ABSTRACTS IN URGENT CARE

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Each month the Urgent Care College of Physicians (UCCOP) provides a handful of abstracts from or related to urgent care practices or practitioners. Sean McNeeley, MD, leads this effort.

Family Members Are Most Frequent Cause of Pertussis in Children Younger Than 1 Year

Key point: Be sure to suggest adding a pertussis vaccine to tetanus whenever possible.

Citation: Skoff TH, Kenyon C, Cocoros N, et al. Sources of infant pertussis infection in the United States. *Pediatrics*. 2015;136:636–641.

Despite recent efforts to increase the number of U.S. adults whose immunizations are current, pertussis still is a frequent problem for children younger than age 1 year and can be life-threatening. This multiyear study attempted to determine the cause of pertussis in children in that age group. A total of 1306 cases were reviewed, and 569 likely causes were noted. Of the cases with a determined cause, most involved exposure from immediate family members as follows: siblings, 35.5%; mothers, 20.6%; and fathers 10.0%. Although the largest infection-causing group is now siblings, parents are close behind. We urgent care providers can make a real difference in our patients' lives if we recommend a tetanus–pertussis vaccine for patients' family members. ■

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Monitoring Local Antibiotic Resistance Patterns Can Assist with Medication Choice for Urinary Tract Infections

Key point: Know your local antibiotic resistance patterns.

Citation: Percival KM, Valenti KM, Schmittling SE, et al. Impact of an antimicrobial stewardship intervention on urinary tract infection treatment in the ED. *Am J Emerg Med*. 2015;33:1129–1133.

Urinary tract infections (UTIs) are a common presenting complaint in urgent care centers as well as emergency departments. The choice of antibiotic should fit guidelines but also local resistance patterns. In this study, the authors attempted to determine whether an educational intervention about local UTI resistance patterns changed empiric antibiotic choice, looking at data for 174 patients before intervention and for 176 patients afterward. Before the intervention, only 40% of prescriptions complied with recommendations. After education, over 80% did. The intervention focused on the increasing resistance to sulfa and quinolone antibiotics and on recommendations by the Infectious Diseases Society of America (ISDA) to be aware of lo-

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cal resistance patterns and increase the use of drugs like nitrofurantoin that are less likely to cause resistance in other flora. Urgent care providers would do well to review the ISDA recommendations and stay updated on local resistance patterns. ■

New Guidelines Available for Evaluating for Pulmonary Embolism

Key point: New pulmonary embolus evaluation guidelines are available.

Citation: Raja AS, Greenberg JO, Qaseem A, et al; Clinical Guidelines Committee of the American College of Physicians. Evaluation of patients with suspected acute pulmonary embolism: best practice advice from the Clinical Guidelines Committee of the American College of Physicians. *Ann Intern Med*. 2015;163:701–711.

The new guidelines from the American College of Physicians may help the urgent care provider decide whether to transfer the patient with suspected pulmonary embolism (PE) to an emergency department or instead order further tests. Because of the common nature of this problem, a review of the entire article is suggested. Here is a summary of the advice covered by the guidelines:

- Best practice 1 concerns the use of validated clinical prediction rules to estimate pretest probability of PE.
- Best practice 2 advises that D-dimer measurements and imaging studies are unnecessary in patients with a low pretest probability if they meet all pulmonary embolism rule-out criteria.
- Best practice 3 advises using high-sensitivity D-dimer measurement instead of imaging studies in patients with a low or intermediate pretest probability.
- Best practice 4 advises use of age-adjusted D-dimer thresholds rather than a generic threshold in patients older than 50 years to establish the necessity of imaging.
- Best practice 5 advises that imaging studies are not helpful in patients whose D-dimer level is less than the age-adjusted cutoff.
- Best practice 6 advises using computed tomography pulmonary angiography (CTPA), rather than a D-dimer measurement, in patients with a high pretest probability. Ventilation–perfusion scans can be used for patients in whom CTPA is inadvisable or when CTPA is unavailable. ■

Alternative for Children with Acute Asthma: Single-Dose Dexamethasone

Key point: Consider dexamethasone for asthma.

Citation: Cronin JJ, McCoy S, Kennedy U, et al. A randomized trial of single-dose oral dexamethasone versus multidose prednisolone for acute exacerbations of asthma in children who attend the emergency department. *Ann Emerg Med*. 2015 October 10. doi: 10.1016/j.annemergmed.2015.08.001. [Epub ahead of print.]

The standard treatment for asthma exacerbation in children is prednisone or prednisolone. Unfortunately the treatment is sometimes not well tolerated. The authors of this study attempted to prove that a single dose of dexamethasone (0.3 mg/kg) was not inferior to prednisolone. The primary outcome was the Pediatric Respiratory Assessment Measure (PRAM) score on day 4 after treatment. A total of 226 children were randomized to one of the steroid treatments, and PRAM scores were obtained for all. There was no difference in PRAM scores, number of hospital admissions, or number of unscheduled physician visits between treatment groups. Urgent care providers who are not already treating patients with dexamethasone may want to consider doing so, because dexamethasone appears to be a good alternative with a reduced risk of poor treatment compliance and reduced need for obtaining further medication. ■

Health-Care Providers Are Not Careful Enough in Removing Personal Protective Equipment

Key point: To decrease contamination, take care when removing personal protective equipment.

