Background: Air pollution increases the risk of various acute respiratory events in children, including asthma exacerbations and acute lower respiratory infections, but there are no published systematic reviews of the effect of air pollution on viral bronchiolitis.

Aim: To systematically review and grade the evidence around the effects of ambient levels of particulate (diameter <2.5μm (PM2.5) or <10μm (PM10)) and gaseous (nitrogen dioxide(NO2), sulphur dioxide (SO2), carbon monoxide (CO), ozone (O3)) pollutants on the risk of hospitalisation with bronchiolitis for infants under two years of age.

Methods: A search was undertaken using Medline, Scopus, and Web of Science. We included observational epidemiological studies that evaluated exposure to the air pollutants listed above at any time period (lag) before hospitalisation. The primary outcome was risk of hospital admission with bronchiolitis.

Results: Eight studies, including 116,609 infants, were eligible. Risk of admission with bronchiolitis was associated with long term exposure to PM2.5, and acute and chronic exposure to SO2. The effects of other pollutants are inconsistent across studies, which impairs interpretation of the evidence. In 3/5 studies that showed a positive association between air pollutants and hospitalisation, measured concentrations were below World Health Organisation (WHO) recommended levels.

Conclusion: PM2.5 and SO2 may increase the risk of hospitalisation with bronchiolitis. Large cohort or time series studies are needed to examine this possible association.