Child and Adolescent Asthma Guidelines

Asthma and Respiratory Foundation
NZ 2017
Acknowledgements

- Innes Asher
- Cheryl Davies
- Teresa Demetriou
- Terry Fleming
- Matire Harwood
- Lorraine Hetaraka-Stevens
- Tristram Ingham
- John Kristiansen
- Jim Reid
- Denise Rickard
- Debbie Ryan

- Consulted organisations
Main sources

- BTS/SIGN Asthma Guideline 2017
- Australian Asthma Handbook 2015
- GINA guidelines
- UK National Review of Asthma Deaths 2015
- He Māramatanga Huangō: Asthma Health Literacy for Māori Children in New Zealand 2015
The Whys
Asthma Mortality

- 65 - 70 deaths per year in NZ
- UK national review 2014 suggests many preventable
  - > 80% deficiencies in acute or chronic care
  - 45% did not seek help
  - Diagnostic process unclear
Asthma mortality disparities in NZ

![Bar graph showing asthma mortality rates per 100,000 people per year for different ethnic groups: Maori (5.4), Pacific (6.5), Asian (13), Non-MPA (1.1).]
Despite this there are also treatment disparities

• Maori and Pacific children more likely to receive oral steroids and nebulisers
• But less likely to receive ICS
• Less likely to receive asthma education
• Less likely to be given an action plan

Crengle, Thesis  2008
Gillies, Prim Care Resp J 2013
Adherence (world-wide data)

- Only 30 - 50% of asthma patients are well controlled (adults and children)
- Compliance with ICS preventers only 20-30%
- 34% of patients with uncontrolled asthma use a preventer less than once per week
- Adherence has not improved in the last 3 decades

Rabe JACI 2004
Reddell MJA 2015
Bender JACI: In Practice 2016
ONE DOES NOT SIMPLY
PRESCRIBE AN INHALER
Asthma Health Literacy for Maori Children in NZ Report 2015

He Māramatanga Huango:
Asthma Health Literacy for Māori Children
In New Zealand

Report to the Ministry of Health
July 2015
Whanau reported:

- Not having adequate knowledge
- < 50% understood what asthma is
- 1/3 not knowing how to seek urgent help
- Not being listened to
- Too much information at once
- Not being taught “why”
“The responsibility for health literacy lies primarily with health professionals”

- Asthma Health Literacy For Maori Children Report 2015
The Guideline

ASTHMA AND RESPIRATORY FOUNDATION NZ
NEW ZEALAND CHILD AND ADOLESCENT ASTHMA GUIDELINES:
A QUICK REFERENCE GUIDE
Goals from the guideline

• All aspects of the health system will support better asthma care, aiming to decrease inequities and improve outcomes

• Māori children have asthma outcomes equal to non-Māori and non-Pasifika children

• Pacific children have asthma outcomes equal to non-Pacific & non-Māori children
Top 10 ways health professionals can help (apart from prescribing medicines)

• Relationships
• Wellness
• Smoke exposure
• Housing
• Income
• Health literacy
• Adherence
• Action plan, Access, Ambulance
Asthma management as a continuous cycle of monitoring and reassessment

- Requirement for follow up and repeated review
- Change from episodic health care
- Use of recall systems

![Diagram of Asthma Management Cycle](image)
Figure 2: Asthma management as a continuous cycle of monitoring and reassessment, adapted from GINA (1)

- Diagnosis
  - Symptom control & risk factors (including lung function)
  - Inhaler technique & adherence
  - Patient preference
  - Health Literacy

Review Response
- Symptoms
- Exacerbations
- Side-effects
- Patient satisfaction
- Lung function

Assess

Adjust Treatment
- Asthma medications
- Non-pharmacological strategies
- Treat modifiable risk factors
Goal: All children who have asthma are correctly diagnosed promptly

• Diagnosis in children
  – based on having characteristic symptoms in absence of another cause
  – AND assessing response to treatment
Likelihood of Asthma

A. 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)

B. 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 (see C below)
C. Red flags suggesting alternate diagnoses*

- Daily symptoms from birth
- Frequent or daily wet, moist-sounding or productive cough
- Digital clubbing
- Chest wall deformity
- Failure to thrive
- Heart murmur
- Spilling, vomiting or choking
- Asymmetrical chest findings
- Stridor as well as wheeze
- Persistent ear, nose or sinus infection
- Family history of unusual chest disease
- Symptoms much worse than objective signs or spirometry
Figure 1B Diagnostic pathway for asthma and wheeze in children 5 – 15 years

Child with respiratory symptoms. Are the symptoms typical for asthma? (see Table 1)

Typical

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

Trial of asthma therapy for at least 8 weeks. (see Figure 5)

Responds to asthma therapy?

