

## **Hospitalization for Lower Respiratory Tract Infection Increases the Risk of Childhood Respiratory Morbidity Among Children with Congenital Heart Disease**

*Vo P.(2), Szabo S.M.(1), Gooch K.G.(2), Korol E.E.(1), Bradt P.(3), Mitchell I.(4), Levy A.R.(1) Oxford Outcomes, Vancouver, BC, Canada (1); Abbott Laboratories, Abbott Park, IL, USA (2); Adzoe Inc., Libertyville IL, USA (3); Professor, Paediatrics, University of Calgary. Paediatric Respiriologist, Alberta Children's Hospital, Calgary, Alberta, Canada (4)*

**Introduction:** Congenital heart disease (CHD) is a risk factor for severe respiratory syncytial virus (RSV) lower respiratory tract infection (LRTI) in infancy. Whether infants with CHD are at increased risk of RSV-related sequelae (e.g. asthma) is unknown. The objective was to estimate the incidence and increased risk of chronic respiratory morbidity among CHD infants hospitalized for LRTI.

**Methods:** A retrospective population-based study was conducted using the Régie de l'Assurance Maladie du Québec administrative databases. Children <2 years of age with CHD (by ICD-9 code diagnoses on physician billing or hospital discharge abstracts) born in 1996 or 1997 were included. Hospitalizations for LRTI before age 2, and chronic respiratory morbidity (asthma, chronic bronchitis, or chronic lung disease) before age 10, were identified by ICD codes. Incidence rates and incidence rate ratios (IRRs) with 95% confidence intervals (CIs) comparing risk among LRTI-hospitalized and non-hospitalized CHD children were calculated. Logistic regression models estimated the adjusted odds ratio (95% CI) of chronic respiratory morbidity based on hospitalization for LRTI in infancy, among CHD children without other known risk factors.

**Results:** Of the 3,223 CHD children, 19 (0.6%) and 417 (12.9%) were hospitalized for RSV or LRTI, respectively, before 2 years old. Before age 10, 58.5% (244/417) of CHD children who were hospitalized for LRTI in infancy were diagnosed with chronic respiratory morbidity; compared to 31.5% (884/2,805) of CHD children not hospitalized for LRTI in infancy. IRRs for chronic respiratory morbidity were 2.0 (1.8-2.2) and 1.6 (1.3-1.9), for males and females aged 2-10 years, respectively. The adjusted odds of developing chronic respiratory morbidity after LRTI hospitalization was 3.0 (2.3-3.9); and of hospitalization for chronic respiratory morbidity after LRTI hospitalization was 5.7 (4.0-8.1).

**Conclusions:** CHD children hospitalized for LRTI in infancy are at almost twice the risk of childhood chronic respiratory morbidity, compared to CHD children not hospitalized for LRTI. Among CHD children, LRTI hospitalization was associated with a 3-fold increase in the risk of childhood chronic respiratory morbidity – and a 6-fold increased risk of hospitalization. The impact of LRTI hospitalization is therefore not limited to the perinatal period among CHD infants; but extends throughout childhood.