Asthma + Respiratory
FOUNDATION NZ

Child and Adolescent Asthma

Guide Summary

This summary provides busy health professionals with key guidance for assessing and treating child and adolescent asthma.

Its source document "**Asthma and Respiratory Foundation NZ Child and Adolescent Guidelines**" is available for download at ***nzasthmaguidelines.co.nz*** or ***asthmaandrespiratory.org.nz***

DIAGNOSIS

The diagnosis of asthma starts with the recognition of a characteristic pattern of symptoms and signs, in the absence of an alternative explanation.

The key to making the diagnosis of asthma is to take a careful clinical history, and then to undertake a clinical examination, document variable expiratory airflow limitation and assess response to inhaled bronchodilator and/or inhaled corticosteroid (ICS) treatment. There is no reliable single 'gold standard' diagnostic test.

Clinical features that increase or decrease the probability of asthma in adults

Asthma more likely

- More than one of the following:
  - Wheeze (most sensitive and specific symptom of asthma)
  - Breathlessness
  - Chest tightness
  - Cough
- Particularly if:
  - Typically worse at night or in the early morning
  - Provoked by exercise, cold air, allergen exposure, irritants, viral infections, stress and aspirin
  - Recurrent or seasonal
- Personal history of atopic disorder or family history of asthma
- Widespread wheeze heard on chest auscultation
- Otherwise unexplained expiratory airflow obstruction on spirometry
- Otherwise unexplained blood eosinophilia or raised exhaled nitric oxide
- Bronchial hyper-responsiveness on challenge testing at appropriate age
- Positive response to bronchodilator (clinical or lung function)

Asthma less likely

- Isolated cough in absence of wheeze or difficulty breathing
- History of wet, moist or productive cough - consider alternative diagnosis
- No wheeze or repeatedly normal physical examination when symptomatic
- Normal spirometry or peak flow (PEF) when symptomatic
- No response to trial of asthma treatment
- Features that point to an alternative diagnosis

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DIAGNOSTIC PATHWAY FOR ASTHMA AND WHEEZE IN CHILDREN 1-4 YEARS

CHILD WITH RESPIRATORY SYMPTOMS.

Are the symptoms typical for asthma?

- No → Consider other diagnoses. Refer and investigate as appropriate. A trial of asthma therapy may be helpful.
- Yes → Frequency and pattern of symptoms.
  - Frequent typical symptoms between viral illnesses or flare ups. → 'Preschool asthma' Trial of asthma therapy. → Evaluate response and reconsider diagnosis after 3 months.
  - Frequent symptoms with viral illnesses (more than every 8 weeks) but no symptoms between flare ups. → Trial of asthma therapy for at least 8 weeks. → Improves with preventer?
    - Yes → 'Preschool asthma' Trial of asthma therapy. → Evaluate response and reconsider diagnosis after 3 months.
    - No → 'Infrequent or frequent preschool wheeze'. → Reliever as needed. ICS not indicated.
  - Infrequent symptoms with viral illnesses only (up to every 8 weeks.) → 'Infrequent or frequent preschool wheeze'. → Reliever as needed. ICS not indicated.

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STEPWISE APPROACH TO PHARMACOLOGICAL TREATMENT OF CHILDREN WITH WHEEZE 1-4 YEARS

STEP UP to achieve control and reduce risk of exacerbations

STEP 1
(infrequent preschool wheeze)

SABA reliever therapy

STEP 2
Maintenance **Low** dose ICS if frequent symptoms

and

SABA reliever therapy (as required)

or

Montelukast if severe exacerbations

STEP 3
Maintenance **Low** dose ICS

and

SABA reliever therapy (as required)

plus

Montelukast if control is not achieved

STEP 4
Same as Step 3

plus

Referral to a paediatrician

STEP DOWN if stable for 3 months step down in incremental reverse fashion

If relapses, resume previous step of treatment

RECOMMENDED LOW AND STANDARD DAILY DOSE OF ICS IN CHILDREN WITH ASTHMA

LOW DOSE		STANDARD DOSE	
Beclomethasone dipropionate	200 mcg/day	Beclomethasone dipropionate	400-500 mcg/day
Beclomethasone dipropionate ultrafine	100 mcg/day	Beclomethasone dipropionate ultrafine	200 mcg/day
Budesonide	200 mcg/day	Budesonide	400 mcg/day
Fluticasone propionate	100 mcg/day	Fluticasone propionate	200-250mcg/day

DIAGNOSTIC PATHWAY FOR ASTHMA AND WHEEZE IN CHILDREN 5-15 YEARS

CHILD WITH RESPIRATORY SYMPTOMS.

Are the symptoms typical for asthma?

Typical — Yes

'Suspected asthma'
Consider lung function testing (PEF, spirometry.)

Trial of asthma therapy for at least 8 weeks.

Responds to asthma therapy?

Yes

Diagnose and treat as asthma.

Evaluate response and reconsider diagnosis after 3 months.

No

Check adherence/compliance and inhaler technique.

Reconsider diagnosis. Further investigation eg. spirometry and reversibility test.

Asthma likely

No — Not typical

Consider other diagnoses.

Further investigation eg. spirometry and reversibility test. A trial of asthma therapy may be helpful.

