**RSV infections among US infants in the PREVAIL birth cohort**

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**Background**: Respiratory syncytial virus (RSV) infection is a major cause of morbidity and mortality in young children. RSV has distinct subtypes, A and B. PREVAIL, a prospective birth cohort study underway in Cincinnati, OH, seeks to understand the natural history of RSV, including A and B subtypes, in the United States.

**Methods**: After maternal enrollment in the 3rd trimester, healthy mother-infant pairs achieved final eligibility at postnatal week 2. Mothers were trained to collect mid-turbinate nasal swabs weekly. Cases of acute respiratory infection (ARI) are documented by weekly cell phone questionnaires and medical records. ARI is defined by cough or fever (≥38.0°C, rectal) in the previous week. Laboratory testing used a molecular respiratory viral panel. We analyzed all weekly nasal swabs that were collected from infants under follow-up in the PREVAIL cohort during the typical RSV season (10/1/17-4/30/18).

**Results**: We followed 180 infants, who ranged from 0 to 52 weeks of age during the study period and contributed 2461 nasal swabs for testing. Thirty (17%) children had at least one sample test positive for RSV; 16 (53%) were infected with RSV A, and 14 (47%) with RSV B. No infants had both subtypes. Of the 30 RSV-infected infants, 14 (47%) had 2 to 4 positive samples ranging from 1 to 54 days apart; 25 (83%) infants had an ARI associated with infection (average days of illness=12.5); 19 (64%) had medically attended infections; 11 (37%) were seen in an outpatient clinic and 6 (20%) in the emergency department (ED); 2 (7%) were hospitalized. Age at onset of RSV infection ranged from 2 weeks to 9 months, but median age was only 7 weeks in RSV A-infected infants, compared to 26 weeks in RSV B-infected infants (*p*=0.006). All severe RSV cases (ED or hospitalization) occurred in infants <6 months of age with none occurring at or above 6 months (*p*=0.012). Lack of breastfeeding at the onset of infection was also a risk factor for severe RSV disease (odds ratio=11.5, *p*=0.028) based on exact logistic regression that accounted for infant age.

**Conclusions**: We found a high incidence of infection and medically attended RSV in infants enrolled in the PREVAIL cohort during the 2017-2018 season. RSV A and B were evenly distributed but RSV A occurred at younger ages. Severe RSV occurred in infants under 6 months and was further associated with lack of breastfeeding. Understanding the timing, type and severity of RSV will contribute to current development of immunotherapy and vaccines.

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**Funded by CDC**

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