HOW DOES AIR POLLUTION AFFECT RESPIRATORY HEALTH?
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WHAT IS THE ROLE OF THE RESPIRATORY TRACT IN MAINTAINING HEALTH?

The upper respiratory tract and more specifically the nose is the first line of defence against air pollutants.¹ The nose has several innate defence mechanisms, such as mucociliary clearance, which traps and removes hazardous components of inhaled air including certain air pollutants, bacteria and viruses.²

The impact of the different components of air pollution on the respiratory tract is dictated by their particle size, water solubility and chemical reactivity.¹ Larger particles such as dust may be filtered by the nose, whereas smaller particles such as diesel exhaust can reach the lower respiratory tract.¹ Several mechanisms have been implicated in the adverse impact of air pollutants, including oxidative stress, alterations in immune function, and increased susceptibility to upper respiratory tract infections (Figure 1).³⁻⁵

**FIGURE 1. MODEL OF OXIDATIVE STRESS MECHANISMS AND EFFECTS ON THE AIRWAY⁴**

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WHAT ARE THE SYMPTOMS FOLLOWING EXPOSURE TO AIR POLLUTION?

Nose and throat symptoms are among the most commonly reported upper respiratory tract symptoms following exposure to air pollution, along with increased risk of infection.¹,² These may include non-allergic rhinitis, sinusitis, runny nose, nasal congestion, sneezing, cough, wheezing, and dyspnoea.¹,²

WHO IS AT INCREASED RISK FROM THE EFFECTS OF AIR POLLUTION?

Individuals with pre-existing conditions such as lung or heart disease, the elderly, pregnant women and children are susceptible to the risks of air pollution.⁶⁻⁸ Exacerbations and hospitalisations for diseases such as asthma can increase with exposure to air pollution.⁸ Maternal exposure to air pollution has been associated with an increased risk of developing asthma, rhinitis and eczema in children.⁶ Air pollution can also increase mortality from respiratory and cardiopulmonary causes in the elderly.⁷
KEY REFERENCES