</td>
<td>8 (1.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postprocedural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adverse reactions occurring in >1% of patients in the AMPLIFY study are listed in Table 4.

Adverse reactions occurring in >1% of patients in the AMPLIFY EXT study are listed in Table 6.

Adverse reactions occurring in >1% of patients in the AMPLIFY EXT study are listed in Table 7.
CEP surveyed emergency department medical directors in early November 2020 about the challenges they’re facing due to the pandemic. Here are some highlights from their responses.

### By the Numbers

#### ED Medical Directors on COVID-19

A CEP survey of emergency department medical directors in early November 2020 revealed the challenges they’re facing due to the pandemic. Here are some highlights from their responses.

#### ED LOCATION

- **Urban**: 47%
- **Suburban**: 32%
- **Rural**: 21%

#### ANNUAL ED VISIT VOLUMES

- **>150,000**
- **100,01-150,000**
- **75,001-100,000**
- **50,001-75,000**
- **25,001-50,000**
- **<25,000**

#### PATIENTS UNABLE TO BE PLACED IN ISOLATION

- **Never**: 6%
- **Once or Twice**: 10%
- **Everyday**: 35%
- **Multiple Times a Day**: 37%

#### NUMBER OF UNPLACED PATIENTS

- **0**
- **5**
- **10**
- **15**
- **20**
- **25**
- **30**
- **35**
- **40**

#### ED COVID-19 MEDICINE SHORTAGES

- **Remdesivir**: 17%
- **Convalescent Serum**: 21%
- **Monoclonal Antibody**: 29%
- **Unknown/Unsure**: 25%
- **Steroids**: 8%

#### NUMBER OF EDS

- **8**
- **10**
- **12**
- **15**
- **20**
- **25**

### ACEP Online Learning Collaborative

**NEW YEAR. NEW CME DOLLARS.**

Get started now on your 2021 education needs.

- New, redesigned platform for on-demand education
- Optimized for mobile
- Easy to find related content to meet your needs
- CME credits you can earn as you learn
- New courses added each month

Learn more at acep.org/OLC

---

[ACEP's geriatric ED accreditation program]

Geriatric EDs promote best clinical practices for older adults and have the potential to improve health outcomes, coordinate care more effectively, and reduce cost of care.

Apply for ACEP’s geriatric ED accreditation program and validate your hospital’s commitment to:

- Providing a more positive and sensitive physical environment
- Adopting standardized approaches to geriatric care
- Ensuring optimal transitions of care from the ED to other settings such as inpatient, home, community-based care, rehabilitation or long-term care
- Supporting geriatric-focused quality improvement

Learn more about accreditation at ACEP.org/GEDA

---

**ACEP NOW | JANUARY 2021**

The Official Voice of Emergency Medicine
The Highly Regarded Course Which Has Helped Tens of Thousands of Emergency Medicine Physicians Pass Their ABEM/AOBEM Certifying and Recertifying Exams

THE NATIONAL
EMERGENCY MEDICINE
BOARD REVIEW COURSE

The 24th Annual

The Highly Regarded Course Which Has Helped Tens of Thousands of Emergency Medicine Physicians Pass Their ABEM/AOBEM Certifying and Recertifying Exams

SELF-STUDY COURSE

✓ Study at your own pace and on your own time
✓ Don’t miss family/work obligations
✓ Avoid the expense and hassle of travel
✓ Earn up to 35 AMA PRA Category 1 Credits™

100% Money-Back Guarantee If You Don’t Pass!

Buy the Self-Study Course Today at
www.EMBoards.com/course

or Call 1-800-458-4779 (9:00am-5:00pm ET, M-F)

THE HEART COURSE

STATE-OF-THE-ART CARDIOVASCULAR AND NEUROVASCULAR EDUCATION FOR THE ACUTE CARE CLINICIAN

Learn and apply emerging data, new guidelines, and optimal treatment strategies for the management of cardiac and vascular emergencies.

COURSE TOPICS

✓ Remember That Patient? Legal Disasters in Cardiovascular Emergencies
✓ Kid Hearts are Not the Same as Little Adult Hearts: Pediatric Cardiology
✓ Slow or Wide: Bradycardias and Wide Complex Tachycardias
✓ So When You Say the Word “Dizzy”... Posterior Circulation Issues
✓ You Called Down the Thunderclap: Subarachnoid Hemorrhage
✓ Cardiac Roulette: Chest Pain Risk Stratification in 2019
✓ An Infarct Rather Than an Accident: Stroke 2019
✓ Mostly Dead Is Still Slightly Alive: Cardiac Arrest
✓ Can’t Catch Me: Narrow Complex Tachycardias
✓ Welcome to the Machine: Device Emergencies
✓ For the Faint of Heart: Cardiogenic Syncope
✓ Ripping It to Pieces: Acute Aortic Dissection
✓ You Can Die of a Broken Heart: Shock
✓ Potpourri for the Heart and Brain
✓ Love Potions: Cardiotoxic Drugs
✓ Asymptomatic Hypertension
✓ Stratification of A-fib and PE

When There’s No Time to Search for Answers Online!

Ideal for Rapid NEMBR Information Retrieval While Taking Your “Open-Book” ConCert™ Exam.

RECERTIFYING IN 2021?

Take the ConCert™ Exam Instead of the Hassle of FOUR MyEMCert Exams.

RECERTIFYING IN 2021?

Take the ConCert™ Exam Instead of the Hassle of FOUR MyEMCert Exams.

NEW

EM QuickSearch

100% Money-Back Guarantee If You Don’t Pass!

OPTIONAL

Expand Your Knowledge of ECG Interpretation with the ECG WORKSHOP

Presented by Amal Mattu, MD

www.HeartSelfStudy.com

Buy the Self-Study Course Today at
or Call 1-800-458-4779 (9:00am-5:00pm ET, M-F)
ACEP Delivers on Out-of-Network Billing

Recently enacted law also substantially reduces painful fee cuts

by L. ANTHONY CIRILLO, MD, FACEP

Amid a global pandemic, out-of-network billing and cuts to fee schedules were probably the last things on the minds of most working emergency physicians. We’ve got enough of a crisis on our hands every time we go to work. But ACEP never lost focus on these issues, as any legislation related to these issues always carries the potential to pose existential threats to our specialty as we know it.

While most of us have been focusing our attention on battling COVID-19 on the front lines, ACEP was deeply engaged in successfully brokering a series of compromises on Capitol Hill in December. The news is excellent.

On Dec. 21, the U.S. House of Representatives and Senate approved a comprehensive end-of-year spending package, and President Donald Trump signed it into law on Dec. 27. The 5,593-page bill includes funding of the federal government for the fiscal year through September 2021, additional COVID-19 relief, and continued funding of health care “extender” programs. Most important for emergency medicine as a profession, the package also has key provisions to address the out-of-network balance billing (OON/BB) issue and delivers significant relief to the previously proposed 2021 Medicare Physician Fee Schedule cuts, which would have been extremely painful ones (see page 11 for more on the fee schedule).

The federal surprise billing law applies nationally to ERISA plans (employer self-funded plans under the Employee Retirement Income Security Act of 1974) and to all state-regulated (fully insured) plans in states that do not have a state-based law. Although the bill applies to patients who receive care from an out-of-network physician or facility, more importantly, it affects the negotiation leverage between insurers and physicians for in-network contracting and care. Overall, this legislation will achieve two major goals:

1. Protecting patients from unexpected medical bills when they seek emergency care
2. Incentivizing insurers to keep physicians and other health care workers in-network and pay reasonably when unexpected out-of-network care occurs

Here are highlights of the OON/BB legislation, which goes into effect on Jan. 1, 2022:

- Creates a framework of initial payment with an opportunity for a simplified arbitration (called independent dispute resolution, or IDR) if insurers don’t make a fair initial payment
- Establishes strong criteria for the IDR arbitrator to consider when determining which side’s offer is “most reasonable,” including the history of contracting between the health care—providing entity and the plan that occurred during the previous four years
- Declares that there be no threshold dollar requirement to use IDR and allows for batching of multiple claims that relate to care provided by the same clinician, for the same service, and in the same geographical area over a 30-day period
- Prevents plans from reducing the median in-network rate considered by the arbitrator by fixing it to a point in time, plus adds an inflation adjustment yearly
- Sets “baseball-style” arbitration, where the arbitrator must pick the most reasonable offer and the loser pay all IDR fees
- Requires plans to make all payments directly to the health care—providing entity (insurers must pay the clinician or entity that provided the care directly, rather than provide the payments to patients who would then have to turn around and make payments to hospitals, physicians, or other care-providing entities)
- Prohibits the arbitrator from considering Medicare and Medicaid rates when determining a fair payment for commercial claims

The next important step in the process will be working with federal agencies to do rule-making to operationalize the law in time for its implementation on Jan. 1, 2022.

Make no mistake: ACEP was the specialty organization for emergency medicine at the table battling against the insurance industry to prevent what looked to be a “bad” bill from being passed into law. The ramifications would have taken years, if not decades, to ameliorate. This compromise, a much better outcome for physicians and our patients, came at the end of a dogfight that lasted almost three years. Despite some knockdowns during the process, we got back up and kept fighting on behalf of every emergency physician and our patients. Our success was due to the efforts of ACEP physician and staff leaders; ACEP’s Washington, D.C., lobbying team; and members like you who called, tweeted, texted, emailed, and visited their members of Congress. Together, we made a difference.

