ABSTRACTS IN URGENT CARE

- Maximizing the Value of Urine Dipstick Testing
- Screening for Intimate Partner Violence
- Antibiotics for Children with RTI
- Azithromycin in Pediatric Viral Infection
- Self-Monitoring BP with Unvalidated Devices
- Modified Valsalva Maneuver in SVT
- To Mix or Not to Mix COVID-19 Vaccines?

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Nitrofurantoin Resistance

Take-home point: Proteeae group bacteria, which are often resistant to nitrofurantoin, normally result in alkaline (ie, high pH) urine on dipstick testing.

Citation: Sheele J, Libertin C, Fink I, et al. Alkaline urine in the emergency department predicts nitrofurantoin resistance. *J Emerg Med*. 2022;62(3):368-377.

Relevance: A potentially underutilized data point available from urine dipstick testing, pH may provide clues to resistance patterns and guide treatment of urinary tract infections (UTI).

Study summary: Data were drawn from a single health system database of emergency department patients aged >18 years. Out of 67,271 urine samples over a 4-year period, 13,456 grew a single bacterial species.

The authors found that urine cultures growing the Proteeae group (ie, *Proteus* species, *Morganella* morganii, and *Providencia* species) were associated with significantly higher urine pH than culture growing other bacteria (odds ratio [OR] 2.20, 95% confidence interval [CI] 2.06-2.36; p <0.001). Proteeae group urine samples represented 24.4% at pH 8-9 and 40.0% at pH 9. At urine pH 5-7, 80.4% of urine samples were sensitive to nitrofurantoin; however, this percentage decreased to 66.1% for urine pH 8-9 and 54.6% for urine pH 9. Urine pH of 8 or higher was most associated with high rates of nitrofurantoin resistance.

Editor's comments: This was a single-center, retrospective study. However, its findings are worth noting for UC providers who most commonly select treatment empirically based on urine dipstick results. While nitrofurantoin is the preferred first-line empiric choice for uncomplicated UTI, it would be reasonable to choose a different agent for very alkaline specimens. ■

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Do We Need to Screen Better for Intimate Partner Violence?

Take-home point: The authors argue for greater vigilance in screening for intimate partner violence (IPV) among patients presenting for acute care.

Citation: Feral-Pierssens A-L. Intimate partner violence: we should not fail to ask about it! *Eur J Emerg Med*. 2022;29(2): 91-92.

Relevance: Screening for and detection of IPV is largely underprioritized in the urgent care setting.

Study summary: This paper focuses on common patterns of presentation and methods of improving detection of IPV. Prevalence of IPV ranges widely, from 5% to 50% of women visiting the ED in studies cited. Systematic screening by sufficiently trained healthcare providers has been shown to significantly increase detection rates. IPV is not inevitable, and the author cautions against nihilism. Encounters with the healthcare system offer one of the highest-yield opportunities for intervention when IPV is identified.

Editor's comments: While this was a perspective piece, it serves as a reminder to focus on identifying less obvious groups of vulnerable patients. ■

Antibiotic Prescribing for Respiratory Tract Infections in Children

Take-home point: Amoxicillin and antibiotics in general are not recommended for uncomplicated chest infections in children unless pneumonia is suspected.

Citation: Little P, Francis N, Stuart B, et al. Antibiotics for lower respiratory tract infection in children presenting in primary care in England (ARTIC PC): a double-blind, randomised, placebo-controlled trial. *Lancet*. 2021;16;398(10309):1417-1426.

Relevance: Despite widespread awareness of the importance of antibiotic stewardship, amoxicillin is still commonly prescribed for simple respiratory tract infection in children. This study adds further confirmation and reassurance that, unless pneumonia is diagnosed, amoxicillin doesn't benefit children with RTI.

