Clinical topics

Work-related asthma

Key points

If new-onset symptoms in an adult appear to be triggered by exposure to airborne irritants or sensitisers in the workplace, immediate referral to a specialist with expertise in work-related asthma is recommended to ensure thorough assessment and prompt diagnosis.

Definitions

Work-related asthma includes occupational asthma and work-exacerbated asthma.[Hoy 2020]

Work-exacerbated asthma is asthma that worsens due to workplace exposure to airborne triggers.

Sensitisers are airborne agents that act as antigens or haptens to induce an inflammatory response in the airway. These include high-molecular weight agents (e.g. plant, animal or fungal allergens) and low-molecular weight agents (e.g. chemicals, dusts, fumes).[Hoy 2020]

Irritants are airborne substances that are thought to produce pro-inflammatory responses in the airway via direct damage to bronchial epithelium.[Hoy 2020]

Occupational asthma is new-onset asthma (or recurrence of asthma after a period of remission) due to exposures to irritants or sensitisers in the workplace. Sensitiser-induced occupational asthma is far more common than irritant-induced occupational asthma.[Hoy 2020]

Prevalence and aetiology

Approximately one in four adults with asthma experience asthma symptoms due to their work.[Hoy 2020]

Sensitiser-induced occupational asthma, which accounts for an estimated 90% of cases of occupational asthma, can be caused by high-molecular-weight (HMW) agents or low-molecular-weight (LMW) agents. HMW agents act as antigens and induce specific IgE. LMW agents trigger cellular immune pathways, and some also act as haptens to induce specific IgE.[Hoy 2020]

More than 300 workplace agents have been described to cause occupational asthma.[Hoy 2020] The 2014 Australian Workplace Exposure Study estimated that approximately 47% of men and 40% of women were exposed to at least one potentially asthma-causing substance at work.[Fritschi 2016]

Both the intensity and duration of exposure contribute to risk of developing occupational asthma.[Hoy 2020]

Symptoms of occupational allergic rhinitis often precede symptoms of asthma.[Hoy 2020]

Diagnosis

Referral to a specialist with expertise in the diagnostic assessment of work-related asthma is recommended because investigation is complex.

Investigation of suspected work-related asthma involves systematically confirming the diagnosis of asthma, establishing the link between asthma symptoms and the workplace, and identifying the specific causal agent(s) through a detailed history, further investigations (e.g. serial PEF measurement, skin prick tests, bronchial provocation testing) and sometimes worksite visits.[Hoy 2020]

For patients with occupational asthma, prompt diagnosis and identification of causal exposures is critical to avoid rapid and potentially irreversible decline in lung function.[Hoy 2020]

Management

Occupational asthma

For patients with occupational asthma, complete elimination of exposure to the triggering agent is essential to avoid worsening symptoms and loss of lung function. Continued exposure to a sensitiser risks worsening of symptoms, airflow limitation, and airway hyperresponsiveness.[Hoy 2020]

Management of sensitiser-induced occupational asthma with ICS-LABA treatment has not been shown to prevent the long-term worsening of lung health in people who remain exposed to the sensitiser.[Hoy 2020]

Specific allergen immunotherapy is sometimes used, but clinical trial evidence and available allergen preparations are limited.[Schwab 2023] Current Australian expert guidance recommends against any continued exposure to relevant workplace allergens in individuals with occupational asthma.[Hoy 2020]

Work-exacerbated asthma

Management of work-exacerbated asthma is as for other adults, with prevention of exposure to the triggering agent.[Hoy 2020]

Referral

Referral to a severe asthma clinic should be considered for patients with persisting asthma symptoms due to workplace exposures.[Hoy 2020] Specialist treatment may include monoclonal antibody therapy[Hoy 2020] or specific allergen immunotherapy.[Smith 2020, Schwab 2023]

References

Fritschi L, Crewe J, Darcey E, et al. The estimated prevalence of exposure to asthmagens in the Australian workforce, 2014. BMC Pulm Med 2016; 16: 48.

Hoy R, Burdon J, Chen L, et al. Work-related asthma: A position paper from the Thoracic Society of Australia and New Zealand and the National Asthma Council Australia. Respirology 2020; 25: 1183-1192.

Smith AM, Sastre J. The role of immunotherapy and biologic treatments in occupational allergic disease. J Allergy Clin Immunol Pract 2020; 8: 3322-3330.

Schwab AD, Poole JA. Mechanistic and therapeutic approaches to occupational exposure-associated allergic and non-allergic asthmatic disease. Curr Allergy Asthma Rep 2023; 23: 313-324.

Resources

National Asthma Council Australia's **Work-related asthma. An update for primary care health professionals**

National Asthma Council Australia and TSANZ's **position paper on work-related asthma**

Severe Asthma Toolkit **module on occupational asthma**

OASYS free software for diagnosis of occupational asthma using serial peak flow records

Severe Asthma Toolkit **information on occupational asthma**