DR. CIRILLO serves on the ACEP Board of Directors. He still actively practices emergency medicine and serves as the director of government affairs for US Acute Care Solutions.
CMS Updates for 2021

LAST-MINUTE INTERVENTION BY CONGRESS MAY TURN A LOSS TO A GAIN FOR EM

by MICHAEL GRANOFSKY, MD, CPC, FACEP; AND DAVID MCKENZIE, CAE

The Centers for Medicare & Medicaid Services (CMS) has released the 2021 Physician Fee Schedule, which will impact emergency medicine reimbursement significantly. The final rule was released Dec. 1, 2020, a month later than usual due to the public health emergency. More analysis will be included in a future issue, but here are points you need to know now to prepare for the rule, which took effect Jan. 1, 2021.

2021 RVUs Increase for ED E/M Services

Acting to protect the safety net, ACEP asked CMS to recognize the intensity of ED services and maintain the relative value between the ED evaluation and management (E/M) codes and the new patient office codes, which received increased values in 2021. Even though the ED codes received increases of about 5 percent for levels 1–4 in 2020, CMS has accepted our arguments and agreed to increase the ED relative value units (RVUs) for 99283–99285 again in 2021 (see Table 1).

In addition to increasing the work RVUs, each year CMS tweaks the practice expense and professional liability insurance components of our RVUs, with the three components together making up our total RVUs for the year (see Table 2).

2021 Conversion Factor Decrease

On Dec. 2, 2020, the 2021 Physician Fee Schedule published a conversion factor (payment per RVU) of $32.4085, a 10.2 percent decrease from the 2020 conversion factor of $36.0896. This significant decrease was due to the CMS decision to increase reimbursement for the office visit codes, a boon for urgent care facilities (which report using office codes). Importantly, the large increase in the office codes triggered a statutory requirement to decrease the conversion factor to maintain budget neutrality. ACEP has worked with Congress, highlighting the unprecedented strain emergency physician practices already face due to the ongoing COVID-19 pandemic.

Learn more about the 2021 Physician Fee Schedule at the Regs & Eggs blog by Jeffrey Davis, ACEP’s regulatory affairs director, at www.acep.org/2021-PFS-blog.

Conessional Action

On Dec. 21, 2020, Congress passed the Consolidated Appropriations Act of 2021, and President Donald Trump signed it into law on Dec. 27. The 5,503-page document contained several favorable adjustments to offset the 10.2 percent budget neutrality cut, including:

• Delaying for three years the implementation of an add-on code (G2213) to office and other outpatient E/M services, which adds back about 3 percent to the conversion factor
• Authorizing new additional funds to support the conversion factor by 3.75 percent
• Delaying the 2 percent sequestration cut for three months to allow time for the next Congress to address that issue on a more permanent basis.

The above changes significantly improve emergency medicine’s outlook for 2021.

As noted above, the work RVUs for 99283–99285 were increased by more than 5 percent for 2021. Those three codes account for about 90 percent of the ED E/M services reported to Medicare.

Net Impact of RVU Increase and Congressional Actions

5.0% (a conservative estimate of all the ED code RVU increases combined) 5.2% prior to the recent Congressional action

Table 1: 2021 Increases to ED E/M Code Work RVUs

<table>
<thead>
<tr>
<th>Code</th>
<th>2020 Work RVUs</th>
<th>2021 Proposed Work RVUs</th>
<th>% Increase in Work RVUs in 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>99281</td>
<td>0.48</td>
<td>0.48</td>
<td>0%</td>
</tr>
<tr>
<td>99282</td>
<td>0.93</td>
<td>0.93</td>
<td>0%</td>
</tr>
<tr>
<td>99283</td>
<td>1.42</td>
<td>1.60</td>
<td>12.68%</td>
</tr>
<tr>
<td>99284</td>
<td>2.60</td>
<td>2.74</td>
<td>5.38%</td>
</tr>
<tr>
<td>99285</td>
<td>3.80</td>
<td>4.00</td>
<td>5.26%</td>
</tr>
</tbody>
</table>

Table 2: 2021 ED E/M Code Total RVUs and Components

<table>
<thead>
<tr>
<th>Code</th>
<th>2020 Total RVUs</th>
<th>2021 Total RVUs</th>
<th>PE RVUs</th>
<th>PLI RVUs</th>
<th>Work RVUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>99281</td>
<td>0.48</td>
<td>0.48</td>
<td>0.11</td>
<td>0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>99282</td>
<td>0.93</td>
<td>0.93</td>
<td>0.21</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>99283</td>
<td>1.42</td>
<td>1.60</td>
<td>0.29</td>
<td>0.13</td>
<td>0.00</td>
</tr>
<tr>
<td>99284</td>
<td>2.60</td>
<td>2.74</td>
<td>0.54</td>
<td>0.27</td>
<td>0.00</td>
</tr>
<tr>
<td>99285</td>
<td>3.80</td>
<td>4.00</td>
<td>0.71</td>
<td>0.40</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 3: 2020 and 2021 MIPS Performance Category Weighting

<table>
<thead>
<tr>
<th>Category</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>Cost</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Improvement Activities</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Promoting Interoperability</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Table 4: OPPS Rates for ED E/M Codes

<table>
<thead>
<tr>
<th>Facility Level</th>
<th>APC</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>99281</td>
<td>5021</td>
<td>$74.19</td>
</tr>
<tr>
<td>99282</td>
<td>5022</td>
<td>$134.57</td>
</tr>
<tr>
<td>99283</td>
<td>5023</td>
<td>$236.87</td>
</tr>
<tr>
<td>99284</td>
<td>5024</td>
<td>$372.01</td>
</tr>
<tr>
<td>99285</td>
<td>5025</td>
<td>$535.13</td>
</tr>
<tr>
<td>99291</td>
<td>5041</td>
<td>$708.57</td>
</tr>
</tbody>
</table>

congressionally approved funds and eliminating a roughly 3 percent contribution to budget neutrality by delaying the implementation of the office add-on code G2213, overall emergency medicine could potentially swing to a positive for 2021.

All in, emergency medicine went from a potential 10.2 percent cut to a gain, which could be as much as 2 percent, depending on the group.

The temporary removal of the sequestration cut is a bonus. However, if sequestration is not delayed again and goes back into effect in April 2021, all Medicare physician payments will be reduced by 2 percent for the remainder of the year.

This is a tremendous win based on the advocacy work through the ACEP Relative Value Scale Update Committee and the legislative and regulatory efforts of ACEP’s staff.

ED Continued Traction with Telehealth Services

CMS considered how codes temporarily on the list of approved Medicare telehealth services during the COVID-19 public health emergency will remain on the list permanently. Ultimately, CMS agreed to keep ED E/M code levels 1–4 (Current Procedural Terminology [CPT] codes 99281–99285), critical care, and observation codes 99217 and 99224–99226 on the list of approved Medicare services through the duration of the year the public health emergency expires. Unfortunately, CMS did not add any of these codes to the permanent approval list for telehealth, citing these services as too intense to be routinely performed via telehealth.

Teaching Physicians and Residents

For rural settings only, CMS has made oversight via telemedicine permanent for teaching physicians supervising residents in residency training sites outside of an Office of Management and Budget–defined metropolitan statistical area (generally defined as an urban cluster of more than 50,000 people). Moonlighting resident flexibilities, allowing an emergency medicine resident to work elsewhere outside the scope of their residency duties, have been extended to Dec. 31, 2021, or may be made permanent to help cover physician shortages due to the public health emergency.

Medical Documentation Requirements

In last year’s rule, CMS finalized numerous changes to the medical record documentation requirements for physicians and other health care practitioners. In this 2021 Final Rule, CMS is clarifying that physicians and other health care practitioners, including therapists, can review and verify documentation performed via telehealth.

Merit-based Incentive Payment System (MIPS)

For 2020 and 2021, the four typical reporting categories—quality, cost, improvement activities, and promoting interoperability—continue (see Table 3).

CMS is granting hardship exemptions on a case-by-case basis due to COVID-19. It is therefore possible for clinicians or groups to request to be exempted from all four performance categories.

CONTINUED on page 14
by CHRISTOPHER SAMPSON, MD, FACEP

When you’re in an adult code and intravenous (IV) access can’t be obtained, the first option we reflexively go to is intraosseous (IO) access. Anyone who has practiced emergency medicine for more than a decade knows that was not always the case. In the 1980s, IO access was introduced as a standard of care by the American Heart Association as a component of pediatric advanced life support. During the decade or two that followed, IO access was mainly reserved for use in the pediatric population as an alternative to IV access. But in the early 2000s, its use in the adult population began to rise. The introduction of IO drills and use by the military helped increase adult use.

First a little history: IO infusions were accidentally discovered in 1936 during experiments on bone marrow transplant in rabbits by Leandro Tocantins, MD, and John O’Neill, MD, in Philadelphia. When 5 mL of saline was injected into the proximal end of the bone, only 2 mL was recovered at the distal end, with no evidence of infiltration. Further studies were conducted using blood, and eventually a clinical trial was conducted using 14 human patients (including two children younger than 1 year old), infusing blood, plasma, glucose, and saline. Initial injection sites used were the sternal body, manubrium, and distal femur or proximal tibia in infants. IO soon became a favored route for patients in shock, and it was also noted during the blitz of World War II that sternal puncture could even be carried out under poor light conditions.1

Despite the rise in its use and across nine decades of re-search, there are still many myths that persist regarding IO access.