Study summary: ARTIC PC was a double-blind, randomized, placebo-controlled, parallel-group trial of amoxicillin vs placebo for children presenting with respiratory infections in primary care at 56 general practice clinics in England. Participants were randomly assigned in a 1:1 ratio to receive either amoxicillin 50 mg/kg per day orally divided into three doses for 7 days or placebo.

Of 438 patients enrolled, 222 were randomly assigned to the antibiotics group, with the other 216 assigned to the placebo group. The authors found the median duration of improvement of symptoms in patients with at least moderately severe symptoms was similar between groups (5 days [IQR 4–11] in the antibiotics group vs 6 days [4–15] in the placebo group). There was a small but statistically significant difference between the groups in symptom severity on days 2 through 4 (1·8 [SD 1·0] in the antibiotics group vs 2·1 [1·1] in the placebo group).

These results suggest that antibiotics do not provide a clinically important benefit on average for symptom reduction nor symptom severity.

Editor's comments: The study was not powered to assess complications or repeat consultations. Recruitment was halted due to the COVID-19 pandemic. Results confirm findings of a number of previous studies indicating that antibiotics, amoxicillin in particular, do not reduce the duration of illness for most children with respiratory infections. ■

Azithromycin to Prevent Recurrent Wheeze in Pediatric Viral Infections

Take-home point: This study showed no benefit in the administration of oral azithromycin in preventing recurrent wheezing in children with viral respiratory infections.

Citation: Beigelman A, Srinivasan M, Goss C, et. al. Azithromycin to prevent recurrent wheeze following severe respiratory syncytial virus bronchiolitis. *NEJM Evid*. 2022;1(4).

Relevance: Wheezing is common among children with viral upper respiratory infection. Azithromycin has been shown to have anti-inflammatory effects; however, it is unclear if this is clinically meaningful in reducing the probability of developing asthma.

Study summary: This double-blind, placebo-controlled, parallel-group, single-center randomized trial compared the effects of azithromycin vs placebo in preventing reoccurrence of wheezing in children who presented with wheezing in the setting of viral URI. There was an active treatment phase of 2 weeks and an observational phase of up to 48 months, with participants enrolled during three consecutive respiratory syncytial virus seasons. Azithromycin was administered orally as 10 mg/kg once daily for 7 days, followed by 5 mg/kg once daily for 7 days.

Two hundred children were randomly assigned to treatment vs placebo arms. The authors found 47% in the azithromycin group developed recurrent wheeze compared with 36% in the placebo group. There was no significant difference in recurrence of wheezing rates between participants in the azithromycin and placebo group. There were no differences between the azithromycin group and the placebo group in the annualized number of days with any respiratory symptoms.

Editor's comments: This was a single-center study and the duration of azithromycin treatment (2 weeks) does not conform to standard treatment guidelines. The authors noted a reduction in respiratory symptom in the third year of the study, which coincided with the start of the COVID-19 pandemic. They postulate that this might be due to other factors introduced during the pandemic, including social distancing and lower levels of air pollution. ■

Validation of Blood Pressure Monitoring Devices

Take-home point: Lack of validation of blood pressure monitoring devices used by patients complicates management of hypertension.

Citation: Picone D, Campbell N, Schutte A, et al. Validation status of blood pressure measuring devices sold globally. *JAMA*. 2022;327(7):680-681.

Relevance: The lack of universal standardization of BP monitoring devices or validation of their accuracy can lead to faulty diagnoses of hypertension and unnecessary treatment with inherent risk of side effects.

Study summary: Analysis was conducted on the publicly available database of Medaval, a for-profit company that provides services for device manufacturers, including validation of research studies for complete protocol adherence and performing

validation studies, which are published in peer-reviewed journals. For this study, 3,411 devices from 457 unique manufacturers were identified for review.

