



ABSTRACTS IN URGENT CARE

- Acute heart failure
- Insurance in the ED
- Probiotics and diarrhea
- Imaging for PE
- Zinc and antibiotics
- Contact sports and learning
- Ultrasound for skull fractures
- Hyperthyroidism and health risks
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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.

Acute Heart Failure: Hospitalize or Discharge?

Key point: A new tool for estimating prognosis could facilitate rapid risk assessment.

Citation: Lee DS, Stitt A, Austin PC, et al. Prediction of heart failure mortality in emergent care: A cohort study. *Ann Intern Med.* 2012;156(11): 767-775.

The decision to hospitalize or discharge a patient with acute heart failure (HF) is often difficult to make. To develop a prognostic model for acute HF suitable for use in the emergency department (ED), investigators in Ontario, Canada, studied clinical data on 12,591 HF patients treated at 86 hospitals from 2004 to 2007. Two-thirds of the patients were hospitalized; the rest were discharged from the ED. Sixty percent of the patients made up the derivation cohort (mean age, 75.4; 51.5% men), and 40% constituted the validation cohort (mean age, 75.7; 51.6% men). Overall 7-day mortality was 2%. Baseline characteristics were similar in the two cohorts, although creatinine and troponin concentrations and the rate of diuretic use were marginally higher in the validation cohort.

The investigators developed an emergency HF mortality risk grade (EHMRG) scale based on 10 factors that were independent predictors of 7-day mortality in multivariate analysis. Some

variables are multiplicative and some are additive; the EHMRG score can be calculated online. For each 20-point increase in the EHMRG score, 7-day mortality risk increased by 41% in the derivation cohort and by 39% in the validation cohort.

Published in *J Watch Card.* June 13, 2012 — Joel M. Gore, MD. ■

Change in Insurance Status Increases Emergency Department Visits

Key point: Change in insurance status, as opposed to actual insurance status, is associated with a more than 30% rise in ED use.

Citation: Ginde AA, Lowe RA, Wiler JL. Health insurance status change and emergency department use among US adults. *Arch Intern Med.* 2012;172(8):642-647.

The common wisdom that lack of insurance increases emergency department (ED) use has been repeatedly debunked. For example, ED visit rates in Canada, where universal insurance prevails, are nearly identical to those in the United States. In Massachusetts, the introduction of mandated insurance hardly affected ED visits.

Noting turmoil in the provision of health insurance brought on by the economic recession and by pending implementation of the Affordable Care Act, investigators examined the effect of recent loss or gain of insurance on ED use. They reviewed data for 160,000 adults who responded to the CDC National Health Interview Survey from 2004 through 2009.

Overall, 83% of respondents had insurance (5% of them were newly insured) and 17% did not have insurance (23% of them were newly uninsured). Twenty percent of the insured



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and uninsured groups had visited an ED in the 12 months before the survey. After adjustment for health status, socioeconomic status, and demographics, newly uninsured adults had 39% higher ED use than those who were continuously uninsured, and newly insured adults had 32% higher ED use than those who were continuously insured. Among the newly insured, those with Medicaid had the highest ED use.

Published in *J Watch Emerg Med*. May 18, 2012 — J. Stephen Bohan, MD, MS, FACP, FACEP. ■

Meta-Analysis: Probiotics Associated with Lower Risk of Antibiotic-Related Diarrhea

Key point: Probiotics seem to lower the risk of antibiotic-associated diarrhea (AAD).

Citation: Probiotics for the prevention and treatment of antibiotic-associated diarrhea. *JAMA*. 2012;307(18):1959-1969.

Probiotics seem to lower the risk of antibiotic-associated diarrhea (AAD), but the available research doesn't support conclusions about which preparations work best or which patients benefit most.

Researchers examined over 80 randomized trials in which probiotics were used to either prevent or treat AAD. In a subset of 63 trials including some 12,000 participants, they found a lower pooled risk of AAD among those receiving probiotics (0.58), compared with controls. They estimate the number needed to treat at 13 to prevent one case of AAD.

