RSV seroprevalence in mother-infant dyad: A longitudinal birth cohort study

Mohammed A. Rasheed1, Suvang Trivedi2, Daniel C. Payne3, Mary Staat4, Ardythe Morrow4, Monica McNeal4, Gayle Langley3, Allison Cline4, Elizabeth Schlaudecker4, Alexandra M Piasecki3, Susan I. Gerber3, Natalie J. Thornburg3

1Synergy America, Atlanta GA

2IHRC Inc, Atlanta, GA

3Centers for Disease Control and Prevention, National Center for Immunizations and Respiratory Diseases, Division of Viral Diseases, Atlanta, GA

4Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

**Background.** Respiratory syncytial virus (RSV) is a significant pathogen causing lower respiratory tract infection in young infants. In this study, we aimed to evaluate RSV-specific maternal antibody transfer to infants and its persistence in the first two year of life. Longitudinal study of decay in titers also help in formulating strategies for determining when to immunize babies or deliver maternal vaccinations when the vaccines are made available.

**Methods.** 265 full term pregnant mothers were enrolled in the between April 2017 and July 2018 at Cincinnati Children’s Hospital Medical Center. Sera from mothers and umbilical cords were collected. The infants will be longitudinally followed until two years of age with blood draws performed at 6 weeks and 6, 12, 18, and 24 months. Antibody responses to RSV were measured by ELISA in sera from mother, cord blood and longitudinal bleeds in infants in specimens collected through July 2018 (up to 12 months of age).

**Results.**

All sera from mothers and umbilical cords had detectable RSV antibodies, although the levels ranged widely. Transplacental transfer of antibodies to infant was efficient and correlated significantly with maternal levels (maternal vs. cord r = 0.81). During the first few months of life, infants retained maternal antibodies, however after 6 months there was a significant decay. By 12 months, the majority of infants had a complete loss of RSV antibodies, with a small percentage exhibiting an increase in titers from six months to one year indicating a potential exposure to RSV.

**Conclusion**. Understanding the dynamics of antibody response to RSV and its proteins is essential to design vaccines that impart protection in infants via maternal antibody transfer. Our data indicates an effective transfer of anti-RSV antibody response from mothers to infants that decayed by six months of age.