

SAEM21 Abstracts

Welcome to the Show!

It has been said that the emergency department (ED) offers the best stage to the theatre of life. I am not positive who said that, or when. Maybe I just made it up. But I submit that it is a good and true metaphor because each day in the ED we meet people at the brink. For a few hours we experience the awful human cost of medical and social disparities and we feel the triumphs and abject failures of society and government. Assuming you buy the metaphor of the ED as the stage of the theatre of life, then by extension, the abstracts of the SAEM annual meeting are the equivalent of the little brochure the snooty usher hands you when you walk into the theatre. (They keenly recognize subtle details that alert them to my imposter status: "Sir, our guests don't normally wear overalls in the house," they loudly whisper). This brochure describes the actors, the roles they have played, the history of the script, and details about the show's director and producer — and also technical stuff that only true theatre enthusiasts have any business reading about. In this year's offering, your brochure of the stage of life tells the dominant theme of "King COVID," shown by the use of this acronym 1165 times in the 884 abstracts. The second most dominant area of interest involves the loosely interconnected themes of disparities, health equity, social determinants, followed by psychosocial stress and burnout. These are the concerns of the world, and these are the days and nights of our lives.

All the best,
 Jeffrey A. Kline, MD
 Editor-In-Chief
 Academic Emergency Medicine

1 | Integrated omics endotyping of infants with respiratory syncytial virus bronchiolitis

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Background and Objectives: Respiratory syncytial virus (RSV) bronchiolitis is not only the leading cause of infant hospitalizations but also one of the strongest risk factors for childhood asthma. While emerging evidence suggests clinical heterogeneity within RSV bronchiolitis, the underlying mechanisms remain unclear. We aim to identify biologically-distinct subgroups (endotypes), and to examine their relationships with acute severity and chronic morbidities.

Methods: In a multicenter prospective cohort study of infants (aged <12 months) hospitalized for bronchiolitis, we integrated clinical, nasopharyngeal microbiome and host transcriptome (RNAseq), and metabolome (liquid chromatography–mass spectrometry) data collected at hospitalization. We then applied network and clustering approaches to identify RSV bronchiolitis endotypes. We examined their association with 1) acute severity (defined by positive pressure ventilation [PPV] use during hospitalization) and 2) the risk for developing asthma by age 5 years by fitting logistic regression models.

Results: Of 221 infants hospitalized for RSV bronchiolitis (median age, 3 months), we identified four distinct endotypes—mainly characterized by their clinical presentation, microbiome, and immune response: A) clinical-classic, microbiome-*M. nonliquefaciens*, and interferon (IFN)-intermediate, B) clinical-severe, microbiome-mixed, and IFN-low, C) clinical-atopic, microbiome-*S. pneumoniae/M. catarrhalis*, and IFN-high, and D) clinical-non-atopic, microbiome-*M. catarrhalis*, and IL-6-high. During the hospitalization, compared with endotype A infants, endotype B infants had a significantly higher risk for PPV use (5% vs 19%; OR 4.82; 95% CI 1.23–32.1). During the follow-up period, compared to endotype A, endotype C had a significantly higher risk for developing asthma (9% vs 38%; OR 6.00; 95% CI 2.08–21.9).

Conclusion: The integrated omics analysis identified biologically-distinct RSV bronchiolitis endotypes in infants, including one characterized by mixed-pattern microbiome and low IFN response that is at risk for higher acute severity, as well as one characterized by

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screens and tests conducted in the ED across different demographic groups. Further analyses could seek to understand relatedness of a marijuana chief complaint or related diagnoses to better understand changes in marijuana screening and testing in the ED over time.

158 | Trends in drug use adverse effect visits at an emergency department during New Jersey's first wave of coronavirus

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Background and Objectives: Emerging reports show that there was an increase in drug use related deaths and visits to the ED during the COVID-19 pandemic. Recent studies looking at ED visits during COVID-19 focus on specific complications such as overdose and do not look at trends of all drug use adverse effects (DUAEs) pre, during, and post COVID's first wave. We report a granular level of trend and rate analysis for visits related to all DUAEs and compare that to trends in ED volume at an urban ED.

