



# ABSTRACTS IN URGENT CARE

- Timing of concussion symptoms
- Emesis and blunt head trauma
- Levofloxacin in children
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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.

## Timing of concussion symptoms

**Key point:** *Symptoms of concussion such as sleep disturbance, forgetfulness, and fatigue are late in onset.*

**Citation:** Eisenberg MA, Meehan WP 3rd, Mannix R. Duration and course of post-concussive symptoms. *Pediatrics*. 2014;133(6):999-1006.

Estimates of the duration of concussion symptoms in children vary from 1 week to months. This study looks at previous cohorts where the median time to recovery was 13 days and considers symptoms, their duration, and clinical course. The original prospective cohort was patients ages 11 to 22 seen in an emergency room within 72 hours of a concussion. The Rivermead Post-Concussion Symptoms Questionnaire (RPSQ) was used to evaluate symptoms. This study included data from 235 patients who filled out at least 2 surveys. The authors noted that "Although headache, fatigue, dizziness, and taking longer to think were the most common symptoms encountered at presentation, sleep disturbance, frustration, forgetfulness, and fatigue were the symptoms most likely to develop during the follow-up period

that had not been present initially after the injury." For urgent care providers, this new information should prompt a discussion of possible late onset of concussion symptoms and the significant duration of symptoms with patients and family. The article contains a complex table with symptoms and percent present at onset, evaluation, 7, 28, and 90 days that providers may find helpful to explain symptoms and duration. ■

## Emesis and blunt head trauma

**Key point:** *Clinically important brain injury is uncommon in patients who present with emesis only after minor blunt head trauma.*

**Citation:** Dayan PS, Holmes JF, Atabaki S, et al. Association of traumatic brain injuries with vomiting in children with blunt head trauma. *Ann Emerg Med*. 2014;63(6):657-665.

Isolated emesis is a frequent presentation after mild blunt head trauma. Authors in this study attempted to determine the likelihood of clinically important brain injury in patients with only emesis. Patients presenting to the emergency room (ER) with head injury were evaluated by physicians and the standard history and physical was used to determine if the emesis was isolated. Of 5,557 with emesis, 815 were determined to qualify as having isolated emesis. The definition of clinically important traumatic brain injury was similar to other studies (death, neurosurgical procedure, intubation for more than 24 hours, or hospital stay greater than 2 days). Of the patients



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with isolated emesis, 0.2% had clinically important brain injury compared to 2.5% of the remainder of patients presenting with emesis. Interestingly only 37% of the isolated emesis group had computed tomography (CT) performed versus 82% with other symptoms. From an urgent care perspective, the low risk of significant brain injury and low rate of CT performed in the ER can be shared with patients and families when considering CT or transfer to an emergency department. ■

**Levofloxacin safety in children**

*Key point: Levofloxacin may be safer in children than previously thought.*

Citation: Bradley JS, Kauffman RE, Balis DA, et al. Assessment of musculoskeletal toxicity 5 years after therapy with levofloxacin. *Pediatrics*. 2014;134(1):e146-e153.

Musculoskeletal toxicity associated with fluoroquinolones has been a concern for many years now and has limited use of these drugs in children. Previous studies looked at children for 1 year after exposure and identified children with possible toxic effects. This study takes another look at this issue with a 5-year window to determine if the effects lasted or not. The authors enrolled the patients from the prior study who were believed to have had musculoskeletal effects at 1 year. Of these patients, 124 (9%) were exposed to levofloxacin and 83 (9%) were exposed to the comparator antibiotic. Only 49% of each of these groups completed the study. Similar 5-year data were found for both groups. This study is small and not prospective but may be the beginning of changes in recommendations for children. From the urgent care perspective, this obviously does not “green light” the use of fluoroquinolones but can be discussed with parents when other options are not available. ■

**Secondary reactions after an ER visit for an allergic reaction**

*Key point: Biphasic allergic reactions seem rarer than previously thought.*

Citation: Grunau BE, Li J, Yi TW, et al. Incidence of clinically important biphasic reactions in emergency department patients with allergic reactions or anaphylaxis. *Ann Emerg Med*. 2014;63(6):736-744.

Concern about biphasic or second reactions has prompted long emergency room (ER) stays for patients with allergic reactions. This study looks at the incidence of this type of reaction in two ERs in Canada. During the study 428,634 patients presented to the ER. Of these cases, 2,819 were reviewed (496 anaphylaxis and 2,323 allergic reactions). A total of 185 patients returned for at least one extra visit. Only five patients had clinically significant biphasic reactions within 7 days of their original visit. Two occurred in the ER and three after discharge. Two patients were in

the anaphylaxis group and three in the allergic reaction group. There were no deaths or serious morbidity. From an urgent care perspective, providers still need to discuss the possibility of a biphasic or repeat reaction but can reference the small likelihood noted in this study. If further studies confirm these findings, the length of recommended observation may become shorter. ■

**Ultrasound vs x-ray in pediatric hand fracture**

*Key point: Ultrasound is an alternative to x-ray in diagnosis of hand fractures in children.*

Citation: Neri E, Barbi E, Rabach I, et al. Diagnostic accuracy of ultrasonography for hand bony fractures in paediatric patients. *Arch Dis Child*. 2014;Jun 20. pii: archdischild-2013-305678.

