



Adjusting treatment for adults and adolescents

Before adjustment



Assess current asthma symptom control and risk factors



Assess adherence and inhaler technique



Understand definition and classification of exacerbations



Recommendation

Adjust treatment to maintain good symptom control, prevent exacerbations and minimise side-effects.

Step up or down one treatment level, or consider switching from a regimen with SABA as the reliever (alternative options) to a regimen with ICS-formoterol as the reliever (recommended options).

Sources & rationale

Recommendation type: Consensus

Prevention of exacerbations is a key goal of asthma management. Short courses of oral corticosteroids to manage asthma exacerbations are associated with increased lifetime risk of osteoporosis, pneumonia, cardiovascular or cerebrovascular diseases, cataract, sleep apnoea, renal impairment, depression/anxiety, type 2 diabetes, and weight gain. [Price 2018]

Most of the benefit of ICS is achieved at low doses. Long-term use of high doses increases the risk of systemic side-effects such as osteoporosis, cataract and glaucoma.[GINA 2025]

Observational data suggest that high daily doses of ICS are associated with an increased risk of adverse effects, including cataract, cardiovascular events, pulmonary embolism, and pneumonia,[Bloom 2024, von Bülow 2025] although these adverse events occur at low frequencies.[Bloom 2024] Even moderate daily doses have been associated with increased risk.[Bloom 2024]

References

Bloom CI, Yang F, Hubbard R, et al. Association of dose of inhaled corticosteroids and frequency of adverse events. Am J Respir Crit Care Med 2024; 211: 54-63.

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Price DB, Trudo F, Voorham J, et al. Adverse outcomes from initiation of systemic corticosteroids for asthma: long-term observational study. J Asthma Allergy 2018; 11: 193-204.

von Bülow A, Hansen S, Sandin P, et al. Use of high-dose inhaled corticosteroids and risk of corticosteroid related adverse events in asthma -findings from the NORDSTAR cohort. J Allergy Clin Immunol Pract Feb 1: S2213-2198(25)00100-X.

Stepping up



Recommendation

Before stepping up treatment, check for common causes of failure to achieve good asthma symptom control or reduce exacerbations.

Common causes of poor symptoms control or exacerbations include poor adherence, incorrect inhaler technique, exposure to triggers. Respiratory symptoms may also be due to a comorbid or alternative diagnosis (e.g. allergic rhinitis or rhinosinusitis, de-conditioning, obesity, heart disease, or inducible laryngeal obstruction).

Sources & rationale

Recommendation type: adapted from GINA

Poor inhaler technique is very common and is associated with poor asthma control, increased risk of exacerbations and increased adverse effects.[[Melani 2011](#)]

Low adherence to ICS treatment is very common among patients with asthma.[[Murphy 2021](#)]

Exposure to triggers (including viral upper respiratory tract infections, allergens or air pollution, including smoke) is a common cause of asthma symptoms and exacerbations.[[GINA 2025](#)]

Comorbidities can contribute to respiratory symptoms, exacerbations, or poor quality of life.[[GINA 2025](#)]

References

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Melani AS, Bonavia M, Cilenti V, et al. Inhaler mishandling remains common in real life and is associated with reduced disease control. *Respir Med* 2011; 105: 930-938.

Murphy J, McSharry J, Hynes L, et al. Prevalence and predictors of adherence to inhaled corticosteroids in young adults (15-30 years) with asthma: a systematic review and meta-analysis. *J Asthma* 2021; 58: 683-705.



Recommendation

For patients using maintenance low-dose ICS plus SABA as needed (alternative Level 1 option), consider switching to budesonide-formoterol as needed (recommended Level 1 treatment) as a strategy to reduce exacerbation risk.

