Table 2. Recent travel and hospitalization* history of Non-KPC CPO patients among those with risk factor history obtained (N=134)

	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	Total n (%)
Recent overnight stay at an Illinois healthcare facility	6 (100)	1 (100)	5 (71)	30 (97)	46 (94)	34 (85)	122 (91)
Recent overnight stay at an Illinois vSNF	1 (17)	1 (100)	2 (29)	22(71)	34 (69)	23 (58)	83 (62)
Recent overnight stay at an Illinois LTACH	2 (33)	1 (100)	1 (14)	7 (23)	14 (29)	7 (18)	32 (24)
Recent overnight stay at an Illinois ACH	5 (83)	1 (100)	5 (71)	20 (65)	22 (45)	31 (75)	83 (62)
Foreign travel	2 (33)	0 (0)	4 (57)	4 (13)	4 (8)	7 (18)	21 (16)
Hospitalization outside of the United States	2 (33)	0 (0)	4 (57)	3 (10)	3 (6)	5 (13)	17 (13)

*Recent hospitalization is defined as within 6 months of culture collection

Disclosures. **All Authors:** No reported Disclosures.

2853. Innate Immune Response in Serum and Cerebrospinal Fluid of Neonates and Infants Infected with Parechovirus-A3 and Enteroviruses

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Session: 297. Pediatric Viral and Fungal Diseases
Saturday, October 5, 2019: 1:45 PM

Background. Parechovirus-A3 (PeV-A3) and enteroviruses (EVs) are the most common viral causes of neonatal and infantile sepsis. We previously reported that the clinical manifestations of PeV-A3 infection—e.g., high body temperature, tachycardia, and poor peripheral circulation, but not cerebrospinal fluid (CSF) pleocytosis—tend be more severe than those of EV infection. We tested the hypothesis that innate immune responses to PeV-A3 and EVs are distinct.

Methods. Using serum and CSF samples, we investigated immune responses of febrile neonates and infants <4 months in Niigata, Japan, from 2015 through 2018. PeV-A and EV infections were diagnosed with real-time PCR. PeV-A3 infection was diagnosed by sequence analysis of the VP1 region. The control was clinically well patients without serum and CSF findings suggestive of bacterial or viral etiology. The Milliplex MAP human cytokine/chemokine magnetic bead panel (Merck Millipore, Germany) was used to analyze 22 cytokines/chemokines related to innate immunity in serum and CSF.

Results. We evaluated 14 PeV-A3-infected and 15 EV-infected patients and 8 controls. Serum levels of proinflammatory cytokines/chemokines (fractalkine, interferon-α2, interleukin [IL]-1 receptor α, IL-6, IL-8, and IL-15) were significantly higher in PeV-A3-infected patients than in EV-infected patients ($P < 0.005$). Serum cytokine/chemokine profiles of EV-infected patients did not differ from those of controls. However, while most pro- and anti-inflammatory cytokines/chemokines in CSF were elevated in EV-infected patients, levels were low or undetectable in PeV-A3-infected patients and controls ($P < 0.005$).

Conclusion. PeV-A3-infected patients had high serum levels of proinflammatory cytokines/chemokines, which may explain why clinical manifestations were more severe in this patient group than in EV-infected patients. Conversely, the limited or nonexistent innate immune response in CSF from PeV-A3-infected patients might explain the absence of CSF pleocytosis. These findings improve our understanding of the differing pathophysiological characteristics of PeV-A3 and EV infection in neonates and young infants.

Disclosures. **All Authors:** No reported Disclosures.

2854. Enterovirus D68 Infections in Pediatric Patients in Central Ohio: Clinical Characteristics of a New Outbreak in 2018

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Session: 297. Pediatric Viral and Fungal Diseases
Saturday, October 5, 2019: 2:00 PM

Background. Many aspects of EV-D68 pathogenesis in children are not fully understood. In 2014, we experienced an outbreak of EV-D68-associated acute respiratory illness affecting mostly asthmatic children with no cases of acute flaccid myelitis identified. Late in 2018, a new outbreak occurred. The objective of this study was to describe the differences in clinical presentation in children diagnosed with EV-D68 infection during the 2018 outbreak.

Methods. This is a single-center, observational study. Nasopharyngeal (NP) samples from patients <21 years of age that tested positive for rhinovirus/enterovirus (RV/EV) by the FilmArray respiratory panel v1.7 were prospectively collected. EV-D68 was confirmed using a laboratory-developed RT-PCR. Demographic, clinical characteristics, and semiquantitative EV-D68 loads were analyzed according to the clinical presentation.

