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Background: Pediatric hematopoietic cell transplant (HCT) recipients often fail to have robust responses to influenza (flu) vaccine. We conducted a blinded phase II trial comparing high-dose (HD) trivalent inactivated vaccine (TIV) vs. standard dose (SD) quadrivalent inactivated vaccine (QIV).

Methods: Children 3–17 years old and 3–35 months post-allogeneic HCT were enrolled at 9 centers and randomized to either 2 doses of HD-TIV or SD-QIV during the 2016–2017 flu season. We compared immune responses by hemagglutination inhibition (HAI) from children 3–11 (early) vs. 12–35 (late) months (m) post-HCT to 3 common flu vaccine antigens, irrespective of vaccine type. HAI responses were evaluated at baseline (visit 1), 1 m post dose 1 (visit 2) and dose 2 (visit 3), and 7 m post dose 2 (visit 4). Geometric mean titers (GMT) were adjusted for baseline log-titer values.

Results: Thirty-one children, median age 11 (7–15) years, were enrolled; 17 (55%) were immunized early and 14 (45%) late. Over 50% of patients had a potentially seroprotective (≥1:40) HAI titer at baseline, with no significant difference post-vaccination between early and late subjects. Table 1 compares early vs late subjects with HAI seroconversion (4-fold HAI titer rise). Post dose 1, late subjects, compared with early, had higher rates of seroconversion to all influenza strains. Post dose 2, early subjects, compared with late, had increased seroconversion. Late subjects had higher GMTs for H1N1 post dose 1 and 2, H3N2 after dose 1, and strain B/VIC post dose 1 and 2 (Figure 1). Although immunogenicity waned throughout flu season, higher seroconversion rates and GMT to H3N2 and strain B/VIC were retained in late subjects.

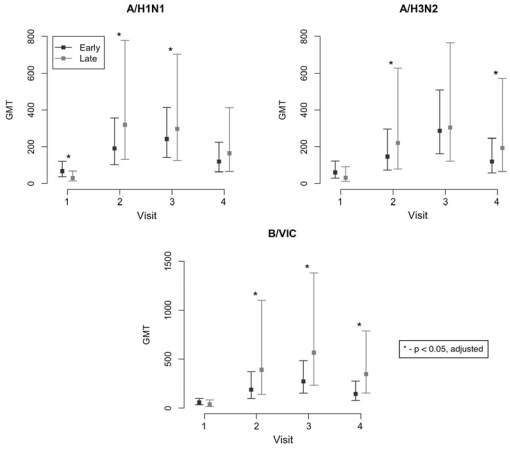
Conclusion: Compared with subjects in early post-HCT group, late post-HCT subjects had better flu vaccine immune responses as noted by higher GMT and HAI seroconversion. However, 2 doses seemed more beneficial in the early post-HCT group. Future analyses are underway, including comparing immunogenicity of HD vs. SD flu vaccine.

Table 1. Percent of early (E) vs late (L) subjects with HAI seroconversion[d]

Visit	Strain								
	A/H1N1			A/H3N2			B/VIC		
	E	L	P Value	E	L	P Value	E	L	P Value
2[b]	6	71	<0.001	0	57	0.002	19	71	0.01
3[c]	24	71	0.02	29	64	0.11	35	79	0.04
4[c]	8	46	0.08	15	62	0.04	15	77	0.006

[a]Early (n=17) & Late (n=14)
[b]Early (n=16) & Late (n=14)
[c]Early (n=13) & Late (n=13)
[d]From baseline

Figure 1. Geometric Mean Titers Pre- and Post-Vaccination in Subjects Receiving Early vs Late Flu Vaccine



Disclosures: Jennifer E. Schuster, MD, Satchel Health: Shareholder Flor M. Munoz, M.D, Biocryst: Grant/Research Support; CDC: Research Grant; Moderna: Other Financial or Material Support, Safety Monitoring Board Member/Chair; NIH: Research Grant; Novavax: Research Grant; UP to Date: Author and Editor - Royalties, Other Financial or Material Support.

2760. Accounting for Vaccination History in Estimates of Current Season Vaccine Effectiveness in the US Flu VE Network, 2012–2013 Through 2017–2018

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Background: Current season vaccine effectiveness (VE) and influenza risk may vary in persons based on vaccination history. United States Influenza Vaccine Effectiveness (US Flu VE) Network studies have explored prior vaccination effects using a single referent group of patients unvaccinated in both the prior and current seasons. We investigated vaccine benefit among those with and without prior season vaccination.

Methods: Our analysis included data from the US Flu VE Network among patients aged ≥9 years old with acute respiratory illness during 6 influenza seasons, 2012–2013 through 2017–2018. We determined current and prior season vaccination status from documented immunizations. Current season VE against laboratory confirmed influenza was estimated using multivariate logistic regression with an interaction term for prior and current season vaccination. Models were adjusted for age, calendar time, high-risk status, and site.

Results: Of 31,819 patients included in the analysis over 6 seasons, 9188 were influenza positive by RT–PCR. Percent flu positivity was greatest among those unvaccinated (34%), followed by those vaccinated in the prior season only (29%), those vaccinated in both seasons (25%), and those vaccinated in the current season only (23%). Among patients with prior season vaccination, current season VE against any influenza was 14% (95% CL: 5, 22) and against A(H3N2), A(H1N1)pdm09, and B was 10% (95% CL: 3, 17), 36% (95%CL: 25, 46), and 40% (95% CL: 33, 46), respectively. Among patients unvaccinated in the prior season, VE was 42% (95% CL: 37, 46) against any influenza in the current season and was 31% (95%CL: 22, 39), 57% (95% CL: 47, 65), and 55% (95% CL: 48, 61) against A(H3N2), A(H1N1)pdm09, and B, respectively. We observed significant interaction of prior season vaccination on current season VE in 4 of 6 seasons ($P < 0.20$).

Conclusion: Current season vaccination was overall protective regardless of vaccination history. Among those vaccinated in the prior season, current season vaccination may provide some benefit in addition to residual protection from previous vaccination.

Disclosures. **All authors:** No reported disclosures.

2761. Interventions to Improve Influenza Vaccination Coverage in Children with Medical Comorbidities: A Meta-Analysis

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Session: 278. Vaccines: Influenza
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Background: Influenza vaccination is the most effective influenza prevention tool for children with medical comorbidities. Despite this, coverage remains inadequate. Numerous interventions to improve vaccination coverage have been assessed, yet there remains a paucity of data comparing the relative efficacy and effectiveness of different interventions.

Methods: We searched MEDLINE, PubMed, Scopus, Embase, CINAHL, CENTRAL, and Web of Science (1980 to March 2019) for studies evaluating interventions which sought to improve influenza vaccine coverage in children with medical comorbidities. Interventions were divided into those targeting parents, targeting vaccination providers, and targeting the hospital, clinic or ward. Screening and data extraction from publications meeting inclusion criteria was performed by two reviewers. Results were pooled and meta-analyses were performed using Mantel–Haenszel random-effects models in Review Manager 5.

Results: 35 articles met inclusion criteria; 14 cross-sectional, 12 randomized trials, and 9 cohort studies, 25 articles had sufficient data for pooled analysis. Of the included interventions, 17 were based within primary care or community-based settings, 17 were based in hospitals or tertiary clinics, and 1 intervention was conducted across both primary and tertiary settings. Interventions overall increased influenza vaccination likelihood by 33% (RR = 1.33: 95% CI 1.31, 1.35). Interventions targeting providers' influenza vaccine knowledge increased vaccine coverage (RR = 1.42: 95% CI