Table 1. Outcomes in the Pre-PCV10 and Post-PCV10 Period

CHARACTERISTICS	PREVACCINE (N=134)	TRANSITION (N=44)	POSTVACCINE (N=192)	P VALUE
Length of hospital stay				
Median, (IQR)	8 (5.5-15)	10 (6-14)	12 (7-22)	<0,001 [3]
PICU admission, n (%)				0,001 [1]
Yes	44 (32.8)	12 (27.3)	99 (51,6)	
No	90 (67.2)	32 (72.7)	93 (48,4)	
PICU admission according to serotypes				< 0,001
PCV10				
PCV13	14 (31,8)	5 (41,7)	8 (8%)	
Non PCV	2 (4,6)	1 (8,3)	59 (59,6)	
Unknown serotype	3 (6,8)	1 (8,3)	16 (16,2)	
	25 (56,8)	5 (41,7)	16 (16,2)	
Complicated pneumonia accoding to serotypes				< 0,001
PCV10	8 (44,4)	3 (37,5)	5 (8,2)	
PCV13	0	1 (12,5)	37 (60,6)	
Non PCV	0	2 (25)	7 (11,5)	
Unknown serotype	10 (55,6)	2 (25)	12 (19,7)	
Total days in PICU				
Median, IQR	5 (2-16)	3.5 (2-8)	5 (1-11)	0,21 [3]
Empiric antibiotic, n (%)				
Penicillin	23 (17,2)	10 (22.7)	30 (15.7)	<0,001 [1]
Ampicillin	38 (28.4)	8 (18.2)	7 (3,6)	
Ampicillin-Sulbactam	1 (0.7)	2 (4,4)	46 (24)	
Ceftriaxone	30 (22,4)	11 (25)	48 (25)	
Cefepime	4 (3)	3 (6.8)	12 (6,2)	
Ceftriaxone and Clindamycin	1 (0.7)	2 (4.5)	11 (5,)	
Other	31 (23.1)	6 (13.6)	35 (18,2)	
NA	6 (4.5)	2 (4,5)	3 (1,6)	
Total antibiotics days				
Median (IQR)	7 (4-11)	5 (3-10)	10 (6-17)	<0,001 [3]
Lethality, n (%)				
Yes	10 (7.5)	2 (4,5)	19 (9,9%)	0,57 [1]
No	124 (92.5%)	42 (95,5%)	173 (90,1%)	

Conclusion. PCV10 significantly decreased vaccine serotypes, with increase in PCV13 serotypes. 19A, 3 and 6A the predominant serotypes had greater severity including PICU admission, CN and more resistance, with an increase in the use of broad-spectrum antibiotics and longer hospitalization. The current data support national and regional evidence on the importance of replacing PCV10 to a higher valence that include 19A, as PCV13, with the aim of reducing the circulation, particularly of this serotype.

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1177. Vaccinate Lurie (VaLu) a QI Project to Improve Pediatric Pre-Transplant Immunization Rates

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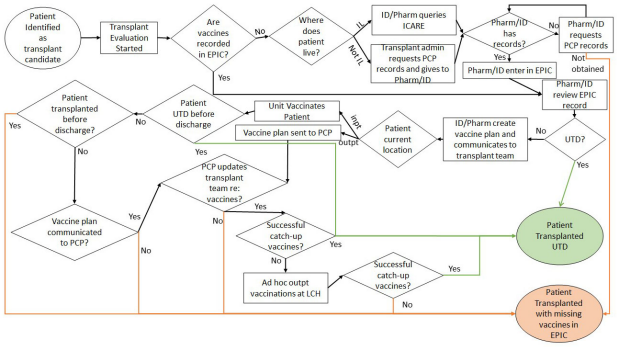
Session: P-69. Pediatric Vaccines

