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EDUCATIONAL SERIES

Simplifying asthma management in primary care

RECOMMENDATIONS FROM THE 2020 NZ ASTHMA GUIDELINES

Making Education Easy

2021

About the expert



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Abbreviations used in this review

AIR = anti-inflammatory reliever therapy
COPD = chronic obstructive pulmonary disease
ED = Emergency Department
FEV₁ = forced expiratory volume in 1 second
FVC = forced vital capacity
ICS = inhaled corticosteroid
IgE = immunoglobulin E
IL = interleukin
LABA = long-acting β_2 -agonist
LAMA = long-acting muscarinic antagonist
NSAIDs = non-steroidal anti-inflammatory drugs
PEF = peak expiratory flow
RCT = randomised controlled trial
SABA = short-acting β_2 -agonist
SMART = single inhaler maintenance and reliever therapy

ABOUT RESEARCH REVIEW

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Publications are free to receive for health care professionals, keeping them up to date with their chosen clinical area.



This review is intended as an educational resource for primary healthcare professionals. It discusses the new Asthma and Respiratory Foundation NZ Adolescent and Adult Asthma Guidelines, published in the NZ Medical Journal in June 2020, and how these may be implemented in primary care. The guidelines, which have been developed by a multidisciplinary group of respiratory health experts, were last updated in 2016. Since that time there have been significant advances in the understanding of how to best manage patients with asthma. Taking into account the latest findings and incorporating recommendations from the Global Initiative for Asthma (GINA) Update strategy, the new guidelines provide simple, practical and evidenced-based recommendations for the diagnosis, assessment and management of asthma. Healthcare professionals may need to review the management of their asthma patients in light of the new guidelines.

The 2020 Asthma and Respiratory Foundation NZ Adolescent and Adult Asthma Guidelines and a number of key clinical resources discussed in this review can be downloaded [here](#).

Asthma: A major public health issue

The prevalence of asthma in NZ is amongst the highest in the world, with up to 20% of children and adults affected and over 610,000 individuals taking medication for this respiratory disease.^{1,2} Asthma is estimated to cost NZ over \$1 billion annually and the disease has significant socioeconomic impacts.³ Optimal asthma management is essential to relieve the burden of asthma not only for the individual patient and their family, but for society as a whole. Providing health professionals with current best practice guidance in the area of asthma management is a key priority for the Asthma and Respiratory Foundation NZ.

What's new in the guidelines?¹

- The inclusion of adolescents (aged ≥ 12 years) in the adult guidelines
- The recommendation to avoid SABA-only treatment in the long-term management of asthma
- The use of budesonide/formoterol reliever, with or without maintenance budesonide/formoterol, is preferred to SABA reliever, with or without maintenance ICS or ICS/LABA, across the spectrum of asthma severity
- The introduction of the terminology 'anti-inflammatory reliever (AIR)' therapy to describe the use of budesonide/formoterol as a reliever, either alone or together with budesonide/formoterol maintenance therapy
- Two new stepwise asthma management algorithms
- A clinical allergy section
- Recommendations for LAMA add-on therapy in severe asthma
- The use of omalizumab for severe allergic asthma
- The use of mepolizumab for severe eosinophilic asthma.

Diagnosing asthma

The advice regarding the diagnosis of asthma remains unchanged since the previous NZ guidelines were published in 2016. The diagnosis of suspected asthma is made by taking a focused history, examination, and lung function testing if available. A useful algorithm for the diagnosis of asthma from the NZ guidelines is shown in **Figure 1**.¹ Certain clinical features increase or decrease the likelihood of asthma (**Table 1**).¹

Traditionally, a cut-point of a $\geq 12\%$ increase in FEV₁ from baseline following bronchodilator therapy has been used as a diagnostic criterion for asthma.¹ The 2020 NZ Adolescent and Adult Asthma Guidelines recommend that a specific cut-point is not used, due to its poor sensitivity and specificity for a diagnosis of asthma, but instead recognise that the greater the degree of bronchodilator reversibility the more likely it is that the patient has asthma.¹

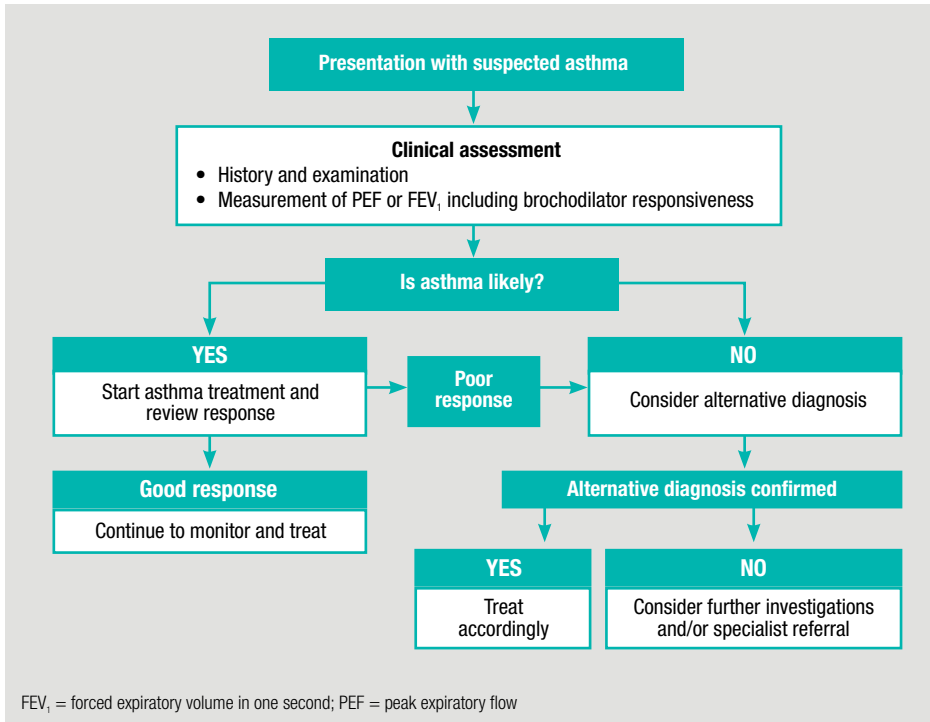


Figure 1. NZ Adolescent and Adult Asthma Guideline's approach to the diagnosis of asthma¹

