



# ABSTRACTS IN URGENT CARE

- Cardiac warning for azithromycin
- Cardiac events after clarithromycin
- Norovirus in childhood gastroenteritis
- Diagnosis and ED visit necessity
- Pertussis immunity
- Home oxygen therapy for bronchiolitis
- DKA and type 1 diabetes

■ NAHUM KOVALSKI, BSc, MDCM

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.

## Azithromycin: FDA Issues Cardiac Warning

**Key point:** The antibiotic azithromycin (Zithromax and Zmax) can cause QT interval prolongation and torsades de pointes.

**Citation:** FDA Drug Safety Communication: Azithromycin (Zithromax or Zmax) and the risk of potentially fatal heart rhythms. <http://www.fda.gov/downloads/Drugs/DrugSafety/UCM343347.pdf>

The agency says that healthcare providers should consider risk of fatal heart rhythms when treating patients already at high cardiovascular risk, including people with known prolongation of the QT interval, torsades de pointes, congenital long QT syndrome, bradyarrhythmias, or uncompensated heart failure; patients taking drugs that prolong the QT interval; and patients with proarrhythmic conditions (e.g., uncorrected hypokalemia). Older patients and patients with cardiac disease may also be at higher risk.

The warning follows a *New England Journal of Medicine* study last year that found a higher rate of cardiovascular and all-cause mortality in patients who took 5 days of azithromycin, compared with other antibiotics. ■

## Cardiovascular events after clarithromycin use in lower respiratory tract infections: analysis of two prospective cohort studies

**Key point:** Use of clarithromycin in the setting of acute exacer-

*bations of chronic obstructive pulmonary disease or community-acquired pneumonia may be associated with increased cardiovascular events.*

**Citation:** Cardiovascular events after clarithromycin use in lower respiratory tract infections: analysis of two prospective cohort studies. Schembri S, Williamson PA, Short PM, et al. *BMJ*. 2013;346:f1235

This was an analysis of two prospectively collected datasets (Chronic obstructive pulmonary disease [COPD] dataset [1,343 patients] including patients admitted to one of 12 hospitals around the United Kingdom between 2009 and 2011; Edinburgh pneumonia study cohort [1,631 patients] including patients admitted to NHS Lothian Hospitals between 2005 and 2009) to study the association of clarithromycin with cardiovascular events in the setting of acute exacerbations of COPD and community-acquired pneumonia (CAP).

Two hundred sixty-eight cardiovascular events occurred in the acute exacerbations of COPD and 171 in the CAP cohort over 1 year. After multivariable adjustment, clarithromycin use in acute exacerbations of COPD disease was associated with an increased risk of cardiovascular events and acute coronary syndrome—hazard ratios 1.50 (95% confidence interval 1.13 to 1.97) and 1.67 (1.04 to 2.68).

After multivariable adjustment, clarithromycin use in CAP was associated with increased risk of cardiovascular events (hazard ratio 1.68, 1.18 to 2.38) but not acute coronary syndrome (1.65, 0.97 to 2.80). The association between clarithromycin use and cardiovascular events persisted after matching for the propensity to receive clarithromycin. A significant association was found between clarithromycin use and cardiovascular mortality (adjusted hazard ratio 1.52, 1.02 to 2.26) but not all-cause mortality (1.16, 0.90 to 1.51) in acute exacerbations of COPD.



Nahum Kovalski is an urgent care practitioner and Assistant Medical Director/CIO at Terem Emergency Medical Centers in Jerusalem, Israel. He also sits on the *JUCM* Editorial Board.

No association was found between clarithromycin use in CAP and all-cause mortality or cardiovascular mortality. Longer durations of clarithromycin use were associated with more cardiovascular events. Use of  $\beta$ -lactam antibiotics or doxycycline was not associated with increased cardiovascular events in patients with acute exacerbations of COPD, suggesting an effect specific to clarithromycin. ■

### Norovirus Is Now the Most Common Cause of Childhood Gastroenteritis (in the US)

**Key point:** *Norovirus most often affects children aged <18 months and accounts for substantial healthcare costs.*

**Citation:** Payne DC, Vinje J, Szilagyi PG, et al. Norovirus and medically attended gastroenteritis in U.S. children. *N Engl J Med.* 2013;368(12):1121-1130.

The health burden of norovirus in the pediatric population has not been determined since widespread use of the rotavirus vaccine. Researchers examined the burden of norovirus-associated gastroenteritis (sudden vomiting, diarrhea, and dehydration lasting 1–3 days) in a multicenter surveillance study of 141,000 children younger than 5 years seeking medical attention for gastroenteritis in three U.S. counties during 2009 and 2010.