Asthma reasonably likely

Asthma not likely

Asthma not likely

Refer, investigate and treat as appropriate for other disorder.

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STEPWISE APPROACH TO PHARMACOLOGICAL TREATMENT OF CHILDREN WITH WHEEZE 5-15 YEARS

STEP UP to achieve control and reduce risk of exacerbation (inhaler technique and adherence must be checked before considering a step-up)

STEP 1

SABA reliever therapy

STEP 2

Maintenance **Low** dose ICS

and

SABA reliever therapy (as required)

*Montelukast may be used as an alternative with SABA reliever therapy

STEP 3

Maintenance **Low** dose ICS/LABA

and

SABA reliever therapy (as required)

or

In patients 12 years or older Single ICS/LABA Maintenance and Reliever Therapy **(SMART) may be used

STEP 4

Standard dose ICS/LABA therapy

and

SABA reliever therapy

(as required)

or

In patients 12 years or older

SMART therapy may be used

Consider adding Montelukast

Consider referral to a paediatrician

STEP 5

Standard dose ICS/LABA therapy

and

SABA reliever therapy

or

In patients 12 years or older

SMART therapy may be used

Consider **High** dose ICS/LABA or add on treatment

Definite referral to a paediatrician

STEP DOWN trial reducing preventer therapy after a period of 3 months

* Not funded in this instance

**Budesonide 100mcg and Formoterol 6mcg

ALGORITHM FOR MANAGEMENT OF MODERATE AND SEVERE ASTHMA IN CHILDREN AND ADOLESCENTS

(Mild asthma is asthma symptoms not usually requiring medical attention and should be managed according to the asthma action plan.)

IMMEDIATELY

ASSESS SEVERITY

MODERATE

Able to talk

SPO2 ≥ 92%

(PEF ≥ 50% best or predicted) *

Give 6 x 100µg salbutamol via MDI and spacer,

Age ≥ 5 prednisone 1-2mg/kg (max 40mg)

SEVERE

SPO2 < 92%

Too breathless to talk

Obvious accessory muscle use

(PEF 33 – 50% best or predicted)*

Oxygen as required

Give 6 x 100µg salbutamol via MDI and spacer or salbutamol 2.5-5mg via nebulisation with oxygen;

prednisone 1-2mg/kg (max 40mg)

LIFE-THREATENING

SPO2 < 92%

Plus **any** of:

- Exhaustion, agitation or altered consciousness
- Cyanosis or silent chest
- (PEF < 30% best or predicted)

Oxygen as required

Give continuous salbutamol 2.5-5mg via nebulisation with oxygen;

ipratropium bromide 0.25mg via nebulisation;

IV hydrocortisone 4mg/kg (max 100mg)

ARRANGE URGENT TRANSFER TO HOSPITAL BY AMBULANCE

All patients will require hospital admission

REFER TO RESUC/ICU/HDU

Oxygen as required

Give salbutamol 2.5-5mg via nebulisation with oxygen, frequency determined by response, up to continuously;

ipratropium bromide 0.25mg via nebulisation up to 4 hourly;

Consider IV magnesium sulphate, aminophylline or salbutamol according to local protocol

15-60 MIN

REASSESS

GOOD RESPONSE

Consider oral prednisone 1-2mg/kg (max 40mg), if age ≥5 years and not given above, and ICS

REMAINS MODERATE

Give prednisone 1-2mg/kg (max 40mg) if not given above

Repeat salbutamol 6 x 100µg salbutamol via MDI and spacer

SEVERE

Oxygen as required

Give 6 x 100µg salbutamol via MDI and spacer or salbutamol 2.5-5mg via nebulisation with oxygen, up to 3 times over 1st hour;

ipratropium bromide 4x20µg via MDI and spacer or 250 µg via nebulisation

Use life-threatening path if any life-threatening features

DISCHARGE

Once pre-discharge conditions are met

REASSESS

1-2 HR

STABLE

No signs of moderate or severe asthma

UNSTABLE

Signs of moderate or severe asthma or PEF < 70%

DISCHARGE

REFER TO HOSPITAL

Continue management and transfer by ambulance

*PEF measurement to be considered for adolescents not younger children

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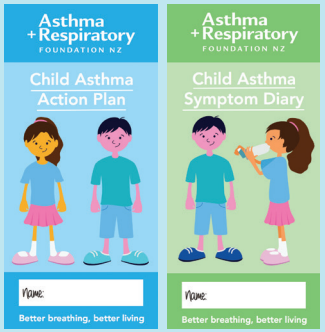
Better breathing, better living

CHILD ASTHMA RESOURCES FOR FAMILIES



Child Asthma Action Plan and Symptom Diary

Asthma Action Plan for health professionals to complete and give to child patients and their parents/ caregivers. Symptom Diaries can be used in conjunction with an Action Plan to help recognise changes in asthma symptoms.

Digital: asthmaandrespiratory.org.nz

Order brochures: http://online.printstop.co.nz/AsthmaFoundation/

Managing your child's asthma resource

A free booklet and online resource for parents, whānau, and caregivers of children with asthma. It will help you make sure your child stays fit, healthy, and happy.

Digital: learnaboutlungs.org.nz

Order booklets: http://online.printstop.co.nz/AsthmaFoundation/

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