Atopic disposition and wheezing in infants as predictors of RSV hospitalisation

In industrialised countries, the rate of respiratory syncytial virus (RSV) hospitalisation has been increasing, and an increase in atopic disease has been widely reported. This study aimed to investigate whether atopic disposition, wheezing and atopic disorders increased the risk of RSV hospitalisation in children aged <18 months.

Methods
This was a nested case-control study to determine relative risks of severe RSV infections using exposure information obtained from interviews with mothers of 2,564 cases and 12,816 control children who had been followed prospectively from birth to 18 months of age. Information on the children’s age at the time of RSV hospitalisation, wheezing (infrequent (<3 episodes) or recurrent (≥3 episodes) during the follow-up period) and atopic dermatitis were used to study these associations chronologically. Information on maternal and paternal asthma was obtained.

Results
The data demonstrated a strong association between maternal asthma (and, to a lesser extent, paternal asthma) and a higher risk of severe RSV infection; the adjusted relative risks (RR) of RSV hospitalisation were 1.72 for maternal asthma and 1.23 for paternal asthma. Infrequent and recurrent wheezing were also strongly associated with an increased risk of RSV hospitalisation; the RR for children with infrequent wheezing was 2.98 (95% confidence interval (CI) 2.56–3.48), while children with recurrent wheezing had an RR of 5.90 (95% CI 4.96–7.01) for RSV hospitalisation. Atopic dermatitis in the child was associated with increased risk of RSV hospitalisation only among infants aged <6 months (RR 1.33). These associations were present also if infants with medical risk factors (intrauterine growth retardation, premature birth, birth weight <2.5 kg, cystic fibrosis, chronic lung disease of prematurity and immune suppression) were excluded from the analysis.

Conclusion
Asthmatic disposition and wheezing are strong determinants of subsequent RSV hospitalisation in infants aged <18 months.

Message
Severe lower respiratory RSV infection occurs in infants who are already predisposed to wheeze.