Table 1. Clinical features that make asthma more or less likely¹

A. Asthma more likely
<ul style="list-style-type: none"> Two or more of these symptoms: <ul style="list-style-type: none"> Wheeze (most sensitive and specific symptom of asthma) Breathlessness Chest tightness Cough Symptom pattern: <ul style="list-style-type: none"> Intermittent Typically worse at night or in the early morning Provoked by exercise, cold air, allergen exposure, irritants, viral infections, beta blockers, aspirin or other non-steroidal anti-inflammatory drugs Recurrent or seasonal Began in childhood History of atopic disorder or family history of asthma Widespread wheeze heard on chest auscultation Symptoms rapidly relieved by inhaled SABA or budesonide/formoterol Airflow obstruction on spirometry (FEV₁/FVC < lower limit of normal) Increase in FEV₁ following bronchodilator ≥12%; the greater the increase the greater the probability Variability in PEF over time (highest-lowest PEF/mean) ≥15%; the greater the variability the greater the probability
B. Asthma less likely
<ul style="list-style-type: none"> Chronic productive cough in absence of wheeze or breathlessness No wheeze when symptomatic Normal spirometry or PEF when symptomatic Symptoms beginning later in life, particularly in people who smoke Increase in FEV₁ following bronchodilator <12%; the lesser the increase the lower the probability Variability in PEF over time <15%; the lesser the variability the lower the probability No response to trial of asthma treatment Clinical features to suggest an alternative diagnosis

Assessing asthma control, severity and future risk

The level of asthma control, severity and future risk must be assessed.¹ The Asthma Control Test™ (ACT) is a simple clinically validated test that provides a very useful tool for monitoring a patient's asthma.⁴ The test can be filled in by patients in the clinic waiting room and has the added value that it educates patients about their asthma control. The online version of the ACT is available from: www.asthmacontroltest.com

The test asks straightforward questions relating to the patient's asthma, including activity limitation, shortness of breath, reliever medication etc.^{4,5} A score is generated and pre-defined cut-off levels indicate the level of asthma control (Figure 2).

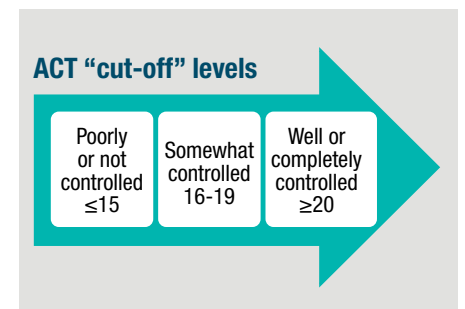


Figure 2. Asthma Control Test score cut-off levels indicating the degree of asthma control.

Identifying high-risk patients in primary care

The identification of high-risk asthma patients who may require more intensive monitoring and supervision can be achieved by assessing healthcare utilisation (hospital admissions, ED and emergency primary care visits) and the patient's need for asthma medication (oral steroids, frequency of SABA prescriptions, a greater number of prescriptions for SABA than for ICS).¹ The features outlined in Table 2 also help to identify asthma patients at increased risk of a poor outcome.¹

TAKE-HOME MESSAGE: In your clinical practice, an important time to assess risk is when issuing a repeat prescription. If review of the patient's electronic health records indicates that the patient has had a recent severe attack requiring urgent medical care, or is using more than one reliever inhaler every two months, then a formal asthma review should be arranged.^{1,6}

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Table 2. Features associated with increased risk of severe asthma exacerbation and mortality¹

A. Asthma
<ul style="list-style-type: none"> Poor symptom control One or more exacerbations requiring oral corticosteroids in the last year Hospitalisation or emergency department visit in the last year High SABA use (≥3 canisters per year) Home nebuliser History of sudden asthma attacks Impaired lung function (FEV₁ <60% predicted) Raised blood eosinophil count Intensive Care Unit admission or intubation (ever) Requirement for long-term oral corticosteroids
B. Comorbidity
<ul style="list-style-type: none"> Psychotropic medications Major psychosocial problems Smoking Food allergy/anaphylaxis Alcohol and drug abuse Aspirin or other non-steroidal anti-inflammatory drug sensitivity
C. Other factors
<ul style="list-style-type: none"> Underuse or poor adherence to ICS treatment Discontinuity of medical care Socioeconomic disadvantage and poor housing Māori and Pacific ethnicity Occupational asthma

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Managing asthma

Effective communication and patient education are essential for optimal asthma management. Care must be taken to explain and deliver health information in a way that is understandable to the patient and their family. Management goals should be agreed upon and a cycle of repeated assessment, adjustment and review of responses to treatment should be undertaken as shown in **Figure 3**.^{1,7}

