



ABSTRACTS IN URGENT CARE

- Long-term survival following pneumococcal pneumonia
- Pediatric concussions
- Energy drinks
- Antibiotics in ambulatory pediatrics
- Chronic traumatic encephalopathy
- Apixaban for VTE
- MMR vaccine and mumps
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- Head CTs for non-trauma in the ED

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Each month, Dr. Nahum Kovalski reviews a handful of abstracts from, or relevant to, urgent care practices and practitioners. For the full reports, go to the source cited under each title.

Long-term survival following pneumococcal pneumonia

Key point: *Pneumococcal pneumonia foretold considerably higher 10-year mortality than the expected rate.*

Citation: Sandvall B, Rueda AM, Musher DM. Long-term survival following pneumococcal pneumonia. *Clin Infect Dis.* 2013;56(8):1145-1146.

Before antibiotics, pneumonia was called “the old man’s friend” for carrying the old and infirm to a swift and relatively painless death. Now that short-term survival after pneumonia is the rule, does the disease provide any long-term prognostic information?

Veterans Administration researchers reviewed medical records of 392 patients in whom bacteriologically confirmed pneumococcal pneumonia was diagnosed at a single hospital during 10 years. Almost all patients were men (mean age, 63), and 48 (12%) died within 1 month of diagnosis. Among the remaining patients, the overall 10-year survival rate was <70%, which was substantially lower than the >95% expected rate for 63-year-old American men. When patients were stratified by severity of pneumonia according to a standard scoring system, 10-year mortality significantly increased with increasing severity scores, but even the mildest disease was associated with higher-than-normal long-term mortality. Bacteremic disease was associated with lower 10-year survival than was nonbacteremic disease.



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Published in *J Watch General Med* April 16, 2013 — Abigail Zuger, MD. ■

What Pediatric Providers Know About Concussions

Key point: *Many lack adequate training or tools to systematically diagnose and manage children with such injuries.*

Citation: Zonfrillo MR, Master CL, Grady MF, Winston FK, Callahan JM, Arbogast KB. Pediatric providers' self-reported knowledge, practices, and attitudes about concussion. *Pediatrics.* 2012;130(6):1120-1125.

Reports in the press of concussions in high-profile professional athletes have renewed a focus on diagnosis and management of mild traumatic brain injury. Although most patients recover quickly, prolonged physical, cognitive, and emotional symptoms require immediate recognition and careful management. Researchers at a large pediatric network surveyed 276 pediatric primary care and emergency medicine providers about their knowledge of concussion and related symptoms.

Among the 145 respondents (53%), 91% had cared for at least 1 patient with acute concussion in the previous 3 months, and nearly all had referred at least 1 patient after the initial visit. Primary care pediatricians were most likely to refer because they were not comfortable with management or did not have adequate time or resources, and they usually referred to a sports medicine specialist, followed by a neurologist or neuropsychologist. Emergency pediatricians were most likely to refer because they did not perceive treatment of concussion to be their role or feel the emergency setting was appropriate for ongoing management, and they usually referred to trauma sur-

geons or clinics. The following concussion symptoms (based on an acute concussion evaluation tool: J Head Trauma Rehabil 2008; 23:230) were rated as *not* relevant to diagnosis of concussion: abnormal eye tracking (17%), difficulty concentrating (11%), vestibular disturbance (9%), decline in school performance (6%), and sensitivity to light or noise (6%). Most providers felt inadequately trained to perform neurocognitive testing, educate families, or recommend the appropriate time before resuming school or play.

Published in *J Watch Ped Adolesc Med*. December 19, 2012 — Louis M. Bell, MD. ■

Energy Drinks

Key point: *Two viewpoints in JAMA discuss some potential harms associated with caffeinated energy drinks.*

Citations: Sepkowitz KA. Energy Drinks and Caffeine-Related Adverse Effects. *JAMA*. 2012;():1-2. doi:10.1001/jama.2012.173526 and Howland J, Rohsenow DJ. Risks of Energy Drinks Mixed With Alcohol. *JAMA*. 2012;():1-2. doi:10.1001/jama.2012.187978.

Two articles in *JAMA* discuss the risks of energy drinks.

One viewpoint highlights the risks associated with mixing energy drinks with alcohol. Although much is still unknown, early studies indicate that the practice reduces the sensation of intoxication by offsetting alcohol's sedating effects.

