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Trends in admissions for acute respiratory infections in children: an inter-country comparison between Western Australia and England

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Objectives

Acute respiratory infections (ARI) including bronchiolitis, pneumonia and influenza are a major cause of hospital admissions in children worldwide. Linkage of administrative health datasets provides a platform to investigate temporal and seasonal trends in large populations over many years. We examined the similarities and differences in ARI admissions using linked datasets in Western Australia and England.

Approach

Through the availability of common data items in each jurisdiction, identical coding and data cleaning principles were applied to both datasets. Hospital admissions for ARI in children aged <5 years between 2000 and 2012 were identified using International Classification of Diseases diagnosis codes. Admission rates per 1000 child-years by age, gender and admission year were calculated in each jurisdiction. A total population birth cohort was available in Western Australia and the denominator was person time at risk whereas for England, all hospitalisations were used with the mid-year population as the denominator.

Results

The overall incidence of ARI was 18.3/1000 child-years in Western Australia and 14.4/1000 in England. In both countries, the highest incidence of ARI was observed in infants (47.9/1000 child-years in Western Australia and 42.1/1000 child-years in England). Bronchiolitis was the most common primary diagnosis in infants in both countries, accounting for 79.7% of ARI admissions in Western Australia and 78.3% in England. The most common primary diagnosis in 1-4 year olds was unspecified lower respiratory tract infections in England (48.8% of ARI admissions in this age group) and pneumonia in Western Australia (43.9% of ARI admissions in 1-4-year-olds). The annual incidence rate for ARI hospitalisations declined in Western Australia from 2000 to 2006 and since remained steady. ARI admission rates increased in England throughout the study period. Admission rates across all age groups were 1.1-1.5 times higher in boys than girls in both countries.

Conclusions

The availability of similar datasets in two economically similar countries in different hemispheres has afforded the opportunity to characterise and compare the epidemiology of paediatric respiratory infections over a 13 year period. Future analyses will allow us to assess differences in coding practices, seasonality and risk factors such as socio-economic deprivation and prematurity. Furthermore the availability of linked laboratory data for respiratory pathogens in each jurisdiction will allow for comparisons of pathogen-specific epidemiology and the impact of universal vaccination programs.

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