

Using probabilistically linked data to investigate the burden of Respiratory Syncytial Virus (RSV) in children <5 years of age on secondary care in England

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Objectives

This study aims to describe the burden of respiratory syncytial virus (RSV) in children <5 years of age on secondary care in England using linked laboratory surveillance and hospital admissions databases. We will compare our results with previous estimates of the burden of RSV in secondary care based on statistical modelling techniques.

Approach

National laboratory surveillance data was probabilistically linked to the Hospital Episode Statistics (HES) database for children aged <5 years in England from 01/08/2010 to 31/07/2012. Linkage was based on NHS and hospital number, date of birth, sex and post code. Only records where the laboratory test was within one week of hospital admission were included. Using the linked data, we estimated the probability of a respiratory hospital admission being related to RSV based on patient characteristics, calendar week and diagnostic coding. We used these probabilities to estimate the national incidence of RSV-associated hospital admissions. Admission rates were calculated by age group (<1 year, 1-4 years) using Office for National Statistics (ONS) mid-year population estimates.

Results

There was an average of 11,289 RSV-positive laboratory records per year during the study period. Preliminary results indicate that 75% of RSV-positive laboratory records linked to a hospital admission. 92% of linked hospital admissions occurred between November and March each year. 76% of the linked hospital admissions were in children aged <1 year. There were significant differences in coding of RSV-associated hospital admissions by

age, and over two-thirds of RSV-associated hospital admissions did not have a primary diagnosis indicating RSV as the cause of disease. We will present results on the number of linked hospital admissions, unlinked hospital admissions potentially caused by RSV and the total estimated number of RSV-associated hospital admissions, stratified by age, calendar week and primary diagnosis.

Conclusion

This study is the first to link laboratory and hospital data for RSV in England, and therefore the first to describe laboratory-confirmed RSV-associated hospital admissions on a national scale. Our approach to estimate the national incidence of admissions based on developing probability weights from a smaller, linked sample has applications not just for RSV but for other seasonal infections. In addition, with a World Health Organization (WHO) consultation last year estimating that an RSV vaccine will be available commercially within 5-10 years, the results of this study can be used in mathematical models of potential vaccine strategy, contributing to the identification of optimal target groups for a potential licensed vaccine.

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