Conclusion: There is a wide spectrum of illness in children with SARS-CoV-2, ranging from asymptomatic to critical illness. Hispanic ethnicity was disproportionately represented in our cohort, which requires further evaluation. We found that young age, comorbid conditions, and CRP appear to be risk factors for severe disease in children.

Disclosures: Kelly E. Graff, MD, BioFire Diagnostics, LLC (Grant/Research Support)

82. Multisystem Inflammatory Syndrome in Children and non-sars-cov-2 Infections: A Retrospective Cross-sectional Study

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Session: O-15. COVID-19 What to be Aware of: Special and Vulnerable Populations

Background: Multisystem inflammatory syndrome in children (MIS-C) has been described in areas with high Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2) burden. Clinical features included in the MIS-C case definition (e.g fever, elevated inflammatory markers) overlap with features of other childhood infections. The prevalence of non-SARS-CoV-2 infection in patients evaluated for MIS-C has not been described.

Patients evaluated for MIS-C, and therapies administered.

	Total evaluated	MIS-C alone	Infection + MIS-C	Bacterial infection alone	Viral infection alone
Number	39	16	2	4	1
Immunomodulation/Antiplatelet					
Anakinra	4	3	1	0	0
Aspirin	14	10	1	3	0
IVIg	17	12	2	3	0
Methylprednisolone	14	12	1	1	0
Antibiotics					
Antibacterials	21	11	2	4	0
Antivirals	5	3	2	0	0
Types of infections			• *Escherichia coli* UTI plus herpes stomatitis (1) • *Pseudomonas aeruginosa* bacterial tracheitis plus *Enterococcus faecalis* UTI (1)	• Staphylococcal toxic shock syndrome (1) • *Staphylococcus aureus* lymphadenitis (2) • Polymicrobial labial abscess (1)	• Human metapneumovirus

Abbreviations: MIS-C = Multisystem inflammatory syndrome in children (MIS-C); UTI = urinary tract infection

Methods: Retrospective cohort study of patients < 21 years of age admitted to a freestanding children's hospital in Boston, MA from May 14-June 6, 2020 who were evaluated for MIS-C. We identified patients undergoing Rheumatology consultation and echocardiogram (per the hospital's protocol for evaluating children with suspicion for MIS-C). We tabulated patients evaluated for MIS-C found to have non-SARS-CoV-2 infection detected on standard microbiologic testing.

Results: 39 patients met inclusion criteria. Median age was 5 years (IQR 2–12 years). Of evaluated patients, 19/39 (49%) were diagnosed with MIS-C according to the Massachusetts Department of Public Health case definition; 10/39 (26%) required ICU admission. Non-SARS-CoV-2 infections were identified in 7/39 (18%), of whom 5/7 (71%) had bacterial infections, 1/7 (14%) had viral infection, and 1/7 (14%) had viral and bacterial co-infections; no fungal or parasitic infections were identified. Of patients diagnosed with MIS-C, 2/19 (11%) were found to have non-SARS-CoV-2 infection. Additionally, 5/19 (26%) had a positive polymerase chain reaction test for SARS-CoV-2 at time of MIS-C diagnosis, of whom 4/5 (80%) received remdesivir. Of patients evaluated for MIS-C, 17/39 (44%) received intravenous immune globulin, 14/39 (36%) aspirin, 4/39 (10%) anakinra, and 14/39 (36%) methylprednisolone. Additionally, 21/39 (54%) received antibacterial and 5/39 (13%) antiviral therapy (Table).

Conclusion: In this study, non-SARS-CoV-2 infections were diagnosed in 18% of children evaluated for MIS-C. Clinicians should consider alternative or concomitant infectious diagnoses in patients undergoing MIS-C evaluation. Research is needed to identify clinical and laboratory features that may distinguish patients with MIS-C from those with non-SARS-CoV-2 infection.

