

Childhood Asthma

Best Practice Guidelines

Childhood Asthma

Welcome and Introduction

Dr Amjad Hussain

Convenor, NWMDGP
Asthma Special Interest Group

Childhood Asthma

A collaborative project between:

- Dept of General Practice, University of Melbourne
- Royal Children's Hospital
- Royal Australian College of General Practitioners
- Northern Melbourne Division of General Practice
- North West Melbourne Division of General Practice

Childhood Asthma

Steering Committee

- Nabil Sulaiman, Teng Liaw Dept of General Practice
- Claire Harris Royal Children's Hospital
- Brian McAvoy, Chris Hogan RACGP
- Phillip Bain Northern Division
- Carolyn Searle North West Division

Project staff

- Jill Byron, Tanja Maksimovic Dept of General Practice

Childhood Asthma

Evidence-based guidelines

- National Asthma Campaign (NAC)
- Improving Child and Adolescent Asthma Management (RCH)

Childhood Asthma

Guideline development group

- NWMDGP Amjad Hussain and Nan Presswell
- NDGP Gobind Duggal and Ayman Aouad
- RCH Claire Harris and Ray Gornall
- Dept of GP Kay Jones

Childhood Asthma

Dr David James, Paediatrician

Dr Jim Goutzamanis, Paediatrician

Ms Adrienne James, Asthma Educator

Dr Ray Gornall, GP Asthma Liaison Officer

Session 1

Diagnosis and Assessment

Dr David James

Paediatrician, Northern Hospital and RCH

Asthma facts

- About 30% of all Australians will have respiratory symptoms consistent with asthma at some time in their lives
- There is evidence of increasing asthma prevalence and severity in children
- Asthma ranks among the 10 most common reasons for seeing a GP
- Asthma is the most common medical cause for hospital admission in children

Diagnosis - History

Wheeze, shortness of breath, cough or chest tightness, particularly if:

- recurrent
- worse at night or early in the morning

RCH Best Practice Guidelines p4

Diagnosis - History

Triggers

- Infection, particularly URTI
- Exercise
- Allergens, particularly HDM
- Irritants, particularly cigarette smoke
- Others – cold air, medications, anxiety

Diagnosis - Examination

Signs that suggest asthma

- wheeze (may be absent if severe)
- tachypnoea
- hyperinflation
- recession
- accessory muscle use

Consider other causes of wheeze

Diagnosis - Examination

Signs that suggest alternative diagnosis

- digital clubbing
- tracheal shift
- localised wheeze
- early morning productive cough

RCH p4

Diagnosis - Tests

Therapeutic trial

Peak flow readings

- limited use in children
- technically unreliable
- diurnal variation

Spirometry

- confirm diagnosis
- monitor response to treatment

Diagnosis - Tests

Exercise challenge

- May be useful in children who can do accurate spirometry
- 70% children have exercise-induced Sx

CXR

- May be useful when diagnosis uncertain

RCH p 36, NAC 1998 p10

Diagnosis - Tests

Allergy tests

Specialist consultation may be helpful in:

- asthma in conjunction with anaphylactic features
- sudden unexplained attacks
- known or suspected hypersensitivity to food
- cases where an allergic factor is suspected
- asthma in conjunction with other problems, especially hay fever and skin conditions

NAC 1998 p 19

Classification of asthma

- In adults, this is based only on severity – Mild, Moderate or Severe
- Management of asthma in children requires an understanding of the patterns of childhood asthma

Pattern of asthma

- Infrequent episodic 75%
- Frequent episodic 20%
- Persistent 5%

Pattern of asthma

- Frequency of attacks
- Severity of attacks
- Presence of symptoms between attacks
- Presence of signs between attacks

NAC 1998 p24

Pattern of asthma

Infrequent episodic

- Attacks > 6-8 weeks apart
- Attacks generally not severe
- Symptoms rare in between attacks
- Normal examination and lung function between attacks

NAC 1998 p24

Pattern of asthma

Frequent episodic

- Attacks < 6 weeks apart
- Attacks more troublesome
- Increasing symptoms between attacks
- Normal examination and lung function between attacks

NAC 1998 p24

Pattern of asthma

Persistent

- Attacks < 6 weeks apart
- Symptoms most days
- Nocturnal symptoms > 1 night/week
- Daily use of beta₂ agonists
- May have abnormal lung function
- Multiple ED visits or hospital admissions

High risk patients

- Frequent medical attendances or hospital admission in past 12 months
- ICU admission or near-fatal attack
- Immediate hypersensitivity to foods
- Denial of asthma
- Poor adherence
- Poor control

NAC 1998 p18

* * * *Key message* * * *

Children are different to adults

* * * *Key message* * * *

- Peak flow measurements are unreliable
- Infection and exercise are important triggers
- Classification based on pattern not severity:
Infrequent episodic, Frequent episodic and
Persistent

