Timing of bronchiolitis hospitalisations and respiratory syncytial virus immunoprophylaxis in non-metropolitan Western Australia

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To the Editor: Bronchiolitis, most often associated with respiratory syncytial virus (RSV), is a major cause of hospitalisation in young children. Those with chronic lung and congenital heart disease (the latter affecting about 192 births annually in Western Australia[1]) are at particularly high risk.[2] Immunoprophylaxis with the RSV monoclonal antibody palivizumab is effective in reducing severe RSV-related hospitalisations, and monthly immunoprophylaxis is recommended in high-risk children.[2,3] Monthly immunoprophylaxis is costly; therefore, the most cost-effective schedule follows the times of peak RSV activity[4] — usually the winter months, May to October.

Using the Western Australian Data Linkage System,[5] we investigated the seasonality of bronchiolitis hospitalisations (International Classification of Diseases-10 code J21) from 1996 to 2005 as a proxy for RSV-related illness. Data specifically for RSV-related illness were considered unreliable because some children may not have been tested for RSV, test results may not have been documented on hospital discharge notes, or RSV immunofluorescence tests may have given false negative results. Furthermore, RSV codes (B97.4, J12.1, J20.5, J21.0) were not used by hospitals in WA until July 1999.

We identified 11 988 hospitalisations for bronchiolitis throughout WA among 245 249 births. Most bronchiolitis admissions (81%) were in children younger than 12 months. In the Perth metropolitan region, there was a clear winter seasonal pattern, with hospitalisations peaking in July. However, in the Kimberley region in northern WA, there was a sustained bimodal seasonality, with a peak in April and second peak in August (Box). Moreover, only 51.5% (469) of bronchiolitis admissions in the Kimberley and 61.5% (444) in the Pilbara–Gascoyne (located in mid-north WA) occurred between May and October, as opposed to 84.3% (6354) in the metropolitan region. These data support an earlier implementation and longer dosing schedule with palivizumab for high-risk children in the Kimberley and Pilbara–Gascoyne than for those in Perth.

Our study has some limitations. Not all bronchiolitis hospitalisations may be caused by RSV. However, when we investigated only those hospitalisations with a specific RSV code, the monthly distribution showed a similar pattern. Additionally, timing of RSV activity, and therefore bronchiolitis, may vary from year to year. Although the numbers were too small to allow separate analysis by calendar year, bronchiolitis hospitalisations in the Kimberley showed extended seasons in 8 of the 10 years.

Our findings support the need for each jurisdiction to know its seasonal pattern of bronchiolitis and RSV hospitalisations, and to implement recommended palivizumab schedules accordingly. Such use of extended prophylactic regimens may well require its cost-effectiveness to be reconsidered. Our analysis highlights the relevance of population-based data linkage studies to clinical care policy.

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Monthly distribution of bronchiolitis hospitalisations by region of child's birth, 1996–2005