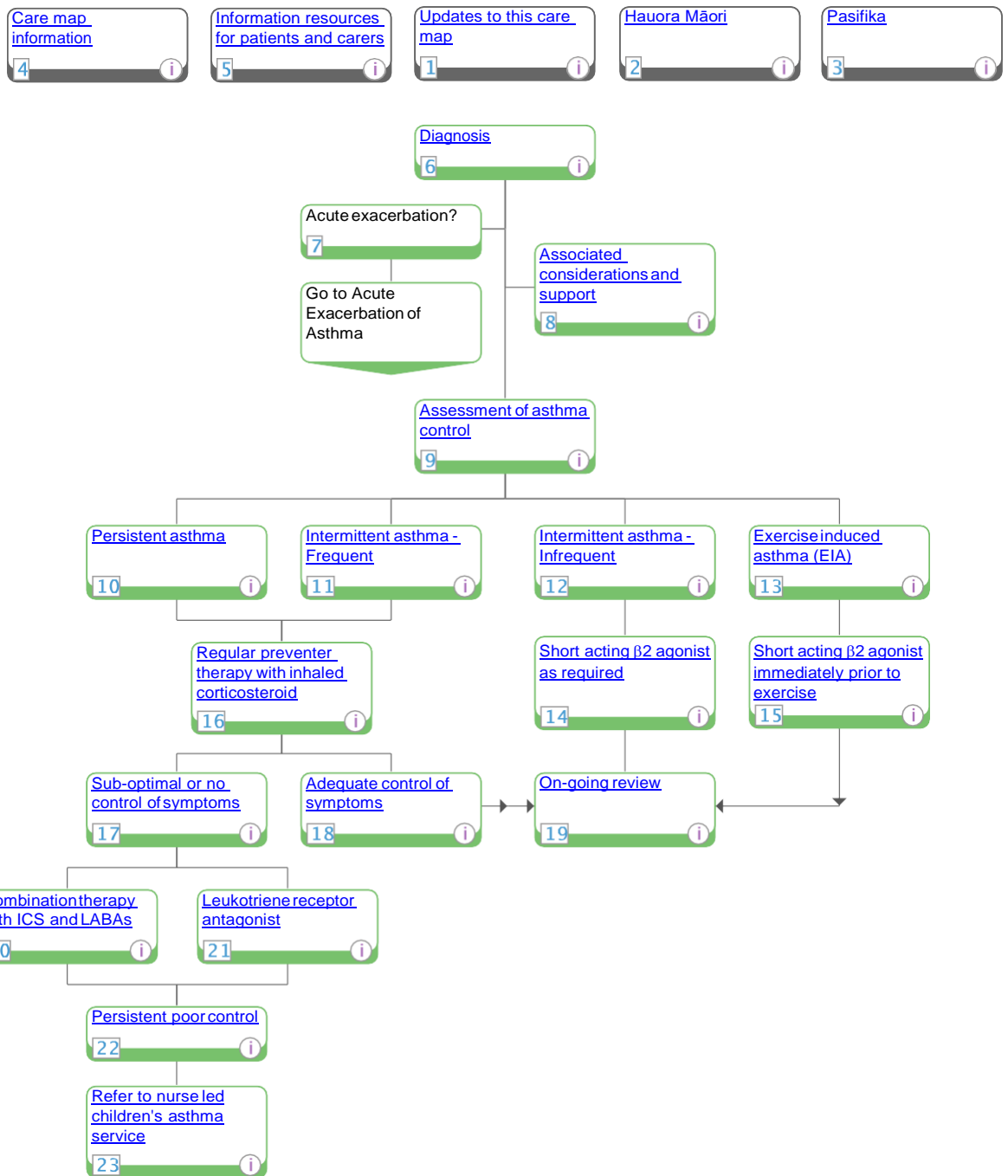


# Management of chronic asthma in children (1-15 years)

Paediatrics > Thoracic medicine > Asthma in children

- i Information
- R Referral
- N National info
- L Local info
- Note
- Primary care
- Secondary care
- Information



## 1. Updates to this care map

First published: 2012

Date of last publication: June 2015

This care map has been updated in line with consideration to evidenced based guidelines.

Below summarises changes made to the pathway following review in July 2017:

- inclusion of information about the nurse led children's asthma service (2015)
- review of diagnosis content
- action plan

Republication date September 2017.

## 2. Hauora Māori

Māori are a diverse people and whilst there is no single Māori identity, it is vital practitioners offer culturally appropriate care when working with Māori Whānau. It is important for practitioners to have a baseline understanding of the issues surrounding Māori health.