Ultrasound has been used to diagnose fractures mostly in the long bones of adults. The uncertain long-term effects of radiation continue to be a concern for parents and providers. The authors of this study attempt to show that ultrasound can be used to diagnose hand fractures in children.

A convenience sample of 204 patients with possible hand fractures were evaluated with standard radiographs and ultrasound. The tests were performed and read independently. The ultrasounds were performed and read by the emergency room providers. A total of 72 fractures were found. Sensitivity and specificity of x-ray were 91.1% and 97.6%, respectively. Ultrasound was similar at 91.5% and 96.8%, respectively.

For urgent care providers, this study is of limited interest, but as the number of indications for ultrasound increase, it may become a modality that urgent care centers might consider adopting if reimbursement covers the cost of equipment and training. ■

**Impact of symptoms at presentation on post-concussion syndrome**

*Key point: More severe symptoms at presentation do not indicate longer symptom duration, but do correlate with risk for post-concussion syndrome.*

Citation: Grubenhoff JA, Deakynne SJ, Brou L, et al. Acute concussion symptom severity and delayed symptom resolution. *Pediatrics*. 2014(1);134:54-62.

Concussion continues to be a hot topic in both professional sports and medicine in general. Delayed resolution of symptoms has great importance when considering advice and follow up for patients diagnosed with concussion. It would seem logical that concussion might take longer to resolve in patients who have more symptoms at presentation.

In this study, 179 patients were reviewed in a longitudinal cohort fashion to determine if more severe symptoms at pres-

entation resulted in delayed symptom resolution (DSR). The analysis showed that DSR was not related to more severe symptoms evaluated by a graded symptom inventory. However, post-concussion syndrome (PSC) was related to more severe symptoms at presentation. PCS is probably more concerning than DSC and its relation to more severe symptoms at presentation needs to be considered.

For the urgent care provider, this information can be used when discussing the importance of follow up and the potential for both DSR and PCS. ■

### Diagnosis of appendicitis with enteral contrast

**Key point:** *Enteral contrast does not appear to improve diagnosis of appendicitis.*

**Citation:** Drake FT, Alfonso R, Bhargava P, et al. Enteral contrast in the computed tomography diagnosis of appendicitis: Comparative effectiveness in a prospective surgical cohort. *Ann Surg.* 2014;260(2):311-316.

Previous studies have shown that enteral contrast does not improve diagnostic accuracy of computed tomography (CT) scans for appendicitis. The authors noted that these studies were mostly at tertiary hospitals and may not be generalizable to other populations. This study examined the diagnostic accuracy of CT scan including intravenous (IV) contrast with and without enteral contrast.

The authors retrospectively reviewed more than 8,000 charts of patients who underwent appendectomy. A total of 54% had only IV contrast. Oral contrast was provided in 28.5%. Pathology correlated with CT findings in 90% of those in whom both IV and enteral contrast was used and 90.4% of those with only IV contrast.

From an urgent care perspective, providers with access to CT scan might discuss skipping the oral contrast with those who are reading imaging studies. Because oral contrast takes time to get through the bowels, eliminating it may decrease the time to get study results and improve throughput. Ill patients also are likely to appreciate not having to swallow the contrast. ■

### Alternative greetings and infection control

**Key point:** *Fist bump could reduce transfer of infections.*

**Citation:** Mela S, Whitworth DE. The fist bump: A more hygienic alternative to the handshake. *Am J Infect Cont.* 2014;42:916-917.

The authors of this study wanted to see how the fist bump compared to hand slap or handshake for risk of spreading infection. Concern continues about the spread of infection through contact with others but providers also are concerned about losing the traditional greeting.

*“From an urgent care perspective, providers with access to CT scan might discuss skipping the oral contrast with those who are reading imaging studies.”*

In this study, two methods were used to determine the location of contact and amount of bacteria spread. All participants used gloves covered in either non-pathogenic *Escherichia coli* or paint. Nearly twice as much transfer was found with the hand-shake versus the hand slap, and even less with the fist bump. Length of contact also increased the amount of transfer.

Although the environment in this study was somewhat artificial, the results are interesting. For the urgent care provider, considering alternative forms of greeting may be appropriate if they are acceptable to patients. ■

### C. difficile infection prevalence

**Key point:** *Clostridium difficile infections are more common than thought in general practice but the percentage is still small.*

**Citation:** Hensgens MPM, Dekkers OM, Demeulemeester A, et al. Diarrhoea in general practice: When should a *Clostridium difficile* infection be considered? Results of a nested case control study. *Clin Microbiol Infect.* 2014 Jul 7. doi: 10.1111/1469-0691.12758

Diarrhea caused by *Clostridium difficile* infection (CDI) is generally considered to have a relationship to hospital or nursing home exposures and antibiotic use. Authors in Holland looked at the incidence of CDI in stool samples from patients that were sent to three laboratories by primary care physicians for any type of infection testing. All unformed stools were tested for CDI toxin whether that was requested or not.

A total of 12,714 samples were tested with 194 (1.5%) samples testing positive for CDI. Only 7% of stool samples had orders for CDI testing, which identified 40% of positive specimens. The authors note that testing based on guidelines (hospitals and antibiotic exposure) would have detected 61% of infections.

From an urgent care perspective this study is interesting. However, considering the low percentage of patients with CDI, further study needs to be done to help identify appropriate patients to test for it. In an era where reducing health care cost is emphasized, testing everyone may not be the best option. ■