Disclosures: **All Authors**: No reported disclosures

83. A Descriptive Analysis of a Multi-disciplinary Approach to Opioid Use Disorder Treatment Within an Infectious Diseases Clinic

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Session: O-16. Current Issues in Public Health

Background: Opioid overdose is the leading cause of injury-related death in the US. Kentucky ranks in the top 5 states for opioid overdose deaths. The rate of injection drug use-associated infections (IDU-AI) has risen; the University of Kentucky Infectious Diseases division (UKID) treated 401 endocarditis cases in 2018, of which 73% were IDU-AI. To curb overdose deaths, ease financial burden on healthcare, and improve patient outcomes, patients need tools for recovery from opioid use disorder (OUD). Access to OUD treatment in Kentucky and much of the US is limited. Poverty, unemployment, and legal issues are barriers.

Methods: UKID implemented a multi-disciplinary approach to expand access to medication assisted treatment (MAT). This is an ongoing study. Any patient ≥18 years old with IDU-AI and OUD is eligible for enrollment unless pregnant or incarcerated. At enrollment and at three additional time points, patients complete both a study specific and Government Performance and Results Act (GPRA) survey. Patients may start MAT and mental health counseling with UKID or be referred elsewhere and are eligible for transportation assistance and medical case management.

Results: To date, there have been 127 referrals. Of these, 87 (69%) were eligible and 54 enrolled (62% of eligible). Primary IVDU-AI includes HIV (n=4; 7%), HCV (n=5; 9%), HIV/HCV (n=3; 6%), endocarditis (n=32; 59%), and other (n=10; 19%). Patients are 48% male (n=26) and 91% white (n=91) with a median age of 34 years (IQR: 16); 35% are receiving MAT (n=19) with 14.8% (n=8) managed by UKID. Other service data are available for 51 patients. Naloxone was dispensed to 45 (88%) patients, 24 (47%) received relapse prevention services, 13 (25%) engaged in peer support, 9 (18%) participated in self-help groups, and 10 (20%) received transportation aid.

Conclusion: Increasing engagement in MAT and wrap-around services is an important touchpoint for OUD. We present a comprehensive program to achieve this for patients who would otherwise be discharged without follow-up for OUD. This program shows proof of concept that patients can be engaged in MAT by ID providers. Ongoing analysis will include longitudinal review of patient progress and outcomes, including hospital readmission, and a study to determine patients' perceived impact on their quality of life.

Disclosures: **All Authors**: No reported disclosures

84. Clarifying the Congenital Zika Syndrome Phenotype and Expanding to Congenital Zika Spectrum in the Absence of Laboratory Evidence

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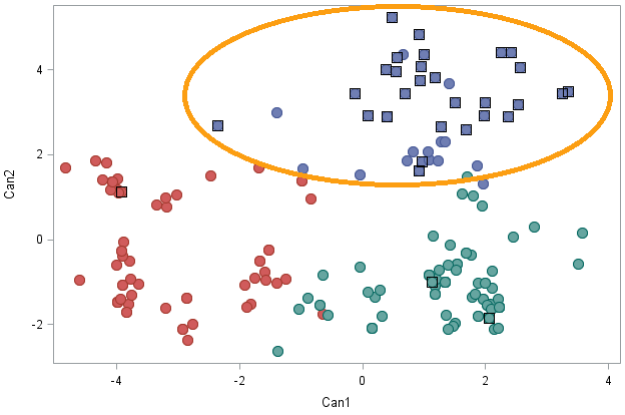
Session: O-16. Current Issues in Public Health

Background: Congenital Zika syndrome (CZS) is a term used to describe the pattern of anomalies in infants due to congenital Zika virus (ZIKV) infection. To date, published reports of infants with these anomalies have been primarily small case series of the most severely affected infants and attempts to determine the CZS phenotype have been based on those reports. Lack of a standard definition has led to inconsistencies in the term's use in the literature and uncertainty about the full spectrum of anomalies, limiting the application for diagnostic and surveillance purposes.

Cluster analysis of brain and eye anomalies associated with congenital Zika infection. Clustering occurred independent of laboratory evidence of Zika virus infection, yielding a clinically distinct phenotype associated with congenital infection.