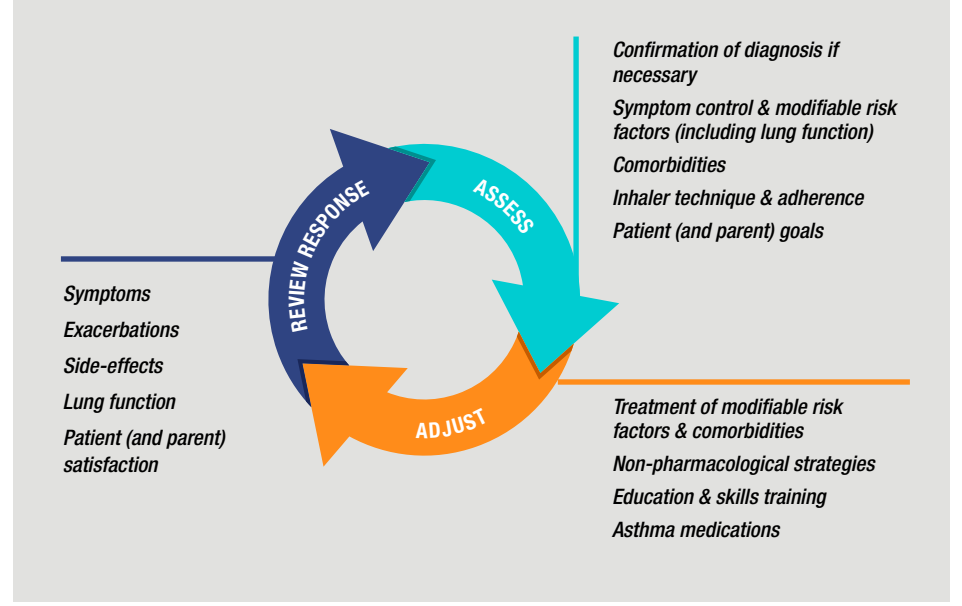


Figure 3. The cycle of management for asthma patients.^{1,7}

A new approach to therapy

- SABA reliever as sole therapy (without ICS or ICS/LABA) is no longer recommended in the long-term management of adolescents and adults with asthma¹
- The use of a single 2-in-1 ICS/fast-acting LABA (budesonide/formoterol) inhaler is recommended as the preferred reliever therapy, either as sole reliever therapy in mild asthma, or as maintenance and reliever therapy in moderate and severe asthma; the budesonide/formoterol 400/12 µg dose should not be used as reliever therapy¹

Background

In mild asthma, combination budesonide/formoterol reliever therapy has been shown to be superior to SABA (terbutaline or salbutamol)-alone reliever therapy with a reduction in the risk of a severe asthma exacerbation of ≥60%.^{8,9}

Also in mild asthma, a number of large RCTs have shown that budesonide/formoterol taken alone and only as reliever therapy has advantages over regular scheduled maintenance ICS and SABA as-needed for relief, reducing the risk of a severe exacerbation by about 20%.^{8,10-12}

In patients with moderate and severe persistent asthma, a systematic review and meta-analysis compared the SMART therapy regimen (ICS/formoterol taken as maintenance and reliever therapy) versus the comparable dose of ICS/LABA maintenance and SABA reliever therapy.¹³ The meta-analysis revealed that SMART therapy was associated with a 32% reduced risk of asthma exacerbation compared with conventional therapy using the comparable dose of ICS/LABA maintenance and SABA as quick relief.¹³

This meta-analysis also showed that the SMART regimen of budesonide/formoterol reduced the exacerbation risk by 23% compared with a higher dose of ICS/LABA plus a SABA for relief, suggesting that the timing of ICS use may be more important than the total dose taken.¹³

Budesonide/formoterol taken as reliever therapy, either with or without regular scheduled maintenance budesonide/formoterol therapy, is now recommended by the 2020 NZ Adolescent and Adult Asthma Guidelines as the preferred option for the treatment of asthma.¹ This change represents the largest paradigm shift in the treatment of asthma over the last two decades, and is consistent with the GINA strategy.⁷

In NZ, the budesonide/formoterol 200 µg/6 µg formulation is registered for use as anti-inflammatory reliever therapy. Please consult relevant data sheets for full indications, dosing, precautions for use and other prescribing information.^{14,15}



'AIR' therapy: The 2020 NZ Adolescent and Adult Asthma Guidelines have introduced the term 'anti-inflammatory reliever (AIR)' therapy to describe this new treatment approach.¹ AIR therapy refers to the use of budesonide/formoterol as a reliever medication either as monotherapy (no maintenance) or together with regular scheduled budesonide/formoterol (also known as SMART: single inhaler maintenance and reliever therapy). AIR therapy (including SMART) can only be undertaken with budesonide/formoterol and not other available ICS/LABA combinations, as they do not contain a fast-acting LABA.¹

ICS therapy for all

The 2020 NZ Adolescent and Adult Asthma Guidelines recommend that all asthma patients receive ICS therapy.¹ ICS in asthma can be delivered in one of three forms:

- As ICS/LABA reliever therapy (AIR) – budesonide/formoterol with or without maintenance budesonide/formoterol
- As maintenance ICS together with SABA reliever
- As maintenance ICS/LABA with SABA reliever

The recommended standard daily dose of ICS, when prescribed according to a regular scheduled maintenance regimen, in adolescent and adult asthma, is detailed in **Table 3**.¹

Table 3. Recommended standard maintenance daily dose of ICS in adolescent/adult asthma¹

Beclomethasone dipropionate	400-500 µg/day
Beclomethasone dipropionate extrafine	200 µg/day
Budesonide	400 µg/day
Fluticasone propionate	200-250 µg/day
Fluticasone furoate	100 µg/day

ICS/LABA therapy

LABAs should not be prescribed in a separate inhaler from ICS.¹

Combination ICS/LABA may be prescribed as:¹

- ICS/LABA reliever therapy (AIR)
- ICS/LABA maintenance and reliever therapy (AIR:SMART)*
- Fixed maintenance ICS/LABA and SABA reliever**

*This is the 2020 NZ Adolescent and Adult Asthma Guidelines preferred regimen for patients at risk of severe exacerbations

**This regimen may be used for patients if their asthma is already well controlled on this regimen, or if they have poor technique with the Turbuhaler® device

What do the new recommendations mean for my asthma patients?

