1663. Marked Improvement in Pandemic H1N1 Component Shedding and Immunogenicity in 2017–2018 Russian-Backbone Live Attenuated Influenza Vaccine (LAIV) in Gambian Children

Background. Recent observational studies in the United States have reported reduced effectiveness of the Ann Arbor-backbone live attenuated influenza vaccine (LAIV), coinciding with emergence of 2009 pandemic H1N1 (pH1N1). A recent RCT in Senegal of the Russian-backbone LAIV also showed no efficacy, with pH1N1 the predominant vaccine-matched strain circulating during the study. The reasons for this reduced effectiveness and efficacy are unclear but may involve pre-existing immunity or pH1N1 virus-specific factors. We explore these underlying reasons through an LAIV immunogenicity study in Gambian children across 2 influenza seasons.

Methods. Gambian children aged 24–59 months (n = 118) were given 2016–17 northern hemisphere Russian-backbone trivalent LAIV. Vaccine shedding, haemagglutinin inhibition (HAI) titre, influenza-specific T-cell responses, and mucosal IgA were measured using RT-PCR, HAI assay, flow cytometry, and ELISA, respectively. The reasons for reducing this strain were updated.

Results. In 2016–2017, significantly less pH1N1 shedding (13.6% children) was seen compared with H3N2 (45.8%) and B/Victoria (80.5%). Similarly, poor pH1N1-specific HAI (5.1% seroconversion), mucosal IgA (18.6% responders) and T-cell responses (<10% responses to pH1N1 HA) were seen, whereas significantly greater responses in T-cell responses (<10% responses to pH1N1 HA) were seen, whereas significantly greater responses in PBS recipients (7). Day 45 CSS was achieved by 39.2% of DAS181-treated patients for up to 10 days. The primary endpoint was the proportion of patients reaching clinical stability (CSS, defined as alive, resolution of SO2 requirement, and normalization of vital signs) by Day 45.

Results. In 2017–2018 LAIV showed improvement in pH1N1 shedding with no significant difference between strains: 67.7%, 63.2%, and 68.4% children shedding pH1N1, H3N2, and B/Victoria at day 2 post-LAIV (see Figure 1). This was matched by enhanced pH1N1 HA-specific T-cell responses, with 47.1% children showing a CD4+IFNg+ and 54.4% a CD4+IL2+ response (Figure 2). HAI and mucosal IgA data for 2017–2018 are currently being generated and will be presented, as well as key interactions between the parameters measured.

Conclusion. Our data suggest that poor pH1N1 A/California strain replication in vivo may explain recent suboptimal LAIV performance and suggest that an improvement can be expected with new pH1N1 strains included in current LAIV formulations.

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compared with 31.4% of placebo (P = 0.29), while the proportion among non-MV patients was 45.0% vs. 31.0% (difference = −14.0%, P = 0.15), respectively. Time to CSS in the non-MV stratum was shorter in DAS181-treated patients (figure). Median change in nasopharyngeal PIV viral load by Day 10 and median hospitalization days were −1.44 vs. −0.68 log (P = 0.51) and 13.5 vs. 21 days (P = 0.18) for DAS181 and placebo, respectively. Post-hoc analysis on the probability of return to room air suggested that DAS181 reduced SO need in the non-MV stratum after Day 21 (P = 0.09). HCT recipients within 360 days from transplant had a 40.8% treatment effect on RTRA at Day 28 (P = 0.04) and 36.7% on mortality at Day 45 when compared with placebo (P = 0.06). The rate of adverse events was similar in both treatment groups. Day 45 all-cause mortality was comparable in both groups (32.4% DAS181 vs. 31.4% placebo).

Conclusion. DAS181 was well tolerated and showed a signal for clinical efficacy in IC patients with PIV LRTI. DAS181 was granted Breakthrough Therapy Designation for the treatment of PIV LRTI in IC patients and a phase 3 trial is being planned.