Another article considers the caffeine in energy drinks. Three grams of caffeine ingested in a short time could be lethal, the author notes. To reach that level, at least 12 caffeinated energy drinks would have to be consumed within a few hours. However, drug-drug interactions may play a role in adverse effects because caffeine is metabolized via the same pathway as several medications.

The author advises: "Physicians should ask their patients about their use of energy drinks, particularly young men who are the heaviest users." Intake levels of less than 500 mg per day (equivalent to four to six energy drinks), according to the author, are generally considered safe. ■

Inappropriate Antibiotic Prescribing in Ambulatory Pediatrics

Key point: *Prescriptions for broad-spectrum antibiotics are common and often inappropriate.*

Citation: Hersh AL, Shapiro DJ, Pavia AT, Shah SS. Antibiotic prescribing in ambulatory pediatrics in the United States. *Pediatrics*. 2011;128(6):1053-61.

Antibiotics are among the most frequently prescribed medication in pediatrics, with more than 30 million prescriptions written for children annually. Although overall rates of antibiotic prescribing in ambulatory settings have declined, antibi-

otic overuse continues and contributes to development of antibiotic-resistant pathogens, unnecessary costs, and avoidable adverse events. To examine antibiotic prescribing patterns in U.S. ambulatory pediatrics, researchers analyzed two nationwide datasets representing visits to offices, outpatient departments, and emergency departments by children younger than 18 years from 2006 to 2008. Antibiotics were categorized as narrow (e.g., amoxicillin) and broad spectrum (e.g., azithromycin), based on national standards.

Antibiotics were prescribed in an estimated 49 million pediatric ambulatory visits (21% of visits). Broad-spectrum antibiotics were prescribed in 50% of these visits, with macrolides (primarily azithromycin) prescribed most often, followed by broad-spectrum cephalosporins. Respiratory conditions accounted for most (72%) visits in which antibiotics were prescribed. Of concern, prescriptions for broad-spectrum antibiotics were highest (63%) for acute respiratory tract infections for which antibiotics were not indicated (such as for nasopharyngitis, bronchitis, viral pneumonia, and influenza). For example, an estimated 2.1 million prescriptions were written for bronchitis annually. Children with public or no insurance were significantly less likely than those with private insurance to receive broad-spectrum antibiotics.

Published in *J Watch Ped Adolesc Med*. December 14, 2011 — Louis M. Bell, MD. ■

The spectrum of disease in chronic traumatic encephalopathy

Key point: *Even 'Mild' Repetitive Impacts Associated with Long-Term Brain Damage.*

Citation: McKee AC, Stein TD, Nowinski C, et al. The spectrum of disease in chronic traumatic encephalopathy. *Brain*. (2012) doi:10.1093/brain/aws307.

A postmortem study of the brains of 85 athletes and military veterans concludes that "there may be severe and devastating long-term consequences of repetitive brain trauma that has traditionally been considered only mild."

In *Brain*, researchers characterized the stages of chronic traumatic encephalopathy on the basis of interviews with next of kin. Symptoms ranged from headache and loss of attention span in phase I, to dementia and aggression in phase IV. Neuropathology was related to the presence of tau protein outside the microtubules of axons, where they are normally found. Among football players, the stage of encephalopathy correlated with the duration of play.

A coauthor of the study told the *New York Times* that "all concussions are not created equal." He said that "parents have become paranoid about concussions and connecting the dots with [chronic traumatic encephalopathy], and that's wrong. The dots are really about total head trauma." ■

Apixaban for Extended Treatment of Venous Thromboembolism

Key point: Treatment with apixaban for 1 year reduced recurrence of venous thromboembolism.

Citation: Agnelli G, Buller HR, Cohen A, et al. *N Engl J Med*. December 8, 2012 DOI: 10.1056/NEJMoa1207541

The international study comprised some 2,500 patients who had completed 6 to 12 months of anticoagulation therapy and for whom there was equipoise about stopping or continuing. The group was randomized to placebo, or to apixaban at 2.5 mg twice daily, or to apixaban at 5 mg twice daily.

After therapy for 1 year, the rate of the composite primary outcome—symptomatic recurrent VTE or death from any cause—was 11.6% with placebo, versus roughly 4% with each of the apixaban dosages. Rates of major bleeding episodes were similar among the groups (all 0.5% or less).

The authors estimate 14 as the number needed to treat to prevent one episode of recurrent VTE, and 200 as the number needed to treat to cause one episode of major or clinically relevant nonmajor bleeding. ■

Would a Third Dose of MMR Vaccine Curb the Uptick in Mumps Outbreaks?

