

空氣污染 PM_{2.5}與肺部感染
PM_{2.5} and pulmonary infection

林恕民

林口長庚醫院胸腔內科

Acute lower respiratory infections (ALRI), including pneumonia and bronchiolitis of bacterial and viral origin, are one of the major causes of infection-related mortality. Thus this specific type of infection accounts for a significant global burden of disease in the whole world. Outdoor air pollution has been associated with increased ALRI mortality and with increased symptoms, admissions to hospitals, and emergency visits. The growing body of the evidence on mortality and hospital admissions from pulmonary infection have comes from many studies of short-term exposures to lower concentrations of outdoor air pollution. Recent evidence suggests that exposure to particulate air pollution can cause pulmonary inflammation and affect host defenses against infection. Toxicological and epidemiological studies suggest that particulate matter with an aerodynamic diameter less than 2.5 μm (PM_{2.5}) are especially harmful, since smaller particles are more likely to penetrate deeper into the lungs and blood streams unfiltered. The World Health Organization (WHO) estimated that exposure urban outdoor PM_{2.5} caused approximately 25,600 deaths and over 862,000 lost years of healthy life due to ALRI in 2000. Several studies have shown that areas with increased concentrations of regulated regional air pollution levels have increased prevalence of pulmonary infection. In contrast, decreases in ambient concentrations of nitrogen dioxide, ozone, PM₁₀, and PM_{2.5} were associated with statistically significant decreases in bronchitis symptoms in children with and without asthma. Therefore, implementation of policies to reduce these concentrations would certainly reduce the impact on adverse outcomes, not only among children with or without respiratory disease, but possibly among adults.