MYTH 1: The proximal tibia is the only location for insertion.
The proximal tibia is the most common site used, but there are multiple alternative locations an IO can be placed. Other locations include the distal tibia, proximal humerus, iliac crest, and sternum.

MYTH 2: Only medications and crystalloid solutions can be infused through an IO.
As far back as the initial experiments with rabbits, IO access has been an option for more than just crystalloid fluids. Not only can any medication given intravenously be given through the IO route, but blood products and even IV contrast have been given successfully in some case reports.2 When paralytics for rapid sequence intubation were given via the IO route, first-pass success rate was 97 percent.3

MYTH 3: IO infusions are too slow, and pressure bags can’t be used.
One concern is that because the IO is placed in the intermedi-ulary space, flow rates need to be slower. But studies show flow rates of 4.96 mL/min in the proximal tibia and 2.07 mL/min in the distal tibia. Use of pressure bags increased the flow rate to 7.70 mL/min in the proximal group. These are still lower rates than a 14-gauge IV (366 mL/min) or triple lumen central venous catheters (CVCA) distal port (79 mL/min) but it provides a safe and effective path to the vascular system.4

MYTH 4: IO access is hard to obtain.
In a study looking at out-of-hospital cardiac arrest, first-attempt success was more likely in the tibial IO group (91 percent) compared to the humeral (51 percent) or peripheral (43 percent) IV group. In a setting where medication delivery speed matters, it was also quicker to place the tibial IO (4.6 minutes) when compared to IV group (5.8 minutes). Success rates were also higher and achieved more quickly for IO when compared to CVCA (96 versus 60 percent; 2 versus 8 minutes).5

MYTH 5: There are no complications to placement of an IO.
All the above is true, but a procedure is a procedure. Though quick and easy to place, complications can occur. The most common complication is extravasation from a misplaced IO line. This can lead to compartment syndrome or tissue necrosis. Inappropriate placement can also lead to placement in the joint and not the intermediary space. An IO line should never be placed in a limb that is fractured or has a vascular injury. If overlying cellulitis is present, or if previous orthopedic surgery has occurred in the location, IO placement may be unwise unless other options have been completely exhausted and the patient is crashing. A study performed in 1993 found the frequently reported serious adverse event was osteomyelitis (0.6 percent). All of these events occurred after prolonged IO infusions, suggesting that, once time permits, better intravascular access should be obtained.6

MYTH 6: IO doesn’t hurt.
Awake patients do report pain, especially with infusions that create increased pressure in the intermediary space. Recommendations for the awake patient include infusing lidocaine 2% (preservative free) over 120 seconds followed by allowing 60 seconds for the anesthetic to dwell in the IO space. In adults, the typical dose is 140 mg, and the pediatric dose is 0.5 mg/kg (maximum of 40 mg).7

Hopefully, this dispels any myths surrounding IO access and safe use. Next time you need to rapidly give medications and no IV access can be obtained, when appropriate, reach for the IO needle and drill.

References
6. Redick AD, Ronald J, Morrison WJ. Intraosseous fluid resuscitation: was Po-
10. EZ-ID intraosseous vascular access. Teleflex website. Available at: https://www.
teleflex.com/global/clinical-resources/documents/MCI-2019-0394_VA_DS_EZ-
A ny time artificial intelligence (AI) is mentioned to doctors, it elicits a mix- ture of reactions that include discom- fort, disgust, and distrust—sometimes all at once. Because my reaction when AI is men- tioned in any health care context is engaged, hopeful, and possibly even giddy, I was un- prepared these sentiments when I began my career in emergency medicine. Even with a proper understanding, criti- cism of AI in health care reflects ongoing distrust. Distress in medical research is not unique to AI. Furthermore, AI does not prom- ise to be a silver bullet for many of our prob- lems. But AI is a tool through which we can look at data already being collected and pos- sibly garner more meaningful conclusions. Even most experts agree that AI cannot pre- dict anything that a human would not have been able to. So why is AI better?

The two primary advantages AI brings to medicine relate to reducing errors and immediating financial sustainability by reducing ineffi- ciencies.

Change is hard in medicine. That’s espe- cially true when new technology is involved. I propose that AI in health care has the poten- tial to be the singular most disruptive change we see in medicine over the next 20 years. If emergency physicians continue to ignore it, it will be a change that happens to us and to the detriment of our patients and our practice. Instead, we should embrace AI so the changes it brings are by us and for us.

AI in EM

Currently, more than 1,000 companies are in- tegrating AI in various aspects of health care. Last year, more than $5 billion was invested by venture capital in this space. These numbers are expected to increase this year, reflecting the magnitude in anticipated future savings that may come from tackling widespread in- efficiencies in the health care system. As we know, inefficiencies exist in almost every sin- gle link in the U.S. health care delivery chain. Let’s explore some novel projects in five differ- ent categories that stand to have substantial impact on our practice of emergency medi- cine.

1. Information collection and process- ing: Smart devices are already collecting and interpreting information for patients, including everything from ECG bands for professional athletes or heart monitors on small children. There are “medical grade”-smart devices such as pacemakers and Holter monitors that track heart rates, la- bel what they see, and send alerts. By now, we have all seen or heard about patients seeking medical evaluation because of an alert they received or an anomaly they no- ticed from these devices. Now, it’s not just wearables that are making their way into hospitals. Aside from the telemetry moni- toring devices, we will soon have other de- vices hooked into our patients, analyzing (quite literally) their outputs. For example, Potero has a bedside Foley device to auto- matically detect anomalies in urine output for early detection of acute kidney injury in ICU patients. It has been tested at Grady Hospital in Atlanta. With COVID-19 in our midst, the value proposition for remote- ly monitoring anything has skyrocketed. Think of all the personal protective equip- ment saved and the reduced risks to staff.

2. Medical decision making: Not every- thing in AI in health care comes from for- profit vendors. Researchers at Stanford University and Duke University completed a study on more than 3,000 patients, show- ing their AI algorithm’s ability to detect pulmonary embolism to be highly effec- tive. It may even be the best existing algo- rithm from an accuracy perspective. Their model evaluated more than 750 different variables, including medications, demo- graphics, vital signs, and all the data from an individual’s prior visits. As a patient, which algorithm would you choose to de- cide whether you should get a CT angio- gram? In this case, the accuracy was only about 80 percent. That’s still higher than other algorithms (about 70 percent), but some wiggle room remains. My prediction and hope: Can sepsis be next?

Also included in this category are di- rect patient care algorithms. For example, CLEW is a platform that analyzes data from critically ill patients to give a dynam- ic work list for the optimization of patient outcomes over the following metrics: ve- nous thromboembolism prevention, lung protective ventilation, stress ulcer prophy- laxis, blood transfusions, and accelerated mechanical ventilation weaning and lib- eration.

3. Communication: Are you ready to hear about an AI start-up with technology that has already been approved for Medicare reimbursement? Viz.ai detects large ves- sel occlusion (LVO) on head CT/CTA. It is integrated into imaging software and sees the images as they are being collected. If an LVO is detected, it sends a message to the images as they are being collected. If an LVO is detected, it sends a message to all the current and future caregivers of the patient, from ED nursing to the neurointerventionalist who may perform a pro- cedure. In other words, the downstream caregivers might automatically receive a text message about a patient before they have even seen them, depending on your center’s stroke workflow. Knowing this, are you surprised centers that adopt Viz. ai have seen a 50 percent increase in interventions?

Regarding the technology, in compari- son with an experienced neuroradiologist, the Viz.ai algorithm performs with very high sensitivity (though mediocre speci- ficity), with an overall accuracy of about 80 percent. This means it catches almost all the LVOS and then some. All of the cases are then presented to the neurointerven- tionalist directly. That said, some of the evi- dence that endovascular intervention for LVO is better than the best medical man- agement for even mild stroke symptoms (NIH Stroke Scale $5$ has been published by the same people who are evaluating the efficacy of the Viz.ai algorithm. Conflict of interest, anyone? The same people also argue that ASPECTS, a radiology scoring system to determine LVO from noncontrast head CTs, performs better than CT angio- gram of the head and neck for determining presence of important and intervenable LVOS. Viz.ai evaluates both noncontrast CT and CT angiograms.

Enter Medicare. Viz.ai has Food and Drug Administration (FDA) approval for its technology, and in a milestone decision made in August 2020, Medicare now reim- burses for it. Interestingly, the model for Medicare reimbursement only comes into play if your center is not currently benefit- ing from increased revenues coming from an increased number of performed inter- ventions. Thus, it is basically a consolation prize to the community hospitals that are losing stroke admission-related revenue to the interventional centers that would have previously never accepted transfer of such patients (or treated them directly). Of course, clot retrieval is not without risks. Hopefully, an increase in these procedures will provide patients more benefits than harm.

Other start-ups in radiology and pa- thology are conducting clinical analyses on other imaging and specimen evalua- tions and their effect on medical decision making. As with strokes, though, the valida- tion studies are often completed by re- searchers who either own stock or stand to reap financial benefits from AI technolo- gies. Does this necessarily negate the effec- tiveness of the technology? No. Should we demand better standards of validation research? Absolutely.

