1818. Immunogenicity of Inactivated Varicella Zoster Vaccine (ZV_{IN}) in Autologous Hematopoietic Stem Cell Transplant (auto-HSCT) Recipients

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Saturday, October 7, 2017: 10:30 AM

Background. Recipients of auto-HSCT have an increased risk of herpes zoster (HZ) infection; however, live attenuated varicella-zoster virus (VZV) vaccine is contraindicated in these patients. In this pivotal Phase III study (V212-001; NCT01229267) inactivated VZV vaccine (ZV_{IN}) reduced the rate of HZ infection compared with placebo (estimated vaccine efficacy, 63.8%) and was well tolerated. Immunogenicity of ZV_{IN} in recipients of auto-HSCT was assessed in the Phase III study as an exploratory objective.

Methods. Adults undergoing auto-HSCT were randomized to receive either ZV_{IN} (n = 560) or placebo (n = 564), administered in a 4-dose regimen. Doses 1 through 4 were administered ~30 days before and ~30, ~60, and ~90 days following auto-HSCT. VZV-specific immune responses were measured at Day 1, ~28 days post-vaccinations 3 and 4, and annually until the end of the study. VZV-specific antibody responses were measured by glycoprotein enzyme-linked immunosorbent assay (gpELISA) in all patients; cell-mediated immune responses were measured by VZV interferon-gamma enzyme-linked immunospot (IFN-γ ELISPOT) assay in a randomized subset of patients (n = 403).

Results. Geometric mean titers (GMT) were significantly higher and the ratios of the gpELISA and IFN-γ ELISPOT were significantly greater in the ZV_{IN} group compared with the placebo group (Tables 1 and 2).

Table 1. GMT 28 days post-dose 4 (PD4)

	Vaccine	Placebo
gpELISA	***n* = 102** 241.8 (95% CI: 186.2, 313.9)	***n* = 108** 105.8 (95% CI: 84.6, 132.3)
IFN-γ ELISPOT	***n* = 102** 62.8 (95% CI: 45.8, 86.2)	***n* = 116** 10.4 (95% CI: 7.9, 13.7)

Table 2. Ratios of geometric mean fold rise between the vaccine and placebo groups (ZV_{IN}/placebo)

	gpELISA(n = 764)	IFN-γ ELISPOT(n = 339)
Pre-vaccination and 28 days PD4	1.79 (95% CI: 1.39, 2.32)	5.41 (95% CI: 3.60, 8.12)
Pre-vaccination and 1 year PD4	1.30 (95% CI: 0.99, 1.71)	4.12 (95% CI: 2.62, 6.47)

Conclusion. ZV_{IN} elicited higher VZV-specific humoral and cell-mediated responses in adult auto-HSCT recipients when compared with placebo ~28 days and ~1 year post-dose 4. These results indicate that ZV_{IN} is immunogenic in these patients who are ineligible for live attenuated HZ vaccine, which is consistent with previously observed clinical efficacy.

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1819. Vaccine effectiveness against influenza-associated hospitalization among children aged < 13 years using a hospital-based surveillance system in Minnesota, 2013 – 2016

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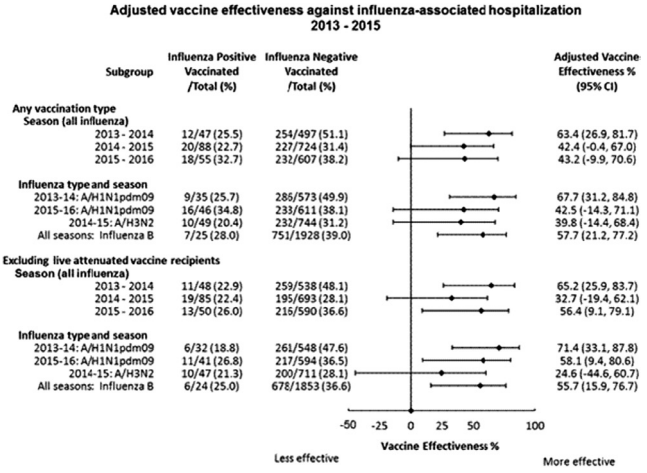
Background. Due to marked variability in circulating influenza viruses each year, annual evaluation of the vaccine's effectiveness against severe outcomes is essential. We used the Minnesota Department of Health's (MDH) Severe Acute Respiratory Illness (SARI) surveillance to evaluate vaccine effectiveness (VE) against influenza-associated hospitalization over three influenza seasons.

Methods. Residual respiratory specimens from patients admitted with SARI were sent to the MDH laboratory for influenza RT-PCR testing. Medical records were reviewed to collect patient data. Vaccination history was verified using the state immunization registry. We included patients aged ≥6 months to < 13 years, after which immunization reporting is not required, hospitalized from the earliest influenza detection after July through April each year. We defined vaccinated patients as those ≥1 dose of influenza vaccine in the current season. Children aged < 9 years with no history of vaccination were considered vaccinated if 2 were doses given a month apart. Partially vaccinated children were excluded. We estimated VE as 1 minus the adjusted odds ratio (x100%) of influenza vaccination among influenza cases vs. negative controls, controlling for age, race, days from onset to admission, comorbidities, and admission month.

Results. Among 2198 SARI patients, 763 (35%) were vaccinated for influenza, 180 (8.2%) were partially vaccinated, and 1255 (57%) were unvaccinated. Influenza was detected among 202 (9.2%) children, and significantly more frequently among children aged ≥5 years (17%) compared with younger children (7.4%). The adjusted VE in 2013–14 was 68% (95% Confidence Interval: 34, 85), but was non-significant during the 2014–15 and 2015–16 seasons (Figure). Estimates of VE by influenza A subtypes varied substantially by year; VE against influenza B viruses was significant, but could not be stratified by year. VE was impacted when live attenuated influenza vaccine recipients were excluded.

Conclusion. We report moderately high influenza VE in 2013–14 and a point estimate higher than other published estimates from outpatient data in 2014–15. These results, underscore the importance of influenza vaccination to prevent severe outcomes such as hospitalization.



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

1820. Impact of Prior Vaccination History on Risk of Vaccine Failure with Live Attenuated and Inactivated Influenza Vaccines in Children, 2013–14 through 2015–16

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Saturday, October 7, 2017: 10:30 AM

Background. Prior season vaccination may influence influenza vaccine effectiveness; however, little is known about the impact of prior vaccination or vaccine type received. We assessed prior vaccination history and risk of influenza in children over 3 seasons.

Methods. Children aged 2–17 years seeking outpatient care for febrile acute respiratory illness were recruited during the 2013–14 through 2015–16 seasons (1 vaccine-mismatched H3N2 season and 2 H1N1pdm09 seasons) at 4 US sites. Influenza was confirmed by RT-PCR. Vaccination data for the season of enrollment (current) and 3 prior seasons were obtained from medical records and immunization registries. Among children who received 1 dose of influenza vaccine during the current season, risk of vaccine failure (ie, PCR-confirmed influenza) was estimated using test-negative design with logistic regression models adjusted for age, season, enrollment site, enrollment week (relative to peak), and outpatient visits. Risk of failure with live attenuated influenza vaccine (LAIV) and inactivated influenza vaccine (IIV) were modeled