Sources & rationale

Recommendation type: adapted from GINA

Low-dose budesonide-formoterol taken as needed is as effective as [[O'Byrne 2018](#), [Bateman 2018](#)] or more effective than [[Beasley 2019](#), [Hardy 2019](#), [Crossingham 2021](#)] low-dose maintenance ICS (plus SABA as needed) for preventing severe exacerbations requiring oral corticosteroid treatment. The use

of budesonide-formoterol as needed also results in a lower average ICS dose maintenance low-dose ICS plus SABA as needed. [O'Byrne 2018, Bateman 2018, Beasley 2019, Hardy 2019]

References

Bateman ED, Reddel HK, O'Byrne PM, et al. As-needed budesonide-formoterol versus maintenance budesonide in mild asthma. *N Engl J Med* 2018; 378: 1877-1887.

Beasley R, Holliday M, Reddel HK, et al. Controlled trial of budesonide-formoterol as needed for mild asthma. *N Engl J Med* 2019; 380: 2020-2030.

Crossingham I, Turner S, Ramakrishnan S, et al. Combination fixed-dose beta agonist and steroid inhaler as required for adults or children with mild asthma. *Cochrane Database Syst Rev* 2021; 5: CD013518.

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Hardy J, Baggott C, Fingleton 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: 919-928.

O'Byrne PM, FitzGerald JM, Bateman ED, et al. Inhaled combined budesonide-formoterol as needed in mild asthma. *N Engl J Med* 2018; 378: 1865-1876.

Notes

Only certain inhalers containing beclometasone-formoterol or budesonide-formoterol can be used in MART regimens.

Table

ICS-formoterol combinations approved for maintenance-and-reliever therapy in adults and adolescents

Active ingredients	Brand names (Type)	Strength (microg)*	Dose (inhalations)			Age restriction	PBS codes	Authority code	Maximum quantity (5 repeats for all)	Actuations per device
			Maintenance	Reliever	Maximum [‡]					
Beclometasone dipropionate-formoterol	<i>Fostair</i> (pMDI)	100/6	1 twice daily	1	6 per occasion 8 per day	18 years	12183F 14376P [†]	15469 15599	1 2	120
Budesonide-formoterol	<i>Rilast</i> <i>Rapihaler</i> <i>Symbicort</i> <i>Rapihaler</i> (pMDI)	100/3	2 twice daily (may increase to 4 twice daily)	2	12 per occasion 16 per day 24 in one day temporarily	12 years	10015D 14467K [†]	4397 15702	2 4	120
	<i>Symbicort</i> <i>Turbuhaler</i> (DPI)	100/6	2 per day in 1 dose or 2 divided doses	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8796Y 14440B [†]	4380 15755	1 2	120
	<i>Rilast</i> <i>Turbuhaler</i> <i>Symbicort</i> <i>Turbuhaler</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8625Y 14439Y [†]	7970 15680	1 2	120
	<i>DuoResp</i> <i>Spiromax</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	18 years	11273H 14434Q [†]	7970 15680	1 2	120

Bufomix Easyhaler (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	14151T 8625Y 14439Y [†]	7970 7970 15680	2 1 2	60 120 120
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Additional information

DPI: dry powder inhaler; ICS: inhaled corticosteroid; pMDI: pressurised metered-dose inhaler;

* Inhaled corticosteroid dose-formoterol dose; † Condition must be stable for the prescriber to consider the listed maximum quantity of this medicine suitable for this patient (60-day prescribing); ‡ Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)

Products approved by the Therapeutic Goods Administration for use in maintenance-and-reliever therapy. The patient uses the same inhaler as their regular daily maintenance treatment, and also takes extra doses as anti-inflammatory reliever as needed to manage symptoms. Other combinations of an inhaled corticosteroid and a long-acting beta₂ agonist cannot be used this way.



Recommendation

For patients using maintenance ICS-LABA plus SABA as needed, consider switching to MART before considering a dose increase.

For a patient using maintenance low-dose ICS-LABA plus SABA as needed (alternative Level 2 option), consider switching to low-dose MART.

For a patient using maintenance medium-dose ICS-LABA plus SABA as needed (alternative Level 3 option), consider switching to medium-dose MART (medium-dose maintenance ICS-formoterol plus as-needed low-dose ICS-formoterol).