Billing: While not part of direct patient care, the myriad applications of AI to medical billing that are ongoing right now should be discussed. In general, bill- ing is the most underappreciated and un- derrated determinant of our practice in emergency medicine. Changes in reim- bursement patterns can alter our practices. Arguably, AI was first introduced in health care for reasons related to medical billing, and this makes sense since the revenue benefits are easy to measure and immedi- ately realized and recognized. For exam- ple, natural language processing is used to scan through charts to find diagnoses we forgot to include, add procedures we forgot to document, and add missing information needed to justify the billing codes we used. AI is also used to better understand cover- age denials and to identify strategic areas for potential fair increases in revenues.

In terms of billing for their own “ser- vices,” AI start-ups are seeing success in getting FDA approval. Medicare reim- bursement is the natural next step. For ex- ample, Digital Diagnostics came out with a
technology called IDx-DR that can detect retinopathies mostly caused by diabetes. Its technology is used in-ternationally and for a low cost and has shown to be instrumental in early detection of diabetic retinopa-thy. Another example: Caption Health received FDA approval to deploy Caption Guidance, which is used for helping ultrasound operators capture high-quality cardiac ultrasound images. It was tested on previ-ously untrained nurses. These caregivers were found to be able to capture high-quality images using this technology. Both of these technologies could be read-ily and legally adopted into our workflows. In fact, the only thing preventing widespread adoption probably is the economics (ie, billing). Given the reimbursement model described above, the floodgates of Medicare re-imbursement for AI can be considered open now. It is only a matter of time before we begin to see how AI changes our diagnostic algorithms.

5. Process improvement: Imagine changes in staffing recommendations being made by an algorithm rather than management. The reality is that this is already happening and not just for physicians, physician as-sistants, and nurse practitioners. AI algorithms are being used to make recommendations on nurse staff-ing in the emergency department as well. Could this be a good thing and an answer to our understaffing problems? Yes! Unfortunately, right now, the opposite has been happening. To implement any technology, a cost-benefit analysis has to be done. If a staffing al-gorithm promises to save a system money, then one easy way to do this is by cutting hours, not increasing them. That said, research on predictive models for staffing emergency departments has been described in academic literature. There are even algorithms that take into account surges in patient volumes. Other areas of process optimization using AI include patient flow, protocol initiation, and really almost any computer-based task. A platform called Olive is designed as a health care bot, or a “digital employee.” It assists hos-pital employees across many departments including rev-enue cycle, supply chain, information technology, human resources, finance, accounting, pharmacy operations, and clinical operations. Olive provides a timely pop-up of what it “thinks” is useful information based on what it has learned about the user so far. One example is in patient information verification.

Conclusion

There are many steps that need to be taken so we physi-cians continue to have agency in our own practices. AI is not about ceding that; it’s about taking it back. We need to engage with researchers, vendors, administrators, insurers, and regulators so our voices as physicians can be heard. We need to advocate for our patients and our colleagues. Ignoring AI is not the answer. We need to embrace AI and make it serve our needs. Decisions are being made with or without us. We all would prefer to be at the table that will shape the future of health care. Let’s do it better: Let’s be at the center of these conversations.

DR. GARG is assistant clinical professor of emergency medicine at Yale University School of Medicine in New Haven, Connecticut, and an emergency physician at Lawrence & Memorial in New London, Connecticut.

Dr. Granovsky is president of LogixHealth, an ED coding and billing company, and currently serves as the course director of ACEP’s Coding and Reimbursement courses. He may be reached at mgranovsky@logixhealth.com.

Mr. McKenzie is ACEP’s reimbursement director and can be reached at dmckenzie@acep.org.

Categories in 2020. If clinicians submit a hardship exemption appli-cation and their application is approved, they will be held harmless from a payment adjustment due to that category in 2022—meaning that they will not be eligible for a bonus and not face a penalty based on their MIPS performance in 2020. Importantly, the Final Rule pub-lished a continuation of the hardship exemption process for 2021.

• Performance Threshold: CMS has set the threshold that clini-cians need to achieve to avoid a penalty in 2022 at 60 points. In the proposed rule, CMS had stated that the performance thresh-old would be 50 points in 2021, but CMS is now instituting a higher threshold.

• MIPS Value Pathways (MVPs): CMS is committed to develop-ing MVPs that would combine all four categories of MIPS re-porting into a single more harmonized process. However, due to COVID-19, the implementation of MVPs is being delayed until 2022. ACEP is working with CMS on developing an MVP for emer-gency medicine and is examining how ACEP’s Qualified Clinical Data Registry, the Clinical Emergency Data Registry (CEDR), can help emergency physicians participate in an MVP (see page 11).
ACEP4U: Transforming Emergency Care

ACEP’s Quality Team is leading digital health care development in five areas

by JORDAN GRANTHAM

In a few short years, ACEP has grown its Quality Team to include five major areas that collectively drive digital transformation in emergency medicine: Clinical Emergency Data Registry (CEDR), Emergency Quality Network (E-QUAL), Quality Measures, Data Science, and Health Information Technology (HIT). Together, the ACEP Quality Team provides products and programs to help protect earned revenue, improve patient outcomes, coordinate care, and reduce clinician burden. Learn more at www.acep.org/quality.

CEDR, the first EM specialty-wide Qualified Clinical Data Registry (QCDR), is now five years old. While the Centers for Medicare and Medicaid Services (CMS) has substantially reduced the number of approved QCDRs, CEDR is a shining example of success within emergency medicine. CEDR not only gathers and reports data, it provides products and programs to help protect earned revenue, improve patient outcomes, coordinate care, and reduce clinician burden. Learn more at www.acep.org/quality.

E-QUAL is a virtual learning community designed to achieve higher-quality patient outcomes at lower cost by creating and accumulating meaningful tools for emergency clinicians and quality improvement leaders. E-QUAL works to advance local quality improvement efforts focused on high-impact areas that demonstrate the value of emergency care including improving sepsis outcomes, reducing avoidable imaging, reducing chest pain hospitalizations, reducing harm from opioids, and improving stroke care.

Emergency departments participate in an E-QUAL initiative by joining a learning collaborative offered annually focusing on a single clinical topic. With a learning collaborative, each emergency department designs a local ED champion who leads a quality improvement project supported by the data and education available in the virtual E-QUAL portal.

E-QUAL had great success from 2015 through 2020 efforts to improve care across multiple practices. With 1,107 EDs participating, including 1,389 rural, critical access, or safety-net hospitals, and 12,000 emergency clinicians, some highlights include:

- 6,000+ improvement activity credits earned for the CMS Quality Payment Program
- 25 percent decline in opioids administered
- 23 percent increase in alternatives to opioids prescribed
- 25,000 lives saved from better sepsis care
- 50,000 fewer patients exposed to ionizing radiation
- $55 million saved in avoidable imaging studies and hospitalization

E-QUAL enrollment for 2021 is now open.

This year’s Opioid Wave IV, with enrollment closing on Feb. 14, is focused on helping emergency departments develop programs to treat addiction for patients with opioid use disorder or nonfatal opioid overdose. The 2021 Stroke Wave II collaborative, with enrollment closing March 14, is expanding its focus to both hemorrhagic and ischemic stroke. Emergency departments can enroll for free. Learn more at www.acep.org/equal.

ACEP’s Quality Measures initiative enables emergency care providers to lead the development of metrics that matter in emergency care. This approach links measures to outcomes, reduces clinician burden, and delivers meaningful information to clinicians and patients. Through CEDR, clinicians may choose to report QCDR measures and MIPS measures to receive credit for MIPS quality reporting. Learn more at www.acep.org/quality-measures. In 2020, the Quality Measures initiative supported:

- 21 QCDR measures
- 22 MIPS measures

For 2021, CMS has approved ACEP’s three-year QCDR self-nomination for the fifth straight year. In addition to measures available this year, the Quality Team successfully built and nominated five new measures:

- ACEP 54: Appropriate Utilization of FAST Exam in the Emergency Department
- ACEP 55: Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 3 Through 17 Years (formerly ACEP 20)
- ACEP 56: Follow-Up Care Coordination Documented in Discharge Summary
- ACEP 57: Avoidance of Opioid Therapy for Migraine, Low Back Pain, and Dental Pain
- ACEP 58: Appropriate Treatment for Adults with Upper Respiratory Infection (URI)

ACEP Quality Team is taking the pioneering spirit that built the College to move boldly forward with a vision for the future.

Health Information Technology

HIT encompasses a broad scope of work that includes mining health information exchange to improve health care quality, safety, and efficacy. HIT programs help discover and drive efforts to reduce clinical burnout, especially by addressing inefficiencies across electronic medical record systems. Learn more at www.acep.org/healthinfotech.

HIT efforts are stewarded by ACEP’s newest committee, the Health Innovation & Technology Committee (HITC). The HITC is working with ACEP staff to develop a plan to insert ACEP at the center of health information/innovation policy development and management, using data-driven advocacy and leveraging new technologies to improve emergency care delivery and patient outcomes.