Methods: We sought to understand which defects co-occur with possible congenital ZIKV infection using data from 415 mother-infant dyads with laboratory evidence of confirmed or presumptive Zika virus infection from the U.S. Zika Pregnancy and Infant Registry, and a comparison group of 4534 mother-infant dyads with no documented or plausible ZIKV infection from the Zika Birth Defects Surveillance System. We use k-means cluster analysis, discriminant analysis, and regression approaches to identify combinations of defects consistent with possible congenital ZIKV infection.

Results: A clinically distinct phenotype emerged as a single cluster in infants for whom both brain and eye defects were recorded that corresponded to evidence of confirmed or probable ZIKV infection. A combination of six defects (sub-cortical calcifications, chorioretinal atrophy/pigmentary anomalies, arthrogryposis or clubfoot, cerebral atrophy or ventriculomegaly, abnormal cortical gyration, and optic nerve atrophy/pallor/other optic nerve abnormalities) predicted the presence of laboratory evidence (area under the receiver operating characteristics curve: 0.95, 95% confidence interval: 0.90–0.99).

Conclusion: Further analyses are underway to develop a scoring rubric to weigh evidence of specific congenital anomalies, separately and in combination, that are consistent with laboratory evidence of congenital ZIKV infection. A quantitatively determined spectrum of Zika-associated anomalies, based on the presence of specific combinations of congenital anomalies, will inform a clinical decision tool to improve patient counseling and public health surveillance practices.

Disclosures: **All Authors**: No reported disclosures

85. Characterization of Group B *streptococcus* Strains with Reduced Susceptibility to Beta-lactam Antibiotics, Active Bacterial Core Surveillance, 1998–2017

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Session: O-16. Current Issues in Public Health

Background: In the United States, approximately 30,000 invasive group B Streptococcus (iGBS) infections occur annually; beta-lactam antibiotics (BL) are the first choice for prevention in young infants and treatment in all age groups. We obtained phenotypic and genotypic data for iGBS isolates from U.S. population-based surveillance sites to describe the emergence and characteristics of strains with reduced beta-lactam susceptibility (RS) over a 20-year period.

Methods: We analyzed RS iGBS isolates from eight Active Bacterial Core surveillance sites from 1998–2017. Through 2014, minimum inhibitory concentrations (MIC) for six BL were determined by broth microdilution, followed by whole genome sequencing (WGS) of RS isolates exceeding pre-defined breakpoints (Table 1). In 2015, WGS and MIC testing were performed for all isolates. After 2015, all isolates underwent WGS. MIC testing was continued on approximately 25% of isolates; otherwise, only those with modified penicillin binding protein (PBP) 2x transpeptidase amino acid sequence types or suboptimal WGS (< 1 % of isolates) underwent MIC testing. Clinical information on RS cases was abstracted from medical charts.

Results: Of 26,058 out of 27,269 iGBS isolates (95.6%) tested to date, 107 (0.4%) exhibited RS, increasing from 0% in 1998 to a peak of 1.1% in 2016 (P< 0.05 for trend) (Figure 1). Seven (6.5%) RS strains were from infants aged < 90 days; the rest were from adults aged ≥30 years (Table 2). RS strains consisted of 52 PBP2x types with diverse susceptibility patterns (Table 1). Seven RS strains (6.5%) had wild-type (non-modified) PBP2x; all met the RS criteria based on a single cephalosporin with a confirmed (repeated) MIC value at the break point (Table 1). Compared to non-RS strains, RS strains were more common in patients who presented with cellulitis and osteomyelitis and with underlying conditions such as diabetes or chronic skin breakdown (Table 2). Of 82 (85.4%) patients with RS strains and additional clinical information, 8.3% had known prior GBS infection; 26.8% had known BL exposure in the preceding year.

