NICU and drive new infection prevention interventions. **Methods:** Environmental surveillance of high-touchpoint surfaces for SA was performed using Dey and Engley neutralizing agar. Selected isolates were confirmed as SA using Columbia Sheep's Blood agar and Staphaurex testing. Statistical analyses examined correlations between monthly effective cleaning, hand hygiene compliance, and colonization rates. To better understand MSSA spread in the NICU, WGS was performed on a convenience sample of 42 MSSA isolates, sampled one month before and after an invasive MSSA infection. Data extracted from electronic health records were used for retrospective room tracing of colonized patients with related isolates to determine modes of transmission. **Results:** WGS analysis MSSA isolates revealed four MSSA strains from 29 patients suggesting within unit transmission, while 13 patients were colonized with unique MSSA isolates suggesting external sources. Retrospective room tracing of colonized patients identified three transmission patterns: subsequent room occupant transmission, intra-pod spread, and inter-pod transmission without patient transfer, with evidence that these strains were endemic within the unit for at least 3-12 months. Statistical analyses showed no significant correlation between environmental cleaning or hand hygiene compliance and colonization rates. **Conclusions:** Persistent MSSA colonization and invasive infections in the NICU result from both within-unit transmission and the introduction of unique isolates. These findings are being used to inform the development of new interventions, including updated below-the-elbow hand hygiene protocols, revised environmental cleaning plans, nurse-parent communication training, and a virtual reality hand hygiene training program for parents and staff. WGS of pathogenic organisms is a useful tool to drive QI initiatives aimed at reducing hospital-acquired infections.

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Table 1. Patient Characteristics

Variable	Control Group (n=108)	PCR Group (n=172)	P value
Age, median, years (IQR)	3 (1-6)	3 (1-8)	0.209
Male, n (%)	58 (54)	117 (68)	0.022
Race, n (%)	White 52 (48) Hispanic 23 (21) Black 12 (11) Asian 12 (11) American Indian 1 (1) Not listed 8 (8)	White 80 (47) Hispanic 28 (16) Black 28 (16) Asian 15 (9) American Indian 2 (1) Not listed 19 (11)	0.618
Length of hospital stay, median, days (IQR)	5 (3-11)	6 (3-18)	0.537
ICU Admission, n (%)	43 (40)	107 (62)	<0.001
Height Percentile, median (IQR)	33.5 (4.3-65.4)	32.7 (2-70)	0.970
Weight Percentile, median (IQR)	33.3 (8-76)	32.7 (5-74.9)	0.858
*Antibiotic Allergy, n (%)	17 (16)	16 (9)	0.128
Antimicrobial use 7 days prior, n (%)	29 (27)	40 (23)	0.569
Prophylactic antibiotics, n (%)	12 (11)	17 (10)	0.743
Asthma, n (%)	55 (51)	61 (35)	0.013
Bronchiectasis, n (%)	42(39)	52 (30)	0.153
Cystic Fibrosis, n (%)	2 (2)	0	0.148
Tracheo/Bronchomalacia, n (%)	12 (11)	31 (18)	0.129
Bronchopulmonary dysplasia, n (%)	15 (14)	16 (9)	0.234
**Other Chronic Pulmonary Disease, n (%)	33 (31)	61 (35)	0.397
Documented Smoking/Vaping History, n (%)	0	2 (1)	0.524
***Immunosuppression, n (%)	7 (7)	12 (7)	0.873
Tracheostomy on Admission, n (%)	20 (19)	21 (12)	0.146
Tracheostomy at Discharge, n (%)	23 (21)	27(16)	0.263

(*) Control Group: TMP/SMX (7), Vancomycin (7), Penicillin (1), Gentamicin (1), Levofloxacin (1), Linezolid (1), Meropenem (1), Piperacillin/Tazobactam (1), Pentamidine (1)
PCR group: TMP/SMX (6), Vancomycin (1), Cefdinir (2), Amoxicillin (4), Azithromycin (1), clindamycin (1), Linezolid (1), Pentamidine (1)
(**) Control Group: Restrictive Lung disease (11), Chronic respiratory failure (11), Laryngomalacia (7), Laryngeal cleft (3), Primary ciliary dyskinesia (2)
PCR Group: Restrictive Lung disease (18), Laryngomalacia (17), Chronic respiratory failure (10)
(***) Control Group: Primary immunodeficiency (3), Neutropenia (2), Immunosuppressive agent (1), Non-neutropenic malignancy (1)
PCR Group: Transplanted (7), Primary immunodeficiency, Corticosteroids (1), Non-neutropenic malignancy (1)