Sources & rationale

Recommendation type: consensus recommendation

MART reduces the rate of exacerbations compared with fixed-dose maintenance ICS-LABA regimens (with SABA as needed) at the same or a higher ICS dose. [Sobieraj 2018]

Low-dose MART is associated with a reduction in severe exacerbations and a similar level of control, at relatively low ICS doses, compared with maintenance ICS-LABA plus as-needed SABA or a higher dose of ICS plus as-needed SABA. [Cates 2013, Kew 2013, Papi 2013, Patel 2013, Bateman 2011, Jorup 2018]

In patients with uncontrolled asthma on low-dose maintenance ICS-LABA plus SABA reliever, switching to MART reduced the rate of severe exacerbations, compared with stepping up to a higher dose of ICS-LABA maintenance plus SABA reliever. [Beasley 2022]

In RCTs in patients with uncontrolled asthma on medium-dose maintenance ICS-LABA plus SABA reliever:

- switching to medium-dose MART (medium-dose maintenance treatment and low-dose reliever) reduced the rate of severe exacerbations, compared with high-dose ICS-LABA plus SABA as needed [Bousquet 2007]
- switching to low-dose MART has reduced the rate of severe exacerbations, compared with medium-dose of ICS-LABA maintenance regimens with SABA reliever. [Kuna 2007]

The benefit of the MART regimen in reducing the risk of severe exacerbations requiring OCS appears to be due to the increase in doses of both the ICS and the formoterol at a very early stage of worsening asthma. [GINA 2025]

References

Bateman ED, Harrison TW, Quirce S, et al. Overall asthma control achieved with budesonide/formoterol maintenance and reliever therapy for patients on different treatment steps. *Respiratory Res* 2011; 12: 38.

Beasley R, Harrison T, Peterson S, et al. Evaluation of budesonide-formoterol for maintenance and reliever therapy among patients with poorly controlled asthma: a systematic review and meta-analysis. *JAMA Netw Open* 2022; 5: e220615.

Bousquet J, Boulet LP, Peters MJ, et al. Budesonide/formoterol for maintenance and relief in uncontrolled asthma vs. high-dose salmeterol/fluticasone. *Respir Med* 2007; 101: 2437-2446. Erratum in: *Respir Med* 2008; 102: 937-938.

Cates CJ, Karner C. Combination formoterol and budesonide as maintenance and reliever therapy versus current best practice (including inhaled steroid maintenance), for chronic asthma in adults and children. *Cochrane Database Syst Rev* 2013; 4: CD007313.

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Jorup C, Lythgoe D, Bisgaard H. Budesonide/formoterol maintenance and reliever therapy in adolescent patients with asthma. *Eur Respir J* 2018; 51: 1701688.

Kew KM, Karner C, Mindus SM, et al. Combination formoterol and budesonide as maintenance and reliever therapy versus combination inhaler maintenance for chronic asthma in adults and children. *Cochrane Database Syst Rev* 2013; 12: CD009019.

Kuna P, Peters MJ, Manjra AI, Jorup C, Naya IP, Martínez-Jimenez NE, Buhl R. Effect of budesonide/formoterol maintenance and reliever therapy on asthma exacerbations. *Int J Clin Pract* 2007; 61: 725-36.

Papi A, Corradi M, Pigeon-Francisco C, et al. Beclometasone-formoterol as maintenance and reliever treatment in patients with asthma: a double-blind, randomised controlled trial. *Lancet Respir Med* 2013; 1: 23-31.

Patel M, Pilcher J, Pritchard A, et al. Efficacy and safety of maintenance and reliever combination budesonide/formoterol inhaler in patients with asthma at risk of severe exacerbations: a randomised controlled trial. *Lancet Respir Med* 2013; 1: 32-42.

Sobieraj DM, Weeda ER, Nguyen E, et al. Association of inhaled corticosteroids and long-acting beta-agonists as controller and quick relief therapy with exacerbations and symptom control in persistent asthma: A systematic review and meta-analysis. *JAMA* 2018; 319: 1485-1496.

