Childhood Asthma

Best Practice Guidelines

Childhood Asthma

A/Prof Colin Robertson, Respiratory Physician

A/Prof Susan Sawyer, Adolescent Physician

Mr Ric Roberts, Respiratory Scientist

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Session 6

Ongoing management

A/Prof Colin Robertson

Respiratory Physician, RCH

Six Step Asthma Management Plan

1. Assess asthma severity
2. Achieve best lung function
3. Maintain best lung function: Avoid triggers
4. Maintain best lung function: Optimal medication
5. Develop an Action Plan
6. Educate and review regularly

Step 1.
Assess asthma severity
(in children – pattern of asthma)

Pattern of asthma

- Infrequent episodic
- Frequent episodic
- Persistent

Assess the patient for ‘high risk’ status

Step 2.
Achieve best lung function

- Treat with intensive asthma therapy until the ‘best’ lung function is achieved

- Back titrate to lowest dose that maintains good symptom control and best lung function

Step 3.
Maintain best lung function:
Identify & avoid triggers

Infection

- Particularly viral URTI
- Assess individual's history
- May require treatment at the onset of infection

Exercise

- 80% of asthmatics have EIA
- Usually diagnosed on history
- Therapeutic trial
- Formal exercise challenge

NAC p55, RCH p27

Exercise

- Short-acting beta$_2$ agonist prior to exercise
- During exercise as required
- Cromones may be added ½ hour before
- Warm up exercises/sprints are effective
- Consider leukotriene receptor antagonist – but expensive

NAC p55, RCH p28

* * * *Key message* * * *

- Physical activity should not be restricted in children with asthma
- Exercise should be actively encouraged
- Preventive medication should be used prior to exercise

NAC p55, RCH p27

Allergy

- House Dust Mite
- Pollens
- Animal danders
- Moulds

Irritants

- Check for smokers in the household
- Offer help to Quit

Step 4.
Maintain best lung function:
Optimal medication

Optimal control

- Absent or minimal symptoms
- Absent or minimal use of reliever
- No nocturnal or early morning symptoms
- Normal lung function
- No, or minimal side effects from medication

Optimal medication

Use minimum maintenance doses to

- maintain good symptom control
- minimise side effects
- maximise compliance

Optimum use of

- Relievers, preventers, symptom controllers

Relievers

- Short acting beta$_2$ agonists
  - Salbutamol, Tertbutaline
- To be avoided
  - Oral therapy
  - Theophylline

Preventers

- Inhaled corticosteroids
  - Beclomethasone, Budesonide, Fluticasone
- Non-steroidal anti-inflammatories
  - Sodium cromoglycate, Nedocromil sodium
- Leukotriene receptor antagonists
  - Montelukast sodium, Zafirlukast

Symptom controllers

Long acting beta$_2$ agonists

- Salmeterol, Eformoterol

Infrequent episodic asthma

- $Beta_2$ agonist as required
- Oral prednisolone if required for attack
- Preventer – no

Frequent episodic asthma

- $Beta_2$ agonist as required
- Oral prednisolone if required for attack
- Preventer
  - Cromoglycate or nedocromil

    or
  - Inhaled corticosteroid
  - Consider leukotriene receptor antagonist

Frequent episodic asthma

Cromones

- No serious side effects
- ? effectiveness
- Intal forte 5mg/puff, Tilade 2mg/puff
- Commence 2 puffs tds

Frequent episodic asthma

Cromones

- Use for 6-8 weeks to determine response
- If effective, maintain on 2 puffs bd
- If not effective, change to steroids

Frequent episodic asthma

Inhaled corticosteroids

- Potent effect, but possible side effects
- May take 6 weeks before benefits evident
- May need to start at higher dose then back-titrate

Frequent episodic asthma

Inhaled corticosteroids

Beclomethasone (CFC-BDP) or Budesonide (BUD)

≤ 400mcg/day

Fluticasone (FP) or CFC-free BPD - half the dose

≤ 200 mcg/day

Frequent episodic asthma

Inhaled corticosteroids

- Minimise local side effects
  - oral thrush and hoarseness
  - use spacer, rinse mouth
- Monitor systemic side effects
  - mainly growth suppression
  - measure height and record on centile chart at each visit

Frequent episodic asthma

Leukotriene receptor antagonists

- Patient does not want inhaled medication
- Parents concerned re steroids: side effects, etc
- Contraindications to steroids: renal failure, etc
- Monteleukast 10mg/daily

Persistent asthma

- $Beta_2$ agonist as required
- Oral prednisolone if required for attack
- Preventer
  - Inhaled corticosteroid
  - Consider leukotriene receptor antagonist

