ABSTRACTS IN URGENT CARE

- Septic Knee Joints in Adults
- Recurrent Cellulitis
- Analgesics and Risk for Fracture Nonunion
- Assessing for MACE with and without a Troponin
- IV Fluids in Headache Management
- COVID-19 and Telemedicine
- COVID-19: The Second Wave

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Diagnostic Dilemma: Septic Arthritis of Knee Joints in Adult Patients

- **Key point:** Synovial fluid white cell count and gram stain are the most useful laboratory markers for septic arthritis. Clinical evaluation, synovial lactate, and PCR do not substantially aid in diagnosis.

- **Citation:** Carpenter CR, Vandenberg J, Solomon M, et al. Diagnostic accuracy of synovial lactate, polymerase chain reaction, or clinical examination for suspected adult septic arthritis. *J Emerg Med*. 2020;59(3):339-347.

- **Relevance:** Septic arthritis is a challenging diagnosis that is typically made based on aggregate findings on clinical assessment, blood tests, synovial fluid aspirate, and culture results.

- **Study summary:** This was a prospective cross-sectional convenience sampling conducted on 71 adult patients who presented to a midwestern emergency department from 2013 to 2016 with features concerning for septic arthritis of the knee. The researchers found that 7% of the patients were confirmed to have septic arthritis of the knee joints based on synovial fluid culture.

  The sensitivity and specificity of clinical assessment were poor, whereas synovial fluid white blood cell counts (WBC) and gram stain had much better test characteristics (Sp 80%, Sn 96% for synovial WBC count, and Sn 97%, Sp 100% for gram stain, respectively). In addition, a high-serum CRP (>100 mg/L) was found to have 100% sensitivity but only 75% specificity. Therefore, a very high CRP can be used for ruling out but not ruling in of septic arthritis of knee joints.

- **Limitations:** This was a small, single-center study. Only the knee joint was evaluated and, therefore, the applicability of the findings to other joints may be limited. The majority of the patients were African-Americans. ■

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Management of Recurrent Cellulitis

- **Key point:** The application of compression therapy reduces the recurrence of cellulitis in the legs.

- **Citation:** Webb E, Neeman T, Bowden FJ, et al. Compression therapy to prevent recurrent cellulitis of the leg. *N Engl J Med*. 2020;383(7):630-639.

- **Relevance:** Recurrent cellulitis in patients with chronic leg edema is common, and prevention is challenging. Little is known regarding the utility of compression therapy compared with standard care for prevention of recurrent cellulitis.

- **Study summary:** This is a single center, nonblinded trial conducted in Australia between June 2017 and February 2019. Eighty-four adult patients were divided into two groups: 1) compression group (n=41), which received compression therapy and education about cellulitis and 2) the control group (n=43), which received only education. Follow-up occurred every 6 weeks for a period of 3 years. The primary outcome was the recurrence of cellulitis; secondary outcomes were hospital admission due to cellulitis, changes in leg volume, and quality-of-life assessments.

  The researchers found that there was a lower incidence of recurrent cellulitis in the compression group (n=6, 15%)

than the control group (n=14, 40%) with a hazard ratio of 0.23, which was highly significant. The number needed to treat with compression to prevent one case of recurrent cellulitis was four. There were also fewer hospital admissions due to cellulitis among the compression group (three, 7%) than the control group (six, 14%).

- **Limitations:** This study was a small, single-center study. There was potential for bias due to the nonblinded methodology. ■

How Do Analgesics Affect Risk for Fracture Nonunion?

- **Key point:** COX-2 inhibitors have a higher association with fracture nonunion than the nonselective nonsteroidal anti-inflammatory drugs. Interestingly, opioid analgesics are also associated with impaired fracture healing.

- **Citation:** George MD, Baker JF, Leonard CE, et al. Risk of nonunion with nonselective NSAIDs, COX-2 inhibitors, and opioids. *J Bone Joint Surg Am*. 2020;102(14):1230-1238.