Notes

Table

ICS-formoterol combinations approved for maintenance-and-reliever therapy in adults and adolescents

Active ingredients	Brand names (Type)	Strength (microg)*	Dose (inhalations)			Age restriction	PBS codes	Authority code	Maximum quantity (5 repeats for all)	Actuations per device
			Maintenance	Reliever	Maximum [†]					
Beclometasone dipropionate-formoterol	<i>Fostair</i> (pMDI)	100/6	1 twice daily	1	6 per occasion 8 per day	18 years	12183F 14376P [†]	15469 15599	1 2	120
Budesonide-formoterol	<i>Rilast</i> <i>Rapihaler</i> <i>Symbicort</i> <i>Rapihaler</i> (pMDI)	100/3	2 twice daily (may increase to 4 twice daily)	2	12 per occasion 16 per day 24 in one day temporarily	12 years	10015D 14467K [†]	4397 15702	2 4	120
	<i>Symbicort</i> <i>Turbuhaler</i> (DPI)	100/6	2 per day in 1 dose or 2 divided doses	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8796Y 14440B [†]	4380 15755	1 2	120
	<i>Rilast</i> <i>Turbuhaler</i> <i>Symbicort</i> <i>Turbuhaler</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8625Y 14439Y [†]	7970 15680	1 2	120
	<i>DuoResp</i> <i>Spiromax</i>	200/6	2 per day in 1 dose or 2	1	6 per occasion	18 years	11273H 14434Q [†]	7970 15680	1 2	120

	(DPI)		divided doses (may increase to 2 twice daily)		8 per day 12 in one day temporarily					
	<i>Bufomix Easyhaler</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	14151T 8625Y 14439Y [†]	7970 7970 15680	2 1 2	60 120 120

Additional information

DPI: dry powder inhaler; ICS: inhaled corticosteroid; pMDI: pressurised metered-dose inhaler;

* Inhaled corticosteroid dose-formoterol dose; † Condition must be stable for the prescriber to consider the listed maximum quantity of this medicine suitable for this patient (60-day prescribing); ‡ Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)

Products approved by the Therapeutic Goods Administration for use in maintenance-and-reliever therapy. The patient uses the same inhaler as their regular daily maintenance treatment, and also takes extra doses as anti-inflammatory reliever as needed to manage symptoms. Other combinations of an inhaled corticosteroid and a long-acting beta₂ agonist cannot be used this way.

Recommendation

If asthma is not well controlled on medium-dose MART (or medium-dose maintenance ICS-LABA plus SABA as needed), assess blood eosinophil count and arrange specialist referral.

This recommendation applies to patients with good adherence to ICS-containing treatment and correct inhaler technique, and after assessing and managing other risk factors such as comorbid conditions and exposure to avoidable triggers.

If asthma is not well controlled on medium-dose maintenance ICS-LABA plus SABA as needed, consider first switching to medium-dose MART first and monitoring control.

If specialist consultation is delayed, consider arranging spirometry by an accredited respiratory laboratory in the interim (see [Difficult and severe asthma](#)).

Sources & rationale

Recommendation type: Consensus recommendation

Raised blood eosinophil count and/or raised FeNO are characteristic of type 2 inflammation in asthma.

Patients with asthma with type 2 inflammation that does not respond to medium-dose ICS or higher are at high risk of exacerbations, and are likely to benefit from monoclonal antibody therapy.[\[GINA 2025\]](#)

Spirometry also guides consideration of add-on LAMA treatment, because the addition of LAMA to ICS-LABA is more likely to benefit adults with reduced lung function than those with normal lung function, independent of baseline blood eosinophil count.[\[Lee 2021\]](#).

