



Predicting Which Patients Need an X-Ray Before Attempting Shoulder Reduction

Take Home Point: In this study, the Fresno-Québec Rule showed excellent sensitivity in identifying concomitant clinically significant fractures in patients with anterior shoulder dislocations.

Citation: Benhamed A, Bonnet M, Miossec A, et. al. Performance of the Fresno-Quebec Rule in identifying patients with concomitant fractures not requiring a radiograph before shoulder dislocation reduction: a multicenter retrospective cohort study. *Eur J Emerg Med.* 2023 Dec 1;30(6):438-444. doi: 10.1097/MEJ.0000000000001067

Relevance: Up to 20% of anterior shoulder dislocations have a concomitant fracture, however, most of these are not clinically significant and do not affect initial management. Having a tool that allows clinicians to identify patients who do not require initial radiography can reduce unnecessary imaging and increase throughput in urgent care (UC) centers.

Study Summary: This was a multicenter, retrospective cohort study of data obtained from 3 tertiary emergency departments (EDs) in France. The Fresno-Québec rule consists of a three-step algorithm whereby patients are included if they meet the following criteria: atraumatic recurrent episode or age <35 years and no dangerous mechanism (road collision, assault, sport, fall from a height greater than 10 feet). The primary endpoint was a clinically significant fracture on the preradiation radiograph. Clinically relevant fractures were those defined as any type resulting in a change in patient management.

The authors included 2,129 patients for final analysis. 90.3% of patients had dislocations without a fracture. The application of the Fresno-Québec rule would have allowed for 678 (35.2%) pre-reduction radiographs to be omitted.



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The patients who had dislocations with concomitant fractures were generally older, male, and had history of trauma. The most common types of fracture were those of the greater tuberosity (71.0%) and of the glenoid fossa (15.5%). Successful reduction was noted on the first attempt in 83.3% of cases in the “dislocation without fracture” group and 65.3% in the “dislocation with fracture” group. The sensitivity of the Fresno-Québec was 96%, however the specificity was only 36%. Shoulder injury caused by an electric shock or seizure had the highest odds of associated fracture, followed by a motor vehicle collision (MVC) mechanism.

Editor’s Comments: This was a retrospective study of ED patients and may not be generalizable to the UC population. It is worth noting that fractures were more common after MVC and seizure/shock mechanisms. Many UC centers currently are struggling to offer x-ray due to technician staffing shortages. ■

Training for Quality and Safety Has Evolved

Take Home Point: In training new clinicians, quality and safety education is valuable and trainees benefit when time is allocated to engage in quality project work.

Citation: Brown R, Kurland L, Rial CL, et. al. How should we train emergency physicians for quality and safety activities? *Eur J Emerg Med.* 2023 Dec 1;30(6):391-392. doi: 10.1097/MEJ.0000000000001081.

Relevance: UC education and training is evolving. Implementation of a robust curriculum that includes quality and safety is important for ensuring that graduates have a skill set requisite to engage in quality work throughout their careers.

Study Summary: This was a viewpoint article looking at the implementation of the new European Training Requirement (ETR) for ED physicians in Europe. The characteristic work of ED physicians, like clinicians in UC, includes evaluation of undifferentiated patients, time-critical decision making, clinical reasoning, and team work within complex healthcare systems. An understanding of how to evaluate and improve quality and safety within this context is critical for ensuring optimal patient outcomes.

The new curriculum overhaul incorporates the “CanMEDS” framework for improving patient care by enhancing physician training, which was developed by the Royal College of Physicians and Surgeons in Canada in the 1990s. It recommends focusing on learning through deliberate practice and close clinical supervision with structured feedback. Practical topics suggested include quality improvement methodology, governance activities, risk management, and the development and implementation of guidelines and operating procedures. Leadership/teamwork, human factors, and creating a culture of safety are cross-cutting themes that embrace both clinical work and the supporting professional activities.

Editor’s Comments: While this editorial was directed at improvement in ED clinician training, many of the themes are similarly relevant for UC clinician training program development, which remains still ill-defined in many countries. ■

How Risky is an Incidental Brugada Pattern on ECG in Asymptomatic Patients?

Take Home Point: Asymptomatic patients, especially those with drug-induced-only, Brugada ECG (BrECG) patterns have a very low risk of short-term malignant dysrhythmia, however, the risk is not sufficiently low so as to alter recommendations that they undergo outpatient cardiac monitoring and cardiology follow-up.

Citation: Gaita F, Cerrato N, Guistetto C, et. al. Asymptomatic Patients with Brugada ECG Pattern: Long-Term Prognosis From a Large Prospective Study. *Circulation*. 2023; 148:1543–1555.

Relevance: Brugada patterns on ECG are not uncommonly encountered incidentally on patients who have an ECG for unrelated reasons (ie, not palpitations or syncope). Risk stratification and disposition of the asymptomatic patients with BrECG are major challenges with no consensus as to their management.