Table 2. Severity of Illness

Variable	Control Group (n=108)	PCR Group (n=172)	P value
Highest Level of O2, n (%)	RA 53 (49) NC 8 (7) HFNC 2 (2) CPAP 6 (6) BIPAP 10 (9) Trach-Mask 2 (2) Trach-vent 17 (16) ETT 10 (9)	RA 65 (38) NC 22 (13) HFNC 2 (1) CPAP 6 (3) BIPAP 24 (14) Trach-Mask 5 (3) Trach-vent 18(11) ETT 28 (16) ECMO 2 (1)	0.134
Duration of mechanical ventilation, days, median (IQR)	26 (16.7-54.2)	9 (5-19.5)	0.002
Vasopressors, n (%)	3 (3)	9 (5)	0.381
Vasopressors duration, days, median (IQR)	14 (7.5-15)	6 (3.25-12.25)	0.692
Type of LRTI, n (%)	CAP 20 (19) HAP 5 (5) VAP 19 (18) Mucopurulent Bronchitis 59 (55) Protracted Bacterial Bronchitis 1 (1) Bronchiectasis Exacerbation 4 (4)	CAP 47 (27) HAP 18 (11) VAP 13 (8) Mucopurulent Bronchitis 85 (49) Protracted Bacterial Bronchitis 5 (3) Bronchiectasis Exacerbation 4 (2)	0.026
Pleural effusion, n (%)	2 (2)	6(4)	0.715
Bacteremia, n (%)	1 (1)	3 (2)	1.00
Indication for BAL, n (%)	LRTI 100 (93) Pulmonology follow up 8 (7)	LRTI 157 (91) Pulmonology follow up 15 (9)	0.824
ID consult, n (%)	21(19)	52 (30)	0.045

LRTI: Lower respiratory tract infection; RA: room air; NC: nasal cannula; HFNC: high flow nasal cannula, CPAP: continuous positive airway pressure; BIPAP: bilevel positive airway pressure; Trach-mask: tracheostomy to mask; Trach-vent: tracheostomy to ventilator; ETT: endotracheal tube to ventilator; ECMO: Extra-corporeal membrane oxygenation.

Presentation Type:
Oral Presentation
Subject Category: Pediatrics

Impact of the Bronchoalveolar Lavage BioFire® FilmArray® Pneumonia Panel on Antimicrobial Utilization in Pediatric Patients

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Background: Lower respiratory tract infections (LRTI) are a leading cause of pediatric mortality. Treatment typically involves empirical antibiotics, followed by de-escalation based on cultures, which are often negative. The BioFire® Pneumonia PCR panel detects pathogens rapidly, allowing for potentially faster optimization of antimicrobial therapy. Limited data exists on this panel in pediatrics, especially for bronchoalveolar lavage (BAL) samples. We hypothesized that patients with LRTI evaluated using the BAL PCR panel (PCR cohort) had shorter times to results and targeted therapy compared to those with BAL cultures alone (control cohort). **Method:** We conducted a retrospective study of patients aged 0–18 admitted to NYU Langone Manhattan with LRTI. The PCR cohort included patients from August 1, 2021, to November 1, 2023, who underwent both BAL culture and PCR testing. The control cohort included patients from August 1, 2017, to November 1, 2019, who had BAL cultures alone. The primary outcome was time to targeted therapy, defined as the time from culture collection to escalation or de-escalation. **Results:** A total of 280 patients were included (PCR n=172, Control n=108). The cohort had a median age of 3 years, with asthma (35% vs. 51%) and bronchiectasis (30% vs. 39%) being the most common comorbidities. Immunocompromised patients accounted for 7% of the PCR cohort and 6% of the control cohort. Most patients were on room air; 16% of the PCR group and 9% of the control group were intubated. Infectious Diseases was consulted more often in the PCR group (30% vs. 19%). PCR detected organisms faster compared to culture alone (4 vs. 25–26 hours). Discordant results between PCR and culture were 57%, with 81% due to additional bacteria detected by PCR. Stenotrophomonas maltophilia was the most common organism detected by culture but not

included in the PCR panel. Time to targeted therapy was significantly shorter in the PCR group compared to culture group (0 vs. 1 day, p=0.003). Time to de-escalation was numerically faster in the PCR compared to control group (2 vs. 3 days, p=0.061). Fewer PCR patients received MRSA agents (34% vs. 55%, p=0.001). Rates of escalation, prior antibiotic use, and adverse outcomes were similar. **Conclusion:** The BioFire FilmArray Pneumonia Panel provides faster results and may aid in optimizing therapy in pediatric patients with LRTI.