The authors found 300 devices (8.8%) were validated, 378 (11.1%) were equivalent, and no evidence of validation for 2,602 (76.3%). Devices listed were from companies that distribute worldwide, as well as by e-commerce. Among the upper arm cuff devices reviewed, 10% were validated, 13.2% were equivalent, and there was no evidence of validation for 73%. In wrist-based devices 5.6% were validated, 5.5% were equivalent, and there was no evidence of validation for 85%.

Editor's comments: The devices included in this database may represent a biased sample. However, it is clear that home BP monitoring devices are not universally validated. This is important to note for patients reporting concerns for high or low readings at home that do not correspond to values in clinic. In such situations, it's worthwhile to have the patient bring their BP cuff in for their next clinic visit to compare values.

Efficacy of Modified Valsalva Maneuver Technique in Treatment of Supraventricular Tachycardia

Take-home point: The modified Valsalva maneuver (VM) was found to be significantly more effective than standard VM in the treatment of supraventricular tachycardia.

Citation: Lodewyckx E, Bergs J. Effectiveness of the modified Valsalva maneuvers in adults with supraventricular tachycardia: a systematic review and meta-analysis. *Eur J Emerg Med*. 2021;28(6):432-439.

Relevance: SVT is a relatively benign dysrhythmia in most cases; however, chemical or electrical cardioversion is rarely an option in urgent care. VM, if effective in terminating SVT, may spare patients from an ED visit.

Study summary: This was a systemic review and meta-analysis using the PRISMA standards for analyzing systemic reviews. Only randomized clinical trials comparing the standard VM's and modified VM's effectiveness in achieving sinus rhythm conversion in adults with SVT (defined as a QRS duration less than 120 ms and a rate more than 100 bpm) were included. Five studies were identified as suitable for meta-analysis which consisted of 1,181 patients. MV included blowing into a syringe or straw and abdominal counterpressure with leg elevation.

The authors found all studies reported a significant difference between standard VM and modified VM, favoring modified VM (OR = 4.36). Pooled analysis showed 15.8% conversion rate for standard VM vs 45% in the modified VM group (NNT = 3.4 patients).

Editor's comments: The results of this systematic review and meta-analysis are necessarily dependent on the quality of the original investigations. Given that these MV have no associated risk, it seems reasonable to immediately include them in the algorithm for treating SVT given their comparative effectiveness in this meta-analysis. ■

COVID-19 Abstracts

To Mix or Not to Mix COVID-19 Vaccines (and Is It safe to Do So)?

Take-home point: Homologous and heterologous booster vaccines both seem to have an acceptable safety profile.

Citation: Atmar R, Lyke K, Deming M, et. al. Homologous and heterologous COVID-19 booster vaccinations. *N Engl J Med*. 2022;386(11):1046-1057.

Relevance: Understanding the safety profile, effectiveness of, and ability to "mix and match" COVID-19 vaccinations will help to guide patients as the pandemic persists.

Study summary: This open-label, nonrandomized, adaptive-design clinical trial was performed in sequential stages at 10 sites in the U.S. Trial vaccines included mRNA-1273 (Moderna, trial stage 1), Ad26.COV2.S (Johnson & Johnson, trial stage 2), and BNT162b2 (Pfizer-BioNTech, trial stage 3) which created nine different combinations of primary vaccinations and boosters.

The authors enrolled 458 participants. They found all booster vaccines were immunogenic (ie, protective) in the participants regardless of which primary regimen they had received. All groups, except for the homologous Johnson & Johnson prime-boost group, had postbooster levels that correlated with 90.7% vaccine efficacy at preventing symptomatic COVID-19. This suggests that homologous and heterologous booster vaccine doses, in any combination, increase protective efficacy against symptomatic COVID-19 infection.

Editor's comments: The authors admit that this trial was not designed to directly compare responses among different booster regimens. There was not an unboosted control group in the study. Study demographics were not entirely represen-tative of the general U.S. population. It seems reasonable to suggest to patients, based on these data, that they needn't worry excessively about which booster shot to get based on the manufacturer of their initial primary series. ■