

New Zealand asthma guidelines support use of environmentally friendly inhalers

CLINICAL COMMENT

It is reassuring to see that the new guidelines for asthma management in New Zealand should help both patients and the environment, although an increased awareness of the environmental impact of prescribing is essential

► Dermot Coffey

The Asthma and Respiratory Foundation NZ recently released their eagerly awaited new guidelines on both childhood and adult asthma management (available at nzrespiratoryguidelines.co.nz), with an excellent article by Helen Cant in *New Zealand Doctor* (Clinical Update, 12 August) giving a clear synopsis of the recommendations.

Buried within the *Adolescent and Adult Asthma Guidelines 2020* is the following statement, which is perhaps deserving of much more attention than it has received: "The lower carbon footprint of dry powder devices (less than 10 per cent of [pressurised metered-dose inhalers]) should be considered alongside other factors."

This follows on from recent National Institute for Health and Care Excellence recommendations in the UK, which bring, for the first time, the carbon footprint of inhalers into the decision-making process for asthma management.¹

Carbon footprint of inhalers

Metered-dose inhalers (MDIs – the commonly used "puffers") make up over 70 per cent of the inhalers prescribed in New Zealand for asthma management,² a percentage very similar to that of the UK.³ These devices contain hydrofluorocarbons (HFCs) as a propellant. HFCs replaced chlorofluorocarbons (CFCs) during the 1990s as a result of the Montreal Protocol that was adopted to prevent damage to the ozone layer.

HFCs are not significantly ozone damaging but are potent climate change gases, with a global warming potential 1300 times that of carbon dioxide for the most commonly used HFC (HFA134a).

For a standard 200-puff/100-dose salbutamol inhaler, this amounts to a carbon footprint of some 28kg of carbon dioxide equivalent per inhaler. If you prefer, this is approximately equal to driving a new Toyota Corolla (with carbon dioxide emissions under 100g/km) for over 300km under typical road conditions. Dry-powder inhalers (DPIs), on the other hand, have a carbon footprint of approximately 1kg per device (go to greeninhaler.org for inhaler comparisons).

The additive effect of such a commonly used medication means that MDI use has an outsized impact on the overall climate emissions of the health sector. In the UK National Health Service, this is calculated to be 4 per cent of the entire NHS emissions budget (one quarter of the pharmaceuticals procurement carbon footprint).³

The impact of MDI use is likely to be of a similar order of magnitude in New Zealand, with our comparable inhaler prescribing habits and prevalence of asthma (in fact, asthma prevalence is higher in New Zealand at 12 per cent of adults versus 8 per cent in the UK).

Changes in recommendations

This issue has led the British Medical Association to focus on inhaler prescribing and disposal in its recently published *Sustainable and environmentally friendly general practice* policy document, with an aim to increase the use of DPIs where possible and to allow proper disposal and recycling of old and expired MDIs.⁴

This pleasingly overlaps with the New Zealand guidelines and their updated recommendations for first-line use of combined inhaled corticosteroid (ICS)/long-acting beta2 agonist

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Switching to dry-powder inhalers is an excellent way to start minimising the environmental impacts of providing healthcare

Key points

- ◆ Metered-dose inhalers contain hydrofluorocarbons, which are potent climate change gases; dry-powder inhalers have a much lower carbon footprint.
- ◆ MDIs are the most commonly prescribed inhalers in New Zealand for asthma management, meaning they have an outsized impact on the overall climate emissions of the health sector.
- ◆ The New Zealand asthma guidelines recommend a DPI in the form of a combined ICS/LABA inhaler for first-line use in adults and adolescents.

(LABA) inhalers in adults and adolescents.

There are, of course, situations where an MDI will be preferred, but it should be noted that the New Zealand children's guidelines suggest that DPIs can be recommended above the age of eight, and trialled in selected children from the age of five.

One of the criticisms levelled at DPIs is their relatively higher cost; however, this will be less of an issue with use of a single combination ICS/LABA inhaler regimen than a switch from individual ICS and short-acting beta2 agonist MDIs to their equivalent DPIs.

Going green

All this raises some important questions regarding our role as healthcare professionals in lessening the environmental impact of healthcare in New Zealand, as well as that of the government and agencies such as Pharmac.

Healthcare is responsible for approximately 5 per cent of New Zealand's overall emissions – the biggest single contributor to that is the area of procurement, and medications make up 20 per cent of healthcare emissions.

