

HEART FAILURE

Air pollution linked with heart-failure-related hospitalization and mortality

A new systematic review and meta-analysis has shown an association between acute exposure to air pollution and hospitalization and mortality related to acute decompensated heart failure. This finding adds to previous studies that have demonstrated an association between air pollution and acute cardiovascular events such as myocardial infarction and cardiovascular-related death. Dr Anoop Shah and colleagues highlight that their new finding “is important because there are major differences in the mechanisms that trigger myocardial infarction compared with acute decompensated heart failure”.

The meta-analysis included data from 35 studies conducted in Europe, North and South America, and the Asia-Pacific region, and involving a total of 4 million events. Each one part per million increase in carbon monoxide was associated with a 3.52% increase in risk of heart-failure-related hospitalization or mortality. Each ten parts per billion increase in sulphur

dioxide and nitrogen dioxide, respectively, were associated with 2.36% and 1.70% increases in risk of heart-failure-related hospitalization or mortality. Measures of particulate air pollution were also associated with increased risk of heart-failure-related hospitalization or mortality (2.12% and 1.63% increases in risk for each 10 $\mu\text{g}/\text{m}^3$ increase in $\text{PM}_{2.5}$ and PM_{10} , respectively).

Shah *et al.* conclude that air pollution “should remain a key target for global health policy”. They estimate that, in the USA alone, a mean reduction in $\text{PM}_{2.5}$ of 3.9 $\mu\text{g}/\text{m}^3$ would prevent approximately 8,000 heart-failure-related hospitalizations each year and result in an annual saving of more than US\$300 million.

Bryony M. Mearns

Original article Shah, A. S. *et al.* Global association of air pollution and heart failure: a systematic review and meta-analysis. *Lancet* doi:10.1016/S0140-6736(13)60898-3