The landscape of emergency medicine and acute care has changed so much in the past five years and continues to transform rapidly. While the future is difficult to predict, the ACEP Quality Team is taking the pioneering spirit that built the College to move boldly forward with a vision for the future.
Osteomyelitis and Vascular Insufficiency

A case of morbidity due to fear of COVID-19

by DHISSANT M. ASARPOTA, MS, MBA; KYLEY J. WYSS, MD; AND CATHERINE A. MARCO, MD, FACEP

D
uring the COVID-19 pandemic, there has been a documented decline in emergency department visits for medical and traumatic conditions, myocardial infarctions, stroke, and hyperglycemic crises.1–4 Four in 10 adults have deferred care for fear of contracting the novel coronavirus, which complicates a patient’s disease course and places them in a higher-mortality cohort.5 A recent survey conducted by ACEP found that 80 percent of respondents were concerned about contracting COVID-19 from another patient or visitor in the emergency department, and 29 percent reported delaying medical care due to concerns about contracting COVID-19.6 Another survey found that, regarding non-COVID-19-related complaints, 59 percent of respondents were unlikely to utilize emergency care, with an additional 20 percent of respondents who “don’t know.”6

We present a case of a patient whose fear of contracting COVID-19 led to significant morbidity.

Case Report

A 79-year-old African American male presented to the emergency department with a two-week history of right leg swelling and darkness of his right second toe. He denied any history of trauma, pain, or erythema. The patient did not report any systemic symptoms, including fever, malaise, or weakness. His medical history was notable for hypertension and ulcerative colitis, the latter of which was managed by infliximab. The patient reported smoking 0.5 packs per day. He had delayed seeking medical treatment for two weeks due to fear of COVID-19. On examination, the patient appeared well, with normal speech and mental status. Vital signs were normal. Cardiac, pulmonary, and abdominal examinations were unremarkable. Examination of the right leg demonstrated moderate edema of the calf. Moderate erythema and edema were seen on the dorsum of the right foot. Right dorsalis pedis and posterior tibial pulses were not palpable. The right second toe was notable for gangrene, purulence, and an absent distal phalanx (see Figure 1).

Laboratory studies included a glucose of 103 mg/dL, hemoglobin of 12.1 g/dL, and erythrocyte sedimentation rate (ESR) of 100 mm/h. A plain radiograph of the right foot showed osteomyelitis of the second middle phalanx (see Figure 2). Ultrasound of the right leg returned negative for an occlusion extending from the right superficial femoral artery through the popliteal artery. No deep vein thrombosis was found.

Empiric antibiotic treatment with intravenous vancomycin and piperacillin/tazobactam was initiated in the emergency department. The patient was admitted to the hospital and received consultations from infectious disease, podiatry, and vascular surgery specialists. On hospital Day 2, he underwent right iliofemoral endarterectomy with bovine patch angioplasty, right proximal superficial femoral artery endarterectomy, and right femoral artery to tibial artery saphenous vein bypass. On hospital Day 7, he underwent a right second digit amputation and flap. He was discharged home after 11 days in good condition.

Discussion

Critical limb ischemia (CLI) is the most advanced stage of peripheral arterial disease (PAD) and is associated with significant morbidity and mortality.7,8 A 2019 report estimates the U.S. prevalence of CLI to be 1.3 percent in patients above the age of 40 (2 million people), while PAD affects more than 200 million people worldwide.9

The “5 P’s” of CLI are pain, pulselessness, pallor, paresthesia, and paralysis. These features are found in 48 to 50 percent of the acute presentations of limb ischemia.10–14 Rarely, progression to severe ischemia leads to ulceration of the digits of the foot (8.5 percent of cases) and frank gangrene (5.2 percent of cases).10–14

Smoking and diabetes are the most significant risk factors of CLI, but others include African American race, male sex, being more than 40 years old, hypertension, dyslipidemia, elevated C-reactive protein, hypercoagulable states, hyperhomocysteinemia, chronic renal insufficiency, and history of cardiovascular disease.15–17 The one-year mortality in CLI patients with gangrene is 33.2 percent, which jumps to 68.5 percent over five years.18

The COVID-19 pandemic has resulted in fear of seeking health care, which can contribute to preventable morbidity and mortality. This case describes a significant delay in seeking medical care due to fear of COVID-19, resulting in worsened osteomyelitis and gangrene and ultimately requiring multiple surgical interventions and prolonged antibiotic therapy. Although our patient had risk factors for PAD, the development of severe and life-threatening CLI potentially could have been mitigated with early intervention.

Many local and national organizations are working to educate the public about seeking appropriate medical care.19–21 Continued patient education at the local and national level is necessary to ensure timely and appropriate medical treatment.

References


Figure 1(LEFT): Gross observation of the right foot demonstrates gangrene with purulence, edema, and absent distal phalanx. Figure 2(ABOVE): X-ray of right foot revealing osteomyelitis of the second middle phalanx (arrow) and absent second distal phalanx in AP view.

KEY POINTS

• Peripheral arterial disease may result in significant mortality, including infection, gangrene, and limb ischemia, but prompt treatment may prevent complications.
• Fear of seeking medical attention during the COVID-19 pandemic may result in significant morbidity and mortality.
• Patient education at the local and national level is crucial to ensure timely medical treatment.
AstraZeneca adenovirus-based coronavirus vaccine had not yet received EUA from the FDA, though published data suggested efficacy ranging from 62 to 90 percent, with recent reports claiming even higher numbers.1-4 When the pandemic began, very few experts believed that an effective vaccine would be available so soon, making vaccines the high- point of an otherwise dismal year for science and public health.

In the United States, the first wave of individuals to receive the Pfizer and Moderna vaccines outside of clinical trials has mainly been composed of health care workers. The “vaccine selfie” quickly became the meme of the moment, with many emergency physicians posting pictures and videos of themselves getting their first dose on social media for all to see. Naturally, the media covered a few instances of systemic allergic reactions requiring epinephrine, but so far, among the nearly 2 million doses given here, the safety reports have been encouraging.

Many people experienced pain at the injection site, and a sizeable number, perhaps 5 percent, experienced lasting symptoms beyond the time necessary to temporarily inhibit usual activities of daily life and work. But all of that pales in comparison to the more than 3,000 Americans currently dying daily of COVID-19 among those who have not yet been vaccinated.

Three Big Questions Answered

Over the next few weeks, we can expect three common questions: 1) Should I get the vaccine when it is available to me? 2) Should I be vaccinated if I was already infected with the coronavirus and recovered? 3) Which vaccine is best?

The answer to the first question is easy in most cases: yes. Comparing to getting COVID-19, which has killed 1 in 1,000 Americans already, the side effects associated with these “reactogenic” vaccines are minor. The answer to the second question is that those with suspected or confirmed previous infections should be vaccinated, though only after symptoms have ceased. (Note: It is possible that immunity from the vaccines will be stronger and longer lasting than that from natural infection, though research is ongoing.)

The answer to the third question is both easy and complicated. The most straightforward answer: “Get the one available to you first.” The CDC and FDA stated that those who want to know more about the differences between the Pfizer-BioNTech and Moderna vaccines, let’s dive in.

Pfizer-BioNTech Versus Moderna

The differences between these two vaccines can be summarized as follows: differences in age indications, storage temperatures, dosing schedule, efficacy at preventing COVID-19 in persons 65 years of age, and frequency of systemic side effects and injection site reactions. (For more granular information, visit ACEPNow.com to view the table accompanying this article.)

Both vaccines appear remarkably efficacious at preventing COVID-19 disease in general, and severe COVID-19 specifically.5-7 The second dose of the Pfizer-BioNTech and Moderna vaccines appears to induce a strong immune response resulting in a higher frequency of influenza-like illnesses than experienced after the first dose.8 Health care workers should be aware of the potential to feel ill for a day or two after receiving either vaccine (especially after the second dose) and should be familiar with their hospital policy regarding post-vaccination symptoms that warrant work restrictions and testing for SARS-CoV-2.

Data are currently limited regarding vaccine safety and efficacy in demographic subsets not included in the clinical trials, such as persons who are immunocompromised, have an autoimmune disorder, are pregnant or currently lactating, or are under the ages of either 16 or 18 years. Nevertheless, at the time of this writing, the Centers for Disease Control and Prevention (CDC) recommends the mRNA vaccine for persons who are immunocompromised, are living with HIV, have been diagnosed with an autoimmune disorder, have a history of Guillain-Barré syndrome stemming from a prior vaccination, or have a history of Bell’s palsy, provided that they have no contraindications to vaccination such as a history of anaphylaxis to any of the ingredients in the formulations.9

At the time of this writing, children younger than 16 or 18 years of age are not authorized to receive the Pfizer-BioNTech or Moderna vaccine, respectively.10,11 We expect further recommendations from the American Academy of Pediatrics in the coming months.

Pregnancy and Lactation Concerns

Data are limited regarding safety of the mRNA vaccine among persons who are pregnant or lactating. The CDC and FDA stated that persons in any demographic otherwise recommended to receive the vaccine, such as health care workers, may choose to be vaccinated.12 Both the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine (SMFM) recommend routine vaccination with the mRNA COVID-19 vaccine in those who are pregnant or lactating if they are in one of the priority groups identified by the Advisory Committee on Immunization Practices (a committee within the CDC).13-14 Notably, ACOG does not recommend routine pregnancy testing before receiving the COVID-19 vaccine.15

Moreover, SMFM states that for breastfeeding mothers, the biological plausibility of harm to the child is essentially nil.16 Even if the mRNA or lipid packaging of the vaccine made its way into breastmilk (unlikely), the child’s own digestive tract would metabolize it such that even if such substances were somehow dangerous (though they are not believed to be), the exposure risk actually approaches zero. Currently, only smallpox and yellow fever vaccines are contraindicated for breastfeeding mothers, as they are based on live-attenuated viruses.