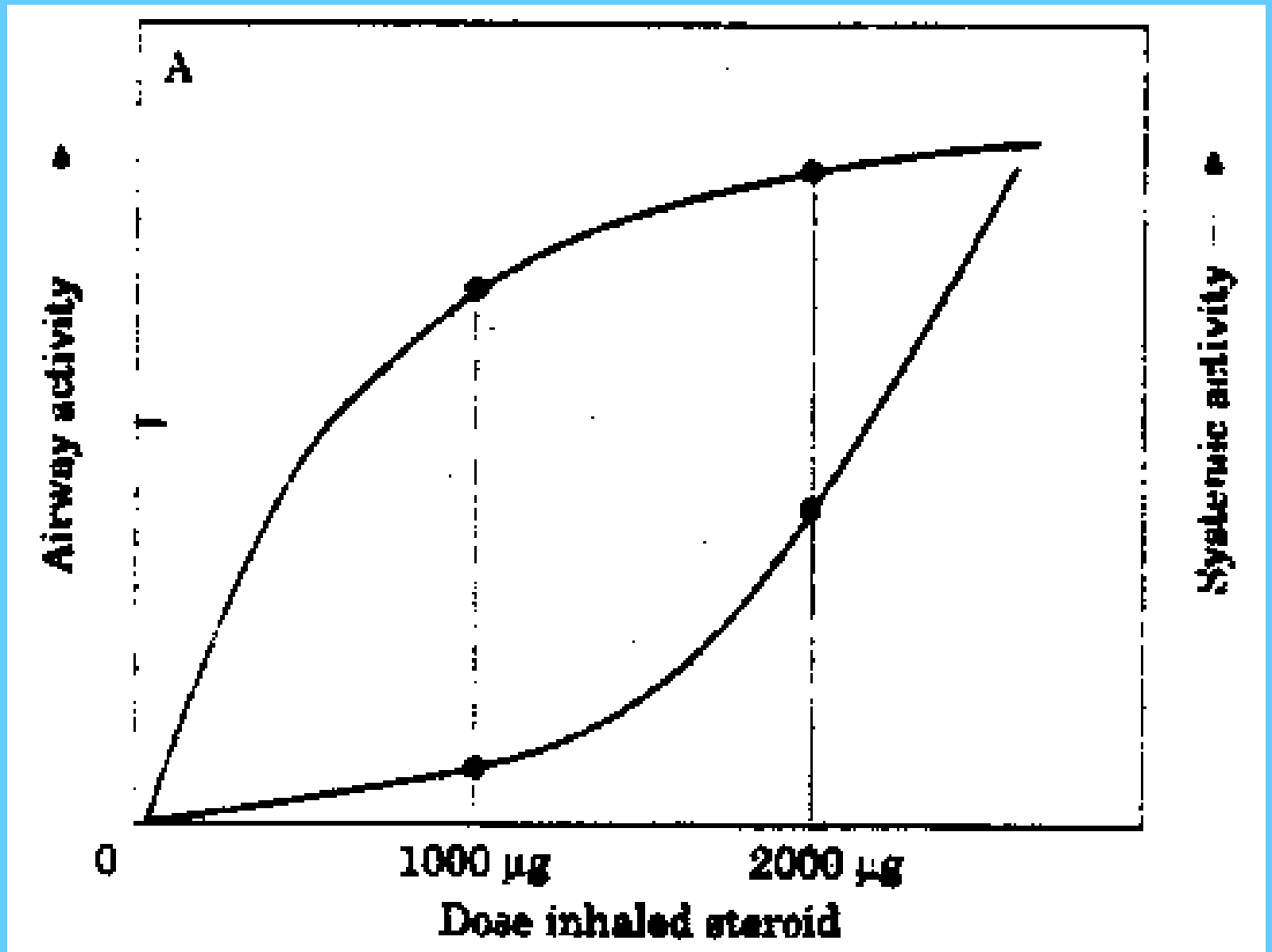
Persistent asthma

- Inhaled corticosteroids as for FEA
- Doses of

  > 800mcg BPD/BUD or

  > 500mcg FP/CFC-free BPD

  are unlikely to improve asthma control


A
Airway activity
Cysteinyl activity
0
1000 µg
2000 µg
Dose inhaled steroid

Persistent asthma

Consider long-acting beta$_2$ agonists if

- $\geq$ 400mcg BPD/BUD
- $\geq$ 250mcg FP/CFC-free BPD
- nocturnal symptoms persist while on inhaled steroids

Persistent asthma

Long-acting beta$_2$ agonists

- For long-term regular use
- Only use with inhaled steroids, not on their own
- Effects usually last for 12 hours
- Tachyphylaxis - after regular use, may only be active for 7-9 hours
- Risk of reducing effect of short-acting β_2 agonists
- If no benefit – stop them

Persistent asthma

Patients on long-acting beta$_2$ agonists must be warned not to stop or reduce their steroid therapy without medical advice, even if they feel better.

* * * *Key message* * * *

Long-acting $beta_2$ agonists

- complement existing therapies
- do not replace inhaled corticosteroids
- are not indicated for symptom relief in an acute attack

Persistent asthma

Leukotriene receptor antagonists

- As for FEA
  - Patient does not want inhaled medication
  - Parents concerned re steroids, side effects, etc
  - Contraindications to steroids: renal failure, etc
- Patient not well controlled on inhaled steroids and long-acting beta$_2$ agonists

Step 5.

Develop an Action Plan

Step 6.
Educate and review regularly

Education

- …is necessary to help patients gain the confidence, skills and motivation to control their asthma

- …should begin at the time of diagnosis and be a significant component of all subsequent consultations

Regular reviews

- Symptoms
- Patient initiated changes to therapy
- Adherence
- Inhaler technique
- Action Plans reviewed and updated
- Education

* *Asthma management summary* *

- Be sure of the diagnosis but be prepared to rethink if treatment fails
- Use the simplest medication regimen
- Use the appropriate delivery system
- Use the same delivery system for relievers and preventers if possible
- Use the lowest dose of medication to achieve control
- There is limited role for peak flow meters
- Newer medications are not superior to existing ones

Massie J, AFP Vol 28 2 Feb 1999 107-111

Session 7

Adherence

A/Prof Susan Sawyer

Adolescent Physician, RCH

* * * *Key message* * * *

- Medications are only effective if patients use them correctly and consistently over time
- Many patients are chronic under-users or erratic in their adherence
- Most people have problems with adherence at least some of the time

Adherence: A complex issue

- The extent to which patients follow the instructions they are given for prescribed treatments
- Interface between effective therapy and effective disease management