More information: [Lung function tests](#)

More information: [Tests for airway inflammation](#)

References

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Lee LA, Bailes Z, Barnes N, et al. Efficacy and safety of once-daily single-inhaler triple therapy (FF/UMEC/VI) versus FF/VI in patients with inadequately controlled asthma (CAPTAIN): a double-blind, randomised, phase 3A trial. [Erratum in: Lancet Respir Med 2021; 9: e18.] Lancet Respir Med 2021; 9: 69-84.

Resources

Thoracic Society of Australia and New Zealand's [list of accredited respiratory laboratories](#).

Notes

Raised eosinophil count (≥ 150 cells/microlitre) in a patient taking medium-dose ICS or daily oral corticosteroids suggests refractory type 2 inflammation. Blood eosinophils may be elevated for reasons other than asthma. A very high blood eosinophil count ≥ 1500 cells/microlitre suggests other serious complications of asthma (e.g. allergic bronchopulmonary aspergillosis) or other serious conditions (e.g. eosinophilic granulomatosis with polyangiitis that require urgent specialist assessment).

Stepping down



Recommendation

At steps 2–3, if good asthma symptom control has been maintained for 2–3 months and the patient has a low risk of exacerbations, consider reducing treatment intensity by one level and reviewing in 4–8 weeks.



Alert

Do not attempt a step-down if the person is exposed to triggers (e.g. respiratory infections, relevant allergens), travelling, or pregnant.

Sources & rationale

Recommendation type: adapted from GINA

The aim of reducing the intensity of treatment when asthma is well controlled (good symptom control and low risk of exacerbations) are to find the optimal dose to control asthma and minimise side-effects.

References

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org



Recommendation

If a patient using maintenance low-dose ICS plus SABA as needed (alternative Level 1 option) experiences good symptom control for several months and wishes to stop taking daily maintenance treatment, consider switching to budesonide-formoterol as needed (recommended Level 1 treatment).

Sources & rationale

Recommendation type: adapted from GINA

Low-dose budesonide-formoterol taken as needed is as effective as [O'Byrne 2018, Bateman 2018] or more effective than [Beasley 2019, Hardy 2019, Crossingham 2021] low-dose maintenance ICS (plus SABA as needed) for preventing severe exacerbations requiring oral corticosteroid treatment. The use of budesonide-formoterol as needed also results in a lower average ICS dose maintenance low-dose ICS plus SABA as needed.[O'Byrne 2018, Bateman 2018, Beasley 2019, Hardy 2019]

References

Bateman ED, Reddel HK, O'Byrne PM, et al. As-needed budesonide-formoterol versus maintenance budesonide in mild asthma. *N Engl J Med* 2018; 378: 1877-1887.

Beasley R, Holliday M, Reddel HK, et al. Controlled trial of budesonide-formoterol as needed for mild asthma. *N Engl J Med* 2019; 380: 2020-2030.

Crossingham I, Turner S, Ramakrishnan S, et al. Combination fixed-dose beta agonist and steroid inhaler as required for adults or children with mild asthma. *Cochrane Database Syst Rev* 2021; 5: CD013518.

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Hardy J, Baggott C, Fingleton 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: 919-928.

O'Byrne PM, FitzGerald JM, Bateman ED, et al. Inhaled combined budesonide-formoterol as needed in mild asthma. *N Engl J Med* 2018; 378: 1865-1876.

Managing exacerbations

Recommendation

Instruct patients to use their reliever as often as needed when symptoms are worsening (symptoms more frequent, recurring after reliever use, or not promptly relieved).

Include instructions in the patient's written asthma action plan about:

- the maximum reliever dose that can be taken at one time
- the maximum reliever dose that can be taken in one 24-hour period
- when to get medical care
- when to call an ambulance.