Study Summary: This was a retrospective review of registry data from 2 Italian regions over an 18-year period. Patients diagnosed were initially given comprehensive instructions, including avoidance of certain medications, large meals, and excessive alcohol intake, as well as prompt treatment of fever. Patients with drug-induced type-1 BrECG pattern were followed up closely with annual Holter checks. Pa-

tients with spontaneous type-1 BrECG had baseline Holter monitoring and electrophysiological studies (EPS) done. Those with positive EPS studies had implantable cardioverter defibrillator installed.

The authors found 17 arrhythmic events occurred in the 1,149 asymptomatic patients with BrECG pattern over the follow-up period. The arrhythmic rate of events was 0.4% per year among patients with spontaneous type 1 and 0.03% per year among patients with drug-induced-only type-1 BrECG ($P < 0.0001$).

“Urgent follow-up with a cardiologist remains important for patients with incidental findings of even the lower-risk Brugada patterns on ECG.”

Editor’s Comments: There was a low incidence of drug-induced BrECG in the study which results in a low power for detecting events. The study was conducted only in Italy and may have involved an excessively homogenous population to allow for safe generalizability.

While the incidence of Brugada syndrome is low, its consequences of possible sudden death in young patients suggests that clinicians would be prudent to exercise caution in interpreting these results. Given the apparently low, but non-insignificant increased risk of fatal dysrhythmia, semi-urgent follow-up with a cardiologist remains important for patients with incidental findings of even the lower-risk Brugada patterns on ECG. The paper references a helpful resource for guiding medication use in patients with Brugada Syndrome and can be found at: www.brugadadrugs.org. ■

How Closely Do Clinicians Adhere to Pediatric Pneumonia Guidelines?

Take Home Point: Over the roughly 10 years since updated guidelines on clinical practice for children with community-acquired pneumonia (CAP), adherence has improved grad-

ually with regards to the limited utility of blood cultures and the selection of an aminopenicillin type antibiotic. Adherence has worsened in particular with regards to excessive use of chest radiography.

Citation: Ambroggio L, Cotter J, Hall M, et. al. Management of Pediatric Pneumonia: A Decade After the Pediatric Infectious Diseases Society and Infectious Diseases Society of America Guideline. *Clin Infect Dis*. 2023 Nov 30;77(11):1604-1611. doi: 10.1093/cid/ciad385

Relevance: Pediatric specific guidelines for evaluation and management of suspected CAP have been well outlined and have not changed for over 10 years. During that time, COVID-19 drastically reshaped the assessment of respiratory infections. This study addresses where clinicians stand in terms of following the guidelines.

Study Summary: This was a retrospective review using ICD-9 and -10 data of children diagnosed with CAP whose treatment was monitored through the Pediatric Health Information System (PHIS) database and were initially seen in an Emergency Department (ED). The PHIS database contains administrative and billing data from 47 U.S. children's hospitals. The Pediatric Infectious Diseases Society and Infectious Diseases Society of America Guidelines guidelines strongly recommend narrow-spectrum antibiotic use for uncomplicated CAP as first-line therapy for children without penicillin allergy, specifically amoxicillin, and less overall diagnostic testing for children with CAP unless it will directly inform management. Billing data were used to assess rates of performance of diagnostic testing, including blood culture, complete blood count (CBC), chest radiograph (CXR), and acute phase reactants, including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and procalcitonin (PCT).

The authors analyzed 315,384 children's data, with 22.8% hospitalized, and 77.2% discharged from the ED. They found blood cultures were obtained in 44.6% of children, CBCs in 24.8%, acute phase reactants in 27.6%, and CXR in 83.1%. More than 91% of children hospitalized with CAP received antibiotics; 15.1% received an antibiotic other than those recommended by the guidelines, a macrolide, or a broad-spectrum cephalosporin. Over the study period, there was gradual and continuous improvement in adherence to antibiotic guidelines, but a decline in adherence to the use of CXR. Of children discharged from the ED with CAP, 27.4% of children received an antibiotic, and 7.4% received an antibiotic outside the recommendations. Some 9.8% revisited the ED within 14 days post-discharge.

Editor's Comments: This study focused on ED and hospitalized children and therefore spectrum bias likely exist compared to UC patients. As this review relied on billing data, the clinical context of treatment rationale was unavailable. The presence of institution-specific guidelines was also not accounted for by the authors. Despite these limitations, it is worthy to note that, in general "less is more" in children with CAP and this is supported by the PIDS/IDSA guidelines. Since not much work-up is recommended for most children with suspected pneumonia, most children with CAP who are not hypoxemic can be treated from UC and discharged for outpatient follow-up. ■

Social and Clinical Determinants of Sepsis Risk

Take Home Point: The risk of sepsis is increased among patients with lower socioeconomic status and intellectual disability. Chronic liver and kidney disease, cancer, neurologic disease, and immunosuppression are relevant underlying comorbidities that also increase the risk of sepsis.