Results. From May to October 2018, 1,987/3,633 (55%) samples were RV/EV positive. Of those 399/1,028 (39%) tested positive for EV-D68 (121 outpatients; 278 inpatients). Inpatients were older (3.1 vs. 1.8 year olds; $P < 0.01$) with no differences in sex or EV-D68 loads ($P > 0.05$). Within the inpatient cohort, 67 (1.4 year olds) children were previously healthy, 146 (4.1 year olds) had underlying asthma and 65 (2.5 year olds) had chronic medical conditions (24% vs. 53% vs. 23%, respectively). Most patients presented with respiratory symptoms (>95%), followed by fever (51%) or gastrointestinal symptoms (28%). Eleven children (4%) presented with neurologic manifestations including: acute flaccid myelitis in two children, opsoclonus myoclonus syndrome in one child, and seizures in the remaining eight. Rates of viral co-detection were low (8%) and none of the children with neurologic manifestations had another respiratory virus identified. Patients with neurologic findings had lower EV-D68 loads than those who did not (29 vs. 25 Ct values; $P = 0.03$).

Conclusion. EV-D68 infection was associated with significant morbidity, affecting children with underlying asthma at greater rates. It was associated with severe neurologic manifestations despite these children having lower EV-D68 loads. Active surveillance for EV-D68 should be routine to allow a better understanding of the epidemiology and severity of disease.

Disclosures. **All Authors:** No reported Disclosures.

2855. Respiratory Syncytial Virus Neutralizing Antibodies in Cord Blood and Serum from Infants up to 2 Years of Age in a Multinational Prospective Study

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Session: 297. Pediatric Viral and Fungal Diseases
Saturday, October 5, 2019: 2:15 PM

Background. Respiratory syncytial virus (RSV) is the most common cause of lower respiratory tract infections (LRTI) during infancy worldwide. High cord blood (CB) concentrations of anti-RSV neutralizing antibody (nAb) may attenuate, delay, or prevent infant infection. We report RSV A and B nAb concentrations in CB and serum from a birth cohort at different time points through 2 years of age.

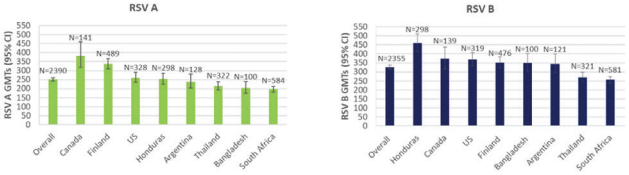
Methods. Between 2013 and 2017, newborns from 8 countries were studied prospectively from birth to 2 years of age (NCT01995175). CB was collected at birth for the entire cohort. A subcohort of children was randomly assigned to have one blood sample collected again at either 2, 4, 6, 12, 18, or 24 months of age. Sera were analyzed for RSV A and B nAb concentrations by serum neutralization assay. Active surveillance was used to identify LRTIs during the 2-year follow-up as previously reported.

Results. In total, 2,401 newborns were enrolled and followed up. >99% of infants had detectable CB RSV A and B nAb. Geometric mean antibody titers (GMTs) varied by country, but were overall higher for RSV B than for RSV A (327 vs. 251; Figure 1). The lowest GMTs were seen from CB sera collected from South African newborns (197 RSV A, 255 RSV B); Canadian newborns had the highest RSV A GMT (383), while Hondurans had the highest RSV B GMT (460). 1380 infants provided follow-up serum nAb results as part of the subcohort (Figure 2). Dramatic waning of GMTs was evident, with a ~3-fold drop in GMTs at 2 months of age, and an additional ~2-fold drop between 2 and 4 months of age. At 6 and 12 months of age, 71% and 50% of infants had RSV A nAb and GMTs were at a nadir of 14. At 6, 12, and 18 months of age, RSV B nAb was detected in 98%, 69%, and 63% of infants, respectively. The RSV B nAb nadir GMT of 20 was observed at 12 months of age, while the 6- and 18-month RSV B nAb GMTs were 30 and 31, respectively. A total of 1,017 LRTIs were identified during the 2-year study period; of which, 94 (9%) were caused by RSV A and 132 (13%) by RSV B. Associations between CB nAb levels and RSV infection will be presented.

