



Regional climate change adaptation Strategy for Greater Melbourne: Melbourne's Climate Journey Discussion Paper

Asthma Australia submission December 2020

ABOUT ASTHMA AUSTRALIA

Asthma Australia is a for-purpose, consumer organisation which has been improving the lives of people with asthma since 1962. Asthma affects one in nine Australians or 2.7 million people. Asthma is an inflammatory condition of the airways, restricting airflow and can be fatal. There is no cure, but most people with asthma can experience good control.

Our purpose is to help people breathe better so they can live freely.

We deliver evidence-based prevention and health strategies to more than half a million people each year.

Our Vision

A community free of asthma.

At Asthma Australia we are committed to halving the number of avoidable asthma hospitalisations by 2030. Currently out of the 40,000 hospitalisations, 80% are avoidable.

Our target is to halve avoidable asthma hospitalisation, reducing them down to 16,000 by 2030.

We want everyone in the community to understand asthma so they can help if they are in an emergency situation. We want to challenge the way we do things now, to keep improving asthma prevention and treatment outcomes for people with asthma.

We will challenge and we will bring our imagination to creating a better tomorrow. At Asthma Australia, we help people to breathe. And you can help, too.



INTRODUCTION

People with asthma are amongst those most vulnerable to climate change impacts in the Greater Melbourne region. Exposure to environmental hazards is both a risk factor for the development of asthma and a trigger for asthma symptoms in people who have asthma.ⁱ Events like thunderstorm asthma, bushfires, storms and flooding, and dust storms are becoming more frequent and severe as a result of climate change, as are temperature extremes and swings and increased ground level ozone.ⁱⁱ These events can trigger asthma flareups which lead to hospitalisation and even death. At the less extreme end of the spectrum, they result in mental and physical ill health, loss of income and lowered participation in social and recreational events.

The health impacts of climate change are already being experienced in the Greater Melbourne region and are expected to increase in frequency and severity as temperatures continue to rise. Even with effective climate change mitigation actions, adaptation will be essential. For people with asthma – and other vulnerable groups – this problem will get worse before it gets better.

Asthma Australia commends Victoria's efforts to develop regional climate change adaptation strategies and we welcome the opportunity to provide input. Our comments in relation to adaptation in the Greater Melbourne region focus on the need to recognise the social determinants of health as an amplifier of climate change impacts. We also recognise declining air quality as a major climate change-driven source of ill health that should be a significant focus of adaptation strategies. Finally, we address thunderstorm asthma as a particular issue in Melbourne that is likely to become more frequent with climate change.

SOCIAL DETERMINANTS OF HEALTH

The Greater Melbourne Regional Climate Change Adaptation Strategy should recognise that the health impacts caused by climate change driven events are amplified by the social determinants of health and health inequities. The burden of disease is far greater for certain population groups, including those experiencing socio-economic disadvantage. Factors including housing, education, employment and air quality interact to raise or lower a person's health and wellbeing. Significantly, poor air quality amplifies other social determinants of health. People in low socioeconomic areas are more likely to be exposed to mould as well as air pollution.

The climate change adaptation strategy should prioritise investment in housing repair and maintenance programs. Substandard housing has been linked to a range of health concerns. Leaky buildings let in smoke during air pollution events, while environmental triggers such as pest infestations, damp and mould result in asthma attacks and new asthma in children. These triggers may become more common with climate change-induced heavy rainfall and flooding events.

The Greater Melbourne area is fortunate to be home to people from many different cultures, as well as visitors from numerous countries. However, new migrants and visitors may live in temporary or short-term housing, meaning they have limited ability to control their living conditions and may be more at risk during air pollution events. Further, they may not be familiar with asthma, or asthma symptoms, and may have limited access to medical care.

Resources should be mobilised and allocated in ways that promote equity including distribution of resources to areas of need. This includes resources for preventive health programs as well as investment in improving air quality and providing infrastructure such as quality affordable housing.



Recommendation: The Greater Melbourne Regional Climate Change Adaptation Strategy should include actions to address the social determinants of health and health inequities which amplify the health impacts caused by climate change driven events.

AIR QUALITY

The United Nations recognised air pollution as one of the 5 risk factors for non-communicable diseases in 2018, alongside unhealthy diet, tobacco use, harmful use of alcohol and physical inactivity. Climate change is making events such as thunderstorm asthma, dust storms and bushfires more frequent and severe, as well as causing increased ground level ozone, all of which increase Australians' exposure to air pollution.