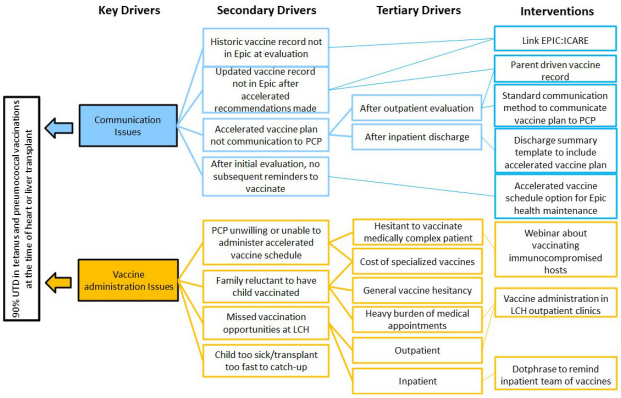
Background. Immunization prior to transplantation is important due to post-transplant immunosuppression. According to a national study, 15% of pediatric solid organ transplant recipients were hospitalized within 5 years post-transplant for a vaccine preventable illness or RSV. At our large academic pediatric hospital approximately 53% of heart and liver transplant recipients in 2016 -2018 were up to date with tetanus and pneumococcal vaccinations. This QI project was designed to improve our pre-transplant vaccination rates to minimize post-transplant infections.

Methods. An interdisciplinary team was convened including pharmacists, nurses, nurse practitioners, and physicians from cardiology, hepatology, and infectious diseases. After evaluating our current processes and key drivers, we selected interventions to implement via the PDSA model. Our first intervention was to have team members gain access to our statewide vaccine database (ICARE). Our second cycle was to link ICARE to our electronic medical record system (EPIC) for automatic immunization record integration.

Process Map

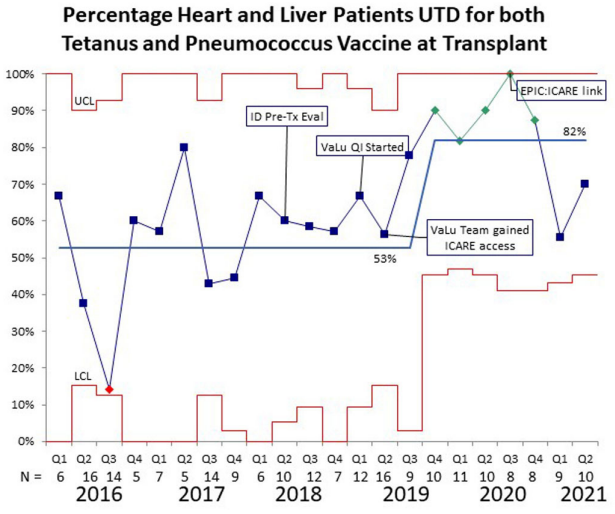


Key Driver Diagram



Results. Our outcome measure was up to date tetanus and pneumococcal vaccines per the CDC recommendations by age at transplant, as documented in the medical record. We saw an improvement in immunization rates to 100% during the third quarter of 2020 with an overall rate of over 80% for late 2019 - mid 2020. With the understanding that our average wait time for a heart and liver transplant was 2.4 and 3.8 months, respectively, the initiation of our QI project and obtaining access to ICARE by our team members was likely related to the improved vaccination rates. Unfortunately, after the team stopped meeting during the pandemic our immunization completion rates have decreased in 2021, despite implementing institutional access to ICARE.

Control Chart



Conclusion. It is possible to obtain optimal immunization rates for pneumococcal and tetanus vaccines in pediatric heart and liver transplant recipients. Our future interventions include improving vaccinations after catch-up recommendations have been made and sustaining our interventions. Additionally, we look to expand our analysis to include outcomes related to vaccine-preventable diseases after transplantation.

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1178. Sustained Vaccine Effectiveness Against Influenza-Associated Hospitalization in Children: Evidence from the New Vaccine Surveillance Network, 2015-2016 Through 2019-2020