For more information regarding COVID-19 vaccines, follow the CDC and Infectious Diseases Society of America.17

References


DR. NIFORATOS is an emergency medi- cine resident at Johns Hopkins School of Medicine in Baltimore and research ed- itor of Brief19.com. Follow him on Twitter @ ReverendDoubt and follow Brief19 @Brief_19.

Emergency physician Felipe Grimaldo, MD, FACEP, receives his COVID-19 vaccine. The Official Voice of Emergency Medicine
ED Staffing

How physician assistants and nurse practitioners perform in emergency departments

by KEN MILNE, MD

The Case
Community emergency departments have seen volumes increase over the years. Previously, departments responded to increases in patient volume by adding more physician coverage. Lately, hospital administrations have looked to advanced practice providers (APPs) such as physician assistants (PAs) or nurse practitioners (NPs) to meet volume demands. Your hospital is considering hiring some APPs.

Clinical Question
What is the impact of APP staffing on ED productivity, flow, and safety?

Background
There has been an increased use of APPs in staffing U.S. emergency departments in recent years, justified in part on economic considerations. Advocates claim APPs can be just as productive as physicians and provide safe ED care while costing less money. This financial calculation could work if APP productivities are similar enough to that of physicians to offset differences in billing rates and compensation. However, there are few data comparing productivity, safety, flow, or patient experiences in emergency medicine.

ACEP has published a number of documents discussing various issues around APPs in the emergency department. Recent concerns about postgraduate training of APPs in the emergency department led to a joint statement issued in September 2020 by multiple organizations, including ACEP, that said the terms “resident,” “residency,” “fellow,” and “fellowship” in a medical setting must be limited to postgraduate clinical training programs.

The debate is only heating up.

• Population: 13 million ED visits from 94 hospitals in 19 states from one national emergency medicine group

• Exposure: Proportion of total clinician hours staffed by APPs in a 24-hour period at a given emergency department

• Comparison: Emergency physician staffing

• Outcomes:
  • Primary Outcome: Productivity (patients/hour, relative value units [RVUs]/hour, RVUs/visit, RVUs/relative salary for an hour)
  • Secondary Outcomes: Proportion of 72-hour returns and proportion of 72-hour returns resulting in admission, length of stay (LOS), and left without completion of treatment (LWOT)

Authors’ Conclusions
“In this group, APPs treated less complex visits and half as many patients/hour compared to physicians. Higher APP coverage allowed physicians to treat higher-acuity cases. We found no economies of scale for APP coverage, suggesting that increasing APP staffing may not lower staffing costs. However, there were also no adverse observed effects of APP coverage on ED flow, clinical safety, or patient experience, suggesting little risk of increased APP coverage on clinical care delivery.”

Key Results
There were more than 13 million ED visits over five years at 94 hospitals in 19 states. Of the ED visits, 75 percent were treated by a physician independently, 18.6 percent by a PA, 5.4 percent by an NP, and 1.4 percent by both a physician and an APP. Physicians were more productive than APPs (PAs or NPs) (see Table 1).

Effect of 10 percent increase in APP coverage:
• Patients/hour: –0.12 (95 percent CI, –0.15 to –0.10)
• RVUs/hour: –0.4 (95 percent CI, –0.5 to –0.3)
• RVUs/visit: 3.0 (2.7–3.3)
• RVUs/relative salary for an hour: 2.8

Evidence-Based Medicine Commentary

1. Surprise: These results were a surprise and do not reflect many of our own personal experiences working with APPs. Often APPs see lower-acuity patients in “fast-track” areas.

2. Safety: It was reassuring to not see any signal of increased harm. However, LOS, LWOT, and 72-hour return rate is probably not granular enough to identify any potential safety concerns.

3. External Validity: This was a large study with 19 states, 94 sites, and 13 million ED visits from one national organization. We need to be careful not to overinterpret these results to other practice locations like small community groups, democratic physician-led groups, or rural sites.

Bottom Line
We do not have good evidence that APPs will improve productivity or negatively impact safety. However, in regions with physician shortages, these data suggest that APPs might represent an important opportunity to reach underserved communities.

Case Resolution
You inform hospital administration that a large study has just been published showing physicians were more productive compared to APPs. Adding more APPs appears to have decreased patient flow and RVUs/hour. However, no safety issues were identified. It is unclear if the results can be applied to your community hospital. Successful implementation depends on how APPs are used in the emergency department. Departments should assess their own local data and think carefully about whether adding APPs to a department is warranted.

Remember to be skeptical of anything you learn, even if you heard it on the Skeptics’ Guide to Emergency Medicine.

Reference
Hepatic Encephalopathy
A 7-step approach to diagnosis and treatment

by ANTON HELMAN, MD, CCFP(EM), FCP

A known complication of cirrhosis of the liver is newly altered level of awareness (LOA). Although several entities can cause altered LOA, hepatic encephalopathy (HE) must be near the top of your differential because it is associated with poor survival and a high risk of recurrence when left untreated.

Unfortunately, the definition of HE is rather nebulous: “a brain dysfunction caused by liver insufficiency and/or portal-systemic shunting; it manifests as a wide spectrum of neurological or psychiatric abnormalities ranging from subclinical alterations to coma.” HE is graded in four stages accordingly. The characteristic asterixis may be absent in stage 1 and missed in stage 4. (While present in stage 4, it is often overlooked because patients are too obtunded to follow commands; however, asterixis can still be elicited by the clinician passively.) As a result, HE can be difficult to diagnose in the emergency department. Below, I outline a simple seven-step approach to diagnosis and treatment of HE.

Step 1: Rule Out Other Causes
Rule out alternative or concurrent causes of altered LOA, including sepsis, renal failure, alcohol withdrawal, intracranial hemorrhage, or trauma.

Step 2: Assess/Address Precipitants
Assess for and address common precipitants of HE, which include medications (ie, nonadherence or overdose diuretics, or benzodiazepines), gastrointestinal bleeding, hypokalemia, alkalosis, volume depletion, and sepsis. Addressing and treating precipitating factors in HE management is important because almost 90 percent of patients with HE can be effectively treated by correcting the precipitating factor alone. If your HE treatment does not produce the expected effect, you must consider the diagnosis or search for unrecognized precipitating factors and correct them.

Step 3: Make the Diagnosis
After excluding other altered LOA causes, consider HE. Look for the constellation of symptoms that includes personality changes as reported by the patient’s family (eg, apathy, irritability). An ongoing infusion of D10W or D25W is often required to achieve normoglycemia for an extended period of time. An ongoing infusion of D50W is often required to prevent hypoglycemia and worsening LOA.

It is important to understand that patients with HE have excess gamma aminobutyric acid (GABA) stimulation. This makes them sensitive to GABAergic medications such as benzodiazepines and propofol. Such medications should be dose-adjusted or avoided whenever possible. When etiologic intubation is necessary, ketamine may be a better choice of induction agent than propofol for this reason.

Step 5: Top Off Fluids, Glucose, Potassium
One way to remember some of the important aspects of treating HE is that everything besides the liver enzymes and liver function tests tends to be low: circulatory volume, serum potassium, and glucose. For fluid replacement, consider albumin in addition to normal saline for patients with a low serum albumin, as there is some RCT evidence (although weak) that it may improve outcomes in patients with HE. Intravenous albumin will likely be especially effective in patients with concurrent hepatoportal syndrome and/or acute liver failure.

It is important to understand that patients with HE have depleted glycogen stores. That’s why a single bolus of D50W is unlikely to achieve normoglycemia for an extended period of time. An ongoing infusion of D50W is often required to prevent hypoglycemia and worsening LOA.

Another pitfall is ignoring mild hypokalemia. Treat even the mildest hypokalemia because low potassium contributes to hyperammonemia by decreasing ammonium excretion. Correcting hypokalemia is thought to decrease ammonium levels in patients with HE. Magnesium must also be corrected if low because failure to address hypomagnesemia will make potassium replacement ineffective.

Step 6: Assess/Treat Cerebral Edema
Cerebral edema resulting from rapid accumulation of ammonium in the brain is the most common cause of death in patients with HE. While ammonium levels generally do not help diagnose or prognosticate hepatic encephalopathy (a fact many are surprised to learn), a Danish study suggests that arterial ammonia levels >50 µmol/L, measured within 24 hours of reaching grade III hepatic encephalopathy, were associated with a higher likelihood of developing cerebral edema. Cerebral edema in these patients may be clinically subtle, so maintain suspicion in comatose patients with HE. If signs of raised intracranial pressure are present, keep the head of the bed elevated at 45 degrees and consider hypertonic saline (20 mL of 30 percent sodium chloride targeting a serum sodium level of 145–150 mmol/L). Mannitol is not recommended for treating cerebral edema in this setting.

Step 7: Consider Rifaximin for Antimicrobial Coverage
Rifaximin 400–550 mg orally is the antibiotic of choice for long-term maintenance in patients with recurrent HE because it is poorly absorbed in the gut and therefore both reaches and covers ammonia-producing E. coli. Initiating this drug in the emergency department is reasonable. Rifaximin in combination with lactulose is effective for the prevention of HE recurrence.

