

1. 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].

OUT OF SCOPE:

Children under one year of age:

- asthma is rarely diagnosed in a child who is less than 1 year old
- in particular, consider whether the child may have acute bronchiolitis or bronchopneumonia
- if in doubt discuss with the paediatrician on call at MidCentral Health

References:

See Provenance Certificate for full list of references.

2. Information resources for patients and carers

Patient information:

- [Kids Health 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 OR contact THINK Hauora's Practice Support team for more details

Te Ara Whānau Ora Brochure:

- [Te Ara Whānau Ora Brochure](#)

3. Updates to this care map

First published: 2012

Date of latest 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:

- review of diagnosis content
- action plan

Republication date September 2017.

4. 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](#)

5. 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, Tararua 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](#)

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.

7. History

Inquire specifically about the:

- duration and nature of symptoms
- treatments used:
 - reliever, preventer
- trigger factors:
 - upper respiratory tract infection, allergy, passive smoking
- pattern and course of previous acute episodes:
 - e.g. admission or ICU admission
- parental understanding of the treatment of acute episodes

8. Examination

Wheeze is not a good marker of severity.

The most important parameters in the assessment of the severity of acute childhood asthma are:

- general appearance/mental state and work of breathing:
 - accessory muscle use, recession [1]
- initial SpO₂ in air, heart rate and ability to talk are helpful but less reliable additional features [1]
- wheeze intensity, pulsus paradoxus, and peak expiratory flow rate **ARE NOT** reliable [1]

Asymmetry on auscultation is often found due to mucous plugging but warrants consideration of foreign body [1].

9. Assess Severity

Severity is based mainly on symptoms and clinical signs [4]:

- saturations can be a guide provided that there is an appropriate probe that is appropriately placed
- peak flows are a poor guide to severity of exacerbation [4]

10. Life threatening

Signs of Severity:

- confused / drowsy
- maximal work of breathing:
 - accessory muscle use/recession
- hypoxia / exhaustion
- marked / worsening tachycardia
- hypotension
- unable to talk
- SILENT CHEST, wheeze may be absent if there is poor air entry
- coma
- cyanosis [1,2,3,5]

Note: Oxygen saturations can remain normal in life-threatening asthma

11. Severe

Signs of Severity:

- agitated / distressed
- moderate to marked increased work of breathing:
 - accessory muscle use/recession
- marked limitation of ability to talk - too breathless to talk or feed [1,2,3]

Age < 5 years:

- heart rate >140/min
- resp rate > 40/min

Age > 5 years:

- heart rate >125/min
- resp rate > 30/min [5]

Note: wheeze is a poor predictor of severity [1,2,3]

12. Moderate

Signs of Severity:

- normal mental state [1]
- some increased work of breathing:
 - accessory muscle use/recession [1, 3]

- some limitation of ability to talk:
 - speaking/feeding interrupted by breaths[1,3]

Age < 5 years:

- heart rate <140/min
- resp rate < 40/min

Age > 5 years:

- heart rate <125/min
- resp rate < 30/min [5]

13. Mild

Signs of Severity:

- normal mental state [1]
- pulse normal [3]
- subtle or no increased work of breathing:
 - accessory muscle use/recession [1,3]
- able to talk / feed normally [1,3]

14. Immediate transfer to ED by fastest method available

Immediate transfer to ED by fastest method available:

- remember ABC
- oxygen high flow 8 litres/min
- continuous Salbutamol via nebuliser driven by high-flow oxygen
- IV Salbutamol 15mcg/kg over 10 minutes [4]

TRANSFER TO ED VIA AMBULANCE OR HELICOPTER WITH MEDICAL ESCORT

Ambulance or helicopter (0800 262 665).

Call Paediatrician (06) 356 9169.

15. Management - severe

Oxygen:

- **2L/min via nasal prongs** (preferably) OR
- 8L/min via mask

Salbutamol 100 mcg MDI via spacer every 5 minutes:

- <5 years 6 puffs
- ≥5 years 12 puffs

Ipratropium 20 mcg MDI via spacer:

- 4 puffs once (all ages)

Prednisolone or prednisone:

- 2mg/kg (max 60mg) [1,2,3,4]

16. Management - moderate

Salbutamol 100 mcg MDI via spacer every 20 minutes:

- <5 years 6 puffs
- ≥5 years 12 puffs

Prednisolone or prednisone:

- 2 mg/kg max 60 mg [1,3,4]

Oxygen may be required:

- particularly if SpO₂ is < 92% [4]

17. Management - mild

Give 2 puffs of blue reliever inhaler via a spacer. If no improvement after 20 minutes, give 6 puffs.

Options:

- **Salbutamol by MDI/spacer:**
 - 100 mcg MDI 2 puffs via spacer
- **Terbutaline:**
 - Turbuhaler 2 inhalations

If symptoms return or become worse within the next 4 hours contact Practice Nurse / GP or A & M Clinic.