Sources & rationale

Recommendation type: Consensus recommendation

Notes

Maximal reliever doses differ between relievers

Table

ICS-formoterol combinations approved for maintenance-and-reliever therapy in adults and adolescents

Active ingredients	Brand names (Type)	Strength (microg)*	Dose (inhalations)			Age restriction	PBS codes	Authority code	Maximum quantity (5 repeats for all)	Actuations per device
			Maintenance	Reliever	Maximum [†]					
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Budesonide-formoterol	<i>Rilast</i> <i>Rapihaler</i> <i>Symbicort</i> <i>Rapihaler</i> (pMDI)	100/3	2 twice daily (may increase to 4 twice daily)	2	12 per occasion 16 per day 24 in one day temporarily	12 years	10015D 14467K [†]	4397 15702	2 4	120
	<i>Symbicort</i> <i>Turbuhaler</i> (DPI)	100/6	2 per day in 1 dose or 2 divided doses	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8796Y 14440B [†]	4380 15755	1 2	120
	<i>Rilast</i> <i>Turbuhaler</i> <i>Symbicort</i> <i>Turbuhaler</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	8625Y 14439Y [†]	7970 15680	1 2	120

<i>DuoResp Spiromax</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	18 years	11273H 14434Q [†]	7970 15680	1 2	120
<i>Bufomix Easyhaler</i> (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	12 years	14151T 8625Y 14439Y [†]	7970 7970 15680	2 1 2	60 120 120

Additional information

DPI: dry powder inhaler; ICS: inhaled corticosteroid; pMDI: pressurised metered-dose inhaler;

* Inhaled corticosteroid dose-formoterol dose; † Condition must be stable for the prescriber to consider the listed maximum quantity of this medicine suitable for this patient (60-day prescribing); ‡ Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)

Products approved by the Therapeutic Goods Administration for use in maintenance-and-reliever therapy. The patient uses the same inhaler as their regular daily maintenance treatment, and also takes extra doses as anti-inflammatory reliever as needed to manage symptoms. Other combinations of an inhaled corticosteroid and a long-acting beta₂ agonist cannot be used this way.

Table

Budesonide-formoterol combinations approved as anti-inflammatory relievers without maintenance treatment in adults and adolescents

Brand names	Type	Strength (microg)*	Dose (inhalations)	Maximum dose [†] (inhalations)	Age restriction	PBS code	Authority code	Maximum quantity (2 repeats for all)	Actuations per device
<i>Rilast Rapihaler</i> <i>Symbicort Rapihaler</i>	pMDI	100/3	2	12 per occasion 16 per day 24 in one day temporarily	≥ 12 years	12042T	10482	2	120
<i>Bufomix Easyhaler</i>	DPI	200/6	1	6 per occasion 8 per day 12 in one day temporarily	≥ 12 years	14166N 12041R	10464 10464	2 1	60 120
<i>Rilast Turbuhaler</i> <i>Symbicort Turbuhaler</i>	DPI	200/6			≥ 12 years	12041R	10464	1	120
<i>DuoResp Spiromax</i>	DPI	200/6			≥ 18 years	12029D	10464	1	120

Additional information

DPI: dry powder inhaler; pMDI: pressurised metered-dose inhaler; *Budesonide dose/formoterol dose; † Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)

TGA-approved indication: Anti-inflammatory reliever therapy is taken as needed for the relief of asthma symptoms when they occur, and as preventative treatment of symptoms in those circumstances recognised by the patient to precipitate an asthma attack. Patients should be advised to always have their anti-inflammatory reliever available for relief of symptoms. If the patient experiences a 3-day period of deteriorating symptoms after taking additional as needed inhalations, the patient should be reassessed for alternative explanations of persisting symptoms. Patient must not be on a concomitant single agent long-acting beta₂ agonist. (Check PBS restrictions before prescribing)



Recommendation

Prescribe a short course of oral corticosteroid if symptoms repeatedly recur within 4 hours after using reliever, or do not resolve quickly after using reliever.

Give oral prednisone/prednisolone:

- adults 37.5–50 mg within 1 hour of presentation, then each morning (total 5–10 days)
- adolescents: 1 mg/kg (maximum 50 mg) orally once daily for 3 days.



Alert Systemic corticosteroids should be avoided except when necessary to manage clinically significant exacerbations.