The health impacts of air pollution are significant:

- Air pollution is linked to premature deaths. An Australian study on the health effects of air pollution in Brisbane, Melbourne, Perth and Sydney in 2005 found a 10 mg/m³ elevation in the concentration of PM_{2.5} – which is present in bushfire smoke – was associated with a 1% increase in the daily total number of deaths.
- Air pollution is harmful to everyone. However, the most vulnerable suffer the most harm, including people living in low socioeconomic areas, which often have higher levels of air pollution, or those who are more vulnerable because of their age. Children and young adults with asthma are more at risk from the effects of pollution because they have faster breathing rates, and their lungs are still developing.
- Air pollution has a significant economic impact. In one NSW study, the health costs of air pollution in the Greater Sydney Metropolitan Region were conservatively estimated to be between \$1.01 billion and \$8.40 billion per annum. The costs for the Greater Melbourne region are likely to be significant.

Addressing poor air quality requires a whole-of-government approach and the climate change adaptation strategy for the Greater Melbourne region can make important contributions. A major issue for people with asthma and others vulnerable to air pollution is the quality of their housing. Homes are often leaky, meaning pollutants such as PM_{2.5} can enter the home even when windows and doors are closed. Asthma Australia conducted the Bushfire Smoke Impact Survey during the 2019-2020 bushfires and respondents spoke about the impact of smoke inside their homes, for example:ⁱⁱⁱ

'Cannot afford air conditioning and am having problems buying an air purifier. Sealing an old 60s/70s flat difficult.'

'Our rental is poorly sealed and the air conditioner is old.'

'Availability of air purifiers to rent or borrow during these times (if proven to work). The system I have in my apartment does not have the option to use recirculated air, so using an air purifier may help.'

'No advice on how to draft proof the house without spending too much. Other family members not taking things more seriously e.g. leaving doors open.'

'Still noticed my son's asthma deteriorate even by staying home in aircon because houses are not hermetically sealed.'



'Sleep has been poorer as I wake up coughing and my eyes are itchy.'

'When smoke is intense on a day of high temperatures we are literally hunkered down in an incredibly hot stuffy house with no ability to use the evaporative cooling system. Even with windows shut, extra blackout curtains and pieces of cardboard on windows to try and keep heat and smoke out it still is 29-30 degrees inside and doesn't cool down overnight so it's extremely uncomfortable.'

The Greater Melbourne Regional Climate Change Adaptation Strategy Discussion Paper makes several references to housing, but doesn't specifically acknowledge the need for housing improvements to protect vulnerable people from the health impacts of climate change driven events. Supporting housing improvements is an important action for the strategy.

Air purifiers are often recommended to reduce indoor air pollution. Adverse events like bushfires and thunderstorm asthma typically occur during hot weather meaning air conditioning may be a necessity if people must shelter inside for hours or days at a time. However, it is expensive to purchase and run air purifiers and air conditioners and people may require assistance to implement these measures to ensure their homes are safe during air pollution events.

Indoor air pollution can also be an issue inside workplaces, schools and public buildings, as Asthma Australia's Bushfire Smoke Impact Survey found, with respondents stating:

'Even working inside a shopping centre gave no relief as the smoke could still be smelt inside. It has been near impossible to avoid.'

'Improved air filtering and positive pressure air conditioning in some public locations such as libraries and pools, so there is somewhere with better air quality and they don't close when the air gets bad.'

'Our school has not been responsive to the public health warnings and carried on with outdoor sport activities on days of hazardous air quality. My son has missed three days of school in order to avoid sports days etc.'

'As a school teacher, smoke entered my classroom from door being open and closed all day. No air con or air purifiers. Not good.'

'Workplace (government building) could not keep smoke out & still had to attend.'

'[In the hospital] where I work smoke collects in corridors & outside surgical theatres.'

'Air quality at work has been very bad, with the air con system unable to filter out particles. I've been wearing a P2 mask all day at work but it gets hard to breathe by the afternoon, once the filter has been blocked by condensation from my breathing. I then have to choose between hard-to-breathe clean air, easy-to-breathe smoky air, or going home. Some days I can work from home but not when I need to use specific equipment or carry out tasks on-site. I've also had to cancel shifts.'

'I've also had to cancel shifts on days when air quality would make it impossible for me to do my job, which has meant reduced income.'



Asthma Australia would like to see the Greater Melbourne Regional Climate Change Adaptation Strategy commit to developing frameworks to enable local schools, workplaces and public buildings to respond to air pollution events. This could include support for upgrades to reduce indoor air pollution and guidelines for responding to air pollution.

Finally, providing information to local communities about air pollution and the associated health impacts will be a critical aspect of adapting to climate change in the Greater Melbourne Region. This should include information for the general public as well as targeted information for people with asthma and other vulnerabilities to air pollution. It should also be presented in ways that meet the needs of the local community, including in multiple languages and formats.