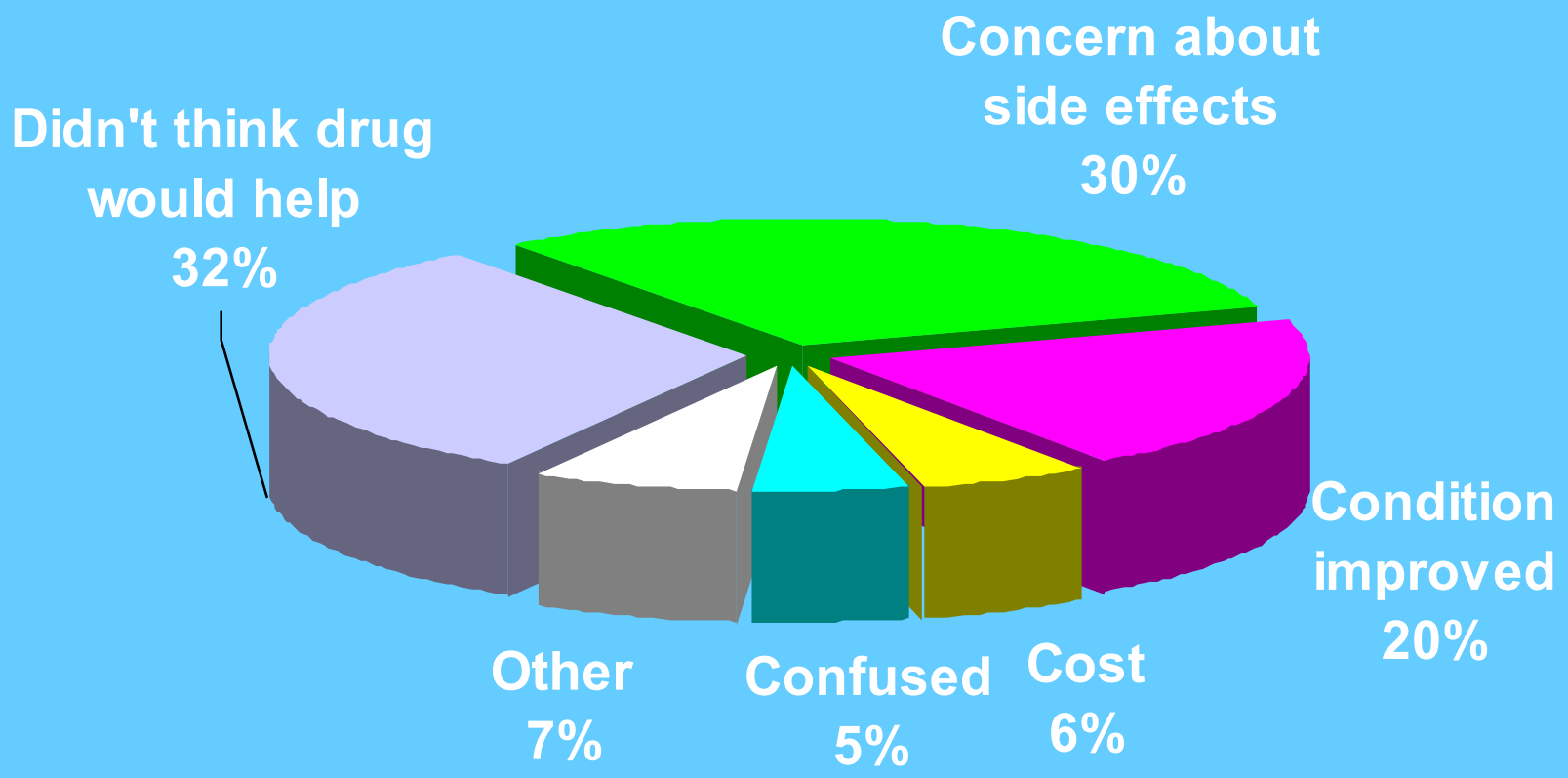
Factors affecting adherence

- Patient factors
- Doctor factors
- Doctor-patient relationship
- Drug regimen characteristics

What do we know about adherence?

- Patient adherence is especially low in therapies that :
  - require greater behaviour change
  - are more complex
  - are more burdensome
  - have no immediate benefits

Prescription refill resistance



AARPS Survey, 1984

Adherence as a dichotomous variable

Adherent or Non-adherent

Adherent or Non-adherent

- Judgmental
- Lacks understanding of the extent of the problem
- Fails to recognise we know little about how much is enough
- Fails to understand the contextual aspects of adherence in chronic illness
- Not informed by a developmental understanding
- Highlights the problem rather than the solution

Adherence is a dynamic phenomenon

Most people have a problem with adherence at least some of the time

Most people have a problem with adherence at least some of the time

Normalises adherence as a common problem

Places the responsibility with the health professional as much as the patient

Promotes universal use of strategies to promote adherence

Provides a framework for more intensive interventions for those with more significant adherence issues

Adherence and asthma

- Is this patient's poor asthma control due to poor adherence?
- Before addressing poor symptom control, assess the extent of poor adherence
- Address adherence before altering medication

Common pitfalls for GPs

- Assume patients have a greater commitment to asthma management than they actually do
- Ask questions that assume adherence is good - makes it difficult for patients to report honestly
- Ask questions that can only elicit yes/no answers - limits the opportunity to understand the impact of asthma

Common pitfalls for GPs

Assessing adherence

Strategies - communication

- Develop open, non-judgmental relationship
- Don’t criticise
- Use open-ended questions
- Use active listening
- Show empathy and interest
- Follow up on non-verbal cues