Methods: This was a single-center retrospective review of all DUAE and ED visits within the time frames February-May 2019 and February-May 2020. Each time frame was broken down into 6-week periods that correspond to the periods before, during, and after the 2020 first wave in our region for comparison. We normalized DUAE data using ED volume. All data were reported using proportions and 95% confidence intervals and were analyzed using the χ^2 test.

Results: Prior to the first wave, the rate of all ED visits relating to DUAEs surpassed the rate for 2019 for every single week (minimum: 100.1% of 2019 visits, maximum: 123.8%, 10.4% CI: [9.9, 11] vs. 9.6% CI: [9.0, 10.0], $p = 0.018$). During the 1st wave, this rate dropped as low as 52.1% of 2019's volume (9% CI: [9.0, 10.0] vs. 8.3% CI: [7.7, 8.9], $p = 0.0292$). Similarly, overall, ED visits fell to as low as 62.8% of 2019's ED volume ($p = 0.002$). After the 1st wave, ED visits recovered to a maximum of 70.4% of 2019's volume towards the end of May. In comparison, the rate of visits related to DUAEs began to surpass that of 2019's volume, with a minimum of 103% and a maximum 145% at the end of April (12.1%, CI: [11.4, 12.9] vs. 9.9% CI: [9.3, 10.4], $p < 0.0001$).

Conclusion: During the first wave there was a reduction of ED utilization for all patients including those with DUAEs. In contrast to overall ED volume which lagged in its return, DUAE visits recovered to baseline more quickly and surpassed that of prior years' volume. The sudden rise in visits post the first wave, which is supported by national data showing an increase in overdose deaths, could be attributed to increased drug use, changes in EMS practice, decrease in access to addiction support and mental health services, or sense of safety due to reduction of statewide COVID cases. Future studies should look at determining the causes for the changes in ED utilization for DUAE during COVID, how to address them, and specific trends for type of complication.

159 | Most rattlesnake envenomation patients receive multiple doses of antivenom

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Background and Objectives: No previous research has reported the quantity and timing of antivenom dosing in the treatment of crota-line snake envenomation patients under real world conditions. This study describes the dose and timing of both ovine Fab and equine F(ab')₂ antivenom administration for rattlesnake victims.

Methods: We performed a post hoc analysis of prospectively collected observational data. Rattlesnake envenomation cases in the American College of Medical Toxicology (ACMT) Toxicology Investigators' Consortium (ToxIC) North American Snakebite Registry (NASBR) treated in 2019 were stratified by antivenom administered. Patients receiving both antivenoms were excluded from this analysis. Descriptive statistics and visual presentation were used to understand total antivenom dosing.

Results: Among 114 rattlesnake envenomation patients receiving antivenom, 53 patients (46.5%) received Fab antivenom, 27 (23.7%) received F(ab')₂ antivenom, and 34 (29.8%) received both products. Among patients receiving only Fab antivenom, the median total antivenom dose was 10 vials (IQR: 6 - 16), and 42 patients (79.2%) received more than one antivenom dose. The median interval between Fab doses was 6.0 (4.0-10.0) hours. The F(ab')₂ only group received a median of 15 (10-22) vials of antivenom, and 17 patients (63.0%) received multiple doses. The median interval between F(ab')₂ doses was 5.0 (3.0-6.0) hours. The mean (SEM) total antivenom dose administered was 11.4 (5.5) vials of Fab and 17.0 (7.6) vials of F(ab')₂ (ratio: 0.67; 95% CI 0.54-0.84).

Conclusion: Regardless of the antivenom used, most rattlesnake patients in the NASBR receive multiple antivenom doses. These data could not consistently distinguish doses given for initial control (either antivenom), scheduled maintenance (Fab), or to treat recurrent venom effects (either antivenom), and do not account for pre-treatment severity.

160 | Amphetamine abuse in emergency department patients with suicidal ideation

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Background and Objectives: Methamphetamine is a stimulant with high potential for abuse and addiction. Chronic methamphetamine abusers can develop psychotic symptoms including paranoia, visual and auditory hallucinations, and delusions. Obtaining a urine drug