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Title: Lung function impairment in term infants developing respiratory syncytial virus bronchiolitis is pre-existent in previously healthy infants

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Body: Introduction Respiratory syncytial virus (RSV) is the most frequent cause for hospitalization in infancy and associated with lower lung function at school age. Whether this lung function is pre-existent in previous healthy children that will develop a RSV infection is not known. Objective To study whether diminished premorbid lung function in healthy infants predisposed to RSV hospitalization. Methods In a prospective birth cohort study, infants were followed from birth through the first year of life with daily questionnaires about respiratory symptoms. Neonatal lung function was performed within the first 2 months of life. Nose and throat swabs were collected in two virus subgroups: one in which infants were sampled during episodes with respiratory symptoms, and one in which infants were sampled irrespectively of symptoms. Polymerase chain reaction was used to detect RSV infections. Patients with a confirmed RSV bronchiolitis were selected based on the general practitioner charts, and compared to non hospitalized RSV positive infant. Results Compliance of the respiratory system (Crs) was significantly lower in the hospitalized RSV patients compared to to non hospitalized RSV positive infants (median difference -6.01 (95% CI -11.34 to -0.74)). Resistance of the respiratory system in the hospitalized RSV patients was significantly higher than in the infants that were not hospitalized (median difference 1.146 (95% CI 0.01 to 2.32). Conclusions We conclude that premorbid lung function in previously healthy infants that develop a RSV bronchiolitis requiring hospitalization is impaired compared to RSV-positive infants not requiring hospitalization.