

Reducing the environmental impact of asthma treatment

Information for health professionals

Many Australians have asthma that is not well controlled. Better asthma management will not only reduce symptoms and help prevent severe exacerbations, but it could also help improve the health of our environment.

Australian studies have reported high rates of poor asthma symptom control,¹ associated with under-use of inhaled corticosteroids (ICS)¹ and over-reliance on short-acting beta₂ agonists (SABAs).² Salbutamol via pressurised metered-dose inhaler (pMDI) is by far the most common reliever medicine used in Australia, with over 5 million prescribed inhalers dispensed per year, plus an estimated 6 million salbutamol pMDIs sold over the counter annually.^{3,4}

Overuse of short-acting beta₂ agonists is risky. Dispensing of three or more 200-dose salbutamol canisters per year (equivalent to more than daily average use) is associated with increased risk of severe asthma exacerbations.⁵⁻⁷

Overuse of salbutamol pMDIs is also a problem for the environment. Poorly controlled asthma has a larger carbon footprint than well-controlled asthma, due partly to healthcare utilisation, but mainly to use of SABA pMDIs.⁸ All asthma inhalers have an impact on the environment,^{9,10} but pMDIs have a much larger impact than other inhalers because they contain hydrofluorocarbon propellants, which are released during use and through leakage after disposal.¹¹ Annual Australian greenhouse gas emissions from SABA inhalers have been estimated to be equivalent to over 350,000 tonnes of carbon dioxide¹² – as polluting as driving a petrol car from Sydney to Perth more than 360,000 times.¹³

Practice points

Minimise wastage by reducing inappropriate or unnecessary prescribing, dispensing and purchase of inhalers:

- Confirm the diagnosis of asthma to target treatment effectively.
- Choose the best inhaler for the individual, and train them to use it correctly.
- Aim for good asthma control to reduce patients' requirement for salbutamol doses via pMDIs.
- Discourage excessive over-the-counter purchase of inhalers.

Think of the environment when prescribing – consider inhalers that contribute least to global warming, where suitable for the patient. If switching inhalers, train the person in correct inhaler technique.

Advise patients on safe disposal of used and unwanted inhalers.

Gain and maintain good asthma control

ICS-based treatment is recommended for almost all adolescents and adults, and for some children, with asthma.¹⁴ There are now several inhalers available that combine ICS and formoterol. Some of these can be used as relievers, with or without daily maintenance doses, depending on asthma severity.* People using these regimens should not also use prescription or over-the-counter SABA pMDIs. Several propellant-free budesonide-formoterol options are available. Using as-needed budesonide-formoterol (without maintenance treatment) in mild asthma can reduce the carbon impact of asthma therapy by over 90%, by avoiding SABA pMDI use.¹⁵

*See Therapeutic Goods Administration product information for indications and age restrictions.

Consider the environment when prescribing inhalers

The right inhaler should be chosen in discussion with each patient. Where suitable, non-propellant inhalers such as dry-powder inhalers (DPIs) and soft mist inhalers should be considered. While DPIs require adequate inspiratory force to maximise lung deposition,¹⁴ most adults and adolescents can use them effectively. pMDIs remain essential for people who cannot use other inhaler types. pMDIs (with spacers +/- face masks) are recommended for children under 6 years and people who cannot reliably take a quick and deep breath.¹⁴

Dispose of inhalers responsibly

Most asthma inhalers in Australia are discarded to landfill waste, where greenhouse gas propellants will leak. Only a tiny proportion of salbutamol pMDIs are disposed of through the Return Unwanted Medicines program.¹⁶ High-temperature incineration of pMDIs in medical waste degrades the propellant into by-products with far lower global warming potential.¹⁷ Remind patients to take empty or unwanted inhalers to their local community pharmacy for safe and responsible disposal.

Goals and strategies for better asthma control and lower environmental impact

Goals	Strategies
Improved asthma control and reduced SABA reliever use	Educate health professional colleagues and patients on harms associated with over-reliance on SABAs and underuse of ICS. Prescribe ICS-formoterol single-inhaler reliever therapy (with or without daily maintenance doses) where clinically appropriate. Check and correct inhaler technique at every opportunity.
Preference for inhalers with a low carbon footprint	If clinically appropriate, switch to DPIs and SMIs (100- to 200-fold lower carbon footprint than pMDIs). Prescribe single combination inhalers for dual or triple therapy, to reduce the overall number of inhalers. Consider patient preferences when switching inhalers and always provide education and training in correct use of the new inhaler.
Safe and responsible disposal of inhalers	Encourage patients to return any used or unwanted pMDIs to a community pharmacy for environmentally safe disposal.

DPI: dry-powder inhaler; ICS: inhaled corticosteroids; pMDI: pressurised metered-dose inhaler; SABA: short-acting beta₂ agonist; SMI: soft mist inhaler

National Asthma Council Australia asthma resources

Australian Asthma Handbook:
astmahandbook.org.au

Inhaler technique:
nationalasthma.org.au/health-professionals/how-to-videos

Developed by the National Asthma Council Australia in collaboration with

Dr Brett Montgomery

General Practitioner, University of Western Australia

Associate Professor Debbie Rigby

Advanced Practice Pharmacist

Toni Riley

Project Manager for Return Unwanted Medicines

Disclaimer

Although all care has been taken, this information is a general guide only, which is not a substitute for assessment of appropriate courses of treatment on a case-by-case basis. The National Asthma Council Australia expressly disclaims all responsibility (including for negligence) for any loss, damage or personal injury resulting from reliance on the information contained herein.