**Rotavirus-specific IgA and IgG Patterns During the First Two Years of Life: Analysis of the PREVAIL Birth Cohort**

Julia M. Baker1, Slavica Mijatovic-Rustempasic1, Mary C. Casey-Moore1, Brendon White2, Claire P. Mattison1,3, Rachel M. Burke1, Shannon C. Conrey2,4, Ardythe L. Morrow2,4, Daniel C. Payne5, Rashi Gautam1, Umesh D. Parashar1, Jacqueline E. Tate1, Mary Allen Staat2,6, Monica M. McNeal2,6

1 Division of Viral Diseases, US Centers for Disease Control and Prevention

2 Division of Infectious Diseases, Cincinnati Children’s Hospital Medical Center

3 Cherokee Nation Assurance

4 Department of Environmental and Public Health Sciences, University of Cincinnati College of Medicine

5 Division of Global Migration and Quarantine, US Centers for Disease Control and Prevention

6 Department of Pediatrics, University of Cincinnati College of Medicine

**Background:** Birth cohort studies that track immune response over time may contribute to our understanding of differential rotavirus immunity and disease burden across settings. The Pediatric Respiratory and Enteric Virus Acquisition and Immunogenesis Longitudinal (PREVAIL) study is a birth cohort study based in Cincinnati, Ohio. Here, we present PREVAIL data on natural infection and vaccine-induced rotavirus-specific immune response during the first two years of life.

**Methods:** A total of 245 children were enrolled from 2017-2018 and followed weekly up to two years of age. Serum was collected at birth (cord blood), 6 weeks, 6 months, 12 months, 18 months and 24 months and tested for rotavirus-specific immunoglobulin A and G (IgA, IgG) using a G1P[8]-based ELISA assay. Stool specimens were collected at birth, weekly, and during acute gastroenteritis and tested for rotavirus using the xTAG® Gastrointestinal Pathogen Panel and reverse transcription-polymerase chain reaction. Children enrolled for ≥18 months who submitted ≥70% of samples were considered adherent. Geometric mean titers (GMTs) and 95% confidence intervals (CIs) were estimated and stratified by time point, rotavirus infection status and vaccination status.

**Results:** A total of 1,179 serum samples from 242 children were available for analysis. Nineteen (8%) children were unvaccinated against rotavirus and 188 (77.7%) completed a full rotavirus vaccine series. The median change in IgA following full vaccination was 86.7 [range: 0-794] (6-week GMT=7.5, 95% CI: 7.4-7.7; 6-month GMT=69.8, 95% CI: 48.7-99.9). Based on stool sample testing, 72 (30%) children experienced ≥1 rotavirus infection. The median change in IgA following infection among fully vaccinated, adherent children was 104.0 [range:0-56,600] (pre-infection GMT=20.7, 95% CI: 12.8-33.5; post-infection GMT=114.0, 95% CI: 44.6-291.0). Among fully vaccinated, adherent children with no known previous infections, 12- and 24-month IgA GMTs remained elevated at 33.0 (95% CI: 24.4-44.5) and 22.3 (95% CI: 15.9-31.2); simultaneously, IgG GMT declined from 69.4 (95% CI: 53.8-89.5) to 35.3 (95% CI: 26.4-47.2).

**Conclusions:** Rotavirus-specific immune response increased following natural infection and vaccination and remained elevated among fully vaccinated children aged 2 years. Subsequent analyses are needed to describe potential reduced risk of rotavirus infection associated with naturally acquired and vaccine-induced IgA and IgG responses.