

TAKES YOUR BREATH AWAY

The home can be a danger zone for asthmatics. Damp and mould, in particular, can seriously affect asthma sufferers and may even precipitate its onset in children.

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Despite considerable research driven by rising rates of asthma and a consequent increase in healthcare, there remains a lot about asthma that is still not understood. One area is the relationship between asthma and the domestic environment, in particular:

- allergies and allergens important in New Zealand
- damp and mould
- oxides of nitrogen from burning gas.

What is asthma?

Asthma has proved hard to define, and there is no specific test for the condition. It is possible to examine and test someone with asthma at a particular point and find that everything, including their lung function, is entirely normal.

The definition generally used is a widespread narrowing of the bronchial airways, which change in severity over short periods of time either spontaneously or due to treatment. It is associated with increased sensitivity of the airways to various stimuli and airway inflammation.

Different occupational exposures have been associated with asthma, and one of the most common causes of wheezing is after viral infections. There are two groups of asthma – one associated with allergy and the other non-allergic.

Beware allergens like dust mites

One of the main associations between asthma and the home is exposure to allergens, particularly dust mite allergens in carpets and bedding. These are important sites of exposure, because house dust mites concentrate in carpets, pillows and mattresses and because of the amount of time spent in bed with the allergens close to the nose and mouth.

Currently, there is no effective treatment for removing these allergens at home. Impermeable covers have been tried on bedding, and some studies have shown benefits, but overall, it has remained difficult to show improvements by carrying out these measures.

If patients with asthma are moved to an entirely mite-free environment, asthma all but disappears. These environments include hospital settings with air filtration and alpine environments above 1,000 m where conditions are too dry for house dust mites. Symptoms resolve in a few weeks but return within days of returning to sea level. Trying to recreate such an environment by removing house dust mite allergens with chemicals or by reducing humidity has proved very difficult.

Finger pointed at mould

Asthma has also been associated with damp and cold. Many studies have shown that damp mouldy environments give rise to significantly greater symptoms of both allergic and non-allergic asthma. On the allergic side, this may be because there are more house dust mites in damp environments or, for some people, an allergic sensitivity to mould.

For others, particularly with non-allergic asthma, this may be due to the effects of endotoxin from bacteria or to beta glucans from the walls of fungal material.

Evidence from a number of studies in asthma clinics and studies of hospital and intensive care unit admissions have shown that asthma is much more severe in mould-sensitised individuals (asthmatics sensitised to mould and living in mouldy environments).

It is also possible that damp, cold environments increase the risk of viral respiratory tract infections. Other important elements in the domestic environment include volatile organic compounds from carpets and synthetic bedding and certain flooring materials.

Burning gas another culprit

Another cause is oxides of nitrogen from burning gas, particularly from gas heaters and unflued stoves in kitchens. In New Zealand, unflued portable gas heaters account for about 30% of household heating. The oxides of nitrogen from burning gas are directly irritant to the airways, especially the more sensitive airways of people with asthma.

Environmental tobacco smoke exposure is another factor associated with asthma in the home, particularly increased wheezing in young children.

Can mould bring asthma on?

More recent studies have suggested that damp and, possibly, mouldy home environments are associated with an increased incidence of asthma developing in young children – suggesting that a damp home environment may be a cause of early asthma, rather than just making existing asthma worse.

In a study from Finland where new cases of asthma and matched controls without asthma were studied in children aged 1–6 years, there was an increased risk of asthma associated with visible mould and water damage in living areas.

Evidence suggests that there are considerable risks both for the development of asthma and the maintenance and worsening of asthma from:

- the domestic environment, particularly allergens and house dust mites
- damp and mouldy environments associated with allergic and non-allergic asthma
- exposure to endotoxin, beta glucans and viral infections
- chemical exposures and nitrogen dioxide – both of which are reasonably easy to avoid. ■