Adjusting treatment for children 1–5 years

Before adjustment

- Assess current asthma symptom control and risk factors
- If child is receiving ICS treatment, assess adherence and inhaler technique

Recommendation

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

Sources & rationale

Consensus recommendation

Stepping up

Recommendation

For a child treated only with salbutamol as needed, start daily maintenance treatment with low-dose ICS if symptoms are frequent or if the child has an asthma exacerbation.

Begin a treatment trial of low-dose maintenance ICS if any of following apply:

- Daytime symptoms/signs (e.g. wheeze, cough or breathlessness) occur twice per week or more.
- Night-time waking due to respiratory symptoms occurs twice per month or more
- The child has a history of an exacerbation that necessitated an ED visit or systemic corticosteroids).

Alert Systemic corticosteroids should be avoided except when necessary to manage a severe exacerbation or life-threatening acute asthma

Sources & rationale

Recommendation type: Consensus recommendation

Prevention of exacerbations requiring systemic corticosteroid treatment is a key goal of asthma management. Treatment with inhaled corticosteroids is the main strategy available to reduce the risk of exacerbations.

The use of multiple short courses of oral corticosteroids to manage asthma exacerbations in children is associated with a dose-dependent reduction in bone mineral accretion and increased risk for osteopenia.[Kelly 2008] In adults, short courses of oral corticosteroids to manage asthma exacerbations in adults 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]

Note on the 2025 recommendation: Anti-inflammatory reliever (ICS plus formoterol or ICS plus salbutamol in a single inhaler) is not approved by the TGA for use in children aged 1–5 years. Future Australian asthma handbook guidance may recommend anti-inflammatory reliever in place of salbutamol, depending on the findings of clinical trials now underway and on TGA and PBS decisions.

Delivery

Most children younger than 5 years cannot use dry powder inhalers correctly because they cannot achieve sufficient inspiratory flow to activate the device.[Kuek 2024]

Efficacy

Daily ICS treatment reduces rates of symptoms and exacerbations in preschool children with recurrent wheeze due to asthma.[Kaiser 2016, Castro-Rodriguez 2009]

ICS is more effective than montelukast in improving symptom control and reducing exacerbation rates.[Castro-Rodriguez 2018]

Safety

At recommended doses, ICSs are generally well tolerated in children.[Rachelefsky 2009; Kapadio 2016]

The use of a spacers with pMDIs reduces oropharyngeal drug deposition and therefore reduces the risk of local adverse effects (e.g. candidiasis and dysphonia) with ICS.[Lavorini 2020]

Topical effects of ICS can also be reduced by mouth-rinsing and spitting after inhaling. Immediate quick mouth-rinsing removes more residual medicine in the mouth than delayed rinsing.[Yokoyama 2007]

ICS-related systematic adverse effects in children include suppression of the hypothalamic-pituitary-adrenal (HPA) axis (rare),[Kapadio 2016] short-term linear growth suppression, clinically non-significant effects on bone mineral density, and dose-dependent effects on glucose metabolism.[Kapadio 2016]

A review of long-term clinical trials of recommended doses of inhaled corticosteroids in children found little or no effect on measures of HPA axis function over 12 to 36 months follow-up, and no clinically significant effects on bone mineral density.[Pedersen 2006]

Regular use of ICS in children before puberty is associated with an average reduction of 0.48 cm/year in linear growth rate in the first year of treatment, after which less effect is seen. Growth suppression depends on the dose.[Axelsson 2019]

Uncontrolled asthma also reduces children's growth and final adult height.[Pedersen 2001]

Pausing ICS treatment to reassess symptom status

Spontaneous remission of preschool asthma may occur. Therefore, the need to continue ICS should be repeatedly reviewed in preschool children to avoid unnecessary medication.

References

Axelsson I, Naumburg E, Prietsch SO, Zhang L. Inhaled corticosteroids in children with persistent asthma: effects of different drugs and delivery devices on growth. Cochrane Database Syst Rev 2019; 6: CD010126.

Castro-Rodriguez JA, Rodrigo GJ. Efficacy of inhaled corticosteroids in infants and preschoolers with recurrent wheezing and asthma: a systematic review with meta-analysis. Pediatrics 2009; 123: e519-25.

Castro-Rodriguez JA, Rodriguez-Martinez CE, Ducharme FM. Daily inhaled corticosteroids or montelukast for preschoolers with asthma or recurrent wheezing: A systematic review. Pediatr Pulmonol 2018; 53: 1670-1677.

Kaiser SV, Huynh T, Bacharier LB, et al. preventing exacerbations in preschoolers with recurrent wheeze: a meta-analysis. Pediatrics 2016; 137: e20154496.

Kelly HW, Van Natta ML, Covar RA, et al. Effect of long-term corticosteroid use on bone mineral density in children: a prospective longitudinal assessment in the childhood Asthma Management Program (CAMP) study. Pediatrics 2008; 122: e53-e61.

Kuek SL, Wong NX, Dalziel S, et al. Dry-powder inhaler use in primary school-aged children with asthma: a systematic review. ERJ Open Res 2024; 10: 00455-2024.

Nielsen KG, Bisgaard H. The effect of inhaled budesonide on symptoms, lung function, and cold air and methacholine responsiveness in 2- to 5-year-old asthmatic children. Am J Respir Crit Care Med 2000; 162: 1500-1506.

Pedersen S. Do inhaled corticosteroids inhibit growth in children? Am J Respir Crit Care Med 2001; 164: 521-35.

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.

Notes

Trial ICS for approximately 3 months:

- If symptoms do not resolve during the trial, check inhaler technique and adherence, environmental triggers, and review the diagnosis.
- If there is a good response to treatment, consider pausing the treatment to assess whether symptoms recur. If symptoms re-appear soon after stopping ICS, this suggests that the ICS was beneficial rather than the improvement being due to natural remission of a viral episode – resume ICS treatment and review again approximately 12 months later.