This knowledge can be actualised by (not in any order of priority):

- acknowledging [Te Whare Tapa Wha \(Māori model of health\)](#) when working with Māori Whānau
- asking Māori clients if they would like their Whānau or significant others to be involved in assessment and treatment
- asking Māori clients about any particular cultural beliefs they or their Whānau have that might impact on assessment and treatment of the particular health issue ([Cultural issues](#))
- consider the importance of Whānau [ngatanga \(making meaningful connections\)](#) with their Māori client / Whānau
- knowledge of Whānau [Ora, Te Ara Whānau Ora and referring to Whānau Ora Navigators](#) where appropriate
- having a historical overview of legislation that has impacted on Māori well-being

**For further information:**

- [Hauora Māori](#)
- [Central PHO Maori Health website](#)

## 3. Pasifika

[Pacific Cultural Guidelines \(Central PHO\) 6MB file](#)

**Our Pasifika community:**

- is a diverse and dynamic population:
  - more than 22 nations represented in New Zealand
  - each with their own unique culture, language, history, and health status
  - share many similarities which we have shared with you here in order to help you work with Pasifika patients more effectively

The main Pacific nations in New Zealand are:

- Samoa, Cook Islands, Fiji, Tonga, Niue, Tokelau and Tuvalu

Acknowledging [The Fonofale Model \(pasifika model of health\)](#) when working with Pasifika peoples and families.

Acknowledging general pacific guidelines when working with Pasifika peoples and families:

- [Cultural protocols and greetings](#)
- [Building relationships with your pasifika patients](#)
- [Involving family support, involving religion, during assessments and in the hospital](#)
- [Home visits](#)
- [Contact information](#)

**Pasifika Health Service - Better Health for Pasifika Communities:**

- the Pasifika Health Service is a service provided free of charge for:
  - all Pasifika people living in Manawatu, Horowhenua, Taranaki and Otaki who have long term conditions
  - all Pasifika mothers and children aged 0-5 years
- an appointment can be made by the patient, doctor or nurse
- the Pasifika Health Service contact details are:
  - Palmerston North Office - 06 354 9107
  - Horowhenua Office - 06 367 6433
  - [More information](#) on the service

**Additional resources:**

- Ala Mo'ui - [Pathways to Pacific Health and Wellbeing 2010-2014](#)
- Primary care for pacific people: [a pacific health systems approach](#)
- Tupu Ola Moui: [The Pacific Health Chart Book 2004](#)
- Pacific Health [resources](#)
- [List of local Maori/Pacific Health Providers](#)
- [Central PHO Pacific Health website](#)

## 4. Care map information

Asthma is a chronic inflammatory disease of the airways characterised by:

- reversible airways
- obstruction and bronchospasm

Exacerbations in children are often precipitated by viral infection [1].

**References:**

See Provenance Certificate for full list of references.

## 5. Information resources for patients and carers

**Patient Information:**

- [Kidshealth handout](#)
- [Key tips for a warmer, drier home](#)

**Action plans:**

- [Online generated action plan \(PAMP\) Waitemata DHB](#)
- [Child Asthma Action Plan \(Asthma Foundation NZ\)](#)
  - **NB:** for installation of the Child Asthma Action Plan to your practice's patient management system please contact [ps@thinkhauora.nz](mailto:ps@thinkhauora.nz) OR contact THINK Hauora's Practice Support team for more details

## Te Ara Whānau Ora Brochure:

- [Te Ara Whānau Ora Brochure](#)

## 6. Diagnosis

Asthma should be suspected in any child with wheezing, ideally heard on auscultation, and which is distinguished from upper airway noises. Diagnosis of childhood asthma is likely if:

- a history of fluctuating wheeze. This may fluctuate spontaneously or in response to bronchodilators or steroids.
- three or more episodes of wheeze. It may be hard to tell with the chronically wheezy infant or child. A fixed obstruction must be ruled out if the wheeze is continuous. Do not diagnose on the first or second episode.
- no alternative diagnosis such as foreign body, cystic fibrosis. Recurrent cough in the absence of wheeze is unlikely to be due to asthma.
- family history, atopic in immediate family or child increases the chance of asthma.
- age Asthma is rarely diagnosed in a child who is less than 1 year old. Under 2 years old, a higher degree of certainty is required than for older children.
- trial of bronchodilator when asthma is suspected and the child is breathless, try salbutamol MDI + spacer, up to 6 puffs under 5 years, up to 12 puffs 5 years or older, check clinical response 20 minutes later.

Lung function (spirometry and peak flow) should not be used for diagnosis in primary care.