- Adolescents and adults with asthma should not be receiving SABA reliever as sole therapy (without ICS or ICS/LABA)¹
- For new asthma patients at risk of severe exacerbation or those requiring a step up in therapy, it is preferable to start them on budesonide/formoterol maintenance and reliever therapy (SMART)¹
- For patients well controlled with no exacerbations on their fixed maintenance ICS (e.g. beclomethasone dipropionate or fluticasone propionate) and a SABA reliever therapy, or ICS/LABA (fluticasone propionate/salmeterol or fluticasone furoate/vilanterol) and a SABA reliever therapy, it is reasonable for them to continue on their regimen. However, if they experience severe exacerbations they should be switched to the SMART regimen.¹

Experts' remarks on the new approach to treatment

The 2020 NZ Adolescent and Adult Asthma Guidelines are consistent with the GINA strategy 2019/2020 updates which recommended that SABAs should not be used alone as sole therapy without ICS, and that combination ICS/formoterol is preferred to SABA as reliever therapy across the spectrum of asthma severity, in adults and adolescents.⁷ It has been suggested that these recommendations represent the most important change in asthma management for over 30 years.¹⁶

A step-up and step-down approach

A step-up and step-down approach to asthma treatment is well established and has been included in asthma guidelines for the past 20 years. With this approach, treatment is stepped up to achieve control and reduce the risk of exacerbation, and stepped down after a period of prolonged control, in order to find and maintain the lowest level of treatment needed.¹

The updated 2020 NZ Adolescent and Adult Asthma Guidelines include two algorithms for treating adolescents and adults with asthma.¹ Both algorithms comprise three steps of asthma treatment with both maintenance therapy and reliever therapy. The first algorithm is for AIR therapy using budesonide/formoterol 200 µg/6 µg (**Figure 4**). This simply involves the use of one inhaler for maintenance and symptom relief across the spectrum of asthma severity. In the algorithm, Step 1 relates to patients with intermittent or mild asthma – maintenance is not necessary and they simply take one actuation of the budesonide/formoterol inhaler as required to relieve symptoms. Evidence shows that this will be at least as effective at reducing exacerbation risk as regular maintenance ICS and a SABA reliever.^{8,10-12} If the patient is taking budesonide/formoterol frequently for relief of their symptoms or experience an asthma attack, then it is reasonable to move to Step 2 and if necessary to Step 3, using their budesonide/formoterol as both a regular maintenance and reliever therapy (no more than 6 inhalations should be taken on any single occasion – a total of up to 12 inhalations daily can be used temporarily).^{1,14,15}

The second algorithm is for traditional treatment regimens incorporating SABA reliever therapy (**Figure 5**).¹ Step 1 involves the use of standard-dose ICS (see **Table 3**) and a SABA as required. Step 2 involves the use of a standard-dose ICS/LABA combination for maintenance and Step 3 involves a high-dose ICS/LABA combination together with SABA reliever therapy.

What about patients not controlled at Step 3? Add-on therapies?

LAMA add-on therapy has demonstrated efficacy in severe asthma with the greatest evidence for tiotropium.¹⁷ Tiotropium [Spiriva® Respimat®] as add-on therapy to maintenance ICS/LABA is approved for use in NZ, but is not currently funded.¹⁸ This agent is only funded for patients with coexisting COPD and is therefore an option only for asthma patients with features of COPD who are not controlled at Step 3.¹

Biologic add-on therapy including omalizumab (anti-IgE) and mepolizumab (anti-IL-5/eosinophils) targets specific inflammatory pathways in severe asthma.¹ Omalizumab [XOLAIR®] and mepolizumab [NUCALA] are only approved in NZ for asthma patients with severe disease meeting specific criteria and need to be prescribed by a specialist.^{19,20}

Other measures include smoking cessation, weight loss, exercise, breathing exercises, avoiding triggers (including aspirin/NSAIDs) and avoiding workplace exposures to asthma triggers.¹

Who to refer?: Consider referral to a respiratory specialist for review and assessment for biological therapy in patients with severe asthma who require frequent courses of oral prednisone or who have become dependent on oral prednisone.¹

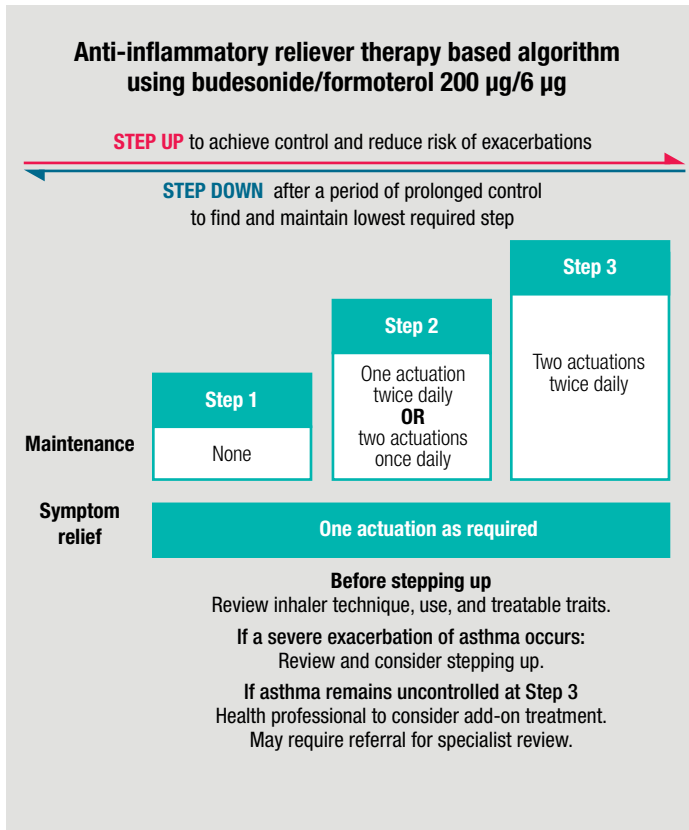


Figure 4. Algorithm for anti-inflammatory reliever therapy using budesonide/formoterol 200 µg/6 µg.¹