Citation: Tomas ME, Kundrapu S, Thota P, et al. Contamination of health care personnel during removal of personal protective equipment. *JAMA Intern Med*. 2015 October 12. doi: 10.1001/jamainternmed.2015.4535. [Epub ahead of print.]

Appropriate removal of personal protective equipment (PPE) is just as important as using it. This study examined safe removal of PPE by measuring exposure to fluorescent lotion. A concerning 46% of removals resulted in contamination because of improper gown-removal technique and because of glove removal. An intervention involving watching a video on proper technique and then practicing it greatly reduced the contamination rate from 60% to <20%, an effect that lasted at least 6 months. Considering all of the virulent pathogens encountered in urgent care centers, management should consider reinforcing PPE removal techniques for all staff members and health-care providers. ■

STONE Score Not Sensitive Enough to Rule Out Need for Computed Tomography Scans

Key point: Although it is better than physician gestalt, the STONE score still does not eliminate the need for computed tomography scans.

Citation: Wang RC, Rodriguez RM, Moghadassi M, et al. External validation of the STONE score, a clinical prediction rule for ureteral stone: an observational multi-institutional study. *Ann Emerg Med*. 2015 October 2. doi: 10.1016/j.annemergmed.2015.08.019. [Epub ahead of print.]

The STONE score was created to categorize patients into low, medium, or high risk of having a renal stone. Its characteristics are as follows: size, topography (stone location), obstruction, number of stones present, and evaluation of Hounsfield units. This study of 845 patients, 331 of whom had renal stones, compared the STONE score to clinical gestalt to determine whether the need for computed tomography (CT) scanning could be eliminated. The STONE score adds points when certain criteria are present: male sex, 2 points; pain duration of <6 hours, 3 points; pain duration of 6 to 24 hours, 1 point; nonblack race, 3 points; nausea alone, 1 point; vomiting, 2 points; hematuria found on urine dipstick testing, 3 points. Patients are then categorized according to score: low, 0 to 5; moderate, 6 to 9; and high, 10 to 13. It was previously assumed that a high STONE score would allow for skipping a CT scan; however, the score has a sensitivity of only 53% and a moderate specificity of 87%, which the authors believed was not good enough to eliminate the need for a scan. This study does not provide a tool that urgent care providers can use to avoid ordering CT scans, but its findings do help quantify the likelihood that a stone is present. Hopefully additional research will make the STONE score more useful in determining which patients may not need CT scans. ■

Five Prediction Models Are Valid for Confirming Pulmonary Embolism

Key point: Pulmonary embolism scores appear to be valid in primary care.

Citation: Hendriksen JMT, Geersing G-J, Lucassen WAM, et al. Diagnostic prediction models for suspected pulmonary embolism: systematic review and independent external validation in primary care. *BMJ*. 2015;351:h4438. doi: 10.1136/bmj.h4438.

Pulmonary embolism is difficult to diagnose or rule out on clinical grounds. This study attempted to validate the criteria that would be available for use in a primary-care setting. The prediction rules using data not normally seen in primary care were excluded. Ten models were reviewed, but only five met the criteria and had available data needed: the original Wells, modified Wells, simplified Wells, revised Geneva, and simplified revised Geneva models. An independent external review of 598 patients showed that all five decision rules performed well. Sensitivity varied from 88% for the simplified revised Geneva to 96% for the simplified Wells, and specificity ranged from 48% for the revised Geneva to 53% for the simplified revised Geneva. Unfortunately the pulmonary embolism rule-out criteria were not validated because pulse oximetry readings were not available for the cohort used. These findings reassure that the prediction rules may also apply to the urgent care setting, but they are also a reminder that even the best rule misses pulmonary embolism in 4% of patients. ■

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Preexisting Symptoms Must Be Considered in Teens Being Evaluated for Concussion

Key point: Concussion-like symptoms are sometimes present at baseline for teenagers.

Citation: Iverson GL, Silverberg ND, Mannix R, et al. Factors associated with concussion-like symptom reporting in high school athletes. *JAMA Pediatr*. 2015 October 12. doi: 10.1001/jamapediatrics.2015.2374. [Epub ahead of print.]

Concussions have been a hot topic in the news and in the sports world. Most U.S. states have passed laws regarding concussion treatment. However, some concussion symptoms are classic descriptions of adolescence. This study attempted to define baseline concussion-like symptoms in a large cohort of teenagers. Over a 4-year period, almost 32,000 students without a concussion in the preceding 6 months were surveyed for baseline concussion-like symptoms. A large percentage of respondents (60%–82% of boys and 73%–97% of girls) reported one symptom, and 19% of boys and 28% of girls had symptoms that could have been classified as post-concussion syndrome. For the urgent care provider, this is a good reminder of that preexisting symptoms must be considered when diagnosing a concussion or post-concussion syndrome. Student athletes should all be tested before play so that their baseline findings can be used in determining their treatment. This is a proactive service that urgent care centers can provide for their communities. [*Editor's note: See our web exclusive "Concussion Care Adds Value to an Urgent Care Sports, Camp, and School Physical Program" at* http://www.jucm.com/concussion-care-adds-value-to-an-urgent-care-sports-camp-and-school-physical-program/.] ■