Alert Do not allow repeat prescriptions for prednisone/prednisolone

Sources & rationale

Recommendation type: Consensus recommendation

Management of worsening asthma symptoms must balance avoidance of adverse effects of systemic corticosteroids with risks of inadequately treated asthma exacerbations.

Prevention of exacerbations is a key goal of asthma management. Short courses of oral corticosteroids to manage asthma exacerbations are associated with increased lifetime risk of osteoporosis, pneumonia, cardiovascular or cerebrovascular diseases, cataract, sleep apnoea, renal impairment, depression/anxiety, type 2 diabetes, and weight gain.[\[Price 2018\]](#)

However, when the patient is already experiencing worsening asthma symptoms and is at risk of a severe exacerbation, prompt treatment with systemic corticosteroids is indicated to avoid emergency department attendance, hospitalisation, or life-threatening acute asthma.

Prednisone/prednisolone doses for adults are based on studies conducted in patients with asthma exacerbations presenting emergency departments. [\[Rowe 2001, Rowe 2007, Rowe 2017\]](#) Doses for adolescents are based on studies in children. [\[Normansell 2016, Chang 2008\]](#) Tapering the dose is not necessary for short courses. [\[O'Driscoll 1993\]](#)

Emphasise that the medicine only for severe exacerbations in the person for whom it was prescribed, and should not be used for any other purpose. Monitor frequency of oral corticosteroid use.

References

Chang, A B, Clark, R, Sloots, T P, et al. A 5- versus 3-day course of oral corticosteroids for children with asthma exacerbations who are not hospitalised: a randomised controlled trial. *Med J Aust.* 2008; 189: 306-310.

Normansell R, Kew KM, Mansour G. Different oral corticosteroid regimens for acute asthma. *Cochrane Database Syst Rev* 2016; Issue 5: CD011801.

O'Driscoll BR, Kalra S, Wilson M, et al. Double-blind trial of steroid tapering in acute asthma. *Lancet* 1993; 341: 324-327.

Price DB, Trudo F, Voorham J, et al. Adverse outcomes from initiation of systemic corticosteroids for asthma: long-term observational study. *J Asthma Allergy* 2018; 11: 193-204.

Rowe BH, Kirkland SW, Vandermeer B et al. Prioritizing systemic corticosteroid treatments to mitigate relapse in adults with acute asthma: a systematic review and network meta-analysis. *Acad Emerg Med* 2017; 24: 371-81.

Rowe BH, Spooner C, Ducharme F, et al. Early emergency department treatment of acute asthma with systemic corticosteroids. Cochrane Database Syst Rev 2001; Issue 1: CD002178.

Rowe BH, Spooner C, Ducharme F, et al. Corticosteroids for preventing relapse following acute exacerbations of asthma. Cochrane Database Syst Rev 2007; Issue 3: CD000195.

Notes

Instructions about when to start a short course of oral corticosteroids should also be included in the person's written asthma action plan.

Prescribers should avoid supplying parents with more prednisone/prednisolone than needed for the course. Prescribers may write PBS scripts for less than the maximum quantity and number of repeats permitted if a lesser quantity is sufficient for the patient's requirements.

The decision whether to provide a single script (no repeats) of prednisone/prednisolone and advise patients/parents to keep the medicine ready to use if instructed by the written asthma action plan, or only if instructed by a health professional after clinical assessment, depends on the patient's age, ability to self-management, and access to a pharmacy.

For younger adolescents, assessment by a GP or virtual emergency consultation service is generally recommended before starting a short course of oral corticosteroids.

Information on [managing acute asthma in adults & adolescents in primary care](#)

Information on [educating adults and adolescents to manage their asthma](#)

Manage asthma during pregnancy as for asthma in other adults, aiming to maintain the best possible asthma control and to avoid asthma exacerbations.

Step up the regimen as necessary to regain or maintain control during pregnancy.



Alert Do not step down treatment during pregnancy unless the dose is inappropriately high.