Diagnosis of childhood asthma should be reviewed at regular intervals, noting that half may resolve.

## 8. Associated considerations and support

### Associated considerations and support include:

- **smoking:**
  - parents/caregivers should be offered appropriate support to stop smoking [3]
- **flu vaccination:**
  - should be offered
- **rhinitis/hayfever:**
  - needs to be well controlled
- **housing:**
  - [Energywise funding for insulation](#)
- **WINZ:**
  - [Disability Allowance information](#)
- [Public Health Nurses](#)
  - e.g. school aged (06) 350 4560
- [Massey University Health Conditions Psychology Services](#)
  - e.g. part of a life-long or life-limiting health condition
  - (06) 350 5180
  - [referral form](#)
- [Youth One Stop Shop \(YOSS\)](#)
  - e.g. coexisting psychological/behavioural condition
  - (06) 3555 909

## 9. Assessment of asthma control

**History** - ask about:

- waking at night with cough or wheeze
- ability to exercise
- attendance at school/preschool
- amount of  $\beta_2$  agonist used

**Examination** - look for:

- weight and height percentiles
- signs of airway obstruction in "interval phase"
- chest deformity

**Consider:**

- symptom diary
- lung function testing >6 yr:
  - lung function measurements cannot be reliably used to guide asthma management in children under 5 years of age [3]

## 10. Persistent asthma

Persistent asthma is defined as:

- symptoms requiring treatment once or more each week

**Action plan:**

- [Online generated action plan](#)
- [Child Asthma Action Plan \(Asthma Foundation NZ\)](#)
  - **NB:** for installation of the Child Asthma Action Plan to your practice's patient management system please contact [ps@thinkhauora.nz](mailto:ps@thinkhauora.nz) OR contact THINK Hauora's Practice Support team for more details

## 11. Intermittent asthma - Frequent

Frequent asthma is defined as:

- symptoms requiring treatment more than once every 1 - 2 months

**Action plan:**

- [Online generated action plan](#)
- [Child Asthma Action Plan \(Asthma Foundation NZ\)](#)
  - **NB:** for installation of the Child Asthma Action Plan to your practice's patient management system please contact [ps@thinkhauora.nz](mailto:ps@thinkhauora.nz) OR contact THINK Hauora's Practice Support team for more details

## 12. Intermittent asthma - Infrequent

Most children have mild intermittent asthma, with episodes or symptoms:

- requiring treatment less often than once every 1-2 months
- and these episodes are usually of mild severity

Children with mild intermittent asthma should be treated with inhaled short acting  $\beta_2$  agonists as needed.

## 13. Exercise induced asthma (EIA)

An inhaled short acting  $\beta_2$  agonist, immediately prior to exercise is the drug of choice.

## 14. Short acting $\beta_2$ agonist as required

Inhaled short acting  $\beta_2$  agonist as required [3].

## 15. Short acting $\beta_2$ agonist immediately prior to exercise

Short acting  $\beta_2$  agonist immediately prior to exercise:

- 2 puffs of inhaled short-acting  $\beta_2$  agonist immediately prior to exercise
- warm up prior to exercise is recommended
- preventer treatment may be required

## 16. Regular preventer therapy with inhaled corticosteroid

Inhaled steroids should be considered for patients with any of the following:

- using inhaled  $\beta_2$  agonists three times a week or more
- symptomatic three times a week or more
- waking one night a week or more with asthma

Added inhaled steroid 200-400 mcg/day BDP or BUD, OR 100-200 mcg/day FP:

- use the higher dose with greater severity.
- or cromoglycate or nedocromil, or montelukast if inhaled steroid cannot be used

### **INHALED CORTICOSTEROID (ICS):**

- the primary treatment to control persistent asthma is inhaled corticosteroid (ICS)
- unlike asthma in adults, some younger children with intermittent asthma symptoms will not have persistent asthma

Many children under the age of 5 years with wheezing episodes with colds will not continue to wheeze as they grow older thus particular attention is required to the stepping down and the weaning off if control is very good.

Some children may have troublesome wheezing only for part of the year in a particular season and it would be appropriate to use ICS for those months of the year rather than the whole year round [3].