Key point: A school-based intervention reduced the mumps attack rate from 4.9% to 0.13% in one community.

Citations: Ogbuanu IU, Kutty PK, Hudson JM, et al. Impact of a third dose of measles-mumps-rubella vaccine on a mumps outbreak. *Pediatrics* 2012 Dec; 130:e1567, Barskey AE et al. Mumps outbreak in Orthodox Jewish communities in the United States. *N Engl J Med* 2012 Nov 1; 367:1704, and Centers for Disease Control and Prevention (CDC). Mumps outbreak on a university campus — California, 2011. *MMWR Morb Mortal Wkly Rep* 2012 Dec 7; 61:986.

Rates of mumps cases in the United States were at historic lows between 2000 and 2006, with fewer than 300 cases reported annually. In addition, two-dose measles-mumps-rubella (MMR) vaccine coverage in teens has been high (>87%). Nevertheless, between 2006 and 2010, mumps outbreaks in the United States have resulted in more than 10,000 reported cases.

In 2009–2010, a mumps outbreak resulted in 3502 cases in New York State and New Jersey. The index case was a fully vaccinated 11-year-old boy who developed mumps after exposure to an outbreak in the United Kingdom and then attended a summer camp in New York during the infectious period. Subsequently, 25 campers and staff developed mumps, and then the virus spread to 3,477 cases in New York City and New Jersey after infected campers returned home. Most cases (71%) occurred in boys aged 13 to 17 years.

Following the outbreak, a school-based vaccination interven-

tion was planned in one of the affected communities. A third dose of MMR vaccine was offered to 2,265 eligible students in grades 6 to 12. Of the 2,178 students (96%) with documentation of having received two previous MMR vaccine doses, 1,755 (81%) chose to receive a third dose. Mumps attack rates declined significantly from 4.9% during the 3 weeks before vaccination to 0.13% during the 3 weeks after vaccination. The greatest decline in mumps cases (96%) was among targeted students aged 11 to 17 years.

In September 2011, another outbreak occurred among students in California. The index case was an unvaccinated student, again returning from Western Europe. He was initially diagnosed with facial cellulitis. The index student's fully vaccinated roommate presented as the second case 3 weeks after exposure. In total, 29 cases were reported.

Published in *J Watch Ped Adolesc Med*. December 12, 2012 — Louis M. Bell, MD. ■

Stress Testing Has Low Yield in Young Adults with Chest Pain

Key point: Observation and further testing yielded few abnormal test results, and most were false-positive.

Citation: Ely S, Chandra A, Mani G, et al. Utility of observation units for young emergency department chest pain patients. *J Emerg Med*. 2013;44(3):306-312.

To assess the yield of extended observation and testing of young patients with chest pain, researchers examined test results and adverse cardiac events within 1 year among 362 patients aged 18 to 40 (49% men; 55% black) who were evaluated for suspected acute coronary syndrome in an emergency department (ED)-based cardiac observation unit.

Of the 362 patients, 124 had negative serial cardiac marker results and were discharged directly from the ED, and 238 underwent further testing. Fifteen patients had abnormal workups; one had elevated troponin and normal angiography but was discharged with a diagnosis of myocardial infarction (MI), and 14 patients had abnormal stress test results. Five stress test results were positive and nine were considered indeterminate, mostly because the patient failed to reach the target heart rate. The five patients with positive stress test results were admitted and underwent angiography; of these, one had significant coronary stenosis. One patient with a normal stress test result had a MI after 8 months. Therefore, 3 of 238 patients had adverse outcomes within 1 year, only 1 of whom was discovered by stress testing. The positive discovery rate of observation unit testing was 0.28%, and the false-positive rate for stress testing was 80%. In contrast, the authors report a 6% rate of coronary disease requiring intervention at 1 year in the general population in their observation unit.

Published in *J Watch Emerg Med* March 8, 2013 — J. Stephen Bohan, MD, MS, FACP, FACEP.

Paramedics' Interpretation of STEMI on Prehospital ECGs Is Unreliable

Key point: Paramedics missed nearly a quarter of anterior and half of posterior MIs.

Citation: Mencil F, Wilber S, Frey J, et al. Paramedic ability to recognize ST-segment elevation myocardial infarction on prehospital electrocardiograms. *Prehosp Emerg Care*. 2013 Apr;17(2):203-210.