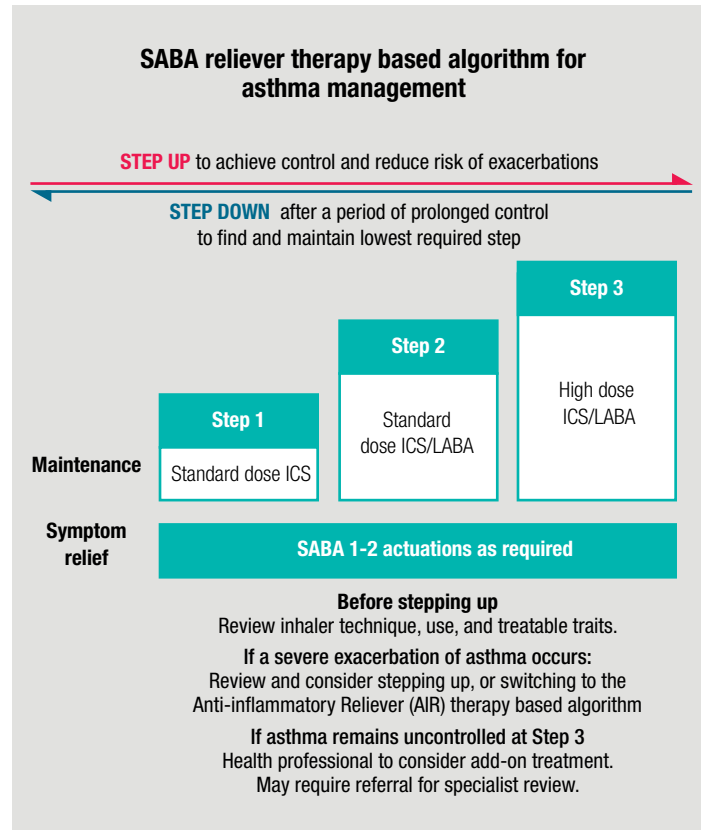


Figure 5. Traditional SABA reliever therapy-based algorithm for asthma management.¹

Asthma self-management

Asthma action plans are effective in reducing asthma-related morbidity and mortality.¹ The 2020 NZ Adolescent and Adult Asthma Guidelines include three different action plans, including the new AIR therapy plan:¹ available [here](#)

- Asthma plans should be offered to all individuals with asthma
- Asthma action plans may be based on symptoms +/- peak flow and comprise 3 or 4 stages
- If there is a need for oral prednisone, the usual dose is 40 mg/day for 5 days. An alternative regimen is 40 mg/day until there is definite improvement and then 20 mg/day for the same number of days.

The new AIR therapy asthma action plan is specifically for the use of budesonide/formoterol (**Figure 6**).¹ The plan reminds patients that budesonide/formoterol is used for both the prevention and relief of symptoms and should be carried at all times. Instruct the patient to take only one actuation as required for relief, as opposed to their previous use of two actuations of their SABA for relief. Explain that in the situation of an emergency, they should continue to use their 2-in-1 inhaler as needed while seeking urgent medical help. For regular scheduled maintenance therapy with budesonide/formoterol, either one or two actuations can be taken at a time, depending on asthma severity.¹

YOUR AIR*
ASTHMA ACTION PLAN

*Anti-inflammatory Reliever Therapy

Know your asthma symptoms

Name: _____ Doctor: _____

Date of plan: _____ Doctor phone: _____

Feeling good

Your asthma is under control when

- You don't have asthma symptoms most days (wheeze, tight chest, a cough or feeling breathless)
- You have no cough or wheeze at night
- You can do all your usual activities and exercise freely
- Most days you do not need extra Symbicort actuations

Your peak flow reading is above:

Know when and how to take your medicine

Regularly scheduled Symbicort:	actuation(s)	every morning
	actuation(s)	every night
As needed Symbicort to relieve symptoms:	1 actuation when you need it to	relieve your asthma symptoms

Other Medication

Severe

Your asthma is getting severe when

- Your asthma symptoms are getting severe (wheeze, tight chest, a cough or feeling breathless)
- **OR** your Symbicort is only helping for 2-3 hours
- **OR** you are using more than 8 actuations a day in total (regular + reliever use)
- **OR** you feel you need to see your doctor

Your peak flow reading is below:

Let's take action...

- **You need to see your doctor today**
- Continue any regular Symbicort PLUS 1 actuation of your Symbicort when needed to relieve symptoms
- Start prednisone if you have it:

Prednisone	mg	for	days
and then	mg	for	days

Other instructions:

Emergency

It is an emergency when

- Your symptoms are getting more severe quickly
- **OR** you are finding it hard to speak or breathe
- **OR** your Symbicort is not helping much
- **OR** you are using your Symbicort every 1-2 hours

Your peak flow reading is below:

Let's keep calm...