### **Dosage:**

- doses of fluticasone propionate (FP) are half those of beclomethasone dipropionate (BOP) and budesonide (BUD):
  - e.g. FP 50mcg is equivalent to 100mcg of BDP or 100 mcg of BUD
- some formulations of ICS do not allow exact equivalency between brands
- it is recommended to round down rather than up to avoid upwards dosage creep

### **Starting dosage:**

- in mild to moderate asthma, starting at high doses of inhaled steroids and stepping down confers no benefit
- start patients at a dose of inhaled steroids appropriate to the severity of disease
- in children 200 mcg BDP equivalent per day is the usual starting dose at any age

### **Maintenance dosage:**

- in children under 5 years, higher doses may be required if there are problems in obtaining consistent drug delivery
- titrate the dose of ICS to the lowest dose at which effective control of asthma is maintained [3]

## 17. Sub-optimal or no control of symptoms

### **If there is NOT adequate control, review:**

- diagnosis
- environmental factors
- adherence and inhaler technique:
  - correct if necessary before proceeding to next steps [3]

### **Steps in therapy:**

1. Combination ICS + LABA
2. Leukotriene receptor antagonist
3. Increase ICS + LABA **and** refer to paediatrician

## 18. Adequate control of symptoms

### **Aims of Management:**

- minimal symptoms during day and night
- minimal need for reliever medication
- no exacerbations
- no limitation of physical activity
- normal lung function [3]

If there is adequate control of symptoms:

- continue treatment
- consider back-titration of medication to the lowest effective dose, especially in pre-school children [3]

## 19. On-going review

Regular review is important.

When deciding which drug to step down first and at what rate, take the following into account:

- the severity of asthma
- the side effects of the treatment
- the beneficial effect achieved
- the child's preference

Children should be maintained at the lowest possible dose of inhaled steroid.

Reductions should be considered every three months, decreasing the dose by approximately 25-50% each time [3].

## 20. Combination therapy with ICS and LABAs

## Combination therapy with ICS and LABAs - Fluticasone + Salmeterol (Seritide)

In children **under 2 years** consider direct referral to paediatrician.

### In children aged 2 - 4 years, consider:

- trial of montelukast:
  - recommended before increasing the dose of BDP or BUD over 400 mcg/day, or FP over 200 mcg/day
- LABA's are not licensed for use < 4years (salmeterol) and <6 years (eformoterol) if used on own

### Children 4 - 15 years:

1. Add inhaled long acting  $\beta_2$  agonist (LABA) as combination inhaler:
  - long acting  $\beta_2$  agonists should not be used without inhaled corticosteroids
2. Assess response to LABA + ICS:
  - good response to LABA + ICS:
    - continue LABA
  - some benefit from LABA + ICS:
    - in maximum dose but control still inadequate, increase inhaled steroid to 400 mcg/day BDP or BUD, OR 200 mcg/day FP (if not already on this dose)
  - maximum recommended dose for eformoterol is 12 mcg bd, and salmeterol 50 mcg bd
  - no response to LABA + ICS:
    - stop LABA consider trial of montelukast or SR theophylline [3]

## 21. Leukotriene receptor antagonist

### Pre-school wheeze:

- intermittent severe wheezing in children under 5 years; and
- has trialed inhaled corticosteroids at a dose of up to 400mcg per day BDP or BUD, or 200mcg per day FP for at least one month; and
- continues to have at least three severe exacerbations at least one of which required hospitalisation in the past 12 months

### Exercise-induced asthma:

- treated with combination ICS and LABAs; and
- continues to experience frequent episodes of exercise-induced asthma [6]

Apply for special authority - [form](#)

## 22. Persistent poor control

If asthma is persistently poorly controlled:

1. refer to paediatrician
2. increase inhaled corticosteroid to 600 - 800 mcg/day BDP or BUD, or 300 - 400 mcg/day FP

## 23. Refer to nurse led children's asthma service

### Referral criteria to Nurse Led Children's Asthma Service

- aged two years to 16th birthday
- diagnosis of asthma confirmed by paediatrician, GP/NP



- child has current asthma action plan
- child/family require further education and support
- lives within the MidCentral DHB region

**A referral must be accompanied** by a current asthma action plan

Child Health Service - [Community Referral Form](#) for eczema and asthma.

- **NB:** for installation of the Child Asthma Action Plan to your practice's patient management system please contact [ps@thinkhauora.nz](mailto:ps@thinkhauora.nz) OR contact THINK Hauora's Practice Support team for more details

# Asthma in Children

## Provenance Certificate

[Overview](#) | [Editorial methodology](#) | [References](#) | [Contributors](#) | [Disclaimers](#)

### Overview

This document describes the provenance of MidCentral District Health Board's **Asthma in Children** pathway. This pathway is regularly updated to include new, quality-assessed evidence, and practice-based knowledge from expert clinicians. Please see the Editorial Methodology section of this document for further information.

This localised pathway was last updated in June 2015.