Summary
Next time you are faced with an altered LOA patient who is flapping their wrists as soon as you extend them, remember that HE is a clinical diagnosis and that serum ammonia levels are unreliable. Assume high central nervous system ammonia levels and treat with lactulose and/or polyethylene glycol and rifaximin. Intravenous albumin must be considered in the patient with HE, especially if they are in acute liver failure and have a low threshold to treat for HE on speculation because it is a diagnosis of exclusion.

A special thanks to Dr. Walter Himmel and Dr. Brian Stein- hart, the guest experts on the EM Cases podcast that inspired this article.

References
Child Sex Trafficking

Tips for recognizing, treating, and reporting it in the ED

by RALPH J. RIVIELLO, MD, MS, FACEP, AND HEATHER V. ROZZI, MD, FACEP

The Case
A 14-year-old male presents with a retained foreign body in his rectum. He states a glass bottle broke during sex with his boyfriend, who is 16 years old. He reports pain and bleeding. Chart review reveals a history of intravenous drug use, bipolar disorder, and history of child welfare involvement. He has had prior ED visits for psychiatric care, sexually transmitted infections, and an opioid overdose. On exam, he has moderate lower abdominal tenderness and bright red blood per rectum. His vital signs are stable. The foreign bodies are unable to be visualized. He repeatedly asks for pain medication.

Case Resolution
Initial hematocrit is at the patient’s baseline. The surgical service is consulted. Staff members are noted to be joking about his condition. After treating the patient’s pain, you update him on the clinical plan. Sitting at eye level, you say, “Some of my patients have sex with people they would rather not have sex with. Sometimes they do that to pay for things they need to get by. If someone is hurting you, I’d need to tell someone. That also may get you help that I wouldn’t be able to connect you with otherwise.” The patient then discloses that he was with a “date” this evening and things turned violent. Since running away from his foster home two years ago, he does what he has to in order to survive, including commercial sex. You thank him for sharing this. The patient is taken to the operating room. You make a report to child welfare.

The Definition
According to U.S. law, any individual under the age of 18 who has engaged in commercial sex is considered to be trafficked. While the word “trafficking” connotes movement, someone may be trafficked in their own home, without crossing town, state, or country borders. While prevalence estimates are limited, given the clandestine nature of the issue, what is known is that those with an experience of trafficking come into contact with emergency caregivers, and few emergency caregivers are equipped to respond.4–5

Red Flags
The goal of an encounter with a potentially trafficked person is not disclosure or rescue. It is educating and empowering them with resources. The recognition of exploited children may prove challenging. The trafficked child may be accompanied by someone posing a family member, significant other, or friend but who is in fact a trafficker or another trafficking victim. In many cases, the trafficker may actually be a relative of the patient.6

There may be clues in the patient’s presentation suggesting they may be vulnerable to trafficking. Patients may present to the emergency department for a number of issues, including retained foreign bodies, sexually transmitted infections, substance use or overdose, psychiatric issues, chronic pain, pregnancy, or abortion complications. The adult accompanying the patient may be unwilling to leave the patient alone with emergency department staff.

Children who are in the child welfare system; runaways; who are homeless; and those with a history of physical abuse, sexual abuse, or neglect are at high risk to become victims of sexual exploitation.5

Inquiring about a trafficking experience should be done thoughtfully and is not as simple as going through a checklist of questions. One approach, the Privacy, Education, Ask, Respect, Respond (PEAR) tool, adapted from the field of domestic violence, shows promise for assessing a patient for trafficking and was used in this patient scenario. It is important to speak with the patient alone and to use a trained interpreter if necessary. Questions should be direct and nonjudgmental. Of note, screening tools for child sex trafficking are currently in development. The history and physical examination will direct the laboratory and radiographic workup needed. If requested or consented to by the patient, sexual assault evidence collection should be performed early in the emergency department visit. Patients should be tested for sexually transmitted infections and pregnancy, as applicable. Placement for drug and/or alcohol rehabilitation should be considered if indicated.

According to the revised federal Child Abuse Prevention and Treatment Act, the sexual exploitation of minors is child abuse, and health care professionals are mandated reporters of child abuse. As such, calls should be made to the relevant authorities. As was done in this case, a discussion of the limits of confidentiality should be completed prior to asking questions that may elicit a disclosure.8

There are several potential barriers to disclosure. First, clinicians may unconsciously or consciously judge a patient, which obscures the ability to see their patient’s exploitation.9 Lack of awareness of trafficking and its diversity of presentations can prevent a clinician from identifying a trafficked person. On the patient side, males in particular may not recognize the exploitation of their situation or resonate with the word “victim.” Shame and stigma may also block disclosure. A patient may sense a judgmental attitude, as in the case described, and be less open as a result.9 Furthermore, if a patient’s presence in the United States is unauthorized, they may be afraid to tell their doctor for fear of deportation.

Treat and Report
As with any emergency department patient, the priority is to identify and treat all life-, limb-, and organ-threatening issues. The history and physical examination will direct the laboratory and radiographic workup needed. If requested or consented to by the patient, sexual assault evidence collection should be performed early in the emergency department visit. Patients should be tested for sexually transmitted infections and pregnancy, as applicable. Placement for drug and/or alcohol rehabilitation should be considered if indicated.

There are several potential barriers to disclosure. First, clinicians may unconsciously or consciously judge a patient, which obscures the ability to see their patient’s exploitation. Lack of awareness of trafficking and its diversity of presentations can prevent a clinician from identifying a trafficked person. On the patient side, males in particular may not recognize the exploitation of their situation or resonate with the word “victim.” Shame and stigma may also block disclosure. A patient may sense a judgmental attitude, as in the case described, and be less open as a result. Furthermore, if a patient’s presence in the United States is unauthorized, they may be afraid to tell their doctor for fear of deportation.

Treat and Report
As with any emergency department patient, the priority is to identify and treat all life-, limb-, and organ-threatening issues. The history and physical examination will direct the laboratory and radiographic workup needed. If requested or consented to by the patient, sexual assault evidence collection should be performed early in the emergency department visit. Patients should be tested for sexually transmitted infections and pregnancy, as applicable. Placement for drug and/or alcohol rehabilitation should be considered if indicated.

According to the revised federal Child Abuse Prevention and Treatment Act, the sexual exploitation of minors is child abuse, and health care professionals are mandated reporters of child abuse. As such, calls should be made to the relevant authorities. As was done in this case, a discussion of the limits of confidentiality should be completed prior to asking questions that may elicit a disclosure.

Treat and Report
As with any emergency department patient, the priority is to identify and treat all life-, limb-, and organ-threatening issues. The history and physical examination will direct the laboratory and radiographic workup needed. If requested or consented to by the patient, sexual assault evidence collection should be performed early in the emergency department visit. Patients should be tested for sexually transmitted infections and pregnancy, as applicable. Placement for drug and/or alcohol rehabilitation should be considered if indicated.

According to the revised federal Child Abuse Prevention and Treatment Act, the sexual exploitation of minors is child abuse, and health care professionals are mandated reporters of child abuse. As such, calls should be made to the relevant authorities. As was done in this case, a discussion of the limits of confidentiality should be completed prior to asking questions that may elicit a disclosure.

Dependents should develop specific evidence-based policies regarding the evaluation, care, and management of suspected trafficking victims. In addition, other resources should be engaged, including local legal aid, social work, victim advocates, and, when appropriate, law enforcement. The National Human Trafficking Hotline (888-373-7888) is available 24 hours a day and can help with assessment, access to shelter, and safety planning. For non-U.S. residents, the Office of Refugee Resettlement of the U.S. Department of Justice can provide refugee status to victims of trafficking.10

Edited by Hannah Stokoska, MD, MPH, an emergency physician at Brigham and Women’s Hospital in Boston and executive director and co-founder of HEAL Trafficking.

References
Know When to Fold ’Em

Sometimes it’s better to settle a lawsuit than go all in with a trial

by GITA PENSA, MD

Consider Dr. V, an emergency physician who is sued after the death of a young patient. Dr. V exceeded the standard of care, but he was unable to save the patient’s life due to agonizing circumstances. He was initially eager to defend his care at trial. However, due to mounting pressures from the plaintiff’s attorney, he and his insurance carrier eventually agreed to settle the case.

We covered this case on my podcast. Listeners have described this outcome as “heartbreaking.” Dr. V explained his reasoning and has come to terms with the events. But settling a case is fraught with conflicting emotions for physicians, whether or not one feels responsible for a bad outcome. Even though we have been told that settling a case is not an admission of malpractice, we often feel that it is and worry that others will think the same. Being reported to the National Practitioner Data Bank (NPDB) and having to list the settlement outcome on every job or licensure application for years feels like an indictment on its own—and since our medical practice often becomes a core part of our identities, we tend to take this all rather personally. We fear the judgment of our peers, our families and friends, and our patients, as well as the optics of the case. Perhaps we are a bad doctor, though it inherently means nothing of the sort.

Just as many good physicians are sued, many cases are settled even though the physician met or exceeded standard of care. Recall that only a small fraction of cases go all the way to verdict at trial; most insurance carrier payments to plaintiffs are through settlement agreements.

Why Settle?

There are two main advantages in agreeing to a settlement for both sides: speed and certainty. The road to trial is stressful and can take many years. Juries are notoriously unpredictable, and judges’ rulings can influence outcomes. Neither side can ever be certain of a win at trial, then the plaintiff is awarded $1 million at trial, you will be responsible for any judgment that exceeds the proposed settlement. For example, if the plaintiff’s attorney offers to settle for $500,000 but you decline and then the plaintiff is awarded $1 million at trial, you would be personally responsible for the other $500,000. It’s not hard to see why many physicians waive their consent to settle.

