



# On CA Pneumonia, Bronchiolitis, Birth Defects and Antibiotics, Effective Use of D-dimer, and H1N1's Toll

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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.

### CAP Treatment Recommendations: Guided in the Right Direction

**Key point:** Results of two large cohort studies indicate that adherence to guidelines for treating community-acquired pneumonia is a good thing.

Citations: Arnold FW, Lajoie S, Brock GN, et al. Improving outcomes in elderly patients with community-acquired pneumonia by adhering to national guidelines: Community-Acquired Pneumonia Organization International Cohort Study results. *Arch Intern Med.* 2009;169:1515-1524.

McCabe C, Kirchner C, Zhang H, et al. Guideline-concordant therapy and reduced mortality and length of stay in adults with community-acquired pneumonia: Playing by the rules. *Arch Intern Med.* 2009;169:1525-1531.

Sharpe BA. Guideline-recommended antibiotics in community-acquired pneumonia: Not perfect, but good. *Arch Intern Med.* 2009;169:1462-1464.

Although guidelines for treating community-acquired pneumonia (CAP) have existed for years, controversy persists regarding guideline-recommended antibiotic regimens, and compliance remains lower than desired.

Now, two research groups have examined the outcomes associated with adherence to the 2007 Infectious Diseases Soci-

ety of America/American Thoracic Society (IDSA/ATS) clinical practice guidelines for CAP management.

In a secondary analysis of data from an observational, retrospective, multinational cohort study, Arnold and colleagues examined outcomes of hospitalized CAP patients aged  $\geq 65$ . Outcomes were better among the 975 patients whose initial antimicrobial therapies were regimen adherent than among the 660 patients whose initial therapies were non-adherent. Guideline adherence was associated with a higher proportion of patients reaching clinical stability within seven days (71% vs. 57%), a shorter median length of stay (LOS; eight days vs. 10 days), and a lower all-cause, in-hospital mortality rate (8% vs. 17%).

Using data from 113 community and teaching facilities in the U.S., the authors examined outcomes among 54,619 adults hospitalized with CAP. Guideline-adherent initial therapy was associated with decreased in-hospital mortality (odds ratio, 0.70), reduced LOS (mean reduction, 0.66 days), and reduced duration of parenteral therapy (mean reduction, 0.57 days).

As listed in an accompanying editorial, several tools are available to improve adherence to practice guidelines. It is time to use our electronic ordering capabilities, for one, to standardize CAP treatment in accordance with the 2007 IDSA/ATS recommendations.

[Published in *J Watch Infect Dis*, October 7, 2009—Larry M. Baddour, MD.] ■

### 3% Hypertonic Saline for Bronchiolitis

**Key point:** Infants treated with hypertonic saline had outcomes similar to those treated with normal saline.



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**Citation:** Grewal S, Ali S, McConnell DW, et al. A randomized trial of nebulized 3% hypertonic saline with epinephrine in the treatment of acute bronchiolitis in the emergency department. *Arch Pediatr Adolesc Med.* 2009;163:1007-1002

A recent Cochrane review suggested that 3% hypertonic saline might reduce length of stay in hospitalized infants with bronchiolitis. In a randomized, double-blind clinical trial conducted at a single pediatric emergency department in Canada, 46 infants with bronchiolitis received nebulized racemic epinephrine with either 3% hypertonic saline or normal saline.

Two hours after treatment, no differences were noted between the groups in the two primary outcome measures—change in a reliable and valid measure of respiratory distress and change in oxygen saturation. Fewer infants in the hypertonic saline group than in the control group were admitted to the hospital, but this difference was not statistically significant (35% vs. 57%).

Bronchiolitis is one of the few pediatric conditions for which hospitalization rates have increased during the past two decades. These results will likely prolong the debate about the use of 3% hypertonic saline to treat bronchiolitis. However, in view of recent findings that the combination of nebulized epinephrine and corticosteroids reduces admission rates, we might be on our way to developing effective treatments for bronchiolitis.

[Published in *J Watch Ped Adolesc Med*, November 25, 2009—Howard Bauchner, MD.] ■

### Birth Defects Associated with Use of Antibiotics During Pregnancy

**Key point:** Sulfonamides and nitrofurantoin (Macrofantin) were associated with birth defects.

**Citation:** Crider KS, Cleves MA, Reefhuis J, et al. Antibacterial medication use during pregnancy and risk of birth defects: National Birth Defects Prevention Study. *Arch Pediatr Adolesc Med.* 2009;163:978-985.

