

## Metadata: Lower respiratory tract infections hospitalisations

Information topic	Details
Indicator name	<b>Lower respiratory tract infection hospitalisations</b>
Domain and topic	Indoor environment domain: Lower respiratory tract infections
Rationale	Household crowding and second-hand smoke exposure both increase the risk of lower respiratory tract infections in young children (Baker et al., 2013; U.S. Department of Health and Human Services, 2007). Evidence also suggests that outdoor air pollution increases the risk of acute lower respiratory tract infection hospitalisations (Mehta et al., 2013).
Indicator definition and units	The number and rate of hospitalisations for lower respiratory tract infections, among children aged 0–4 years. Rates are presented per 100,000 population.
Data source	National Minimum Dataset (NMDS), Ministry of Health.
Numerator	<p>Acute hospital admissions with a primary diagnosis of pneumonia (ICD-10 AM J12, J13, J14, J15, J16, J18), bronchitis (J20), bronchiolitis (J21) or unspecified acute lower respiratory tract infection (J22), among children aged 0–4 years.</p> <p>The indicator includes overnight hospital admissions for acute or semi-acute/arranged visits (admission type in 'AA', 'AC', 'ZA', 'ZC').</p> <p>The following hospitalisations were excluded from analysis:</p> <ul style="list-style-type: none"> <li>• transfers within or between hospitals</li> <li>• overseas visitors</li> <li>• deaths (defined as 'event end types' DD, DO or ED).</li> </ul> <p>Day cases and emergency department cases meeting the three-hour threshold have been included, to align with the approach taken by the Child and Youth Epidemiology Service (Simpson et al 2017) and Health Quality and Safety Commission (2016). It is thought that this is the best way to measure childhood medical hospitalisations across the country, as some hospitals admit children as an in-patient, while other hospitals treat children in a short-stay unit.</p>
Denominator	Population estimates (2013 and prior) and projections (after 2013) from Statistics New Zealand. For the NZDep2013 analysis, the 2013 denominator population by NZDep2013 deciles, age group and sex has been used.
Methodology	Crude (unadjusted) rates have been calculated rather than age-standardised rates, due to the small age group of 0–4 years. Prioritised ethnic groups have been used, in the following prioritisation order: Māori, Pacific peoples, Asian, European/Other. We have used the variables provided on the National Minimum

	Dataset for the analysis, including prioritised ethnicity, sex, NZDep2013 decile and District Health Board. District Health Board (DHB) refers to DHB of residence.
Time period and time scale	Annual data, from 2001 to the most recent data available.
Population coverage	New Zealand usually resident population aged 0–4 years.
Spatial coverage	National.
Reporting variables	Results are presented by year, sex, age group, ethnic group, NZDep, and DHB.
Confidence intervals	95% confidence intervals were calculated based on the methodology outlined in APHO (2008). Confidence intervals are presented as error bars on graphs.
Limitations of indicator and data source	<p>Limitations include the following.</p> <ul style="list-style-type: none"> <li>• The indicator only covers lower respiratory tract infections that resulted in hospital admissions.</li> <li>• The indicator presents the rate of hospitalisations and does not give information about the number of children affected; some children may be admitted more than once in a year, and each hospitalisation is counted in our analysis.</li> </ul> <p>From 2000 to about 2009, there were regional variations in whether providers uploaded their day cases to the NMDS. This has led to issues when comparing regions and time series. One possible way of minimising this variation is to exclude day cases and emergency department short stay visits from the analysis. However, this approach is not necessarily appropriate for children, since some hospitals treat children in specialist paediatric short-stay units, rather than admitting the child to hospital. For this reason, and for consistency with other agencies, we have used the same approach as the Child and Youth Epidemiology Service (Craig et al., 2013; Simpson et al., 2017) and the Health Quality and Safety Commission (2016), and included all day cases and emergency department visits that meet the 3-hour treatment rule. However, this may mean that earlier years of data (especially 2000–2009) have undercounted the number of admissions, since some hospitals may not have recorded all day cases during this time period.</p>
Related indicators	Household crowding Second-hand smoke exposure Maternal smoking at two weeks postnatal Asthma prevalence Asthma hospitalisations

	<p>Sudden unexpected death in infancy (SUDI) Meningococcal disease</p>
<p>References</p>	<p>APHO. (2008). <i>Technical Briefing 3: Commonly used public health statistics and their confidence intervals</i>. York, UK: Association of Public Health Observatories.</p> <p>Baker, M.G., Goodyear, R., Telfar Barnard, L., &amp; Howden-Chapman, P. (2012). <i>The distribution of household crowding in New Zealand: An analysis based on 1991 to 2006 Census data</i>. Wellington: He Kainga Oranga/ Housing and Health Research Programme, University of Otago.</p> <p>Craig, E., Adams, J., Oben, G., Reddington, A., Wicken, A., Simpson, J. (2013). <i>The Health Status of Children and Young People in New Zealand</i>. Dunedin: New Zealand Children and Youth Epidemiology Service, University of Otago.</p> <p>HQSC. (2016). <i>Atlas of Healthcare Variation Methodology: Asthma</i>. Wellington: Health Quality and Safety Commission. Available online: <a href="https://www.hqsc.govt.nz/assets/Health-Quality-Evaluation/Atlas/asthmaSF18Aug/Methodology_asthma.pdf">https://www.hqsc.govt.nz/assets/Health-Quality-Evaluation/Atlas/asthmaSF18Aug/Methodology_asthma.pdf</a> (accessed 26 Oct 2017).</p> <p>Mehta, S., Shin, H., Burnett, R., North, T., &amp; Cohen, A.J. (2013). Ambient particulate air pollution and acute lower respiratory infections: a systematic review and implications for estimating the global burden of disease. <i>Air Qual Atmos Health</i> 6:69–83.</p> <p>Simpson, J., Duncanson, M., Oben, G., Adams, J., Wicken, A., Pierson, M., &amp; Gallagher, S. (2017). <i>The Health Status of Pacific Children and Young People in New Zealand 2015</i>. Dunedin: New Zealand Children and Youth Epidemiology Service, University of Otago.</p> <p>U.S. Department of Health and Human Services. (2007). <i>Children and Secondhand Smoke Exposure. Excerpts from The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General</i>. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.</p>