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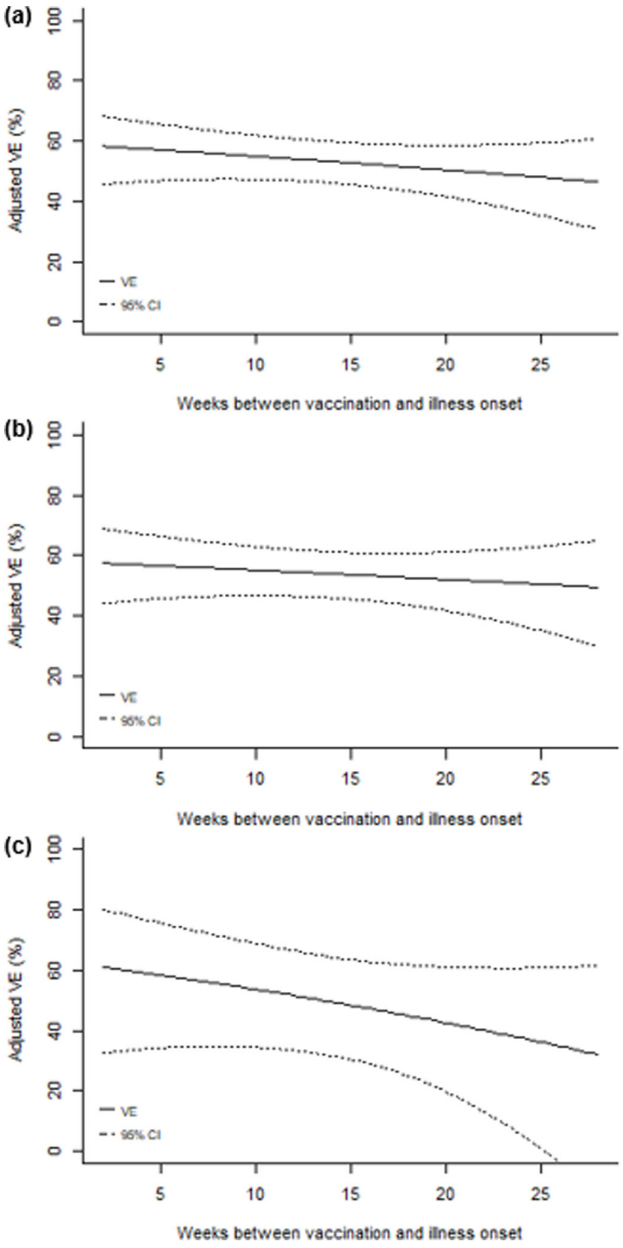
Session: P-69. Pediatric Vaccines

Background. Adult studies have demonstrated intra-season declines in influenza vaccine effectiveness (VE) with increasing time since vaccination; however, data in children are limited.

Methods. We conducted a prospective, test-negative study of children ages 6 months through 17 years hospitalized with acute respiratory illness at 7 pediatric medical centers each season in the New Vaccine Surveillance Network during the 2015-2016 through 2019-2020 influenza seasons. Cases were children with an influenza-positive molecular test; controls were influenza-negative children. Controls were matched to cases by illness onset date using 3:1 nearest neighbor matching. We estimated VE [100% x (1 – odds ratio)] by comparing the odds of receipt of ≥ 1 dose of influenza vaccine ≥ 14 days before the onset of illness that resulted in hospitalization among influenza-positive children to influenza-negative children. Changes in VE over time between vaccination date and illness onset date during each season were estimated using multivariable logistic regression models.

Results. Of 8,430 hospitalized children (4,781 [57%] male; median age 2.4 years), 4,653 (55%) received ≥ 1 dose of influenza vaccine. On average, 48% and 85% of children were vaccinated by the end of October and December, respectively. Influenza-positive cases (n=1,000; 12%) were less likely to be vaccinated than influenza-negative controls (39% vs. 61%, p< 0.001) and overall VE against hospitalization was 53% (95% CI: 46%, 60%). Pooling data across 5 seasons, the odds of any influenza-associated hospitalization increased 0.96% (95% CI: -0.76%, 2.71%) per week with a corresponding weekly decrease in VE of 0.45% (p=0.275). Odds of hospitalization with time since vaccination increased 0.66% (95% CI: -0.76%, 2.71%) per week in children ≤ 8 years (n=3,084) and 2.16% (95% CI: -1.68%, 6.15%) per week in children 9-17 years (n=771). No significant differences were observed by virus subtype or lineage.

Figure 1. Declines in influenza VE over time from 2015-2016 through 2019-2020, overall (a) and by age group (b: ≤ 8 years; c: 9-17 years)



Conclusion. We observed minimal intra-season declines in VE against influenza-associated hospitalization in U.S. children. Vaccination following Advisory Committee on Immunization Practices guidelines and current timing of vaccine receipt is the best strategy for prevention of influenza-associated hospitalization in children.