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Lung alert

Seasonal predictive factors of acute respiratory tract infections in children

Acute respiratory tract infections (ARTI) in children under 5 years of age are a leading cause of mortality worldwide, and predictive tools are invaluable in preventing infection and timely vaccination. Owing to the seasonal nature of ARTI, this German study aimed to determine the effect of climate on ARTI in children requiring hospitalisation.

This retrospective study investigated the association between common pathogens in children and various meteorological parameters. Between 2003 and 2006, nasopharyngeal aspirates were taken from 2012 children (<16 years) admitted to hospital with ARTI. These were analysed for 19 pathogens. Data on climate taken from the University of Mainz were averaged over 14 days and included measurement of temperature, relative humidity, wind speed and atmospheric pressure.

At least one ARTI pathogen was identified in 66.9% of samples, the most common being rhinovirus, respiratory syncytial virus (RSV), adenovirus and influenza A. Influenza A, RSV and adenovirus were associated with temperature, and rhinovirus with humidity. In addition, RSV, influenza A and human metapneumovirus showed winter peaks. In a time series model, only RSV was found to be associated with hospitalisation for ARTI in children.

This retrospective study provides intriguing data into the prediction of seasonal respiratory tract infection in children. Application of seasonal patterns to pathogen prevalence may be helpful in the management of other respiratory diseases.

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