Sources & rationale

Recommendation type: Consensus recommendation

In Australia an estimated 12–13% of pregnant women have asthma.[\[Murphy 2023\]](#) Approximately 40% of pregnant women with asthma experience worsening asthma symptoms, and at least 20% have an exacerbation that requires medical intervention.[\[Murphy 2023\]](#)

Asthma exacerbations during pregnancy are associated with low birth weight, preterm birth, and small for gestational age status.[\[Murphy 2023\]](#) However, among women with asthma that is managed by a health professional, the risk of preterm labour and preterm delivery is not significantly higher than for non-asthmatic pregnant women.[\[Murphy 2011\]](#)

The Therapeutic Goods Administration database on prescribing medicines in pregnancy has assessed several asthma medicines as Category A or B3.[\[TGA\]](#) The TGA safety statement *The benefits of asthma control outweigh any potential for an adverse pregnancy outcome* applies to the following asthma medicines: budesonide, beclometasone, fluticasone furoate, fluticasone propionate, salmeterol.[\[TGA\]](#)

References

Murphy VE, Gibson PG, Schatz M. Managing asthma during pregnancy and the postpartum period. *J Allergy Clin Immunol Pract* 2023; 11: 3585-3594.

Murphy VE, Namazy JA, Powell H, et al. A meta-analysis of adverse perinatal outcomes in women with asthma. *BJOG* 2011; 118: 1314-1323.

TGA. Prescribing medicines in pregnancy database. [The Australian categorisation system and database for prescribing medicines in pregnancy](#). [Website] [Accessed February 2025] Australian Government Department of Health and Aged Care Therapeutic Goods Administration

Resources

TGA's [Prescribing medicines in pregnancy database](#)

Notes

More information on [asthma in pregnancy](#)



Alert

LABAs should not be used as monotherapy for asthma – only in combination with an inhaled corticosteroid.



Alert

Hoarseness (dysphonia) and thrush (candidiasis) are common local adverse effects of ICSs. A valved spacer should be used when ICSs are taken via manually-actuated pMDIs. Patients using regular daily maintenance inhaled corticosteroids should rinse their mouth with water and spit after each dose, if possible (unnecessary with doses of low-dose budesonide–formoterol taken as needed for symptom relief).



Alert

Systemic corticosteroids should be avoided except when necessary to manage clinically significant exacerbations.



Practice point

Adherence can be assessed by asking the patient about their actual use of their maintenance treatment in a non-judgmental manner. Dispensing records can also be checked online for patients who have opted into My Health Record.



Practice point

For patients using budesonide–formoterol taken as needed, treatment can be increased by adding a daily maintenance dose (low-dose MART).



Practice point

For patients using low-dose MART, treatment can be increased by changing the maintenance dose to medium. (Doses taken for relief of symptoms are always low).



Practice point

To reduce treatment in a patient using maintenance ICS-LABA plus SABA taken as needed for relief of symptoms, reduce ICS dose gradually and review 4–8 weeks after each dose reduction.



Practice point

Do not withdraw ICS completely – the least intensive appropriate treatment for adults and adolescents with asthma is low-dose budesonide-formoterol taken as needed.



Practice point

When stepping down treatment for patients using ICS-formoterol as anti-inflammatory reliever, ICS dose is immediately increased if symptoms increase.



Practice point

Consider the environmental impact of inhalers when prescribing and when discussing treatment options with patients.

Resources



National Asthma Council Australia information paper: Reducing the environmental impact of asthma treatment. Information for health professionals (2024)

https://files.nationalasthma.org.au/resources/NAC036-Environmental-Impact-of-Inhalers-Factsheet-2024_FINAL.pdf



Practice point

When prescribing oral corticosteroids, consider writing a PBS script for the precise number of tablets needed for one course, with no repeats.



Practice point

Advise pregnant patients that good asthma control during pregnancy is a high priority, to protect the foetus as well as the mother. Explain that asthma control can change during pregnancy, so treatment adjustments may be needed to maintain good asthma control throughout pregnancy.