If cough is the predominant sign, check clinical response to a treatment trial of ICS after 4 weeks. If cough has not resolved, stop ICS treatment and reconsider alternative diagnoses.

Table

Low and medium/high ICS doses in children 1–5 years

Active ingredient	Total daily dose (microg)	
	Low	Medium/high
Fluticasone propionate	100 (50 twice daily)	200 (100 twice daily)

Additional information

ICS: inhaled corticosteroid

Medium/high doses should be avoided except under specialist supervision

The optimal duration of treatment trial depends on predictable seasonal fluctuation in exacerbations. Avoid stopping when respiratory viruses are prevalent.

Recommendation

If signs and symptoms of asthma are not well controlled on maintenance low-dose ICS or the child has a severe exacerbation despite treatment, assess and manage common causes of poor symptom control before considering increasing the intensity of treatment.

Check:

- adherence to maintenance low-dose ICS treatment
- inhaler technique
- whether the symptoms and signs are likely due to asthma
- exposure to irritants (e.g. smoke, pollution) or airborne allergens (if sensitised).

Sources & rationale

Recommendation type: Consensus

Recommendation

In children aged ≥4 years whose asthma is not adequately controlled with maintenance low-dose ICS, maintenance low-dose ICS-LABA can be considered while awaiting specialist advice.

This recommendation applies after confirming good adherence to ICS treatment and correct inhaler technique.

Sources & rationale

Recommendation type: consensus recommendation

ICS-LABA is approved by TGA for use in children ≥4 years.[Australian PI: fluticasone propionate-salmeterol]

Low-dose ICS-LABA is a treatment option for children aged 4 years and over, based on limited evidence from clinical trials of salmeterol added to ICS in children 5 years and younger reporting reductions in exacerbations and symptoms, compared with ICS alone or previous treatment, [Ambrożej 2024] and on efficacy studies in older children.

In children aged 4–11 years, addition of LABA to ICS does not increase risk of exacerbations, contrary to historical concerns.[Stempel 2016]

There is insufficient safety data to support the use of ICS-LABA in children younger than 4 years.[GINA 2025]

References

Ambrożej D, Cieślik M, Feleszko W, et al. Addition of long-acting beta-agonists to inhaled corticosteroids for asthma in preschool children: A systematic review. Paediatr Respir Rev 2024: S1526-0542(24)00079-4.

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

Stempel DA, Szefler SJ, Pedersen S, et al. Safety of adding salmeterol to fluticasone propionate in children with asthma. N Engl J Med 2016; 375: 840-849.

Recommendation

If asthma is not well controlled in a child 1–5 years already using the highest recommended level of treatment, recheck adherence, inhaler technique, exposure to triggers, confirm that the symptoms are due to asthma, and arrange referral to a specialist.

Sources & rationale

Recommendation type: Consensus recommendation

Notes

Suitable specialists for referral include paediatric respiratory physicians, general paediatricians with a special interest in asthma, and allergists.

Stepping down

Recommendation

If good asthma symptom control has been maintained for at least 3 months, despite exposure to triggers known to cause the child's symptoms, consider stepping down treatment.

Arrange follow-up within 3–6 weeks to reassess asthma symptom control and review the treatment plan.

Sources & rationale

Recommendation type: Consensus

Notes

Do not attempt a step-down at a time when exposure to known symptoms triggers is likely (e.g. in winter when respiratory viruses are prevalent, or in springtime if the child has allergic rhinitis or known sensitisation to seasonal aeroallergens such as pollens).

Consideration

Consider stepping up treatment sooner for children with a history of severe atopy, anaphylaxis, or sudden unpredictable severe exacerbations, and for those exposed to cigarette smoke.

Sources & rationale

Recommendation type: Consensus recommendation

Notes

Table

Risk factors for severe asthma exacerbations in children

High probability of respiratory viral infection (beginning of day care/preschool term, epidemics)
Confirmed food allergy or history of anaphylaxis
Poor asthma symptom control
ED visit or admission to hospital for asthma in preceding 12 months
History of sudden, unpredictable exacerbations not preceded by gradual worsening of symptoms
History of intubation/paediatric ICU admission for acute asthma
Over-use of salbutamol
Poor adherence to prescribed ICS treatment by parents/carers
Poor inhaler technique for ICS
Frequent failure to attend consultations
Parent's/carer's inability to follow asthma action plan
Significant parental psychological or socioeconomic problems
Carer unequipped to manage asthma emergency
Exposure to clinically relevant allergens
Exposure to tobacco smoke
Damp housing
Exposure to outdoor pollution
Obesity
High eosinophil count (if known)

Practice point

Update the child's asthma action plan after each change in treatment.

Practice point

Excessive use of salbutamol (e.g. 3 canisters in a year) indicates that ICS is indicated and the level of treatment should be stepped up.

Practice point

If parents are concerned about potential side effects of ICS, explain that the use of oral or injected corticosteroids carries a much higher risk, and that low doses of ICS reduce the risk of severe exacerbations that require oral corticosteroids.

Practice point

If ICS is indicated, but the child's parents refuse ICS treatment after discussing benefits and potential side effects, daily montelukast can be considered as an alternative.

Alert ⚠ Montelukast TGA-approved product information and consumer medicine information carry a warning about potential neuropsychiatric adverse effects. Counsel parents about risks (see TGA safety alert).

TGA safety alert

Practice point

In a child aged 4 years or older, do not delay ICS-LABA treatment until child has several ED presentations for asthma and has received multiple courses of systemic corticosteroids. The risk-to-benefit ratio of ICS-LABA is significantly better than that of oral corticosteroids.