In primary care, the figures are even more stark. We do not generally heat our clinics with coal burners (unlike hospitals), we are relatively lower users of medical equipment, and our work and education/conference-related travel are generally more modest than our somewhat more internationally minded hospital-based peers. Thus, medication prescription makes up over two-thirds of the carbon footprint of primary care, with MDIs as the number one culprit.

We can and should focus on the many other areas where we can improve our environmental impact at

work, but in primary care, it's in the signing of the prescription or, these days, the clicking of the mouse that we can make the biggest change.

This leads to the much wider concept of environmentally minded prescribing. The RNZCGP's excellent *Greening General Practice* resource (available at <https://bit.ly/2EiTQtf>) and the already mentioned British Medical Association policy document (available at <https://bit.ly/34vCwM8>) are excellent places to start when considering this issue.

Many of the ideas are simple and obvious – avoid overprescription and prevent waste by prescribing only the amount needed, use more frequent dispensing to limit the risk of unused medication, and deprescribe where possible.

However, the environmental impacts and footprints of medications (and medical equipment) can be hard to come by and are not properly taken into account by Pharmac in their factors for consideration for funding.

While we should continue to advocate for both the Ministry of Health and Pharmac to use their hugely important positions to help minimise the climate impacts of providing healthcare, we should do what we can ourselves to improve things.

Switching to DPIs is an excellent place to start, both from an environmental and therapeutic point of view – let's help make the "psssh" of the jet of propelled salbutamol a very infrequently heard sound. ■

Medication prescription makes up over two-thirds of the climate footprint of primary care, with MDIs as the number one culprit

CLINICAL QUIZ ANSWERS

(questions on page 20)

FROM THE LAB

1. False 2. False
3. True

MENTAL HEALTH

1. True 2. False
3. True

PHARMACO-THERAPY

1. True 2. True
3. False

SPORTS MEDICINE

1. True 2. False
3. False

PEARLS

Should you aim to lower blood pressure below 135/85mmHg in those with hypertension and a history of cardiovascular disease?

Practical Evidence About Real Life Situations

Clinical question Are lower blood pressure targets ($\leq 135/85$ mmHg) associated with a greater reduction in mortality and morbidity than standard blood pressure targets ($\leq 140-160/90-100$ mmHg) in the treatment of people with hypertension and a history of cardiovascular disease?

Bottom line The evidence identified in this review does not support lower blood pressure targets ($\leq 135/85$ mmHg) over standard blood pressure targets ($\leq 140-160/90-100$ mmHg) in people with hypertension and established cardiovascular disease (myocardial infarction, stroke, chronic peripheral vascular occlusive disease or angina pectoris). Predefined subgroup analyses in older people, in people with diabetes, or based on participant's sex did not suggest any differences in these conclusions.

In order to reach the lower blood pressure target, more medication was required, with those in the lower target group requiring more antihypertensive drugs than those in the standard care group (mean difference 0.56; 95% confidence interval 0.16–0.96). Most withdrawals due to adverse effects occurred in the lower target group (risk ratio 8.16; 95% CI 2.06–32.28). However, little evidence was available for this outcome, making establishment of a trustworthy global assessment of benefits and harms very challenging.

Caveat Some uncertainties remain as the evidence was very low quality for withdrawals due to adverse effects.

Context Hypertension is a prominent, preventable cause of premature morbidity and mortality. People with hypertension and established cardiovascular disease are at particularly high risk, so reducing blood pressure to below standard targets may be beneficial. This strategy could reduce cardiovascular mortality and morbidity but could also increase adverse events. The optimal blood pressure target in people with hypertension and established cardiovascular disease remains unknown.

Cochrane Systematic Review. Saiz LC, et al. Blood pressure targets for the treatment of people with hypertension and cardiovascular disease. *Cochrane Database Syst Rev* 2020, Issue 9. Art. No.: CD010315. DOI: 10.1002/14651858.CD010315.pub4. This review contains 6 trials with a total of 9484 participants.

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PEARLS are summaries of Cochrane Systematic Reviews. These are developed for primary care practitioners by the Cochrane Primary Care Field and Cochrane New Zealand, funded by the Ministry of Health. Vanessa Jordan is a senior research fellow and the New Zealand Cochrane Fellow, based at Cochrane New Zealand, University of Auckland. New Zealanders can access the Cochrane Library free via nz.cochrane.org

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@ Membership in OraTaiao is open to all healthcare professionals at orataiao.org.nz

- References:
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4. British Medical Association. *Sustainable and environmentally friendly general practice*. June 2020. bma.org.uk