However, the authors found poor documentation of the probiotic strains used, unexplained heterogeneity among the trials, and little reporting on adverse effects of treatment. ■

Pulmonary Embolism: One Third of ED Imaging Avoidable

Key point: Up to one-third of computed tomography (CT) and nuclear imaging scans for suspected pulmonary embolism are potentially avoidable if emergency department (ED) personnel were less aggressive in ordering the tests for low-risk patients.

Citation: Venkatesh AK, Kline JA, Courtney M, et al. Evaluation of pulmonary embolism in the emergency department and consistency with a national quality measure. *Arch Intern Med*. 2012;172(13):1028-1032.

The study focused on ED imaging behavior for the 2,238 ED patients in the study who were recommended imaging to rule out the presence of pulmonary embolism (PE), despite a low pretest probability of PE. These patients were hemodynamically stable (systolic blood pressure ≥ 90 mm Hg) and had Wells scores for pretest probability of less than 2 points. Other factors include the attending physician's opinion about the most likely diagnosis and their gestalt pretest probability.

Findings demonstrated the value of D-dimer testing. About

11% of the avoidable imaging studies were derived from 394 patients who underwent imaging despite negative D-dimer results. The remaining 22% of avoidable imaging studies were associated with the potential application of the NQF criteria for 1,427 patients who did not undergo D-dimer testing. Fifty patients (1.3% of those imaged) were diagnosed with PE by imaging considered potentially avoidable by the NQF measure because no D-dimer testing was performed. The researchers identified only eight cases (0.2%) of patients who had a negative D-dimer before a positive diagnosis for PE with imaging considered avoidable.

Assuming 100% imaging specificity, it was estimated that adherence to the NQF guideline would have led to 11 missed PEs from eight patients with negative D-dimer test results and three patients who had not undergone D-dimer testing (93% sensitivity). Multivariate analysis demonstrated that the likelihood that imaging can be avoided decreased with increasing patient age or the presence of an inactive cancer, sickle cell disease, and pregnancy.

"Our results demonstrate the validity of the NQF measure and refute the notion that high measure performance is associated with the unintended consequence of missed PE," the authors write. They stress that the study was limited to identifying potentially avoidable studies, not definitely avoidable imaging workups for patients with no D-dimer testing performed. More research would be needed to make that determination. ■

Adding Zinc to Antibiotics Reduces Treatment Failures

Key point: Zinc is inexpensive. Its use could potentially decrease mortality in infants with serious infections in developing countries and reduce the proportion of infants needing second-line antibiotics because of treatment failure.

Citation: Bhatnaga S, Wadhwa N, Aneja S, et al. Zinc as adjunct treatment in infants aged between 7 and 120 days with probable serious bacterial infection: A randomised, double-blind, placebo-controlled trial. *Lancet*. 2012;379(9831):2072-2078.

Bacterial infections are responsible for more than one-quarter of neonatal deaths in India. Might the addition of zinc improve treatment outcomes, given findings of beneficial effects in animals and in children?

To find out, researchers conducted a double-blind trial involving infants aged 7 to 120 days who were treated for probable serious bacterial infection (based on clinical findings and elevated C-reactive protein levels) at any of three hospitals in New Delhi. The infants were randomized to receive 10 mg of oral zinc or placebo daily, along with standard antibiotic therapy.

Treatment failure (defined as need to change therapy within

7 days, need for intensive care, or death within 21 days; assessable in 655 infants) occurred significantly less frequently in the zinc group than in the placebo group (10% vs. 17%; relative risk reduction, 40%). The death rate was nonsignificantly lower in the zinc group than in the placebo group (5% vs. 3%). Tests of zinc levels done at study entry showed that 44% of study infants had low baseline levels ($<9.2 \mu\text{mol/L}$).

Published in *J Watch Infect Dis*. June 13, 2012 — Mary E. Wilson, MD. ■

Contact Sports May Affect Learning in College Athletes

Key point: *Even one season of repetitive head impacts might have a negative effect on cognitive performance.*

Citation: McAllister TW, Flashman LA, Maerlender A, et al. Cognitive effects of one season of head impacts in a cohort of collegiate contact sport athletes. *Neurology*. 2012;78(22):1777-1784.