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1716. Results of the Respiratory Protection Effectiveness Clinical Trial (ResPECT) Lewis Radonovich, MD1, Michael S. Simberkoff, MD, FIDSA2, Mary Bessenese, MD3, Alexsandra C. Brown, PhD4, Derek Cummings, PhD5, Charlotte Gaydos, DrPH6, FIDSA2, Jenna Los, MLA7, Amanda Krosche, BS8, Cynthia Gibert, MD, MSc9, Geoffrey Gorse, MD10, Ann Christine Nyquist, MD, MSPH11, FIDSA12, Nicholas Reich, PhD, Maria Rodrigue.Zarraga, MD13, FIDSA14 Connie Price, MD15 and Trish Perl, MD, MSc, FIDSA, FSHEA16, 1National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Pittsburgh, Pennsylvania, 2VA New York Harbor Healthcare System, New York, New York, 3VA Eastern Colorado Healthcare System, Denver, Colorado, 4University of Massachusetts Amherst, Amherst, Massachusetts, 5Department of Biology and Emerging Pathogens Institute, University of Florida, Gainesville, Florida, 6Division of Infectious Diseases, Department of Medicine, Johns Hopkins University, Baltimore, Maryland, 7Medicine, Johns Hopkins University, Baltimore, Maryland, 8College of Medicine, Weill Cornell Medicine, New York, New York, 9FIDSA, Washington, DC, VAMC, Washington, DC, 10FIDSA, VA St. Louis Healthcare System, St. Louis, Missouri, 11University of Colorado School of Medicine/Children's Hospital Colorado, Aurora, Colorado, 12Department of Biostatistics and Epidemiology, School of Public Health, University of Massachusetts Amherst, Amherst, Massachusetts, 13Department of Medicine, Michael E. DeBakey VA Medical Center, Houston, Texas, 14Infectious Diseases, University of Colorado School of Medicine/ Denver Health and Hospital, Denver, Colorado, and 15Division of Infectious Diseases Department of Medicine, University of Texas Southwestern Medical Center, Dallas, Texas

Session: 199. Clinical Trials that May Change Your Practice
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Results of the Respiratory Protection Effectiveness Clinical Trial (ResPECT)

Background. Respiratory protection (RP) for healthcare personnel (HCP) is controversial and clinical studies are inconclusive about the effectiveness of N95 respirators (N95) and medical masks (MM) for protecting HCP from workplace viral respiratory infections and illnesses (VRII).

Methods. We conducted a cluster-randomized, investigator-blinded, multisite effectiveness study comparing N95 to MM in geographically diverse, high exposure outpatient settings between 2011 and 2016. Each year during VRII season, participants were assigned devices when within 6 feet of patients with known or suspected respiratory illness. Respiratory swabs were collected from symptomatic and asymptomatic participants. Diaries detailed VRII exposures, influenza vaccination, adherence to RP and hand hygiene, and manifestations of illness. The primary and secondary outcomes were incidence of laboratory-confirmed influenza (LCRI) using polymerase chain reaction (PCR) and hemagglutinin inhibition assays (HAI), and acute respiratory illness (ARI), influenza-like illness (ILI), laboratory-confirmed respiratory illness (LCRI), and laboratory-detected respiratory infection (LDRI) (figure). Intervention protective effects were estimated using unadjusted odds and incidence rate ratios.

Results. 5,180 HCP seasons enrolled and randomized (2,243 to N95 and 2,446 to MM), with 4,689 (91%) completing the study. In the intention-to-treat cohort (ITT), among participants in the N95 and MM groups, respectively, 207 (8.2%) and 193 (7.9%) were diagnosed with LCRI (odds ratio [OR] 1.14, 95% confidence interval [CI] 0.93–1.40); 1,556 (61.9%) and 1,711 (64.1%) were diagnosed with ARI (relative risk [RR] 0.99, CI 0.92–1.06); 128 (5.1%) and 166 (6.2%) were diagnosed with ILI (RR 0.87, CI 0.68–1.10); 371 (14.8%) and 417 (15.6%) were diagnosed with LCRI (RR 0.97, CI 0.84–1.12); and 679 (27.0%) and 745 (27.9%) were diagnosed with LDRI (RR 0.99, CI 0.89–1.09). The adjusted ITT and per-protocol analyses yielded similar results.

Conclusion. In this outpatient-based, cluster-randomized, controlled trial, neither N95 nor MM resulted in superior protection from LCRI or VRII.

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