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Title: Viruses in acute bronchiolitis in South Eastern Norway

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Body: Background: Acute bronchiolitis is a frequent cause of hospitalization in infants worldwide. The etiology is predominantly viral, occurring in seasonal patterns with Respiratory Syncytial Virus (RSV) as the most common. With increasingly sensitive techniques, a higher number of viruses are detected, both alone and together with RSV. Aims: We aimed to assess viral etiology and their seasonal patterns in children with acute bronchiolitis in Norway, with modern, sensitive techniques. Methods: A clinical trial of bronchiolitis treatment (Bronchiolitis ALL-SE Study) included 404 hospitalized patients in 8 different hospitals in Norway with nasopharynx aspirate sampled at inclusion and further analysis in 363 (mean age 4.2 months, 60% boys) patients. Total RNA was isolated by the Viral RNA isolation kit (Qiagen) and on column DNAse treatment. After cDNA synthesis amplification of viral target sequences using DPO primers was performed, followed by real-time PCR detection of Flu A (including H5N1, H1N1), Flu B, RSV A/B, MPV, AdV (B/C/E and some of A/D/F), CoV (229E/NL63/OC43), HRV (A/B/C)- HEV, HBoV (1/2/3/4) and PIV (1/2/3/4) (Magicplex RV Panel Real-time Test, Seegene). Results and Conclusion: The detection rate for RSV was 83%, human rhinovirus 34% and the other viruses 8-15%. 1 virus was detected in 29%, 2 viruses in 31%, 3 in 19% and more than 3 viruses was found in 12% of the patients. In two patients seven simultaneous viruses were found. The different viruses showed different seasonal patterns (fig 1). The number of simultaneously present viruses is higher than previously reported.