Consider Prednisolone or prednisone:

- single dose 1 mg/kg max 40 mg [1, 2,3,4]

18. Reassess after 20 minutes treatment

Is the child's asthma now severe, moderate, mild or better?

19. Severe

Signs of Severity:

- agitated / distressed
- moderate to marked increased work of breathing:
 - accessory muscle use/recession
- marked limitation of ability to talk - too breathless to talk or feed [1,2,3]

Age < 5 years:

- heart rate >140/min
- resp rate > 40/min

Age > 5 years:

- heart rate >125/min
- resp rate > 30/min [5]

Note: wheeze is a poor predictor of severity [1,2,3]

20. Moderate

Signs of Severity:

- normal mental state [1]
- some increased work of breathing:
 - accessory muscle use/recession [1, 3]
- some limitation of ability to talk:
 - speaking/feeding interrupted by breaths[1,3]

Age < 5 years:

- heart rate <140/min
- resp rate < 40/min

Age > 5 years:

- heart rate <125/min
- resp rate < 30/min [5]

21. Mild or better

Signs of Severity:

- normal mental state [1]
- pulse normal [3]
- subtle or no increased work of breathing:
 - accessory muscle use/recession [1,3]
- able to talk / feed normally [1, 3]

22. Transfer to ED and call paediatric registrar

Ambulance or helicopter (0800 262 665).

Call paediatric registrar (06) 3569 169.

Continue treatment:

- **Oxygen:**
 - 2L/min via nasal prongs (preferably) OR
 - 8L/min via mask
- **Salbutamol 100 mcg MDI via spacer every 5 minutes:**
 - < 5 years 6 puffs
 - ≥5 years 12 puffs
- **Ipratropium 20 mcg MDI via spacer:**
 - 4 puffs every 20 minutes
 - total 3 treatments in first hour

23. Continue to treat and assess

Continue to treat and assess:

- **Salbutamol 100 mcg MDI via spacer every 20 minutes for 1 hour:**
 - < 5 years 6 puffs
 - ≥5 years 12 puffs [1,3,4]
- **Oxygen may be required:**
 - particularly if SpO₂ is < 92% [4]

24. Reassess after 1 hour's treatment

Is the child's asthma now severe, moderate, mild or better?

25. Moderate or Severe

Signs of Severe Asthma:

- agitated / distressed
- moderate to marked increased work of breathing:
 - accessory muscle use/recession
- marked limitation of ability to talk - too breathless to talk or feed [1,2,3]

Age < 5 years:

- heart rate >140/min
- resp rate > 40/min

Age > 5 years:

- heart rate >125/min
- resp rate > 30/min [5]

Note: wheeze is a poor predictor of severity [1,2,3]

Signs of Moderate Asthma:

- normal mental state [1]
- some increased work of breathing
- accessory muscle use/recession [1, 3]
- some limitation of ability to talk:
 - speaking/feeding interrupted by breaths [1,3]

Age < 5 years:

- heart rate <140/min
- resp rate < 40/min

Age > 5 years:

- heart rate <125/min
- resp rate < 30/min [5]

26. Mild or better

Signs of Severity:

- normal mental state [1]
- pulse normal [3]
- subtle or no increased work of breathing:
 - accessory muscle use/recession [1,3]
 - able to talk / feed normally [1, 3]

27. Transfer to ED and call paediatric registrar

Ambulance or helicopter (0800 262 665).

Call paediatric registrar (06) 3569 169.

Continue treatment:

- **oxygen:**
 - 2L/min via nasal prongs (preferably) OR
 - 8L/min via mask
- **Salbutamol 100 mcg MDI via spacer every 5 minutes:**
 - < 5 years 6 puffs
 - ≥5 years 12 puffs
- **Ipratropium 20 mcg MDI via spacer:**
 - 4 puffs every 20 minutes, total 3 treatments in first hour

28. Review and advice

Review and advice:

- **review medication**
- **review 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 OR contact THINK Hauora's Practice Support team for more details
 - [Online generated action plan \(PAMP\) Waitemata DHB](#)
- **advice to parents:**
 - [Kids Health handout](#)

Consider referral to:

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

Asthma in Children

Provenance Certificate

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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 http://www.rch.org.au/clinicalguide/guideline_index/Asthma_Acute/
2	Starship Children's Hospital. (2009). Asthma, Management of Acute. From http://www.adhb.govt.nz/starshipclinicalguidelines/Asthma,%20Management%20of%20Acute.htm
3	Paediatric Society of New Zealand. (2005). Best Practice Evidenced Based Guideline - Management of Asthma in Children Aged 1- 15 Years. From http://www.paediatrics.org.nz/files/guidelines/Asthmaendorsed.pdf
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 http://www.bpac.org.nz/magazine/2009/asthma/management.asp?page=1

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)
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Other contributors:

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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.