Yes

'Asthma reasonably likely'
Diagnose and treat as asthma. (see Figure 5)

No

'Asthma not likely'
Evaluate response and reconsider diagnosis after 3 months.

Asthma not typical

Consider other diagnoses.

Further investigation eg. spirometry and reversibility test. A trial of asthma therapy may be helpful. (see Figure 5)

Asthma reasonably likely

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

Asthma likely

Refer, investigate and treat as appropriate for other disorder.
What age do we diagnose asthma?

• Current paradigm
  – < 1 year “bronchiolitis”
  – 1 – 4 year “pre-school wheeze”
  – > 4 year asthma
Pre-School Wheeze

• Two distinct groups
  – Those who only wheeze with viruses (infrequent)
  – Those with frequent wheeze
  – Pattern does not predict later asthma or not

• Only regular wheezers (incl those with frequent viral exacerbations) benefit from preventers → treat as asthma

• Can swap groups – review and trial off meds each 3 months
Figure 1A Diagnostic pathway for asthma and wheeze in children 1 – 4 years

Child with respiratory symptoms. Are the symptoms typical for asthma? (see Table 1)

Yes

Frequency and pattern of symptoms.

No

Frequent typical symptoms between viral illnesses or flare ups.

Frequent symptoms with viral illnesses (more than 8 weekly) but no symptoms between flare ups.

Infrequent symptoms with viral illnesses only (up to every 8 weeks.)

Consider other diagnoses. Refer and investigate as appropriate. A trial of asthma therapy may be helpful.

Trial of asthma therapy for at least 8 weeks.

Improves with preventer?

Yes

‘Preschool asthma’
Trial of asthma therapy. (see Figure 4)

Evaluate response and reconsider diagnosis after 3 months.

No

‘Infrequent or frequent preschool wheeze’

Reliever as needed.
ICS not indicated.
Figure 2: Asthma management as a continuous cycle of monitoring and reassessment, adapted from GINA (1)

Diagnosis
- Symptom control & risk factors (including lung function)
- Inhaler technique & adherence
- Patient preference ★
- Health Literacy

Assess
- Asthma medications
- Non-pharmacological strategies
- Treat modifiable risk factors

Adjust Treatment
- Symptoms
- Exacerbations
- Side-effects
- Patient satisfaction ★
- Lung function

Review Response
Goal: All children with asthma are assessed for their severity, control and future risk
Goal: The right step of medicine in the right device is used for the age and symptoms of the child

- Maximize quality of life (reduce symptoms)
- Reduce risk
- Avoid adverse treatment effects
- Utilising a step-wise approach to management
Pre-school preventer management

• Initially as needed salbutamol
• Severe flare ups without frequent symptoms
  → Montelukast
• Frequent flare ups or frequent symptoms between flare ups
  → Inhaled corticosteroid
• Still poor control?
  – Add other option
• Never for LABAs
Figure 3: Stepwise approach to treatment of children with wheeze 1.4 years

**STEP UP** to achieve control and reduce risk of exacerbation

**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
Figure 4: Stepwise approach to treatment of children with asthma 5-15 years

**Step 1**
- Maintenance Low dose ICS
- SABA reliever therapy (as required)
  - *Montelukast may be used as an alternative with SABA reliever therapy

**Step 2**
- Maintenance Low dose ICS/LABA
- SABA reliever therapy (as required)
  - In patients 12 years or older

**Step 3**
- Standard dose ICS/LABA therapy
- SABA reliever therapy (as required)
  - In patients 12 years or older

**Step 4**
- Standard dose ICS/LABA therapy
- SABA reliever therapy (as required)
  - In patients 12 years or older
  - SMART therapy may be used

**Step 5**
- Standard dose ICS/LABA therapy
- SABA reliever therapy
  - In patients 12 years or older
- SMART therapy may be used

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

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

*Montelukast not funded in this instance
*Budesonide 100 mcg and Formoterol 6 mcg
Figure 2: Asthma management as a continuous cycle of monitoring and reassessment, adapted from GINA (1)

- Diagnosis
  - Symptom control & risk factors (including lung function)
  - Inhaler technique & adherence
- Patient preference ★
- Health literacy
- Asthma medications
- Non-pharmacological strategies
- Treat modifiable risk factors

**Symptoms**
- Symptoms
- Exacerbations
- Side-effects
- Patient satisfaction ★
- Lung function

**ADJUST TREATMENT**

**REVIEW RESPONSE**

**ASSESS**
Goal: For all children with asthma it should be clear if ICS should be prescribed, and if so, a prescription given and the medicine taken.
Assessing adherence

• Prescribing records
  – At the Practice
  – Pharmacy database

• Self report – “How often do you forget to take your inhaler in a week?”