- **Dial 111 for ambulance**
- Keep using your Symbicort as often as needed
- Even if you seem to get better seek medical help right away
- If you haven't started taking your prednisone, start now

Best peak flow: _____

Plan prepared by: _____

Next review date: _____

Signature: _____

Figure 6. Anti-inflammatory reliever therapy asthma action plan.^{2,14}



Treatable traits in severe asthma

The concept of treatable traits was introduced in the 2016 NZ Asthma Guidelines and relates to the other factors that may be contributing to a patient's poor asthma control.^{1,21} Identifying and managing treatable traits is especially important for patients who are optimally treated for asthma but still experience marked respiratory symptoms.^{1,21} Treatable traits include overlapping disorders, comorbidities, environmental and behavioural factors detailed in **Table 4**.¹

Table 4. Treatable traits in asthma¹

Overlapping disorders:	Comorbidities:
<ul style="list-style-type: none"> • COPD • Bronchiectasis • Allergic bronchopulmonary aspergillosis • Dysfunctional breathing, e.g. vocal cord dysfunction 	<ul style="list-style-type: none"> • Obesity • Gastro-oesophageal reflux disease • Rhinitis • Chronic rhinosinusitis ± nasal polyps • Obstructive sleep apnoea • Depression/anxiety
Environmental:	Behavioural:
<ul style="list-style-type: none"> • Smoking • Damp, mouldy, cold or crowded housing • Occupational exposures • Provoking factors including aeroallergens • Drugs such as aspirin, other non-steroidal anti-inflammatory drugs and beta blockers • Insufficient income to access healthcare 	<ul style="list-style-type: none"> • Adherence • Inhaler technique • Health literacy

TAKE-HOME MESSAGE: In asthma patients with uncontrolled respiratory symptoms, enquire about overlapping disorders, comorbidities, environmental and behavioural factors before stepping up their asthma treatment.

RESPIRATORY RESEARCH REVIEW

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The four step asthma consultation¹

Assess asthma control and risk

Complete the Asthma Control Test
www.asthmacontroltest.com

Review lung function tests

(peak flow monitoring and/or spirometry)

Review severe asthma attacks in last 12 months

(requiring urgent medical review/oral steroids/bronchodilator nebuliser use)



Consider other relevant clinical issues

Ask about compliance with maintenance treatment

Check inhaler technique

Enquire about clinical features associated with increased risk

Consider treatable traits

Decide if peak flow monitoring is indicated



Decide if increase or decrease in maintenance therapy required

Is a step up in level of treatment required?

(asthma not adequately controlled, poor lung function or recent severe exacerbation)

Is a step down in the level of treatment possible?

(has there been a sustained period of good control?)

Is a step across to the SMART regimen required?

(in patients prescribed ICS or ICS/LABA who have had a recent severe exacerbation)



Complete the asthma action plan

<https://www.asthmafoundation.org.nz>

Peak flow instructions

(recommended cut points of <80% for getting worse and <50% for an emergency = reference guide only and can be adjusted according to clinical judgement)

Prednisone regimen

(for severe asthma prednisone 40 mg/day for 5 days or 40 mg/day until definite improvement, then 20 mg/day for the same number of days)

Additional instructions

(avoidance of provoking factors such as aspirin/NSAIDs, option of increasing ICS dose through increasing frequency up to 4 x daily when symptoms worsen with 4 stage plan, etc.)

Adapted from Beasley R et al., 2020¹



Specific allergy issues

Allergens such as house dust mites, pollens or pet dander are the most likely allergic triggers for asthma.¹

Testing for allergen-specific IgE to aero-allergens should be considered in patients with allergic asthma.¹ Allergen immunotherapy (approved for use in NZ but not funded) can be considered in patients with asthma and rhinitis who have evidence of allergy to house dust mites and/or pollens. All patients with food-related anaphylaxis should be referred to an immunologist/allergist.¹

Asthma in Māori and Pacific people

Māori and Pacific people are disproportionately affected by severe asthma, exhibiting over 3-fold higher rates of asthma-related hospitalisations and higher mortality rates than NZ Europeans and other ethnic groups.^{2,22} Furthermore, a concerning inequality is seen across the socio-economic spectrum, with 3-fold higher rates of respiratory-related hospitalisations in those living in the most deprived versus the least deprived areas.² This may be partly due to barriers to health literacy (knowing about illness and when to seek primary care treatment) among lower socio-economic groups and highlights the importance of patient education in primary care settings.²³ Effective education is essential for optimal asthma management and care must be taken to explain and deliver health information in a way that is understandable to the patient and their family.^{23,24}

TAKE-HOME MESSAGE: Patient education is key to effective asthma management. Make time for patient asthma education. Make sure the patient understands what good asthma control looks like and how they can achieve it. Consider triaging Māori and Pacific asthma patients as being at high risk of asthma exacerbations in view of their greater burden of disease. Multifaceted interventions may be required.