Assessing adherence

Strategies – general approach

- Normalise the problem of poor adherence
- Assume poor rather than good adherence
- Find out which dose most likely to be missed
- Identify the impact of asthma on the patient

Strategies for GPs

* * * *Key message* * * *

GPs need to ask questions that

- elicit more complex information
- reveal the pattern of adherence

in order to understand the problem and find solutions

Maximising adherence

Knowledge-attitudes-behaviour

- At least 50% of patients leave their doctor's office not knowing what they have been told to do (DiMatteo, '94)
- Good knowledge is not consistently associated with good adherence but is a necessary antecedent

Patient understanding of the treatment regimen

Medication detail	Consultations %
Schedule	52
Dosage	44
Duration	44
Restrictions	13
Side effects	10
Missed tablets	0

Cockburn et al, '8

Maximising adherence

- Knowledge is a poor predictor of adherence
- Relationship between knowledge and adherence is not linear
- Once patients and families are reasonably well informed, further education is unlikely to increase adherence
- Education is the strategy most commonly used by health professionals to improve adherence

Maximising adherence

Communication

- Show non-verbal attentiveness
- Give non-verbal encouragement
- Give praise for things well done
- Maintain interactive consultation
- Identify underlying worries or concerns

NM Clark et al, Pediatrics '98

Maximising adherence

Communication

- Give specific reassuring information
- Reach agreement on short term goals
- Review the long term therapeutic plan
- Help patient use criteria for decision making

NM Clark et al, Pediatrics ‘98

Maximising adherence

Patient-focused approach

Patients need a strong, personal reason to change their approach to medication and asthma management

Maximising adherence

Patient-focused approach

- Identify the impact of asthma
  - limitation of activity
  - influence of other people
  - lifestyle
- Elicit a patient-focused reason to make asthma management a greater priority in their life

Maximising adherence

Practical strategies

Repeat prescription reminders

- RP reminders (diabetics) resulted in RP adherence in 83% versus 57% in control group
- Combined use of RP and special packaging resulted in RP adherence of 92%

Sclar et al, 1998

Maximising adherence

Practical strategies

Improving attendance for review

- RCT: telephone appointment reminder vs control
- Non-attendance reduced from 20 to 8% (p=0.029)
- ‘Forgetting’ is the most frequent explanation for non-attendance
- 79% parents thought reminders were helpful

Sawyer et al, 200

* * * *Key message* * * *

Develop strategies
with the patient
to improve their adherence

Maximising adherence

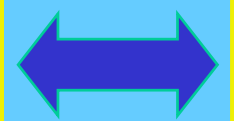
Follow-up

Reinforcing positive changes

- Praise specific efforts
- Help plan reinforcements
- Help link behaviour with good health outcomes
- Help match expectations and behaviours

The need to *strike a balance*

Deliver a strong message about the importance of adherence to the health care regimen



Recognise the everyday limitations of young people and their families and understand that partial adherence is a reality for many