Fecal samples were obtained from 1,295 children with gastroenteritis and 493 healthy controls. Norovirus was detected in 21% of cases and 4% of controls and rotavirus was detected in 12% of cases and in 1 child in the control group. Norovirus was more common than rotavirus in all clinical settings. Nearly half of norovirus infections were in children aged 6 to 18 months. Norovirus occurred year-round and peaked in January. In 2009, the GII.4 Minerva norovirus genotype accounted for 71% of norovirus infections. In 2010, GII.4 New Orleans was the most common norovirus genotype. Median costs were \$3,918 for norovirus-associated hospitalizations, \$435 for emergency department (ED) visits, and \$191 for clinic visits. The authors estimate that norovirus accounted for 14,000 hospitalizations, 281,000 ED visits, and 627,000 outpatient visits during the 2 years and cost about \$273 million each year.

Published in *J Watch Ped Adolesc Med* March 20, 2013 — F. Bruder Stapleton, MD. ■

### Can We Use the Diagnosis to Determine Whether an ED Visit Was Necessary?

**Key point:** *Emergency-department presenting complaints are similar for patients with serious and nonserious discharge diagnoses.*

**Citation:** Raven MC, Lowe RA, Maselli J, et al. Comparison of presenting complaint vs discharge diagnosis for identifying “nonemergency” emergency department visits. *JAMA.* 2013;309:1145-1153.

Reduction in emergency department (ED) use is frequently

viewed as a potential source for cost savings. One consideration has been to deny payment if the patient’s diagnosis on ED discharge appears to reflect a “nonemergency” condition. This approach does not incorporate other clinical factors such as chief complaint that may inform necessity for ED care. The purpose of this study was to determine whether ED presenting complaint and ED discharge diagnosis correspond sufficiently to support use of discharge diagnosis as the basis for policies discouraging ED use.

The New York University emergency department algorithm has been commonly used to identify nonemergency ED visits. The authors applied the algorithm to publicly available ED visit data from the 2009 National Hospital Ambulatory Medical Care Survey (NHAMCS) for the purpose of identifying all “primary care–treatable” visits. The 2009 NHAMCS data set contains 34,942 records, each representing a unique ED visit. For each visit with a discharge diagnosis classified as primary care treatable, the authors identified the chief complaint. To determine whether these chief complaints correspond to non-emergency ED visits, the authors then examined all ED visits with this same group of chief complaints to ascertain the ED course, final disposition, and discharge diagnoses.

Although only 6.3% (95% CI, 5.8%-6.7%) of visits were determined to have primary care–treatable diagnoses based on discharge diagnosis and the modification of the algorithm, the chief complaints reported for these ED visits with primary care–treatable ED discharge diagnoses were the same chief complaints reported for 88.7% (95% CI, 88.1%-89.4%) of all ED visits. Of these visits, 11.1% (95% CI, 9.3%-13.0%) were identified at ED triage as needing immediate or emergency care; 12.5% (95% CI, 11.8%-14.3%) required hospital admission; and 3.4% (95% CI, 2.5%-4.3%) of admitted patients went directly from the ED to the operating room.

Among ED visits with the same presenting complaint as those ultimately given a primary care–treatable diagnosis based on ED discharge diagnosis, a substantial proportion required immediate emergency care or hospital admission. The limited concordance between presenting complaints and ED discharge diagnoses suggests that these discharge diagnoses are unable to accurately identify nonemergency ED visits. ■

### Pertussis Immunity Drops Soon After the Last Vaccine Dose Is Given

**Key point:** *The incidence of pertussis in children rises steadily in the years immediately following receipt of the fifth dose of the diphtheria-tetanus-acellular pertussis (DTaP) vaccine.*

**Citation:** Tartof SY, Lewis M, Kenyon C, et al. *Pediatrics.* Published online March 11, 2013.

Researchers examined the incidence of pertussis among more than 400,000 children in Minnesota and Oregon who’d re-

ceived all five doses of diphtheria-tetanus-acellular pertussis, with the fifth dose given between ages 4 and 6 years. In the 6 years after the last dose was received, some 550 pertussis cases were identified. The incidence rose steadily with each passing year.

The authors say their findings “strongly [suggest] waning of vaccine-induced immunity,” which “helps to explain the emergence of an increased burden of disease among 7- to 10-year-olds.” (Currently, the adolescent booster is recommended at ages 11 to 12 years.)