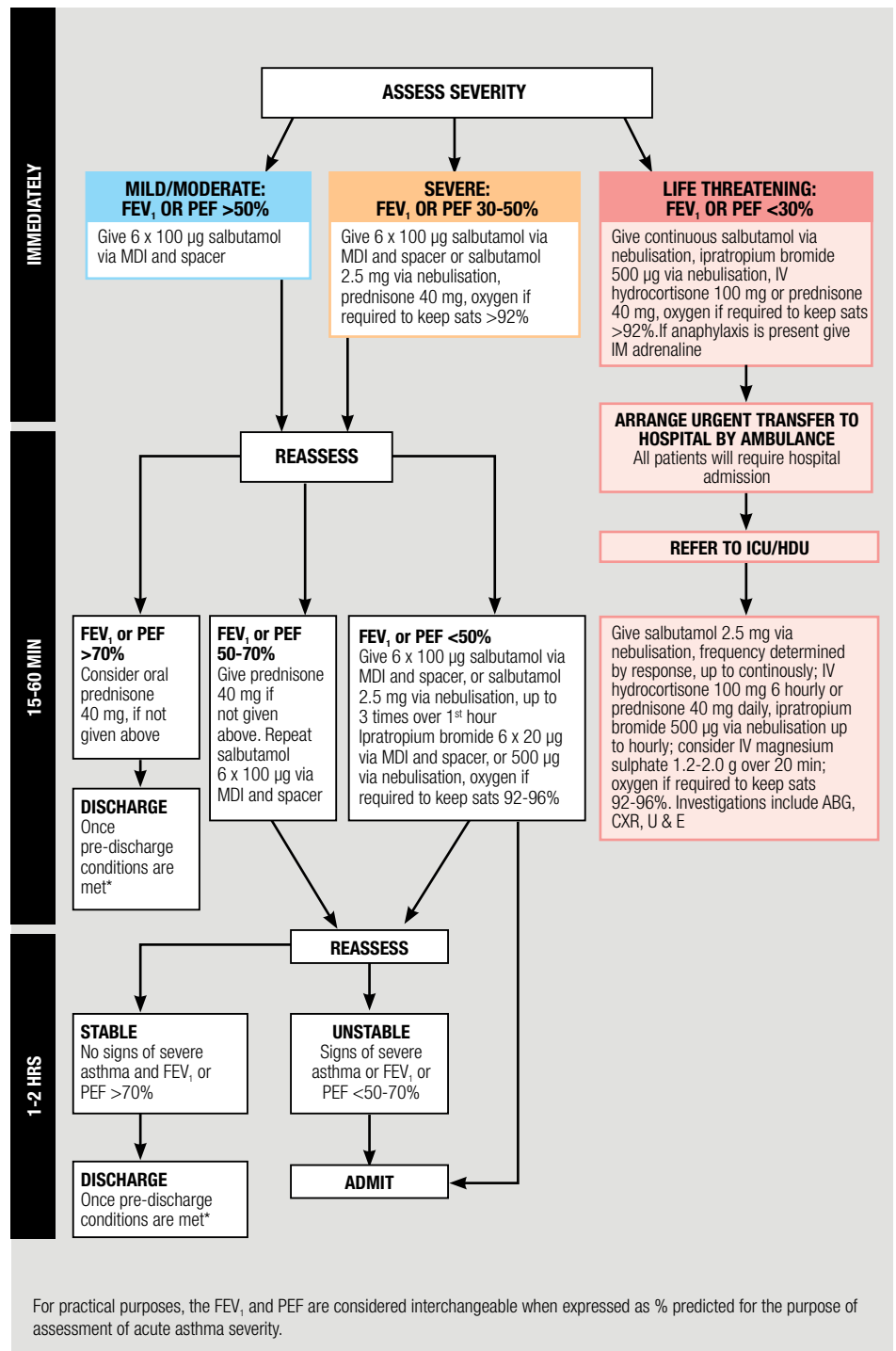
Asthma in pregnancy

The risks to the mother and baby of poor asthma control in pregnancy outweigh the theoretical risks with asthma medications.^{1,7}

TAKE-HOME MESSAGE: The NZ Adolescent and Adult Asthma Guidelines recommend that SABAs, ICS and ICS/LABAs should be used as normal during pregnancy. During severe attacks, oral steroids should be used as normal and patients should be treated in hospital.

Management of acute severe asthma

Acute asthma management is based on the objective measurement of severity, administering treatment appropriate for the degree of severity, repeatedly reassessing the response to treatment, and assessing the need for referral to hospital and/or hospital admission.¹ The 2020 NZ Adolescent and Adult Asthma Guidelines include a practical algorithm for the management of acute severe asthma (Figure 7).¹



ABG = arterial blood gas; CXR = chest x-ray; FEV₁ = forced expiratory volume in one second; HDU = high dependency unit; ICU = intensive care unit; IM = intramuscular; IV = intravenous; MDI = metered-dose inhaler; PEF = peak expiratory flow; sats = oxygen saturations; U & E = urea and electrolytes

*Please refer to the full NZ Adolescent and Adult Asthma Guidelines for a list of pre-discharge considerations

Figure 7. NZ Adolescent and Adult Asthma Guideline's algorithm for the management of acute severe asthma.¹



For most patients, initial treatment with a SABA via a spacer and oral steroids is likely to be sufficient.¹ Reserve nebulised SABA for those with severe asthma who do not respond to initial inhaled therapy. Magnesium sulphate is the preferred IV bronchodilator in life-threatening asthma. The criteria for referring a patient with a severe asthma attack to hospital are outlined in **Table 5**.¹

Table 5. Criteria for referral to hospital and/or hospital admission¹

- Any feature of life-threatening asthma
- Any feature of severe attack persisting after initial treatment
- Other considerations suggest admission appropriate:
 - Living alone/socially isolated
 - Psychosocial problems
 - Physical disability or learning difficulties
 - Previous near fatal or brittle asthma
 - Exacerbation despite adequate dose oral steroids
 - Presentation at night
 - Pregnancy

TAKE-HOME MESSAGE: Always maintain your position as the patient's advocate and refer to hospital if appropriate. The amount of SABA used in the 12 to 24 hours prior to presentation is a useful marker of likely need for hospital admission, as is a lack of response to initial bronchodilator treatment and/or a requirement for repeat doses.

USEFUL RESOURCES:

- <https://www.asthmafoundation.org.nz>
- <https://ginasthma.org>

The use of SABAs via a spacer is not only as effective as nebulisation in severe asthma attacks, but also reduces the risk of aerosolisation, an important consideration in the COVID-19 pandemic era. There is insufficient evidence to recommend the use of budesonide/formoterol by health professionals in the setting of a severe attack, and for this reason SABAs are preferred in this situation.

