Clinical topics

Smoking and vaping

Key points

If a person smokes, or is exposed to other people's tobacco smoke, this factor must be considered when investigating respiratory symptoms, assessing asthma control, and managing asthma.

Smoking increases the risk of asthma flare-ups in people with asthma, increases the risk of COPD, reduces the probability of achieving good asthma control, reduces therapeutic response to inhaled corticosteroid, and accelerates long-term decline in lung function.

Exposure to environmental tobacco smoke during gestation or early childhood increases the risk of early childhood wheezing and adversely affects lung function, as well increasing the risk of other congenital and childhood conditions.

Smoking

Among adults with asthma, exposure to cigarette smoke (smoking or regular exposure to environmental tobacco smoke within the previous 12 months) has been associated with a significantly increased risk of needing acute asthma care within the next 2–3 years.[Osborne 2007]

Exposure to environmental smoking and vaping is consistently associated with increased risk for recurrent symptoms and exacerbations in preschool children with wheeze.[Makrinioti 2024] In children with asthma, exposure to environmental tobacco smoke doubles the risk of hospitalisation for asthma and significantly increases the risk of exacerbations requiring emergency department visits or urgent health care, wheezing, and poor lung function.[Wang 2015]

Exposure to cigarette smoke in people with asthma alters the inflammatory disease mechanism to become more like that seen in people with chronic obstructive pulmonary disease (COPD).[Tamimi 2012]

Smoking reduces lung function in people with or without asthma. In those with asthma, smoking accelerates decline in lung function over a lifetime.[O'Byrne 2009, Dijkstra 2006, James 2005]

Figure

Lung function decline in smokers and non-smokers with or without asthma

Data from the Busselton Health Study.

James AL, Palmer LJ, Kicic E, et al. 2005. Decline in lung function in the Busselton Health Study: the effects of asthma and cigarette smoking. Am J Respir Crit Care Med 2005; 171: 109-114.

The American Journal of Respiratory and Critical Care Medicine is an official journal of the American Thoracic Society.

Vaping

E-liquids contain propylene glycol, vegetable glycerine, synthetic coolant agents, and flavouring chemicals.[Marshal 2025] Inhalation of propylene glycol is associated with increased airway hyperreactivity.[Marshal 2025] Common flavouring agents in vapes are chemically similar to known airway irritants and sensitisers that have been reported to cause occupational asthma.[Clapp 2017]

Vaping is associated with acute lung injury.[NHMRC 2022, Casey 2020]

The use of e-cigarettes results in an acute reduction in lung function in people with asthma, and a greater acute increase in airway inflammation than in people without asthma.[Kotoulas 2020]

Adolescents with asthma who vape regularly have increased respiratory symptoms, more severe asthma symptoms, and increased school absences, compared with those who do not vape.[Marshal 2025] A survey conducted in adolescents aged 11–17 years found that those with asthma who were exposed to second-hand aerosols from electronic cigarettes had a 27% increased risk of asthma exacerbations.[Bayly 2019]

Assessment considerations

A smoking and vaping history should be taken for all patients, including exposure to environmental tobacco smoke and vaping.

The possibility of co-occurring COPD should be considered in people who smoke.

Information on COPD

Management considerations

Treatment with inhaled corticosteroids helps prevent lung function decline in smokers with asthma.[O'Byrne 2009]

Smoking reduces response to inhaled corticosteroids and oral corticosteroids in people with asthma.[Chaudhuri 2003, Chaudhuri 2006, Lazarus 2007, Pedersen 1996, Tomlinson 2005] People who smoke may need higher doses of inhaled corticosteroids to receive the same benefits (improvement in lung function and reduction in flare-ups) as non-smokers.[Tomlinson 2005]

Primary prevention

Exposure to tobacco smoke toxins in utero or in infancy has been associated with increased risk of wheezing and asthma in children.[Castro-Rodriguez 2016, Burke 2012]

Maternal smoking during pregnancy is associated with an almost twofold increase in asthma in infants aged 2 years or less. [Burke 2012]

Several large systematic reviews and meta-analyses of prospective cohort studies have reported that maternal smoking during pregnancy and exposure to tobacco smoke in infancy are associated with large increases in the risk of wheezing in the first 2 years of life.[Burke 2012, Vardavas 2016]

A meta-analysis of observational studies (mainly cross-sectional studies) found that exposure to environmental tobacco smoke was associated with an increase in childhood asthma,[Tinuoye 2013] but this association was weaker than that between exposure to environmental tobacco smoke and wheezing.

Epigenetic effects may modify the effects of environmental risk factors, including exposure to tobacco smoke, on development of asthma.[Harb 20016] A large prospective longitudinal study reported that maternal grandmaternal smoking during pregnancy was associated with higher asthma risk and lower lung function in male grandchildren,[Mahon 2021] but reported associations between smoking by grandparents and wheeze/asthma in grandchildren differ between studies.[Miller 2014]

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Resources

National Health and Medical Research Council's 2022 NHMRC CEO Statement on electronic cigarettes

Royal Australian College of General Practitioners Supporting smoking & vaping cessation: a guide for health professionals (2024)

Thoracic Society of Australia and New Zealand's guidance for the management of electronic cigarette use (vaping) in adolescents and adults

Pharmaceutical Society of Australia's **Professional practice guidelines for pharmacists: nicotine dependence support**