- **Relevance:** Nonunion of fractures is a cause of significant morbidity. Therefore, it is worthwhile to understand risk factors, including medications, which may predispose to malunion.

- **Study summary:** This is a retrospective cohort study conducted on the basis of the Optum Database of fracture patients in the United States between 2000 and 2015. Following rigorous inclusion and exclusion criteria, over 300,000 fracture episodes in adult patients were evaluated for association of the use of COX-2 inhibitors, nonselective NSAIDs, and opioids with fracture nonunion occurring between 3 and 12 months after the initial injury.

  Nonunion was rare and occurred in 0.9% of long-bone fractures (2,996 cases). The researchers found that the incidence of nonunion was higher among those taking COX-2 inhibitors (adjusted odds ratio = 1.84 [95% confidence interval = 1.38 to 2.46]) or opioids (adjusted odds ratio = 1.69 [95% CI= 1.53 to 1.86]). Interestingly, the incidence of the nonunion for long bones was relatively lower among those taking nonselective NSAIDs (adjusted odds ratio = 1.07 [95% CI = 0.93 to 1.23]).

  The researchers also noted that those filling multiple prescriptions for COX-2 inhibitors, NSAIDs, and opioids all had higher incidence of nonunion of long bones. Interestingly, patients who were taking COX-2 inhibitors or nonselective NSAIDs prior to their fractures had higher rates of nonunion.

- **Limitations:** This was a retrospective study using an Optum de-identified database, which may have incomplete data. The authors only investigated for nonunion in long-bone fractures. Therefore, the study may not be generalizable. It was not clear how the researchers classified patients who were co-ingesting other medications.

Can We Use the HEART Score without a Troponin?

- **Key point:** Troponin testing did not add any additional value in the risk stratification of low-risk patients with chest pain (ie, those with a HEAR (minus T) score of 0 or 1). Such patients had a risk of the major adverse cardiac event (MACE) <1% within 30 days of their initial chest pain presentation and can be safely discharged from UC for outpatient follow-up.

- **Citation:** Smith LM, Ashburn NP, Snavely AC, et al. Identification of very low-risk acute chest pain patients without troponin testing. *Emerg Med J*. 2020;37(11):690-695.

- **Relevance:** The HEART score is based on history, ECG findings, age, risk factors, and troponin measurement. The HEAR scoring system is based on the HEART score but does not include troponin testing. The HEAR scoring system is useful, as rapid troponin testing is often not available in the UC setting.

- **Study summary:** This is a preplanned secondary analysis of the HEART Pathway Implementation Trial which was conducted on nearly 5,000 adult patients (n=4,979) in three hospitals in North Carolina between 2013 and 2016. The authors included adult patients over 21 years with low-risk chest pain. Patients with ECG changes or other features of high-risk chest pain (eg, abnormal ECG and/or known coronary artery disease) were excluded. The primary outcome was MACE, which was defined by death, myocardial infarction, or need for re-vascularization within 30 days.

  The researchers found that 9% of the patients (447/4,979) had the HEAR score of 0 or 1. Among these patients, 0.9% (4/447) developed MACE in the subsequent 30 days (two deaths and two MIs). Among the patients with a HEAR score of 0 or 1, the sensitivity for MACE was 97.8% (95% CI 94.5% to 99.4%), which validates the HEAR score as a valuable tool to risk stratify low-risk patients in UC. Neither the sensitivity nor the negative predictive value was impacted by the troponin test results. Interestingly, both patients who died had cancer (lymphoma and lung cancer). The researchers concluded that among the patients with a HEAR score, ≤1 may not have benefited from the serial troponin testing.
- **Limitations:** Different troponin assays were used between sites. ■

Intravenous Fluids in Headache Management

- **Key point:** There was no statistically significant benefit of IV

fluids in the management of benign headaches in this study.

- **Citation:** Zitek T, Sigal T, Sun G, et al. I-FiBH trial: intravenous fluids in benign headaches—a randomised, single-blinded clinical trial. *Emerg Med J*. 2020;37(8):469-473.