Prehospital identification of ST-segment elevation myocardial infarction (STEMI) allows early cath lab activation, thereby reducing first medical contact-to-balloon time and mortality. Using anonymous surveys, researchers tested paramedics' abilities to recognize STEMI on electrocardiograms (ECGs). The 472 respondents worked within five counties in northeastern Ohio. Each survey contained ten standardized patient vignettes with actual prehospital ECGs representing three STEMIs (inferior, anterior, and lateral), five STEMI mimics (left ventricular hypertrophy, ventricular pacing, left and right bundle branch blocks, and supraventricular tachycardia), and two normal studies.

Of the respondents, 52% had 10 or more years of experience, 69% had received ECG training within the past year, and 74% reported they were confident in their ability to recognize STEMI. While all paramedics correctly identified the normal ECGs and most (96%) detected the inferior STEMI, 22% failed to identify the anterior STEMI and 50% missed the lateral STEMI. Overall, only 39% of paramedics correctly identified all three STEMIs, whereas only 3% also correctly answered that the remaining ECGs were not STEMIs. There was no correlation between years of experience, recent training, or confidence level and ability to interpret ECGs. Overall, sensitivity and specificity for STEMI detection were 75% and 53%.

Published in *J Watch Emerg Med* March 8, 2013 — Kristi L. Koenig, MD, FACEP, FIFEM. ■

Add Antibiotics When Admitting Patients for COPD Exacerbations

Key point: A Cochrane review supports use of antibiotics in managing hospitalized patients with chronic obstructive pulmonary disease exacerbations.

Citation: Vollenweider DJ, Jarrett H, Steurer-Stey CA, et al. Antibiotics for exacerbations of chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2012 Dec 12; 12:CD010257.

Exacerbations of chronic obstructive pulmonary disease (COPD) are caused by bacterial infections in about half of all cases; the remaining cases are caused by viruses or environmental irritants. Cochrane investigators performed a meta-analysis of 16 randomized controlled trials in which the effects of antibiotics were compared with placebo for managing COPD exacerbations. In this summary, the reviewers focused on the seven trials that involved inpatients.

Among 612 non-intensive care unit (ICU) inpatients with severe exacerbations, antibiotics significantly lowered treatment failure (defined as no resolution or deterioration of symptoms, need for additional antibiotics or other medication, or death due to exacerbation) at 4 weeks (42% vs. 52%; number needed to treat [NNT], 10) but did not prevent all-cause mortality. Among 93 ICU patients with very severe exacerbations, antibiotics significantly lowered treatment failure (11% vs. 57%; NNT, 2) as well as all-cause mortality (4% vs. 22%; NNT, 6) at 4 weeks.

Published in *J Watch Hosp Med*. April 1, 2013 — Daniel D. Dressler, MD, MSc, SFHM, FACP. ■

Can We Perform Fewer Head CTs for non-Trauma in the Emergency Department?

Key point: Rules can definitely reduce CT rate. The question is how much.

Citation: Wang X, You JJ. Head CT for nontrauma patients in the emergency department: Clinical predictors of abnormal findings. *Radiology*. 2013; 266(3):783-790.

The Centers for Medicare and Medicaid Services recently issued a utilization measure for cranial computed tomography (CT) scanning for nontrauma indications in the emergency department (ED), but the measure has met with strong criticism (*JW Emerg Med* Sep 21 2012).

To derive a decision rule for emergent head CT, researchers in Hamilton, Ontario, Canada, retrospectively examined records of 4000 adults who were scanned for nontrauma indications at three hospital EDs during 3 years. Patients with previously known intracranial pathology were excluded. An abnormality was defined as hemorrhage, acute or subacute infarction, mass lesion, or other findings that required intervention or follow-up.

In a 2000-patient derivation cohort, the prevalence of abnormal head CT was 14% (275 cases). Multivariable analysis yielded six independent predictors of abnormality: older age, nausea or vomiting, altered mental status, focal neurological deficit, cancer history, and derangement in coagulation. Findings were as follows:

- Performing CT only in patients with any of the five non-age predictors would have detected 94% of abnormalities and lowered CT scanning by 30%.
- Including all older patients (age >70), plus younger patients with any of the other five predictors, would have increased sensitivity to 96%, and 21% of scans would have been avoided.
- Although seizure was not an independent predictor, adding seizure as an indication to scan would have increased sensitivity to 99%, and 14% of scans would have been avoided.

Published in *J Watch Gen Med* March 14, 2013 — Allan S. Brett, MD. ■