KEY TAKE-HOME MESSAGES:

- SABA reliever as sole therapy is no longer recommended in the long-term management of adolescents and adults with asthma
- The use of a single 2-in-1 ICS/fast-acting LABA (budesonide/formoterol) inhaler as reliever therapy is recommended across the spectrum of asthma severity, either as monotherapy (no maintenance) in mild patients, or together with regular scheduled budesonide/formoterol (also known as SMART: single inhaler maintenance and reliever therapy) in moderate and severe patients
- If prescribers are to practice evidence-based medicine they need to be familiar with AIR therapy and how to implement this regimen in clinical practice
- Add-on treatments such as LAMAs and monoclonal antibody therapies represent important management approaches to those patients with chronic severe difficult-to-treat asthma
- The identification and treatment of 'treatable traits' represent an important clinical approach to patients with poor respiratory health despite standard treatment.

REFERENCES:

1. Beasley R et al. Asthma and Respiratory Foundation NZ Adolescent and Adult Asthma Guidelines 2020: A quick reference guide. *N Z Med J.* 2020;133(1517):73-99
2. Asthma and Respiratory Foundation NZ. Available from: <https://www.asthmafoundation.org.nz/our-work/research/key-statistics> (Accessed December 2020)
3. Telfar Barnard L and Zhang J. The impact of respiratory disease in New Zealand 2018 update. Available from: https://s3-ap-southeast-2.amazonaws.com/assets.asthmafoundation.org.nz/images/NZ-Impact-Report-2018_FINAL.pdf (Accessed December 2020)
4. Nathan RA et al. Development of the asthma control test: a survey for assessing asthma control. *J Allergy Clin Immunol.* 2004;113(1):59-65
5. Schatz M et al. Asthma Control Test: reliability, validity, and responsiveness in patients not previously followed by asthma specialists. *J Allergy Clin Immunol.* 2006;117(3):549-56
6. Nwaru BI et al. Overuse of short-acting β 2-agonists in asthma is associated with increased risk of exacerbation and mortality: a nationwide cohort study of the global SABINA programme. *Eur Respir J.* 2020;55(4):1901872
7. 2020 GINA Report, Global Strategy for Asthma Management and Prevention. Available from: <https://ginasthma.org/gina-reports/> (Accessed December 2020)
8. Beasley R et al. Controlled trial of budesonide-formoterol as-needed for mild asthma. *N Engl J Med.* 2019;380(21):2020-30
9. O'Byrne P M et al. Inhaled combined budesonide-formoterol as needed in mild asthma. *N Engl J Med.* 2018;378(20):1865-76
10. Hardy J et al. Budesonide-formoterol reliever therapy versus maintenance budesonide plus terbutaline reliever therapy in adults with mild to moderate asthma (PRACTICAL): a 52-week, open-label, multicentre, superiority, randomised controlled trial. *Lancet* 2019;394(10202):919-28
11. Bateman ED et al. As-needed budesonide-formoterol versus maintenance budesonide in mild asthma. *N Engl J Med.* 2018;378(20):1877-87
12. Rogliani P et al. SMART and as-needed therapies in mild to severe asthma: a network meta-analysis. *Eur Respir J.* 2020;2000625
13. Sobieraj DM et al. Association of inhaled corticosteroids and long-acting β -agonists as controller and quick relief therapy with exacerbations and symptom control in persistent asthma: A systematic review and meta-analysis. *JAMA* 2018;319(14):1485-96
14. Medsafe. Symbicort® Turbuhaler® data sheet. Available from: <https://www.medsafe.govt.nz/profs/Datasheet/s/Symbicortinh.pdf> (Accessed December 2020)
15. Medsafe. DuoResp Spiromax data sheet. Available from: <https://www.medsafe.govt.nz/profs/datasheet/d/DuoRespinh.pdf> (Accessed December 2020)
16. Reddel H et al. GINA 2019: a fundamental change in asthma management: Treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents. *Eur Respir J.* 2019;53(6):1901046
17. Anderson DE et al. Long-acting muscarinic antagonists (LAMA) added to inhaled corticosteroids (ICS) versus the same dose of ICS alone for adults with asthma. *Cochrane Database Syst Rev.* 2015;(8):CD011397
18. Medsafe. Spiriva® Respimat® data sheet. Available from: <https://www.medsafe.govt.nz/profs/Datasheet/s/Spirivarespimat.pdf> (Accessed December 2020)
19. Medsafe. XOLAIR® data sheet. Available from: <https://medsafe.govt.nz/profs/Datasheet/x/Xolairinj.pdf> (Accessed December 2020)
20. Medsafe. NUCALA data sheet. Available from: <https://www.medsafe.govt.nz/profs/Datasheet/n/nucalainj.pdf> (Accessed December 2020)
21. Agusti A et al. Treatable traits: toward precision medicine of chronic airway diseases. *Eur Respir J.* 2016;47(2):410-419
22. Telfar-Barnard L and Zhang J. The impact of respiratory disease in New Zealand: 2016 update. Available from: <https://www.asthmafoundation.org.nz> (Accessed December 2020)
23. Health Partners Consulting Group 2012. Metro-Auckland Pacific Population Health Profile. Auckland: HPCG. Available from: <https://www.health.govt.nz/system/files/documents/publications/metro-auckland-pacific-population-health-profile-april2103.pdf> (Accessed December 2020)
24. Bpac^{nz}. Asthma education in primary care. *Best Practice Journal.* 2015;BPJ 70. Available from: <https://bpac.org.nz/bpj/2015/september/asthma.aspx> (Accessed December 2020)



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