• Physician judgement

• Electronic monitoring devices
Goal: The correct inhaler device is considered and age appropriate

- Spacer with mask – < 2 years
- Spacer no mask – transition 2 – 4 years
  - Improved lung deposition by 60%
  - Not when severe exacerbation
• Turbuhaler - from 5 - 7 years

• MDI alone – never (possible from 8 years)
NZ children

- Only 80% of children under 6 use a spacer
- Only 30% of children over 7 use a spacer
- Less than 35% given an action plan
Assessing inhaler technique: Check every visit

• Only 7 - 22% have had technique tested
• 20 - 50% of health professionals incorrect technique!
  – up to 85% for dry powder inhalers
• Repeated education necessary
• Dry powder inhalers take 3 sessions
• Skills decay over 2-6 weeks
Figure 2: Asthma management as a continuous cycle of monitoring and reassessment, adapted from GINA (1)

Diagnosis
- Symptom control & risk factors (including lung function)
- Inhaler technique & adherence
- Patient preference ★
- Health Literacy

Assess
- Asthma medications
- Non-pharmacological strategies
- Treat modifiable risk factors

Adjust Treatment
- Symptoms
- Exacerbations
- Side-effects
- Patient satisfaction ★
- Lung function

Review Response
Goal: Identify and address personal, whānau or environmental factors which may be unsettling asthma

- Smoke exposure
- Housing
- Allergen avoidance
- Anxiety and psycho-social triggers
- Associated conditions
  - Rhinitis
Figure 2: Asthma management as a continuous cycle of monitoring and reassessment, adapted from GINA (1)

- Diagnosis
  - Symptom control & risk factors (including lung function)
  - Inhaler technique & adherence
  - Patient preference
- Health Literacy

- Symptoms
- Exacerbations
- Side-effects
- Patient satisfaction
- Lung function

- Review Response

- Adjust Treatment
  - Asthma medications
  - Non-pharmacological strategies
  - Treat modifiable risk factors
Goal: Achieving effective self/family education and management

- Good asthma education
  - Enhances health-literacy
  - Enhances self-efficacy
Education takes time and repeated effort

• Education at every visit (chunks)
• Incorporate a variety of media
• Build rapport by building partnership
• Use a shared language for better understanding
  – “Puffers”
  – “Relievers and Preventers”
  – “Flare ups”
• Goal is improved self-management
Goal: All children with asthma should be provided with an asthma action plan

<table>
<thead>
<tr>
<th>Well</th>
<th>Worse</th>
<th>Worried</th>
<th>Emergency</th>
</tr>
</thead>
</table>
| **When I'm well:**  
- I have no cough  
- I play just like other children  
- I use my reliever puffer less than 2 times a week  | **When my asthma is getting worse:**  
- I cough or wheeze and it's hard to breathe, or  
- I'm waking at night because of my asthma, or  
- I cough or wheeze when I play, or  
- I need my reliever inhaler to control my asthma more than 2 times per week | **My asthma is a worry when:**  
- My reliever isn’t helping, or  
- I’m finding it hard to breathe, or  
- I’m breathing hard and fast, or  
- I’m sticking in around my ribs/throat, try looking under my shirt  
- I’m looking pale or blue | **DIAL 111 and ask for an ambulance**  
**WHILE YOU’RE WAITING:**  
- Try to stay calm and keep me sitting upright  
- Give 6 puffs of reliever through a spacer every 6 minutes with 6 breaths for each puff until help arrives |

**My puffers are:**  
Preventer: I take this every day even when I'm well.  
The name of my preventer is ____________  
I take ___ puffs in the morning and ___ puffs at night through a spacer.  
Reliever: I take this only when I need it  
The name of my reliever is ____________  
I take ___ puffs through a spacer when I wheeze, cough or when it's hard to breathe.  

If I find it hard to breathe when I exercise I should: Take ___ puffs of my reliever  
If my asthma gets worse I should:  
Keep taking my preventer every day as normal and take ___ puffs of my reliever every 4 hours  
If I'm not getting better doing this I should see my doctor today  

**Contact:**  
___________  

---

Date Prepared: ____________  
Doctors Signature: ____________  
Plan to be reviewed when treatment changed
Goal: All children should be managed to avoid life-threatening asthma or death
SUMMARY: In order to reduce inequality and improve outcomes

- Children with asthma require
  - Time
  - Repeated visits
End