* * * *Key message* * * *

Strategies that

- elicit the extent of adherence
- aim to improve adherence

should be part of every consultation

Session 8

Lung function

Dr Ric Roberts

Senior Scientist, Respiratory Laboratory, RCH

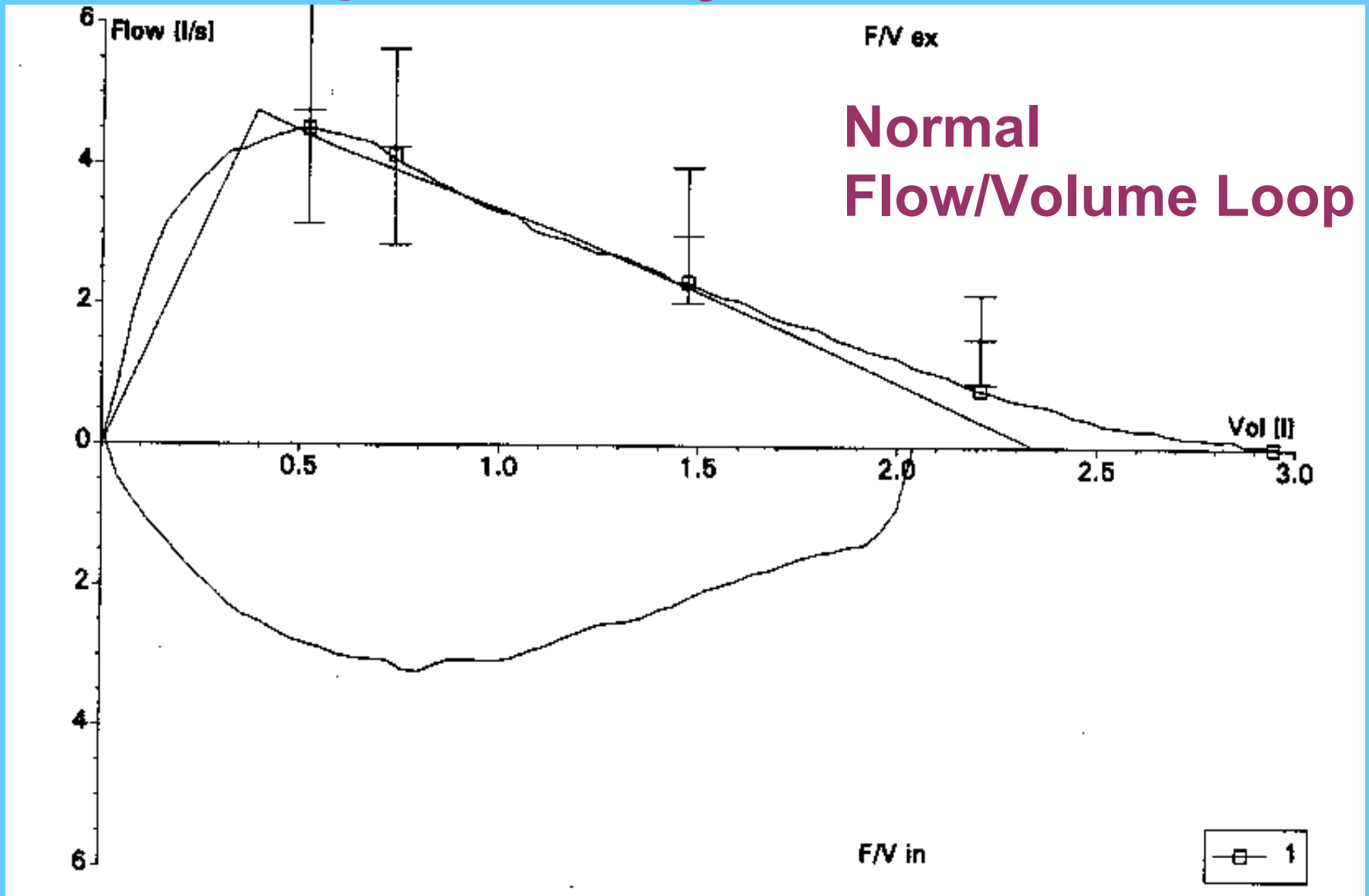
Spirometry in children

- What is spirometry?
- Flow/volume loops
  - how measured
  - what does it mean
- Requirements for test
  - quiet area
  - standing
  - nose clip