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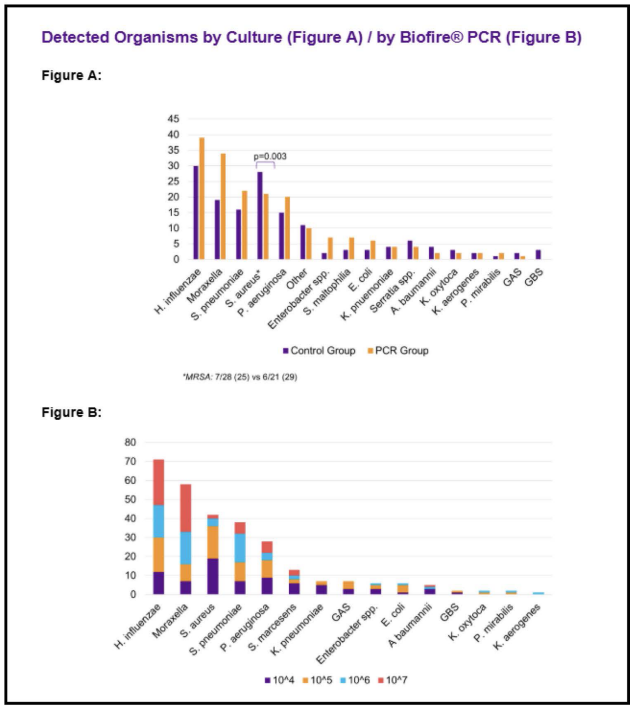
Table 3. Antimicrobials and outcomes

Variable	Control Group (n=108)	PCR Group (n=172)	P value
Time to targeted therapy, days (IQR)	1 (0-3)	0 (0-2)	0.003
MRSA agent, n (%)	59 (55)	55 (34)	<0.001
MRSA agent duration, days (IQR)	5 (4-6)	4 (3-7.5)	0.361
Anti pseudomonal agent, n (%)	31 (28)	66 (38)	0.121
Anti pseudomonal agent duration, days (IQR)	8 (5.5-11)	9 (6-15)	0.274
Atypical agent, n (%)	4 (4)	6 (3)	1.00
Atypical agent duration, days (IQR)	6 (5-7)	5 (3-7)	0.610
Time to de-escalation, days (IQR)	3 (2-4)	2 (1-5)	0.061
Total escalation (in vitro susceptibilities, PCR, clinical change), n (%)	17 (17)	30 (17)	0.711
Escalation based on in vitro susceptibilities, n (%)	14/17 (78)	17 (57)	0.074
Escalation based on PCR, n (%)		9 (30)	
Escalation based on clinical change, n (%)	4/18 (22)	4 (13)	0.435
C. Diff infection within 90 days, n (%)	1 (1)	1 (1)	1.00
New resistance, n (%)	4 (4)	8 (5)	0.772



Presentation Type:
Oral Presentation
Subject Category: Public Health

Barriers to Patient Safety in Ambulatory Surgical Centers: Lessons Learned from an Outbreak of Mycobacterium fortuitum Joint Infections

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Background: Procedures performed at Ambulatory Surgical Centers (ASCs) have been increasing in type and volume for over a decade. Similarly, outbreaks in ASCs are increasingly detected, but ASCs face unique challenges to Infection Prevention and Control (IPC). In 2023, Tennessee state and local health departments (HDs) responded to an outbreak of 14 Nontuberculous mycobacteria (NTM) periprosthetic joint infections in an ASC, unveiling gaps in IPC practice and significant barriers to resolving them. **Method:** Cases were detected through third-party clinical laboratory reporting. HD Infection Preventionists (IPs) conducted onsite infection control assessments using qualitative observation, verbal interview, and CDC's Infection Control Assessment and Response (ICAR) and Association of perioOperative Registered Nurses (AORN) checklist tools. A citizen complaint triggered an independent survey performed by the state's regulatory body. **Result:** ICAR revealed there was no Water Management Plan (WMP) for the building or ASC suite. Areas with lapses in IPC practice included aseptic technique, instrument handling, and environmental services (EVS). There was no surveillance mechanism for tracking surgical site infections. Complications were tracked via paper provider surveys but could not be produced when requested. Regulatory survey identified additional violations related to biohazardous waste and unlicensed performing of pediatric procedures.
The facility IP and the sterile processing department lacked specialized training in their respective areas. The IP had no knowledge of reportable disease requirements. The outbreak was reported by the clinical laboratory only after five cases had been detected at a separate facility where revisions were performed. **Conclusion:** Major barriers to IPC best practice included lack of subject matter expertise and the complexity of multi-stakeholder ownership and operation. A healthcare management corporation holding the facility license was responsible for ASC operations, employment of non-physician staff, and adherence to state and federal regulations. An independent orthopedic group employed surgeons, and a third healthcare system owned the building and contracted EVS. As a result, the licensee was not capable of addressing building water management, and the facility IP had no authority over EVS or the physicians' group to require complications reporting. Public health action was delayed by the ASC not reporting the outbreak, despite NTM being reportable in Tennessee. This delay was likely due to lack of knowledge around reportable diseases and poor surveillance and follow-up. Once all stakeholders met, compliance with recommended interventions improved. Public health authorities should consider supporting ASC IP education opportunities, engaging varied stakeholders during outbreaks, and enhancing surveillance within this setting.

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Presentation Type:
Oral Presentation
Subject Category: Public Health

Early Detection of a Carbapenemase-producing organism Outbreak Using Whole Genomic Sequencing

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Background: In June of 2024 the Cincinnati Health Department Communicable Disease Prevention and Control Unit investigated an outbreak of Carbapenemase-resistant Pseudomonas aeruginosa (CRPA)