For information on changes in the last update, see the information point entitled 'Updates to this care map' on each page of the pathway.

One feature of the "Better, Sooner, More Convenient" (BSMC) Business Case, accepted by the Ministry of Health in 2010, was the development of 33 collaborative clinical pathways (CCP).

The purpose of implementing the CCP Programme in our DHB is to:

- Help meet the Better Sooner More Convenient Business Case aspirational targets, particularly the following:
  - Reduce presentations to the Emergency Department (ED) by 30%
  - Reduce avoidable hospital admissions to Medical Wards and Assessment Treatment and Rehabilitation for over-65-year-olds by 20%
  - Reduce poly-pharmacy in the over-65-year-olds by 10%
- Implement a tool to assist in planning and development of health services across the district, using evidence-based clinical pathways.
- Provide front line clinicians and other key stakeholders with a rapidly accessible check of best practice;
- Enhance partnership processes between primary and secondary health care services across the DHB.

Asthma in Children was developed because there was already a pathway in primary and secondary health care being utilised within the MidCentral district.

To cite this pathway, use the following format:

Map of Medicine. Paediatrics. MidCentral View. Palmerston North: Map of Medicine; 2012 (Issue 1).

### Editorial methodology

This care map was based on high-quality information and known Best Practice guidelines from New Zealand and around the world including Map of medicine editorial methodology. It has been checked by individuals with front-line clinical experience (see Contributors section of this document).

Map of Medicine pathways are constantly updated in response to new evidence. Continuous evidence searching means that pathways can be updated rapidly in response to any change in the information landscape. Indexed and grey literature is monitored for new evidence, and feedback is collected from users year-round. The information is triaged so that important changes to the information landscape are incorporated into the pathways through the quarterly publication cycle.

## References

This care map has been developed according to the Map of Medicine editorial methodology. The content of this care map is based on high-quality guidelines and practice-based knowledge provided by contributors with front-line clinical experience. This localised version of the evidence-based, practice-informed care map has been peer-reviewed by the CCP Executive Team and with stakeholder groups.

1	Royal Melbourne Children's Hospital. (2011). Asthma Acute. From <a href="http://www.rch.org.au/clinicalguide/guideline_index/Asthma_Acute/">http://www.rch.org.au/clinicalguide/guideline_index/Asthma_Acute/</a>
2	Starship Children's Hospital. (2009). Asthma, Management of Acute. From <a href="http://www.adhb.govt.nz/starshipclinicalguidelines/Asthma,%20Management%20of%20Acute.htm">http://www.adhb.govt.nz/starshipclinicalguidelines/Asthma,%20Management%20of%20Acute.htm</a>
3	Paediatric Society of New Zealand. (2005). Best Practice Evidenced Based Guideline - Management of Asthma in Children Aged 1- 15 Years. From <a href="http://www.paediatrics.org.nz/files/guidelines/Asthmaendorsed.pdf">http://www.paediatrics.org.nz/files/guidelines/Asthmaendorsed.pdf</a>
4	Contributors representing the Child Health Collaborative Clinical Pathway Working Group – MidCentral DHB (2012)
5	BPAC NZ. (2009). Guide to Asthma Management in Children. From <a href="http://www.bpac.org.nz/magazine/2009/asthma/management.asp?page=1">http://www.bpac.org.nz/magazine/2009/asthma/management.asp?page=1</a>

## Contributors

MidCentral DHB's Collaborative Clinical Pathway editors and facilitators worked with clinical stakeholders such as front-line clinicians and pharmacists to gather practice-based knowledge for its care maps.

The following individuals contributed to the update of this care map:

- Dr Jeff Brown, Clinical Director, Child Health, MidCentral Health (Secondary Care Clinical Lead)
- Dr Stephan Lombard, General Practitioner (Primary Care Clinical Lead)
- Jess Long, Project Director, Collaborative Clinical Pathways Programme (Pathway Editor)

The following individuals contributed to the original development of this care map:

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Other contributors:

- Dr Warwick Davenport, Clinical Advisor, MDHB

## Disclaimers

### Central PHO Clinical Board, MidCentral DHB

It is not the function of the Central PHO Clinical Board, MidCentral DHB to substitute for the role of the clinician, but to support the clinician in enabling access to know-how and knowledge. Users of the Map of Medicine are therefore urged to use their own professional judgement to ensure that the patient receives the best possible care. Whilst reasonable efforts have been made to ensure the accuracy of the information on this online clinical knowledge resource, we cannot guarantee its correctness and completeness. The information on the Map of Medicine is subject to change and we cannot guarantee that it is up-to-date.