Sedative agents used included propofol, etomidate, ketamine, methohexital, and midazolam in 303, 67, 57, 17, and 13 cases, respectively (some patients required a second reduction). Adverse events (predefined as events requiring airway interventions, reversal agents, anti-dysrhythmic agents, or chest compressions) occurred in 12 patients (2.8%). Respiratory complications included apnea (1 patient) and ventilator insufficiency (8); all patients responded to airway maneuvers or brief bag-valve-mask ventilation. Two patients developed hypotension: one responded to intravenous (IV) fluids and the other to flumazenil IV. No patient required endotracheal intubation and no complication resulted in prolonged observation or hospital admission. ■

### Home Oxygen Therapy for Young Children with Bronchiolitis

**Key point:** *Combining the use of an observation unit and home oxygen therapy resulted in shorter hospital stays and cost savings for bronchiolitis.*

**Citation:** Sandweiss DR, Mundorff MB, Hill T, et al. Decreasing hospital length of stay for bronchiolitis by using an observation unit and home oxygen therapy. *JAMA Pediatr.* 2013;01-7.

Inpatient care for young children with bronchiolitis can cause an overcrowding crisis during peak respiratory-virus activity. Those with hypoxia may linger in the hospital to receive supplemental oxygen, even though their condition is otherwise improved. In a recent retrospective cohort study conducted at a large children’s hospital in Salt Lake City, Utah, researchers tested the hypothesis that length of stay (LOS) could be reduced by providing home oxygen therapy (HOT) after a short stay in an observation unit (OU).

During the 2010–2011 bronchiolitis season, OU-HOT was offered to the families of children aged 3 to 24 months with uncomplicated bronchiolitis (i.e., low illness severity; no comorbid conditions) who tolerated oxygen delivered by nasal cannula. Duration of OU stay was >8 hours. Those whose condition deteriorated were admitted to the inpatient unit. The LOS for the 2010–2011 season (725 children; mean age, 7.5 months) was compared with that for the 2009–2010 season (625 children; mean age, 7.1 months), as well as with the expected LOS derived by extending the linear trend from the previous five seasons forward.

The mean overall hospital LOS (OU or inpatient unit) decreased

from 63.3 hours in 2009–2010 to 49.3 hours in 2010–2011, which was significant by both outcome measures ( $P < 0.001$ ). In addition, the proportion of patients discharged within 24 hours increased from 20% to 38% ( $P < 0.001$ ). Cost per case decreased from \$4,800 to \$3,582 ( $P < 0.001$ ). The protocol appeared safe and was not associated with an increase in readmissions.

Published in *J Watch Infect Dis* March 20, 2013 — Robert S. Baltimore, MD. ■

### DKA often the first recognized sign of type 1 diabetes

**Key point:** *About a third of children are already in diabetic ketoacidosis by the time they are diagnosed with type 1 diabetes, which means that earlier signs of the disease were missed.*

**Citation:** Otto AM. DKA often the first recognized sign of type 1 diabetes. *Fam Pract News.* 02/08/13. <http://www.familypracticenews.com/specialty-focus/diabetes-endocrinology-metabolism/singleview-enewsletter/dka-often-the-first-recognized-sign-of-type-1-diabetes/5038801234459705c70e6cfc58c0735d.html>

Among 805 children in the Pediatric Diabetes Consortium’s database, 34% presented in diabetic ketoacidosis (DKA), half of whom had moderate or severe DKA (pH less than 7.2). The risk of DKA was 54% in children under 3 years old and 33% in older children ( $P = .006$ ). The findings were consistent with previous studies.

“Unfortunately, there has been no apparent change in the rate of DKA at presentation of T1D [type 1 diabetes] in children over the past 25 years; the incidence of DKA in children at the onset of T1D remains high. Effective techniques for increasing awareness of the early symptoms of T1D in both the general public and primary care providers are needed to decrease the incidence of this life-threatening complication,” the investigators wrote (*J. Pediatr.* 2013;162:330-4).

The problem is that those early T1D symptoms—often an abrupt increase in thirst and urination—are “not infrequently” overlooked by parents unfamiliar with the disease and sometimes even by clinicians, especially in very young children. The classic signs of diabetes in children have a variety of harmless possible explanations. Excess thirst might be chalked up to hot weather or a growth spurt. Polyuria might be mistaken for a urinary tract infection. Weight loss, particularly in an obese child, might be attributed to dieting. It’s also hard to tell the difference between normal and abnormal thirst and urination in children less than 1 or 2 years old, and they’re unlikely to be able to voice any complaints.

DKA can be missed too, especially when its associated nausea and vomiting mimic a viral infection. “When a child presents with a flulike illness, it’s worth getting a simple urine dipstick to make sure there’s no sugar or ketones in the urine. ■