Concussion and traumatic brain injury in athletes has been a frequent subject in the lay press recently, given growing interest in chronic traumatic encephalopathy as a distinct neurodegenerative entity; however, scientific studies on the topic are few and often contradictory. To assess the effect of repetitive head impacts on cognitive performance, researchers prospectively compared pre- and postseason neuropsychological test results between 214 Division I college athletes who played contact sports (ice hockey or football) and 45 such athletes who played noncontact sports. Contact-sport athletes wore helmets that recorded acceleration, duration, and location of head impact.

Contact-sport athletes were exposed to a mean of 469 distinct head impacts per season. None of the athletes studied suffered a concussion during the season. Comparison of pre- and postseason test results demonstrated that repetitive head impacts during a single season did not have a short-term detrimental effect overall. However, significantly more contact-sport athletes than noncontact-sport athletes (22% vs. 4%) performed more than 1.5 standard deviations below their predicted score on postseason tests of learning and memory (1.5 standard deviations was prospectively selected as a marker of “significantly poorer than expected” performance).

Published in *J Watch Emerg Med*. June 22, 2012 — Richard D. Zane, MD, FAAEM. ■

Ability of Emergency Ultrasonography to Detect Pediatric Skull Fractures: A Prospective, Observational Study

Key point: *ER ultrasound for pediatric skull fractures has a positive predictive value of 97.2% and negative predictive value of 100%.*

Citation: Parri N, Crosby BJ, Glass C, et al. Ability of emergency ultrasonography to detect pediatric skull fractures: a prospective, observational study. *J Emerg Med*. 2012 May 10. [Epub ahead of print]

Blunt head trauma is a common reason for medical evaluation in the pediatric Emergency Department (ED). The diagnostic work-up for skull fracture, as well as for traumatic brain injury, often involves computed tomography (CT) scanning, which may require sedation and exposes children to often-unnecessary ionizing radiation.

This is a prospective study of bedside ultrasound for diagnosing skull fractures in head-injured pediatric patients. A consecutive series of children presenting with head trauma requiring CT scan was enrolled. Cranial bedside ultrasound imaging was performed by an emergency physician and compared to the results of the CT scan.

Bedside emergency ultrasound performs with 100% sensitivity and 95% specificity when compared to CT scan for the diagnosis of skull fractures. Positive and negative predictive values were 97.2% and 100%, respectively.

Compared to CT scan, bedside ultrasound may accurately diagnose pediatric skull fractures. Considering the simplicity of this examination, the minimal experience needed for an emergency physician to provide an accurate diagnosis and the lack of ionizing radiation, emergency physicians should consider this modality in the evaluation of pediatric head trauma.

Subclinical Hyperthyroidism Raises Risk for Mortality and Cardiac Events

Key point: *Risk was particularly high with thyrotropin levels $<0.10 \text{ mIU/mL}$.*

Citation: Collet T, Gussekloo J, Bauer DC, et al. Subclinical hyperthyroidism and the risk of coronary heart disease and mortality. *Arch Intern Med*. 2012;171(10):799-809.

The results of prospective cohort studies conflict on whether subclinical hyperthyroidism (thyrotropin level $<0.45 \text{ mIU/L}$, with normal free thyroxine and triiodothyronine) is associated with elevated incidence of coronary heart disease (CHD) or atrial fibrillation (AF). This meta-analysis combined the results of 10 such studies with 53,000 participants (median age, 59), of whom 2,188 (4%) had subclinical hypothyroidism.

During median follow-up of 9 years, in analyses adjusted for age and sex, the risk for those with subclinical hyperthyroidism compared to those who were euthyroid was increased 24% for overall mortality, 29% for CHD mortality and 68% for incident AF. Risks were even higher in those with thyrotropin levels $<0.10 \text{ mIU/L}$, and risks did not change substantially after adjustments for other cardiovascular risk factors. The risk attributable to subclinical hyperthyroidism, after accounting for

traditional risk factors, was 14.5% for total mortality and 41.5% for incident AF.

Published in *J Watch Gen Med*. May 3, 2012 — Thomas L. Schwenk, MD. ■

Chronic Urticaria Might Be a Harbinger of Other Autoimmune Diseases

Key point: *Subsequently diagnosed autoimmune diseases were 17 times more common in patients with idiopathic urticaria.*

Citation: Confino-Cohen R, Chodick G, Shalev V, et al. Chronic urticaria and autoimmunity: Associations found in a large population study. *J Allergy Clin Immunol*. 2012;129(5):1307-1313.