Session 2

The Acute Attack

Dr Jim Goutzamanis

Paediatrician, Northern Hospital

Assessment

3 - 4 grades of severity (NAC-RCH)

- Mild
- Moderate
- Severe and life threatening/Critical

NAC 1998 p 14, RCH p 7

Assessment

Primary Features

- mental state
- accessory muscle use/recession
- activity level

RCH p 7

Assessment

Secondary Features

- heart rate
- oxygen saturation
- ability to talk
- wheeze

Assessment

Unreliable features

- lung function
- central cyanosis

Unrealistic features

- pulsus paradoxus
- blood gases

Treatment

- Inhaled beta₂ agonist
- Corticosteroids
- Ipratropium bromide (Atrovent)
- Oxygen
- IV salbutamol
- Aminophylline

Treatment

Inhaled beta₂ agonist

Nebuliser vs MDI and spacer

Treatment

Nebuliser

Pros

- Status quo - doctor and patient comfortable
- Can leave patient unattended in surgery

Cons

- Expensive to purchase
- Difficult to carry around – often inaccessible
- Time consuming
- Side effects

Treatment

MDI and spacer

Pros

- As effective as nebuliser - fewer side effects
- Much quicker to administer
- Inexpensive to purchase
- Very portable, easily accessible

Cons

- Cannot leave patient unattended (*? positive - opportunity to teach/watch spacer technique*)

Treatment

MDI and spacer

< 6 years old

4-6 puffs (600 mcg) small volume spacer

> 6 years old

10-12 puffs (1200 mcg) large volume spacer

RCH p 15

* * * *Key message* * * *

MDIs and spacers

- as effective as nebulisers
- less side effects

Treatment

Corticosteroids

- For moderate/ severe attacks
- Use early in attack
- ↑ pulmonary function and clinical parameters
- ↓ need for admission, ↓ length of stay

RCH p 14

Treatment

Corticosteroids

- Oral prednisolone 1 mg/kg/dose
- Once daily for up to three days
- IV route if critical or patient vomiting

RCH p 14

Treatment

Ipratropium bromide (Atrovent)

- no benefits in mild/moderate attack
- only benefits in severe attack
- no benefits beyond the first hour

RCH p 13

Treatment

Ipratropium bromide (Atrovent)

- up to 3 doses in 1st hour (every 20 mins)

< 6 years old

2 puffs Atrovent Forte (80mcg)

> 6 years old

4 puffs Atrovent Forte (160mcg)

RCH p 13

Mild Asthma

- *normal* mental state
- *nil* accessory muscle use
- *no* limitation of activity
- terminal expiratory wheeze
- *normal* heart rate
- *normal* O₂ saturation

Mild Asthma

- Inhaled β_2 agonist – probably once only
 - 6 or 12 puffs MDI & spacer
 - 250 or 500 mcg in nebuliser
- Prednisolone - probably not
- Ipratropium bromide - no
- Review after 20 minutes

RCH p 10

Moderate asthma

- *normal* mental state
- *mild* accessory muscle use
- *mild* limitation of activity
- expiratory and inspiratory wheeze
- tachycardia
- *normal* O₂ saturation

RCH p 7

Moderate asthma

- Inhaled β_2 agonist - every 20 mins for 1st hour
- Oral prednisolone 1 mg/kg/dose stat, then once daily for up to 3 days
- Ipratropium bromide - no
- Review 10 minutes after 3rd dose
- Consider admission

RCH p 10

Severe asthma

- *agitated* mental state
- *moderate* accessory muscle use
- *moderate* limitation of activity
- wheeze audible without stethoscope
- tachycardia
- O₂ saturation potentially <91%

Severe asthma

- Call ambulance
- Inhaled β_2 agonist - every 20 mins for 1st hour
- High flow oxygen
- Add ipratropium bromide 2-4 puffs - every 20 mins for one hour only
- Oral prednisolone 1 mg/kg/dose stat, then once daily for up to 3 days (give IV if vomiting)

RCH p 10

Critical asthma

- *confused / drowsy* mental state
- *marked* accessory muscle use
- *severe* limitation of activity / exhausted
- wheeze audible without stethoscope, or chest may be silent
- tachycardia
- O₂ saturation <91%

Critical asthma

- Call ambulance
- Nebulised salbutamol continuously
- High flow oxygen
- Nebulised ipratropium (250 mcg/dose) every 20 mins for one hour
- IV methylprednisolone 1mg/kg/dose

RCH p 10

*** * *** *Key message* *** * ***

Mild

- B₂ agonist

Moderate

- B₂ agonist + steroid

Severe

- B₂ agonist + steroid + oxygen
- Call ambulance
- +/- Atrovent

Session 3

Inhaler techniques

Ms Adrienne James

Asthma Educator

Lung Health Promotion Centre, Alfred Hospital

Health professionals and inhaler technique

Most common mistakes

- failure to hold breath for at least 5 secs (54%)
- failure to shake MDI before use (40%)
- actuating the MDI more than once during a single breath (29%)