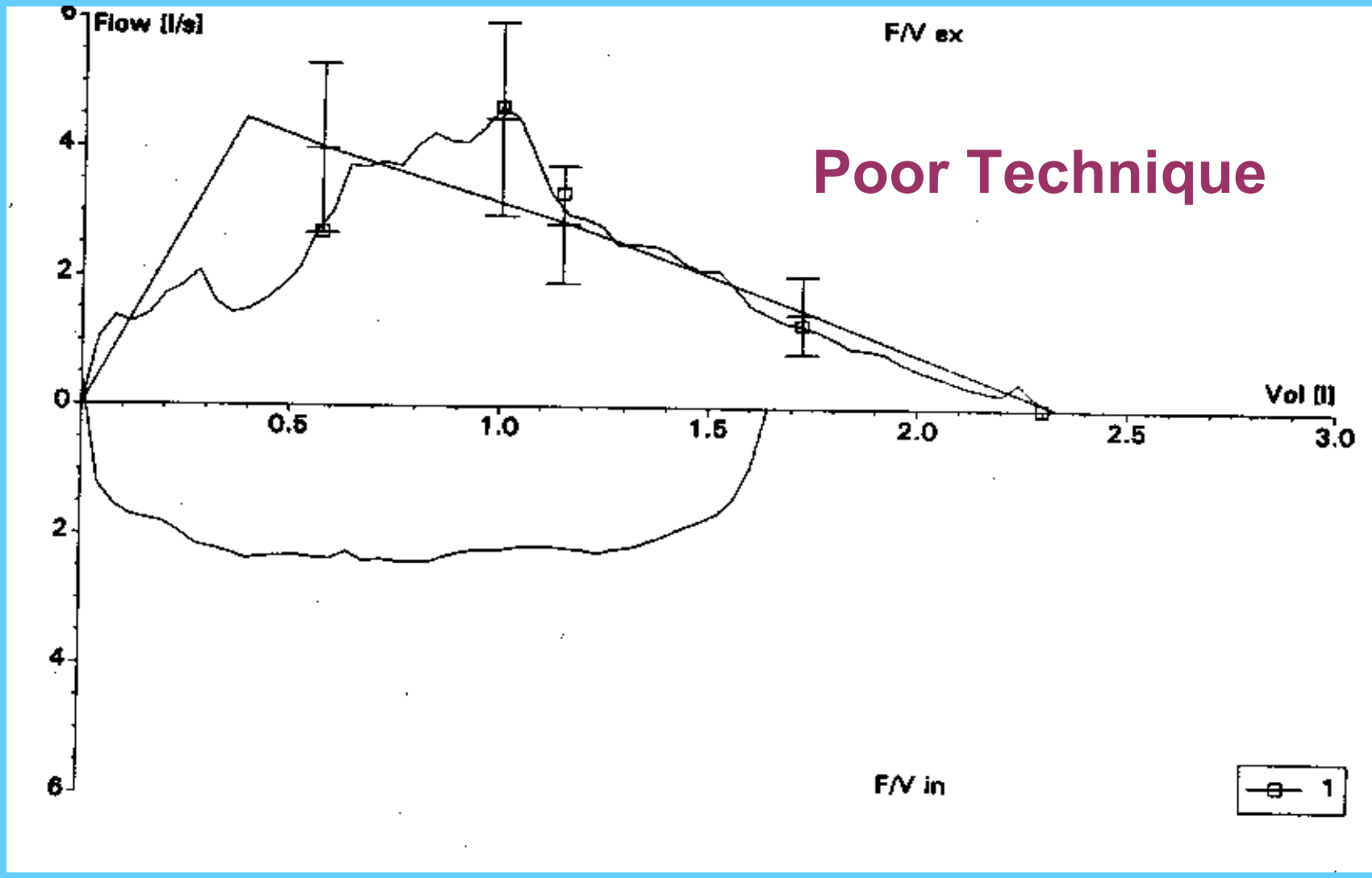
Spirometry in children

- Normal test
- Unacceptable test
  - Poor effort, coordination, cough

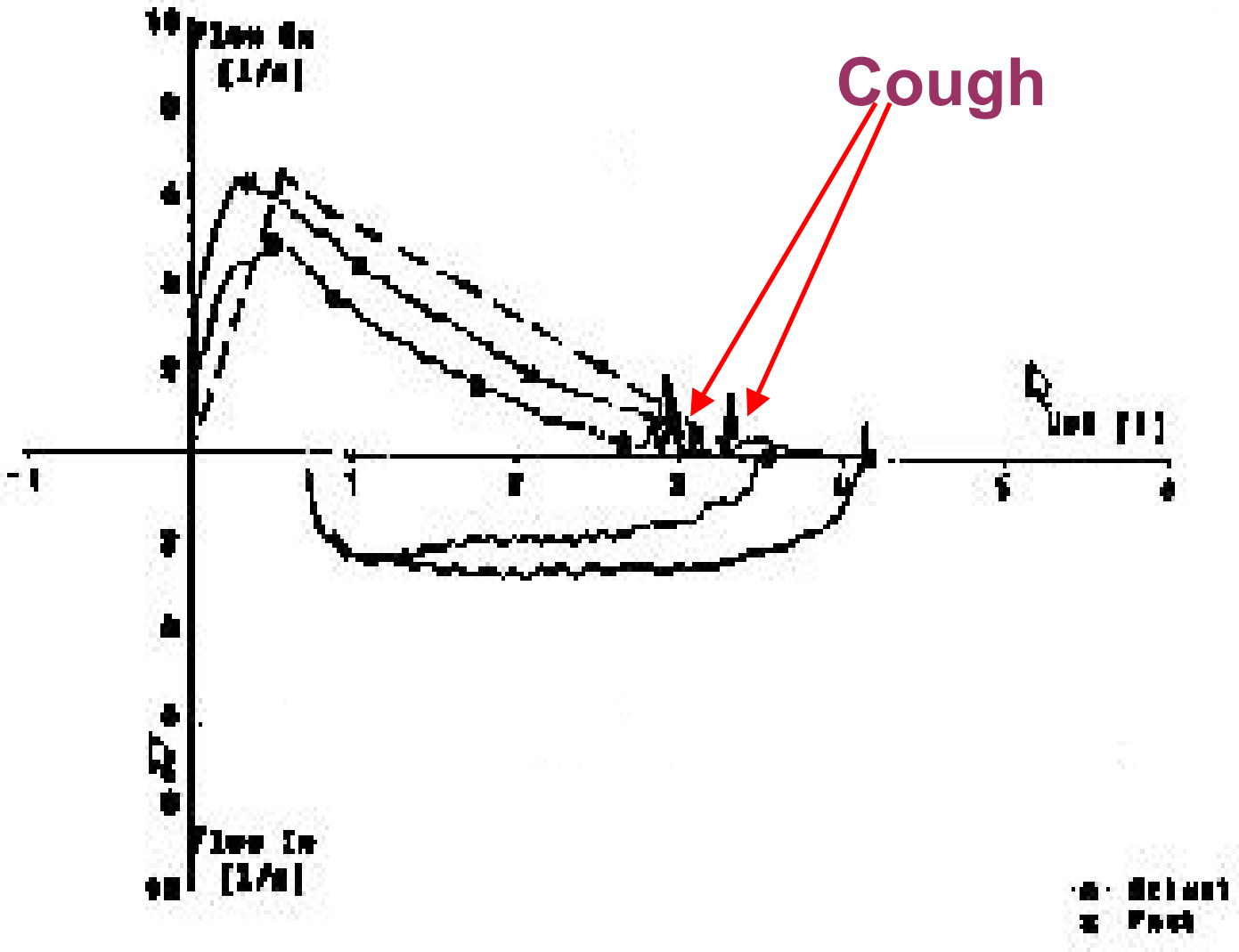
Spirometry in Children



Spirometry in Children



Spirometry in Children



Spirometry in children

Criteria for test: child versus adult

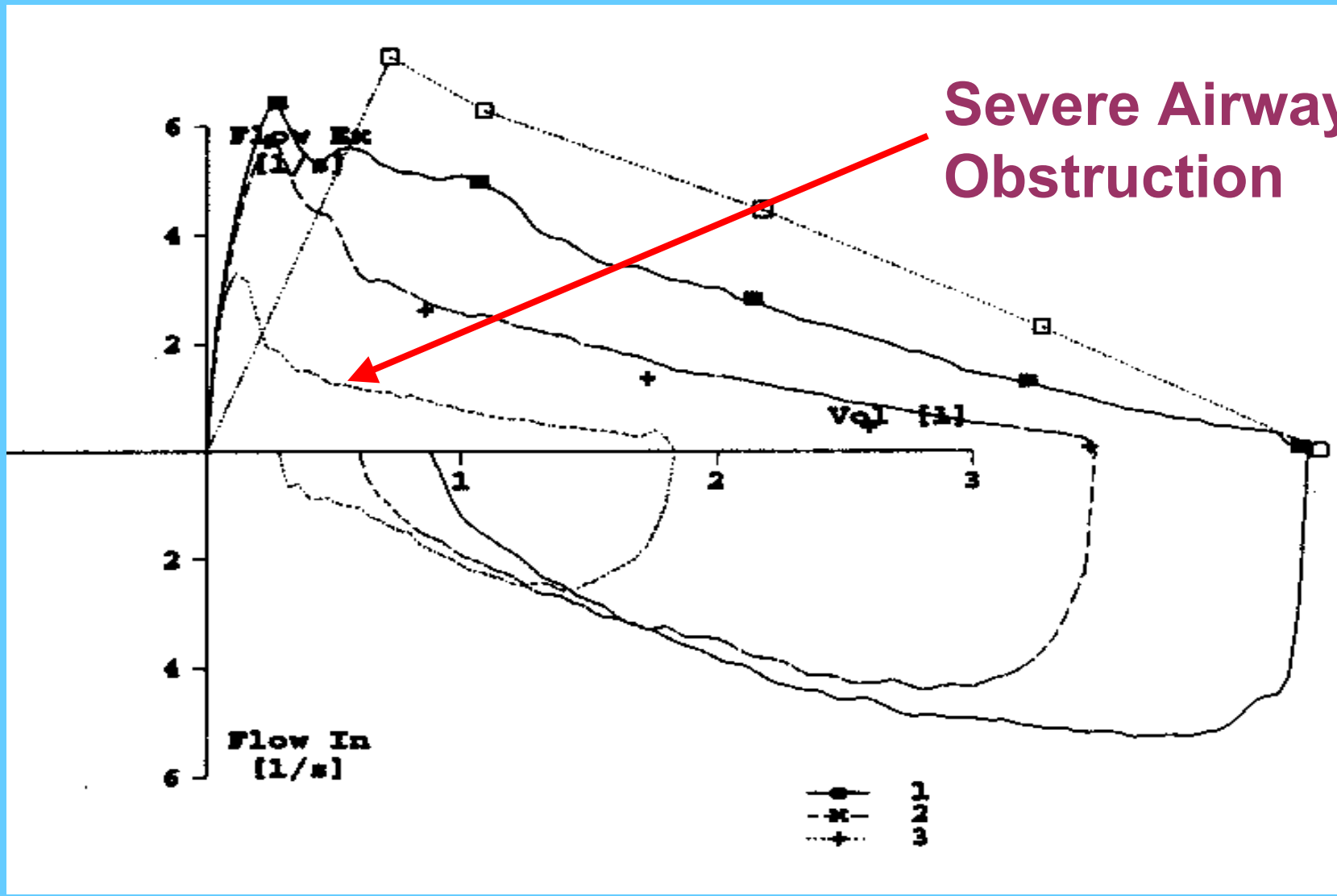
- Minimum 6 years of age
- At least 3 blows for at least 3 secs (maximum 5-8)
- ATS criteria: 2 tests with less than 200ml difference in FVC/FEV1
- Best test = greatest sum of FVC and FEV1 in a single test

Spirometry in children

Asthmatic

- Airway obstruction
  - Mild (66% < FER < 72%)
  - Moderate (50% < FER < 65%)
  - Severe (FER < 50%)

Spirometry in Children