Chronic idiopathic urticaria (CIU) is defined by the presence of hives three or more times weekly for at least 6 weeks, with no identifiable trigger. Half of patients who experience CIU exhibit IgE autoantibodies or antibodies against high-affinity IgE receptors on mast cells and basophils; these antibodies are thought to be pathogenic.

An automated search of an Israeli medical database yielded 12,778 patients with CIU; 10.0% and 2.6% of patients had hypothyroidism and hyperthyroidism, respectively. Additionally, type 1 diabetes, rheumatoid arthritis, celiac disease, lupus, and Sjögren syndrome were significantly more common (odds ratio, 17.3) in CIU patients than in a matched control group without CIU. Women were at significantly greater risk for developing autoimmune diseases than were men. Of all autoimmune diseases that were diagnosed in the CIU population, more than 80% developed in the 10 years following diagnoses of CIU.

Published in *J Watch Gen Med* May 10, 2012 — David J. Amrol, MD. ■

Clinicians' gut feeling about serious infections in children: observational study

Key point: *Gut feeling has real clinical value.*

Citation: Van den Bruel A, Thompson M, Buntinx F, Mant D. Clinicians' gut feeling about serious infections in children: observational study. *BMJ*. 2012;345:e6144

This was an observational study, in a primary care setting in Flanders, Belgium, on a consecutive series of 3890 children and young people aged 0-16 years.

Of the 3369 children and young people assessed clinically as having a non-severe illness, six (0.2%) were subsequently admitted to hospital with a serious infection.

Intuition that something was wrong despite the clinical assessment of non-severe illness substantially increased the risk of serious illness (likelihood ratio 25.5) and acting on this gut feeling had the potential to prevent two of the six cases being missed at a cost of 44 false alarms (1.3%, 95% confidence interval 0.95% to 1.75%).

The clinical features most strongly associated with gut feeling were the children's overall response (drowsiness, no laughing), abnormal breathing, weight loss, and convulsions. The strongest contextual factor was the parents' concern that the illness was different from their previous experience (odds ratio 36.3).

A gut feeling about the seriousness of illness in children is an instinctive response by clinicians to the concerns of the parents and the appearance of the children. It should trigger action such as seeking a second opinion or further investigations. The observed association between intuition and clinical markers of serious infection means that by reflecting on the genesis of their gut feeling, clinicians should be able to hone their clinical skills. ■

Low-Risk Chest Pain Patients Can Be Monitored and Discharged Without Provocative Testing

Key point: *This single-center study suggests that deferring provocative testing to the outpatient setting is safe.*

Citation: Scheurmeyer FX, Innes G, et al. Safety and efficiency of a chest pain diagnostic algorithm with selective outpatient stress testing for emergency department patients with potential ischemic chest pain. *Ann Emerg Med*. 2012;59(4):256-264.e3.

Debate continues regarding whether provocative testing is needed before emergency department (ED) discharge for low-risk chest pain patients. Investigators at a single academic ED in Vancouver, Canada, studied the 30-day rate of missed acute coronary syndrome or death in 1116 patients with chest pain who were discharged after 6 hours of observation if they did not have objective ischemia or ongoing pain.

Overall, 26% of patients were deemed very low risk and were discharged immediately without further investigation, 24% were referred for cardiology evaluation during their ED visit, 24% were referred for outpatient provocative testing after their ED visit, and the rest were discharged after ED observation and testing without recommendations for further testing. Ninety-six percent of patients referred for outpatient provocative tests complied. Acute myocardial infarction was diagnosed in 39 patients (3.5%), all at the index ED visit. Unstable angina was diagnosed in 60 patients (5.4%) at the index visit and in 21 (1.9%) at outpatient testing. No cases of missed acute coronary syndrome or death at 30 days were identified by searches of regional databases and telephone follow-up.

Published in *J Watch Emerg Med*. May 4, 2012 — Daniel J. Pallin, MD, MPH. ■