Evans 1993 Thorax

Correct use of MDI

1. Remove cap from inhaler
2. Shake the inhaler
3. Breathe out normally
4. Place inhaler between teeth, close lips around mouthpiece
5. Tilt chin up slightly
6. Commence slow deep breath in
7. Press down on canister to release dose
8. Continue to breathe in slowly and deeply
9. Hold breath for 5-10 seconds
10. Wait approx 1 min before repeating steps 2-9

Why use a spacer?

- Removes the need for coordination of actuation and inhalation
- Increases delivery to lower airway
- Reduces local and systemic side effects
- As effective as nebuliser

Which spacer?

All children should use a spacer when inhaling medication from MDIs

< 3 year olds – small volume spacer, with face mask

3–6 year olds – small volume spacer, with or without mask

> 6 year olds – large volume spacer

Spacer technique

- Join two parts together
- Shake to ensure one way valve rattles
- Shake inhaler
- Insert inhaler into end of spacer
- Press down on inhaler to release one dose
- Place lips around mouthpiece
- Breathe in slowly and deeply or tidal breaths x 4
- Hold breath for 5-10 seconds
- Wait approx 1 min before second dose

Spacer care at home

- Static may build up and reduce medication delivery
- Wash every 2-4 weeks with household detergent
- Do not rinse out the suds
- Air-dry, do not rub dry

Spacer care in the surgery

- Spacers must be sterilised between patients
- Some brands suitable for autoclave

* * * *Key message* * * *

All children using metered dose
inhalers (MDIs / puffers) should use
them with spacers

Turbuhaler

- Remove cap
- Hold upright
- Twist the coloured base to the right
- Turn base to left click
- Breathe out normally
- Hold mouthpiece between lips to form seal
- Breathe in quickly and deeply
- Hold breath for 5-10 seconds if possible
- Replace cap

DO NOT immerse unit in water or wash mouthpiece

Autohaler

- Remove mouthpiece cover
- Hold upright and click grey lever on top into raised position
- Shake inhaler
- Breathe out normally
- Place between lips
- Breathe in slowly and deeply
- Keep breathing despite click
- Hold breath for 5-10 seconds if possible
- Click grey lever back into place and replace cover

Accuhaler

- Hold device in one hand
- Place thumb of other hand on thumb grip
- Open by pushing thumb grip around until it clicks
- Breathe out normally
- Place mouthpiece between lips to form seal
- Breathe in quickly and deeply
- Hold breath for 5-10 seconds
- To close, slide the cover until it clicks into place

Session 4

Asthma Action Plan

Dr Ray Gornall

General Practitioner

GP Asthma Liaison Officer, RCH

Education and Action Plan

↑ health outcomes and ↓ resource use

are associated with:

patient education involving:

- Self-monitoring by either PEF or symptoms
- Regular medical review
- Written Asthma Action Plan

NAC '6 Step Plan' 1999

Asthma Action Plan

- Individualised according to each person's pattern of asthma
- Keeps patients in control of their asthma
- Enables patients to recognise deterioration promptly and respond appropriately
- Should be written in consultation with the patient and parents

NAC 1998 p 27, RCH p 18

Action Plan in Acute Attack

- Patients may not be very receptive to asthma education at the time of an acute attack
- ‘Information-only’ education programs are not effective in reducing readmissions or morbidity
- An Asthma Action Plan may be the most useful component of education in the acute setting

RCH p 18

Action Plan in Acute Attack

The Action Plan provided at the time of an acute attack should contain clear instructions about:

- which medications to take for this episode
- the dose, frequency and length of course for each medication

and

- how to manage the next attack

RCH p 18

Action Plan for ongoing management

- Importance of prevention - either daily and/or for exercise-induced symptoms
- How to recognise and manage exacerbations
- An emergency plan

and

- Be based on symptoms rather than PEF

RCH p 3

Asthma Action Plans

- Illustration on slide – or copies of NAC and RCH in resource kit.

Session 5

Case discussion

Management of acute attacks:

Using the guidelines

Summary

Dr Claire Harris

GP Liaison, Research and Education Unit, RCH

* * * *Key message* * * *

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* * * *Key message* * * *

- Peak flow measurements are unreliable
- Infection and exercise are important triggers
- Classification based on pattern not severity:
Infrequent episodic, Frequent episodic and
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Mild

- B₂ agonist

Moderate

- B₂ agonist + steroid

Severe

- B₂ agonist + steroid + oxygen
- Call ambulance
- +/- Atrovent

* * * *Key message* * * *

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EVALUATION