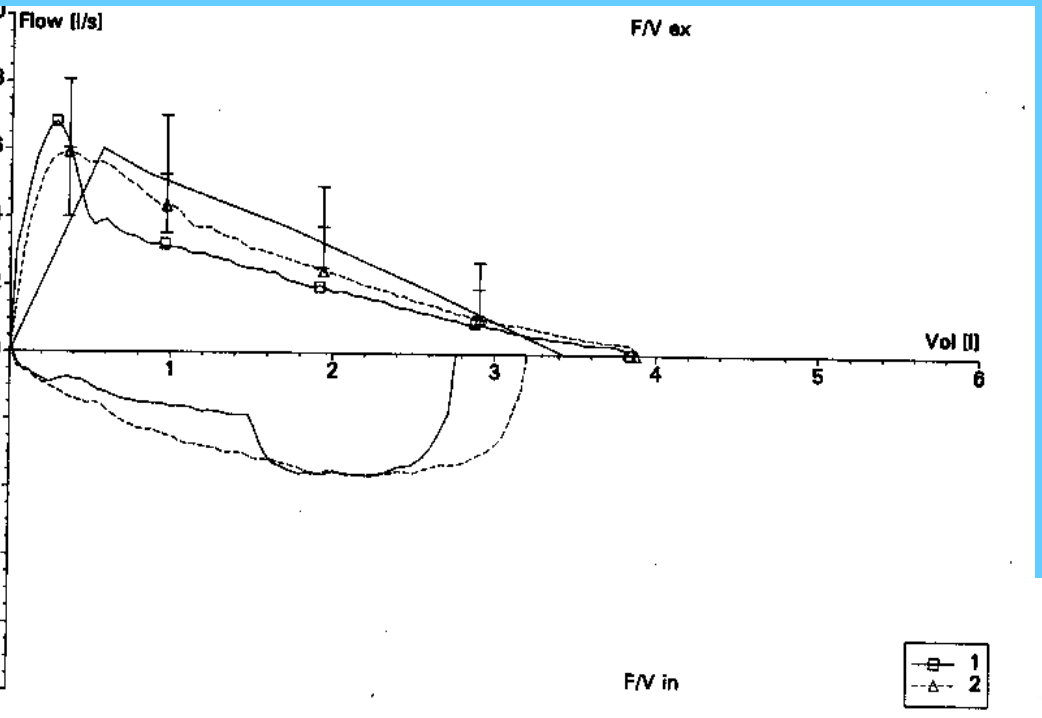


Spirometry in children

Asthmatic

- Bronchial hyper-responsiveness
  - FEV1 increases >10% or 200ml after bronchodilator

Spirometry in Children



Bronchodilator Response

Age: 17/07/1985
13 Years

Height: 158.4 cm
Weight: 43.2 kg
Sex: male
Diagnosis:

	Pred	Obs	%Pred	Post	%Pr
FVC.....[l]	3.43	3.84	112	3.87	1
FEV 1.....[l]	2.85	2.56	89.9	2.84	99
MMEF 75/25.....[l/s]	3.34	1.74	52.1	2.11	63
FEV 1 % FVC.....[%]	84.0	66.7	79.4	73.3	87
PEF.....[l/s]	6.03	6.81	113	5.92	98
FEF 75.....[l/s]	1.92	0.90	46.8	1.07	55
FEF 50.....[l/s]	3.73	1.96	52.5	2.44	65
FEF 25.....[l/s]	5.27	3.21	60.9	4.34	82

Spirometry in children

Interpretation

- Who should review the spirometry test?