Antibacterial drugs are among the medications most commonly used during pregnancy. Investigators analyzed data from a national birth defects study to compare antibiotic use in 13,155 mothers of infants with at least one major birth defect and 4,941 randomly selected mothers of infants without birth defects from the same geographic region and born during the same period (1997–2003).

Antibiotic use was determined by telephone interview six weeks to two years after the pregnancy. Exposure to antibiotics was defined as reported use during the month before the estimated date of conception through the end of the first trimester; 14% of cases and 13% of controls used antibiotics during this interval.

Sulfonamides were associated with six major birth defects, including anencephaly (odds ratio, 3.4) and hypoplastic left heart syndrome (OR, 3.2). Nitrofurantoin was associated with four birth defects, and erythromycin was associated with two defects. Penicillins, cephalosporins, and quinolones each were associated with one defect.

Hence, penicillins, erythromycin, and cephalosporins appear to be safe. Sulfonamides and nitrofurantoin appear to be associated with several birth defects and should be avoided if possible. Quinolones, used infrequently by women in this study, are not recommended for use during pregnancy.

[Published in *J Watch Ped Adolesc Med*, November 18, 2009—Howard Bauchner, MD.] ■

### Do Emergency Physicians Use Serum D-dimer Effectively to Determine the Need for CT when Evaluating Patients for Pulmonary Embolism? Review of 5,344 Consecutive Patients

**Key point:** D-dimer screening was not used effectively to determine the need for MDCT in diagnosing acute PE in emergency patients.

**Citation:** Corwin MT, Donohoo JH, Partridge R, et al. Do emergency physicians use serum D-dimer effectively to determine the need for CT when evaluating patients for pulmonary embolism? Review of 5,344 consecutive patients. *Am J Roentgenol.* 2009;192:1319-1323.

The purpose of this study was to investigate whether D-dimer screening is being used effectively to determine the need for multidetector CT (MDCT) in diagnosing acute pulmonary embolism (PE) in emergency department patients.

The authors performed a retrospective review of all patients who underwent D-dimer testing or MDCT in the emergency department from January 1, 2003 through October 31, 2005. A D-dimer value of >0.43 mcg/mL was considered positive. Diagnosis of PE was made on the basis of the MDCT.

Clinical algorithms for diagnosing PE mandate that patients with a low clinical suspicion for PE undergo D-dimer testing, then MDCT if positive. For patients with a high clinical suspicion for PE, MDCT should be performed without D-dimer testing.

Of 3,716 D-dimer tests, 1,431 (39%) were positive and 2,285 (61%) were negative. MDCT was performed in 166 (7%) patients with negative D-dimer results and in 826 (58%) patients with positive D-dimer results.

The authors concluded that D-dimer screening was not used effectively to determine the need for MDCT in diagnosing acute PE in emergency patients. This is because 42% of pa-

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tients with a positive D-dimer who should have undergone CT did not receive this examination, and 7% of patients with a negative D-dimer who should not have undergone CT according to protocol actually did undergo CT.

The authors estimated that the diagnosis of acute PE was missed in 12 patients.

### H1N1 Update: Estimates of Flu's Toll; Seasonal Vaccine Not Effective Against 2009 H1N1

*Key point: Government data tally number of cases, hospitalizations, and deaths.*

Citations: CDC Estimates of 2009 H1N1 Influenza Cases, Hospitalizations and Deaths in the United States, April – October 17, 2009. Available at: [www.cdc.gov/h1n1flu/estimates\\_2009\\_h1n1.htm](http://www.cdc.gov/h1n1flu/estimates_2009_h1n1.htm).

MMWR. Update: Influenza activity—United States, August 30–October 31, 2009. 2009;58(44):1236-1241. Available at: [www.cdc.gov/mmwr/preview/mmwrhtml/mm5844a4.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5844a4.htm).

Reports on 2009 H1N1 influenza in the U.S. will now use estimates from the CDC's Emerging Infection Program, rather than counting only laboratory-confirmed cases, according to a CDC news briefing.

The new estimates for the first six months of the pandemic (from mid-April to mid-October) find that:

- roughly 22 million people in the U.S. became ill from the virus
- nearly 100,000 were hospitalized
- some 3,900 died, including an estimated 540 children <18; some 2,900 adults between 18 and 64; and 440 elderly.

The CDC also concludes that the seasonal trivalent vaccine offers no protection from, or increased risk for, 2009 H1N1 disease.

An additional surveillance article on the pandemic notes that "severe outcomes among children ... continue to be prominent" and provides support for the recommendation that those aged 6 months to 24 years be targeted for vaccination. ■

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