Conclusion. Neutralizing Ab to RSV A and B was present at birth in infants from 8 countries, and waned over time. GMTs were at a nadir at 6 to 12 months of age.

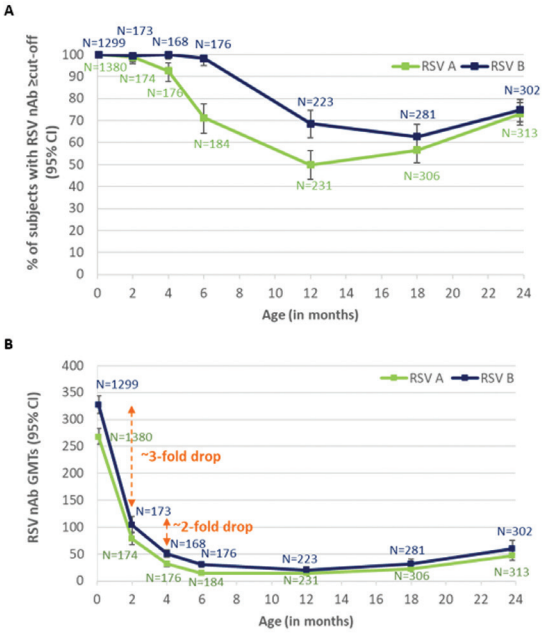
Funding. GlaxoSmithKline Biologicals SA.

Figure 1. Geometric mean titers of RSV A and RSV B neutralizing antibodies in cord blood, overall and by country



[Per-protocol cohort] 2390 (99.5%) participants had available results for neutralizing antibodies against RSV A and 2355 (98.1%) for neutralizing antibodies against RSV B; Neutralizing antibody titers were expressed as ED60; **GMT**, geometric mean antibody titer; **95% CI**, 95% confidence interval; **N**, number of participants with available results

Figure 2. Seropositivity rates (A) and geometric mean titers (B) of RSV A and RSV B neutralizing antibodies by age in participants randomized to blood collection subcohort



[Per-protocol subcohort] Neutralizing antibody titers were expressed as ED60; The assay cut-off was 8 (RSV-A) or 6 (RSV-B); **GMT**, geometric mean antibody titer; **95% CI**, 95% confidence interval; **N**, number of participants with available results

Disclosures. **All Authors:** No reported Disclosures.

2856. Salvaging High-Value Catheters: Antifungal Lock Therapy for Candidal Central Catheter Infections in a Pediatric Cohort

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Session: 297. Pediatric Viral and Fungal Diseases
Saturday, October 5, 2019: 2:30 PM

Background. By IDSA guidelines, therapy for central line-associated bloodstream infections (CLABSI) due to *Candida* species requires catheter removal and administration of systemic antifungals. Despite this, in selected cases catheter salvage is desirable. The addition of antifungal lock therapy (ALT) has been proposed in these cases, but evidence for efficacy of this approach is limited. Here we report a retrospective analysis of ALT use for CLABSI due to Candida species at a single pediatric center.

Methods. All events of candidal CLABSI with ALT use were identified by retrospective record review between January 1, 2008 and December 31, 2018. CLABSI was defined by the growth of *Candida* from at least one central blood culture. Clearance was defined as a period of 48 hours with no positive cultures. Recurrence was defined as a subsequent positive blood culture with the same fungal organism either before or after line removal. Events were classified as "early removal" vs. "retained 7 days" depending on whether the line remained in place on day 7 after the first positive culture.

Results. Overall, 122 qualifying CLABSI were identified, 64 (52%) were retained 7 days or more (Table 1). Overall, 59% of CLABSI met criteria for clearance prior to line removal. Lines retained 7 days were likely to also remain in place at 28 days (72%) and had a low rate of relapse (8%) within 28 days. Lines in the early removal group had lower recurrence rates within 1 year (17% vs. 42%, $P = 0.005$), but this difference narrowed when considering recurrence at any time (31% vs. 47%, $P = 0.1$) or by Kaplan–Meier analysis (Figure 1) Additional microbiological and outcome data can be found in Tables 2 and 3.

Conclusion. This retrospective analysis is the largest described cohort of antifungal locks for line salvage in a pediatric population to our knowledge. These findings highlight the advantages of line removal, with lower recurrence at 1 year. However, when line salvage with antifungal locks is attempted, retention and recurrence rates in the first month are favorable, and recurrence rates converge in the long-term, presumably because the underlying risk factors remain. While line removal remains the standard therapy for candidal CLABSI, we find that ALT-based line salvage may be a viable alternative.