- **Relevance:** Many clinicians administer IV fluids such as normal saline as part of a "cocktail" in the management of benign headache presentations (eg, migraine).

- **Study summary:** This is a randomized, single-blinded, clinical trial (RCT) conducted in a single center in Nevada. Fifty-eight patients between the ages of 10 and 67 years were evaluated. Subjects were divided into two groups: 1) a fluid bolus group (n= 35) who received 20 mL/kg of IV normal saline along with IV prochlorperazine 0.15 mg/kg up to 10 mg and diphenhydramine 1 mg/kg up to 50 mg, and 2) the control group (n=23), who received IV normal saline along with the same dose of IV prochlorperazine and diphenhydramine. The primary outcome was the mean reduction of pain scores within 60 minutes of the onset of treatment, as measured through a visual analogue score. The secondary outcomes were pain reduction in 30 minutes, nausea scores, use of rescue medications, and disposition.

  The researchers found no statistically or clinically different improvement in mean pain score reduction at 60 minutes between the fluid bolus group and the control group. In addition, the authors did not find any statistically significant differences between the groups in terms of the secondary outcomes. They concluded that there is no evidence to support routine use of IV fluids in the management of benign headache.

- **Limitations:** The study was dependent on the availability of the research assistants between 14:00 and 22:00, excluding patients presenting outside this window. ■

COVID-19 Literature Reviews

Telemedicine in the Era of COVID-19

- **Key Point:** COVID-19 has prompted a significant expansion of telemedicine services.

- **Citation:** Mann DM, Chen J, Chunara R, et al. COVID-19 transforms healthcare through telemedicine: evidence from the field. *J Am Med Inform Assoc*. 2020;27(7):1132-1135.

- **Relevance:** The number of patients with COVID-19 continues to rise and with it the associated health and safety concerns for staff. Telemedicine offers a solution for healthcare delivery that addresses these issues.

- **Study summary:** This is a retrospective observational study conducted in the New York University Langone Health between January 1, 2020 and April 14, 2020. Patients with COVID-19-related symptoms were included in the analysis. The application of video telemedicine services was divided into 1) urgent care and 2) nonurgent care practice.

  The researchers found a significant increase in the use of telemedicine services since the start of the COVID-19 pandemic in New York area. On March 2, 2020, the rate of telemedicine use in the health system was 369.1 visits per day; this increased to 866.8 per day (an increase of 135%) as the study period continued. The authors concluded that the COVID-19 pandemic has caused a significant increase in both COVID- and non-COVID-related presentations, as well.

- **Limitations:** This was a retrospective study. ■

The Second Wave of COVID-19

- **Key point:** The second wave of COVID-19 that has swept through the world notably had a lower case fatality ratio than the first wave.

- **Citation:** Grech V, Cuschieri S. COVID-19: a global and continental overview of the second wave and its (relatively) attenuated case fatality ratio. *Early Hum Dev*. 2020 Oct 3:105211.

- **Relevance:** COVID-19 continues to have a significant impact on urgent care and healthcare systems throughout the world. Following the initial surge, a second wave of COVID-19 occurred.

- **Study summary:** This is a retrospective observational study using COVID-19 data publicly available in the Our World in Data website. The authors analyzed the datasets published between December 2019 and September 2020. They found that there were two waves of the virus at the global level. The first wave peaked in mid-April followed by a plateau phase and subsequently a second wave in mid-June and beyond. Regionally, the second wave was different throughout the world. While the incidence of COVID-19 rose steadily in Asia, it had a bimodal distribution in Europe and a decline in North America. The authors also reported that the case fatality rate was 0.08 during the first wave, but fell to 0.02 during the second wave.

- **Limitations:** This was a retrospective observational study on the basis of publicly available data which was not validated. There have been subsequent waves of COVID-19 regionally, which were not analyzed as part of this study. ■