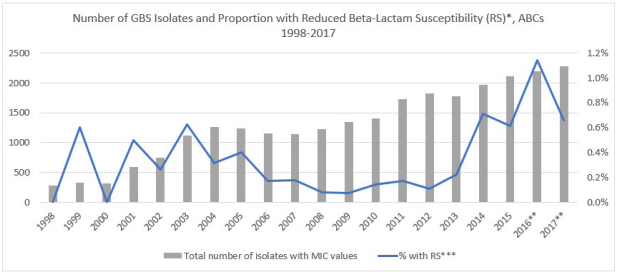
Table 1. Phenotypic Characterization and Diversity of Represented PBP2x Types of Invasive Group B *Streptococcus* (iGBS) Strains with Reduced Beta-lactam Susceptibility (RS), ABCs 1998–2017 (N=107)

Number of Antibiotics to which RS detected	Strain with RS to Individual Beta-lactam Antibiotics Determined by MIC Break Points (µg/mL)						Total Number of RS Isolates	Number of PBP2x types represented	Number of RS Isolates with *pbp2x* Mutation (%)
	Ampicillin MIC ≥0.5[1]	Penicillin MIC≥0.25[1]	Cefotaxime MIC ≥0.25	Ceftizoxime MIC ≥1[2]	Cefazolin MIC ≥1[2]	Cefoxitin MIC ≥16[2]			
1						Y	30	14	26 (86.7)[3]
				Y			15	11	14 (93.3)[4]
			Y				3	2	1 (33.3)[5]
	Y						1	1	1 (100)
2				Y		Y	21	17	21 (100)
			Y			Y	1	1	1 (100)
					Y	Y	1	1	1 (100)
3				Y	Y	Y	5	4	5 (100)
			Y	Y		Y	3	3	3 (100)
	Y			Y		Y	1	1	1 (100)
4			Y	Y	Y	Y	4	4	4 (100)
		Y		Y	Y	Y	2	2	2 (100)
	Y	Y		Y	Y		1	1	1 (100)
		Y	Y	Y		Y	1	1	1 (100)
5		Y	Y	Y	Y	Y	5	4	5 (100)
	Y	Y		Y	Y	Y	2	2	2 (100)
	Y	Y	Y	Y		Y	3	3	3 (100)
	Y	Y	Y	Y	Y		1	1	1 (100)
	Y		Y	Y	Y	Y	1	1	1 (100)
6	Y	Y	Y	Y	Y	Y	6	6	6 (100)

MIC=minimum inhibitory concentration; Y=presence of reduced susceptibility to the individual beta-lactam antibiotic
1. Same break points as defined by Clinical & Laboratory Standards Institute (CLSI)
2. No break points defined by CLSI
3. 4 isolates with wild-type PBP2X had cefoxitin MIC=16 µg/mL
4. 1 isolate with wild-type PBP2X had ceftizoxime MIC value=1 µg/mL
5. 2 isolates with wild-type PBP2X had cefotaxime MIC=0.25 µg/mL

Table 2. Characteristics of Invasive Group B *Streptococcus* (iGBS) Infections with Reduced Beta-Lactam Susceptibility (RS) Isolates, ABCs 1998–2017

	Infections with RS Strains (n=107), N (%)	Infections with non-RS Strains (n=25,951), N (%)	RS vs. Non-RS, P value (Chi-Squared Test)
Patient Age Group			0.34
<7 days	4 (3.7)	1,635 (6.3)	
7 to 89 days	3 (2.8)	1,550 (6.0)	
90 days to <1 year	0	211 (0.2)	
1–14 years	0	114 (0.4)	
15–64 years	50 (46.7)	12,176 (46.9)	
≥65 years	50 (46.7)	10,263 (40.0)	
Underlying Conditions			
Diabetes mellitus	56 (52.3)	10,476 (40.3)	**0.01**
Atherosclerotic Cardiovascular Disease	17 (15.9)	4,457 (17.2)	0.72
Current Smoker	19 (18.1)	2,610 (10.3)	**<0.01**
Emphysema/COPD	16 (15.0)	2,182 (8.4)	**0.02**
Chronic Skin Breakdown	20 (25.3)	2,061 (12.5)	**<0.01**
Solid Organ Malignancy	9 (11.4)	1,952 (11.8)	0.91
Chronic Kidney Disease	14 (13.1)	1,858 (7.2)	**0.02**
iGBS Presentation			
Bacteremia without focus	30 (28.0)	11,138 (42.9)	**<0.01**
Cellulitis	34 (31.8)	5,811 (22.4)	**0.02**
Pneumonia	11 (10.3)	2,689 (10.4)	0.98
Osteomyelitis	22 (20.6)	2,562 (9.9)	**<0.01**
Septic Arthritis	11 (10.3)	2,103 (8.1)	0.41



*Reduced beta-lactam susceptibility was defined as minimum inhibitory concentration (MIC) of ≥1 µg/mL for ceftizoxime or cefazolin, ≥0.25 µg/mL for cefotaxime or penicillin, ≥0.5 µg/mL for ampicillin, and ≥16 µg/mL for cefoxitin.