Citation: Zhong X, et al. Clinical and health inequality risk factors for non-COVID-related sepsis during the global COVID-19 pandemic: a national case-control and cohort study. 2023. *eClinicalMedicine*. doi: <https://doi.org/10.1016/j.eclinm.2023.10232>

Relevance: Sepsis is common, life-threatening condition precipitated by infection. Despite its high incidence, no large-scale reviews exist which examine the risk factors for developing sepsis.

Study Summary: The authors performed both a cohort study and a 1:6 matched case-control study using data available from the OpenSAFELY platform of the National Health Service (NHS) of England. Patients diagnosed with sepsis were identified using ICD-10 codes from hospital admissions records. Control patients were matched as patients without any recorded diagnosis of sepsis from the same database. Cases were matched to control for age, sex, and calendar month of admission. The primary outcome was a non-COVID-19 sepsis diagnosis during admission and secondary outcome was 30-day-mortality in patients with sepsis.

The authors analyzed 248,767 (11.3%) cases of non-COVID-19 sepsis from a cohort of 22 million individuals. 79.8% of cases were defined as community-acquired (ie, sepsis was diagnosed within 2 days of admission), and 20.2% was considered as hospital acquired. The research-

ers found the incidence of sepsis was greater in infants and then declined until age 17 years. In adults, the risk of sepsis steeply increased with increasing age. The presence of multiple clinical and social characteristics—including low socioeconomic status, being underweight or obese, smoking history, residing in a care facility, chronic kidney disease, organ transplantation, diabetes, malignancy, chronic liver disease, other neurological diseases, other immunosuppressive condition, and intellectual disabilities—increased the risk of developing sepsis. An additional finding was that patients with history of recent antibiotic use also seemed to have higher a risk of developing sepsis in the subjects of this study.

Editor's Comments: This was a retrospective study using billing data. Diagnosis accuracy relied on ICD-10 coding. However, despite the limitations, this large-scale study does highlight certain factors that UC clinicians should take integrate in their consideration of sepsis. Many of the risk factors revealed through the data confirm conventional teaching around sepsis risk factors (eg, presence of diabetes, cancer, liver disease), whereas others such as being underweight or economically disadvantaged have not been previously appreciated. ■



COVID-19

Duration of Test Positivity to COVID-19 and Likelihood of Long COVID

Take Home Point: The likelihood of developing long COVID in infected individuals rises with the increasing of duration of positive viral testing.

Citation: Pozzi C, Sarti R, Levi R, et. al. Association Between Duration of SARS-CoV-2 Positivity and Long COVID. *Clin Infect Dis.* 2023 Nov 30;77(11):1531-1533. doi: 10.1093/cid/ciad434

Relevance: As we continue to see effects of the pandemic, understanding factors that contribute to long COVID—which can be significantly disruptive to affected patients' lives—it is important for UC clinicians to remain up-to-date with the literature on this new and poorly understood condition.

Study Summary: This was an observational study of healthcare workers who were infected with COVID-19 and sub-

“The presence of multiple clinical and social characteristics increased the risk of developing sepsis.”

sequently developed long COVID in a facility in Italy. The observational period consisted of wave 1 (wild-type variant), wave 2 (Alpha variant), and wave 3 (Delta and Omicron variants). Self-reported COVID positivity duration was categorized into 4 groups: ≤10 days, 11–14 days, 15–21 days, and >21 days. All the analyzed individuals were vaccinated with 3 doses of BNT162b2 vaccine over the observed period.

The authors included 1,293 participants. They found 441 patients, or 34.1%, developed long COVID. Univariate analysis revealed significant associations between long COVID and female sex ($P = .01$), older age ($P < .001$), high body mass index ($P = .01$), and the presence of allergies ($P = .001$). Vaccination with 3 doses and infection in wave 3 correlated with a lower odds of developing long COVID (odds ratio [OR] 0.42). Greater odds of long COVID were associated with the self-reported positivity duration of self-testing (11–14 days: OR, 2.30 [95% CI: 1.53–3.46], $P < .001$; 15–21 days: OR, 4.10 [95% CI: 2.84–5.91], $P < .001$; >21 days: OR, 5.39 [95% CI: 3.74–7.77]). Only 14.5% of individuals with a positivity duration of ≤10 days developed long COVID, while 42.5% for individuals infected for 15–21 days and 56.2% for those positive for >21 day developed long COVID.

Editor's Comments: The self-reporting of symptoms and positivity in the study introduces an element of bias. It is unclear what type of testing was used to confirm COVID-19 positivity in the methods. The population was also homogenous (ie, all Italian healthcare workers) and the results may not be generalizable. Only a single vaccine type was used for all the participants and all participants were vaccinated as well. While the study was retrospective, the linear increase in odds of long COVID with increasing duration of test positivity does lend credence to the veracity of the association. ■