Recommendation: The Greater Melbourne Regional Climate Change Adaptation Strategy should include actions to improve air quality and environmental health, including:

- **Reducing the adverse health impacts of poor air quality through targeted information and support, particularly for people who are at greater risk, including people with asthma, people from culturally and linguistically diverse backgrounds, people with low literacy or reading skills and people who lack access to digital tools.**
- **Approaches to reduce the risk of adverse health impacts from exposure to poor air quality, including in priority settings such as public buildings and schools, including:**
 - **Developing air quality frameworks that can be adopted by local institutions such as schools, early childhood learning centres, councils and businesses.**
 - **Reviewing building standards so that homes can be better protected against air pollution during periods of poor air quality.**
 - **Identifying public buildings in the Greater Melbourne region which meet certain clean air criteria which can be used as clean air 'shelters' during periods of poor air quality and weather events such as thunderstorm asthma.**
- **Assisting vulnerable people to make their homes resilient to pollutants including bushfire smoke and pollen, for example programs to seal homes and financial support towards the costs of air purifiers and air conditioners.**
- **Advocating to the Victorian Government to:**
 - **Strengthen air pollution regulations to improve air quality and reduce pollution.**
 - **Improve air quality monitoring and reporting, and the provision of timely and appropriate information on air quality.**
 - **Improve hazard reduction burning practices and use alternatives to burning to minimise health impacts.**

THUNDERSTORM ASTHMA

Melbourne is recognised as a global hotspot for thunderstorm asthma, which can occur when high grass pollen levels combine with a dramatic change in weather condition caused by a certain type of thunderstorm. This causes pollen grains from grasses to be swept up in the wind and carried long distances before bursting open and releasing tiny particles that are concentrated in the wind just before the thunderstorm. These small particles get deep into the airways and can trigger asthma symptoms. The risk of thunderstorm asthma is highest in adults who are sensitive to grass pollen and have seasonal hay fever (with or without known asthma).

Thunderstorm asthma can be very serious, as we witnessed in November 2016 when a thunderstorm asthma event resulted in 10 deaths and thousands of emergency department presentations. According to Victoria's Department of Health and Human Services, Epidemic



Thunderstorm Asthma events are more likely to occur following wet springs which encourage grass growth. Thunderstorm asthma events may become more frequent as climate change leads to more frequent thunderstorms and accelerated proliferation of pollen.

When thunderstorm asthma events are predicted, people at risk are advised to avoid exposure and stay inside with the windows and doors closed until after the storm has passed. Climate change adaptation actions should include community education around the threat of thunderstorm asthma. Significantly, this should include a focus on recently arrived migrants, who were disproportionately impacted by the 2016 Melbourne event: 6 out of the 10 deaths, and 40% of the 3,356 people who presented to hospitals with respiratory-related issues, were from Indian and Asian backgrounds.^{iv}

Community education should include raising awareness ahead of thunderstorm asthma season as well as sharing alerts when pollen counts are high or extreme. Emergency health information should be tailored to align with cultural language and health literacy levels and delivered by trusted community messengers who are accepted and acceptable to the targeted cultural community.

'Information needs to be understood, accessed and used. We need to look at different ways of communicating – not always in words. One size doesn't fit all.' Person with asthma

As with air pollution, housing is an issue with thunderstorm asthma as people are advised to shelter indoors with windows and doors shut. Investing in housing improvements will reduce the health impacts of both air pollution and thunderstorm asthma events.

Finally, there is an important role for health service providers who can educate patients on the risks of thunderstorm asthma and discuss managing asthma and hay fever ahead of the season.

Recommendation: The Greater Melbourne Regional Climate Change Adaptation Strategy should include actions to address thunderstorm asthma, including:

- **Community education to raise awareness about thunderstorm asthma**
- **A communication strategy for high pollen count days during thunderstorm asthma season**
- **Targeted outreach to newly arrived migrants and resources in multiple languages**
- **Improvements to housing to ensure people can shelter safely when needed**
- **Support for healthcare providers to educate patients and manage risks**

ⁱ Commonwealth of Australia. 2017. National Asthma Strategy 2018. Canberra: Australian Government Department of Health.

ⁱⁱ Salas, R.N., Solomon, C.G. 2019. The Climate Crisis — Health and Care Delivery. N Engl J Med 2019; 381:e13.

ⁱⁱⁱ Asthma Australia. 2020. Bushfire Smoke Impact Survey. Available at <https://asthma.org.au/what-we-do/advocacy/smoke-survey-results/>

^{iv} Thien et al. 2018. The Melbourne epidemic thunderstorm asthma event 2016: an investigation of environmental triggers, effect on health services, and patient risk factors. Lancet Planet Health 2018; 2: e255–63.