Physicians often base decisions on whether to accept a settlement offer on emotion; feelings of fairness, shame, fear of judgment, and anger can come into play. To insurers, however, it’s all a business decision. They must make shrewd calculations of their odds of winning—or losing big—at trial. What are some factors that go into their deliberations?

First, math. Insurers know approximately how much it will cost to go to trial, adding up attorneys’ hours and the high costs of expert testimony. The more complex the case, the more experts and the higher the cost. Cases often cost hundreds of thousands of dollars, not including any liability payments required of insurers if they lose. How do these costs compare against any settlement offer—and how low a settlement might they negotiate in the end?

Next, what are the optics of the case? If the physician made a significant error, the carrier will often push for a settlement. However, it takes two to tango. The plaintiff might be hoping for a big win at trial and refuse to settle. But this is risky for them, too; they know that the majority of trial verdicts favor the physician. Another consideration for both sides is how well the physician performs as a witness. Do you have a demeanor that a jury will like? Do you have a reputation that a jury will like? Does the physician actually meet the standard of care? Remember: In and of itself, settling a case is not the driving determinant.

Best Among Bad Choices

For those who have not been involved in litigation, it’s easy to assume that any physician who feels their care was reasonable would want to have their day in court. However, when weighed against years of stress on themselves and their families, the uncompensated time involved in preparation and attending trial, and the risks of an unfavorable verdict, sometimes settling a case feels like the best choice among bad choices. In my own case, I agreed to go to trial the first time—but when the plaintiff appealed and we found ourselves headed back to trial, I very much wanted to just settle. I wanted it all to just be over. My insurer made the final decision to refuse an offer for a policy limits settlement, and we went at trial a second time. Nevertheless, I still personally understand why physicians might want to settle a case. Remember: In and of itself, settling a case says nothing about the care you rendered or your skills as a physician.

My next column will discuss trial preparation and testimony when settling isn’t in the cards.
“Are Children Allowed?”, Kass et al surveyed childcare family policies at academic conferences from 2016 to 2018. Though they found significant variability in their survey of childcare policies across different specialties, not a single conference in the study had reported completely subsidized childcare. Practices also differed among specialties in terms of allowing children at exhibit halls, lectures, and social events, although every conference did report providing an area for lactation. Clearly, there is a need to improve the way we go about in-person conferences to support women. But has the move to virtual conferences during the pandemic brought any gains for women who face obstacles of balancing childcare needs with their professional development?

Emergency Physicians Weigh In

Many of the women I spoke with say they have found virtual conferences easier to attend. Nimita Joshi, MD, emergency department medical director at Alameda Hospital, Alameda Health System in Oakland, California, states that she “can attend many more conferences now than before without the additional cost and travel and fatigue associated with that.” She explained, “I am available for bedtime, bath, and story time, which are important.”

Shideh Shafie, MD, FACEP, assistant professor of emergency medicine at the Warren Alpert School of Medicine at Brown University in Providence, Rhode Island, said she has been able to attend more of her department’s meetings and notes the advantage of not having to commute allows her time to drop off kids at school and then jump onto the call. “I feel I can be there and participate without missing a beat.” She hopes that when the meetings do go back to in-person, there can continue to be an option to call in. “I think that would allow for people whose opinions actually are very important and often marginalized to have their voices and opinions be heard.”

Carol Pak-Teng, MD, FAAEM, founder and CEO of APA Emerge, attended ACEP’s Council and Board meetings this year and reported an increased number of participants at the Board meeting. She feels this type of inclusion allows for increased transparency and may lead to new voices and increased representation.

Throughout the pandemic, we have seen that women have disproportionately taken on increased childcare responsibilities while balancing a professional identity. That’s why Nicole Battaglioli, MD, FACEP, FAWM, assistant professor of emergency medicine at Emory University in Atlanta, is a critic of blanket claims that virtual meetings have greatly benefited women. “I’ve been very aware of women who are juggling children, including myself, while attending these conferences,” she said. “It’s easier to put these obligations aside when you are physically distant.” And Dr. Pak-Teng said, “Sometimes things give the illusion of balance when truly they are just making more of a complicated mess. With too much optionality of a virtual way to attend, women may get more pressure not to go and instead to do the balancing act at home while trying to work. Sometimes we just need an excuse to get away and fully immerse ourselves in the work.”

Carrying Benefits of Virtual Forward

Virtual conferences were never intended as a solution to gender bias and gender iniquity. These issues still remain and will be with us long after the pandemic unless deliberately addressed. Those of us hosting virtual conferences need to ask, “Do women truly have a seat at the virtual table?” by looking at variables such as the number of women speakers and women leading and chairing committees at our conferences, and ensuring that the content of the conference is inclusive.

One can argue whether virtual conferences truly benefit the professional development of women in our field. To do so, we would first need to investigate measures of leadership and contribution. However, there are other reasons to favor virtual meetings from home. The financial cost to individuals and departments for travel and conference attendance can be substantial, representing a barrier for those in our field who have less funding or persons with larger debt. The cost of travel also extends beyond the dollar sign. It’s time away from our daily lives, it’s jet lag, and it’s the inconvenience.

We are all looking forward to a time when we can be back together in person. Clearly, virtual conferences can’t replicate everything we value about conferences: side conversations, introductions, and escape from our usual habitat. For those of us presenting at a conference with a child on our lap, we might truly need the physical separation to actually be present. The pandemic has placed a unique and unbalanced strain on professional women with young children. Gender expectations, bias, and discrimination still need to be confronted head on. Yet, we have also witnessed the advantages of virtual options: increased inclusivity and feasibility for time at home as well as decreased cost, that benefit all of us.

I hope when the restrictions are lifted, we don’t default to our old habits. Instead, let’s take away some of the good and continue to work on areas that still need improvement to achieve equity in our field. Our mission should be to continue to create and advocate for options that allow more of us to participate in conferences and lead in our organizations.

Editor’s Note: Visit ACEPNow.com for the references for this article.

Dr. Haber is director of clinical education and director of simulation in the department of emergency medicine at University Medical Center and assistant professor at University of Nevada, Las Vegas School of Medicine.

California

Long Beach: Long Beach facility re-opening with new 18-bed Emergency Department. 12,000+ annually/malpractice paid/competitive salary/established group.

Orange County/Tustin: 110 bed community hospital non-stemi/non-stroke. Only 0.8 pts/hr, competitive salary with incentives, 12 hr shifts.


Norwalk: Low volume 600/mo. Paramedic receiving. Patients 8/hr. 10-year history stable. $110/hr. 24 hr shifts available.

San Fernando Valley: 120 bed hospital med surg and psych, non-trauma non-stemi, paramedic receiving, 6 days 6 nights $328,000 a year plus incentive.

FAX CV to 213 482-0577 or call 213 482-0587 or email neubauerjanice@gmail.com
Penn State Health, Hershey PA, is expanding our health system. We offer multiple new positions for exceptional physicians eager to join our dynamic team of EM and PEM faculty treating patients at the only Level I Adult and Level I Pediatric Trauma Center in Central Pennsylvania.

What We’re Offering:
• Salaries commensurate with qualifications
• Sign-on Bonus
• Relocation Assistance
• Retirement options, Penn State University Tuition Discount, and so much more!

What We’re Seeking:
• Emergency Medicine trained physicians with additional training in any of the following: Toxicology, Ultrasound, Geriatric Medicine, Pediatric Emergency Medicine, Research
• Completion of an accredited Residency Program.
• BE/BC by ABEM or ABOEM

What the Area Offers:
We welcome you to a community that emulates the values Milton Hershey instilled in a town that holds his name. Located in a safe family-friendly setting, Hershey, PA, our local neighborhoods boast a reasonable cost of living whether you prefer a more suburban setting or thriving city rich in theater, arts, and culture. Known as the home of the Hershey chocolate bar, Hershey’s community is rich in history and offers an abundant range of outdoor activities, arts, and diverse experiences. We’re conveniently located within a short distance to major cities such as Philadelphia, Pittsburgh, NYC, Baltimore, and Washington DC.

FOR MORE INFORMATION PLEASE CONTACT:
Heather Peffley, PHR FASPR 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.
Why? We’re physician-owned.

We’ve said it for years: Ownership matters. Last year proved that expression to be more than a clever hashtag. While many clinicians in other groups found themselves swept along by forces that were out of their control, our physician ownership model enabled us to take a different path – for our patients, for each other and for our hospital partners.

Physician-owned USACS protected our clinicians. Other EM groups abandoned their "physician employees."

<table>
<thead>
<tr>
<th>Hourly rate at sites was maintained</th>
<th>56% cut clinician pay for same work</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO benefit deferments or cuts</td>
<td>47% deferred or cut benefits</td>
</tr>
<tr>
<td>NO 2021 cuts to benefits or pay</td>
<td>64% of groups expect to decrease benefits or pay in the next 6 months</td>
</tr>
<tr>
<td>USACS physicians own their future because our clinicians receive ownership in our group</td>
<td>44% of groups have concerns about their viability over the next four months</td>
</tr>
</tbody>
</table>

*Data in a recent ACEP Now survey.

OWN YOUR FUTURE JOIN USACS
Learn more at USACS.com