Spirometry in children

Choice of equipment

- Cost
- Type of pneumotachograph
  - fleisch, screen, turbine
  - daily calibration – barometric P, T, humidity
  - heating recommended
- PFT parameters available
  - FVC, FEV1, FER, MEF, PEF

Spirometry in children

Choice of equipment

- Recommended flow/volume loop available
- Other measurements required:
  - height, age, gender, (weight)
- % predicteds
- Written report
- Extras
  - animation
  - database

Spirometry in children

Infection control

- Filters
- Mouthpieces

Spirometry in children

Peak flow measurement

- Not reliable in children under 6
- Poor technique – possible to learn ‘tricks’
- Not reproducible in acute setting
- Useful as part of an asthma management plan
- Diurnal variation

Session 9

'3+ Visit Plan'

Dr Chris Hogan,

GP Asthma Group, National Asthma Council and RACGP

The 3+ Visit Plan

A GP-developed (and evaluated) regular, planned review

- Replaces ‘add on’ or ‘rescue’ visits
- Initiated by GPs
- Well accepted by GPs and patients
- Linked to new MBS items

The 3+ Visit Plan

- Visit 1: deal with presenting asthma problems and contract to return
- Visit 2: detailed explanation of asthma
- Visit 3 etc: review and deal with any presenting issues
- Time for 3 visits >4, <12 weeks

Visit 1

- Deal with the presenting reason/issue relating to asthma
- Engage the patient
- Introduce the concept of a ‘contract’ for care: the ‘3+ Visit Plan’ and the reasons for review.
- Give ‘3+ Visit Plan’ handout to patient.

Visit 2

- Physical examination (including lung function testing
- Explore patient knowledge, perceptions and expectations
- What do they want from you?
- Review medications, including device techniques.
- Is a change in medication required?

Visit 3

- Review patient
- Complete Asthma Action Plan
- Explore trigger factors
- Review medication
- Recheck, reinforce and expand education
- Answer any questions

Regular review

Depends on pattern and level of control

- Infrequent episodic - 6 monthly
- Freq episodic (well controlled) - 6 monthly
- Persistent (well controlled) - 3 monthly
- Poorly controlled/being stablised – 1-2 monthly, consider specialist review

Who should be offered the ‘3+ Visit Plan’?

How to Get the Money

- Sign up - PIP for capital expenditure
- Visit 1 - Normal cons
- Visit 2 - Normal cons & (>12 years) spirometry**
- Visit 3 - Item 2664 to 2677- SIP of $100
- Visit 4 - Assess, Review, Reinforce

** Not yet compulsory for a GP to do this - Path Lab, Specialist, Hospital

How to Get the Money

- At least Visits 2 & 3 are planned recalls
- Visits 1-3 take a minimum of 4 weeks,
  - maximum of 4 months
- Diagnose asthma severity
- Review asthma related medication ?DMMR
- Provide written action plan & education

Other tools for the GP

- Care planning
- Asthma ‘clinics’ in the surgery
- Case conferencing
  - (very useful in complex situations)
- Asthma navigator

Care Plan

For people with ongoing conditions

- All relevant medical conditions are listed
- All current treatments are listed
- Relevant AHPs are identified & a need, goal & task indicated for them
- Care Plan is written & agreed to by the patient & sent to the allied health professionals

Who benefits from a Care Plan?

- Has been or is likely to be present for at least 6 months
- Have multidisciplinary needs
- Full details available at www.racgp.org.au

or

- Medicare Benefits Schedule Book

  http://www.health.gov.au/pubs/mbs/mbs5/category.htm#Notes-SectionA.21

Asthma Action Plan

Written instruction on:

- Which medication to have available
- What to avoid
- Preventative strategies
- How to vary medication
- When to seek help
- When to be reviewed

Session 10

Case discussion

Ongoing management -

Maintaining best function:

Using the guidelines

Summary

Dr Nabil Sulaiman

Dept of General Practice, University of Melbourne

* * * *Key message* * * *

- Physical activity should not be restricted in children with asthma
- Exercise should be actively encouraged
- Preventive medication should be used prior to exercise

NAC p55, RCH p27

* * * *Key message* * * *

Long-acting $beta_2$ agonists

- complement existing therapies
- do not replace inhaled corticosteroids
- are not indicated for symptom relief in an acute attack

* * * *Key message* * * *

- Medications are only effective if patients use them correctly and consistently over time
- Many patients are chronic under-users or erratic in their adherence
- Most people have problems with adherence at least some of the time

* * * *Key message* * * *

Strategies that

- elicit the extent of adherence
- aim to improve adherence

should be part of every consultation

Baseline results

Use of Asthma Action Plan

- 1/3 of participants never use AAPs
- of those who use AAPs 1/4 NAC proforma
- 1/2 use AAP following a severe attack
- only 16% use AAPs with all patients

Baseline results

Confidence in managing asthma

- ½ ***confident*** or ***very confident*** in managing severe attack
- ½ ***very confident*** in managing ongoing asthma

Baseline results

Primary and secondary features

- 54% regard mental state as primary
- 37% regard pulsus paradoxus as primary
- 29% regard peak flow as primary
- 40% stated that activity level is secondary
- 67% think blood gas is primary

EVALUATION