**Preliminary data

***Out of isolates with MIC values

Conclusion: Preliminary results show that RS increased in recent years; strains RS to penicillin and ampicillin remain low. Variable *pbp2x* mutations have emerged and predominant strains have not yet been identified.

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86. Health Resource Burden of Influenza Among the Elderly with Underlying Conditions in the United States

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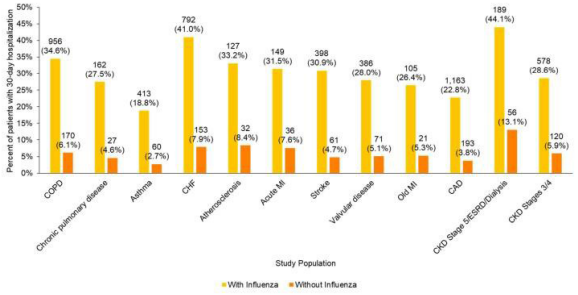
Session: O-16. Current Issues in Public Health

Background: Seasonal influenza poses a substantial clinical and economic burden, despite influenza vaccination efforts. This study evaluates healthcare resource utilization attributable to influenza in elderly populations at increased risk of influenza-related complications.

Methods: Elderly (≥ 65 years of age) patients (pts) with ≥ 1 influenza diagnosis (Dx) during influenza seasons from October 1, 2014 – March 1, 2019 were identified in the IQVIA PharMetrics® Plus claims database. The earliest influenza Dx was the index date and pts had evidence of pulmonary, cardiovascular, or renal disease before index. Pts had ≥ 12 months continuous enrollment (baseline before index) and ≥ 30 days follow-up after index. Medically-attended influenza cases were identified by primary influenza Dx codes or any influenza Dx with a record of an influenza test within ±14 days. Influenza pts were 1:1 propensity score matched to pts without influenza using baseline demographic and clinical characteristics and baseline healthcare costs. All-cause hospital and emergency department (ED) visits and total healthcare costs during follow-up (30-day and in the index influenza season) were compared in the matched cohorts.

Results: Baseline characteristics were balanced after matching. Elderly influenza pts had 3 to 7 times higher 30-day hospitalization rates compared to pts without influenza, including pts with congestive heart failure (41% vs. 8%), chronic obstructive pulmonary disease (35% vs. 6%), coronary artery disease (23% vs. 4%), and stage 5/end stage renal disease (ESRD)/dialysis (44% vs. 13%; all p< .05; Figure). Hospital and ED visit rates in the influenza season were 2 to 3 times higher in pts with vs. without influenza; ED visit rates were 49% vs. 23%, 44% vs. 18%, 37% vs. 14%, and 60% vs. 28% for the above cohorts, respectively (all p< .05). Mean total healthcare costs per patient per season were $3,299 to $12,398 higher in pts with vs. without influenza (all p< .05, except myocardial infarction and stage 5/ESRD/dialysis pts).

Figure. All-cause 30-day hospitalization rates in matched cohorts of elderly patients with baseline comorbidities with and without influenza



All p-values for comparisons of hospitalization rates <0.05.

Abbreviations: CAD, coronary artery disease; CHF, congestive heart failure; CKD, chronic kidney disease; COPD, chronic pulmonary disease; ESRD, end stage renal disease; MI, myocardial infarction

Conclusion: Hospitalizations, ED visits, and total healthcare costs are elevated in the elderly after evidence of medically-attended influenza, but to varying degrees depending on baseline comorbidities. Continued efforts to reduce influenza burden in high-risk populations are needed.