	Total (N=122)	Retained 7 days (N=64)	Early Removal (N=58)
Distinct Individuals	75	38	50
Sex = Male (%)	67 (55)	34 (53)	33 (59)
Race = White (%)	88 (72)	46 (72)	42 (72)
Race = Black (%)	19 (16)	9 (14)	10 (17)
Race = Other (%)	15 (12)	9 (14)	6 (10)
Mean Age (y) [IQR]	8.6 [2.2-16.1]	8.9 [2.7-16.8]	8.2 [1.8-15.4]
Diagnosis = ONC (%)	17 (14)	6 (9)	11 (19)
Diagnosis = SGS (%)	80 (66)	50 (78)*	30 (52)*
Diagnosis = SOT (%)	42 (34)	27 (42)	15 (26)
Diagnosis = BMT (%)	6 (49)	2 (3)	4 (7)

Table 1: Demographic information. IQR: Interquartile range. ONC: oncology, SGS: short gut syndrome, SOT: solid organ transplant, BMT: bone marrow transplant. y: years. An instance may belong to more than one diagnosis group. * - $p < 0.05$ by Pearson's Chi-squared between "early removal" and "retained 7 days" groups.

	Total (N=122)	Retained 7 days (N=64)	Early Removal (N=58)
Polymicrobial (%)	54 (44)	33 (52)	21 (36)
Candida glabrata (%)	38 (31)	25 (39)	13 (22)
Candida parapsalosis (%)	36 (30)	19 (30)	17 (29)
Candida albicans (%)	34 (28)	18 (28)	16 (28)
Candida tropicalis (%)	11 (9)	5 (8)	6 (10)
Other Candida (%)	14 (11)	4 (6)	10 (17)
GPC coinfection (%)	40 (33)	24 (38)	16 (28)
GNR coinfection (%)	32 (26)	20 (31)	12 (21)
Other bacterial coinfection (%)	3 (2)	1 (2)	2 (34)
AMB Locks Used (%)	93 (76)	47 (73)	46 (79)
Ethanol Locks Used (%)	34 (28)	20 (31)	14 (24)

Table 2: Microbiological information. An instance may belong to more than one microbiological category or lock category. AMB: Liposomal amphotericin. All $p > 0.05$ by Pearson's Chi-squared between "early removal and "retained 7 days" group.

	Total (N=122)	Retained 7 days (N=64)	Early Removal (N=58)
Infection cleared prior to line removal (%)	72 (59)	58 (91)*	14 (24)*
Recurrence within 28 days (%)	8 (7)	5 (8)	3 (5)
Recurrence within 1 year (%)	37 (30)	27 (42)*	10 (17)*
Recurrence at any time (%)	48 (39)	30 (47)	18 (31)
Line retained 28 days (%)	46 (38)	46 (72)	NA
Line retained 1 year (%)	9 (7)	9 (14)	NA
Median time to recurrence (d) [IQR]	136 [73-357]	101 [63-202]*	358 [115-640]*

Table 3: Rates of clearance, recurrence and line retention. IQR: interquartile range. d: days. * - $p < 0.05$ by Pearson's Chi-squared or Mann-Whitney U test between "early removal" and "retained 7 days" groups.

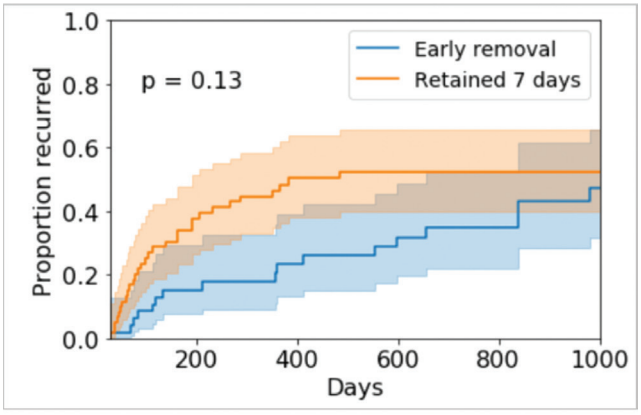

Figure 1: Kaplan-Meier curves for recurrence of Candidal CLABSI for "early removal" and "retained 7 days" groups. P-value by Log-Rank test.

Disclosures. **All Authors:** No reported Disclosures.