



Asthma in children

DR SHRUTI JAWAHAR GANATRA

CONSULTANT PAEDIATRICIAN

INTEREST IN RESPIRATORY MEDICINE & INTEGRATED CARE

GENERAL PRACTITIONER

Overview

- ▶ Importance
- ▶ Clinical features
- ▶ Red flags & Differentials
- ▶ Structured approach to management
- ▶ Montelukast
- ▶ How to approach an asthma review
- ▶ When to refer

Context

- ▶ Ongoing public health crisis
 - ▶ 1 in 11 children currently receiving treatment
 - ▶ Most common chronic condition in children
 - ▶ Admission: rates falling, but still in top 10 causes
 - ▶ Each presentation = red flag

Asthma Kills

- ▶ Disease that kills
 - ▶ UK highest mortality in Europe
 - ▶ 20-30 children <14yrs/year die
 - ▶ “mild”: care must be delivered with this in mind
- ▶ National Review of Asthma Deaths:
 - ▶ Emergency admissions & deaths are largely preventable
 - ▶ Almost half who died received inadequate standard of care
 - ▶ Preventable factors identified in 90%
 - ▶ <25% had personalised asthma plans

Suspected Asthma: Clinical Features

History:

- ✓ Recurrent episodes symptoms (> 1) with daily or seasonal variation
- ✓ Triggers
- ✓ Atopic history

Examination:

- ✓ Expiratory polyphonic wheeze
- ✓ Harrison's Sulcus



- ✓ Normal – therefore recordings very useful!



Red flags ...consider **alternatives** & refer!

History:

- Sx from day 1 of life
- Sudden onset
- Chronic productive cough
- Signs of systemic illness or immunodeficiency

Examination:

- Systemic signs
- Upper airway disease
- Severe chest deformity
- Unexpected signs on auscultation

Differentials to consider

- ▶ Is it even wheeze?!
- ▶ Transmitted sounds
 - ▶ >10 viral URTIs/year
- ▶ Viral induced wheeze
 - ▶ Symptoms with colds only, no interval symptoms
- ▶ Habit cough
 - ▶ Isolated cough, disappears when asleep
- ▶ Vocal cord dysfunction
 - ▶ Complex, may co-exist
- ▶ Panic attack
 - ▶ Dizziness, peripheral tingling

Investigations in Primary Care

- ▶ Validated symptom questionnaire – Asthma Control Test (ACT)
 - ▶ $<19/25$ = poor control
- ▶ Is there Peak Expiratory Flow **variability**?
 - ▶ IF normal PEFr: 2 - 4 weeks home monitoring, diurnal variation $>20\%$ = positive
 - ▶ Realistically > 8 years
- ▶ If asthma unlikely consider investigations as per differentials
- ▶ Reserve CXRs for children with clinical signs suggestive of other conditions

Suspected Asthma?

Symptomatic?

> 3x/week : salbutamol use, nocturnal, impacts school attendance, limits exercise
Admission, oral steroids, ACT<19, Peak Expiratory Flow Rate (PEFR) < 80% or variability

Monitored Initiation of Preventer Treatment

Age <5 years: Clenil Modulite (ICS) 100mcg BD via pMDI & spacer (mask or mouthpiece)

Age >5 years: Clenil Modulite 200mcg BD via pMDI & spacer (mouthpiece)

After 6-8 weeks reassess objectively using ACT & PEFR

Symptoms Resolved?

STOP treatment
Reassess ACT & PEFR

Monitor

If symptoms reoccur:
- within 4 weeks – restart
- after 4 weeks - retriial

Symptoms Persist?***

Age <5 years: Add Montelukast (LTRA) 4mg OD

Age >5 years: Change to Serevide 50 (combination ICS fluticasone /LABA salmeterol) TT BD via pMDI & spacer

Reassess ACT & PEFR

Symptoms Persist?

Age <5 years: Increase steroid dose

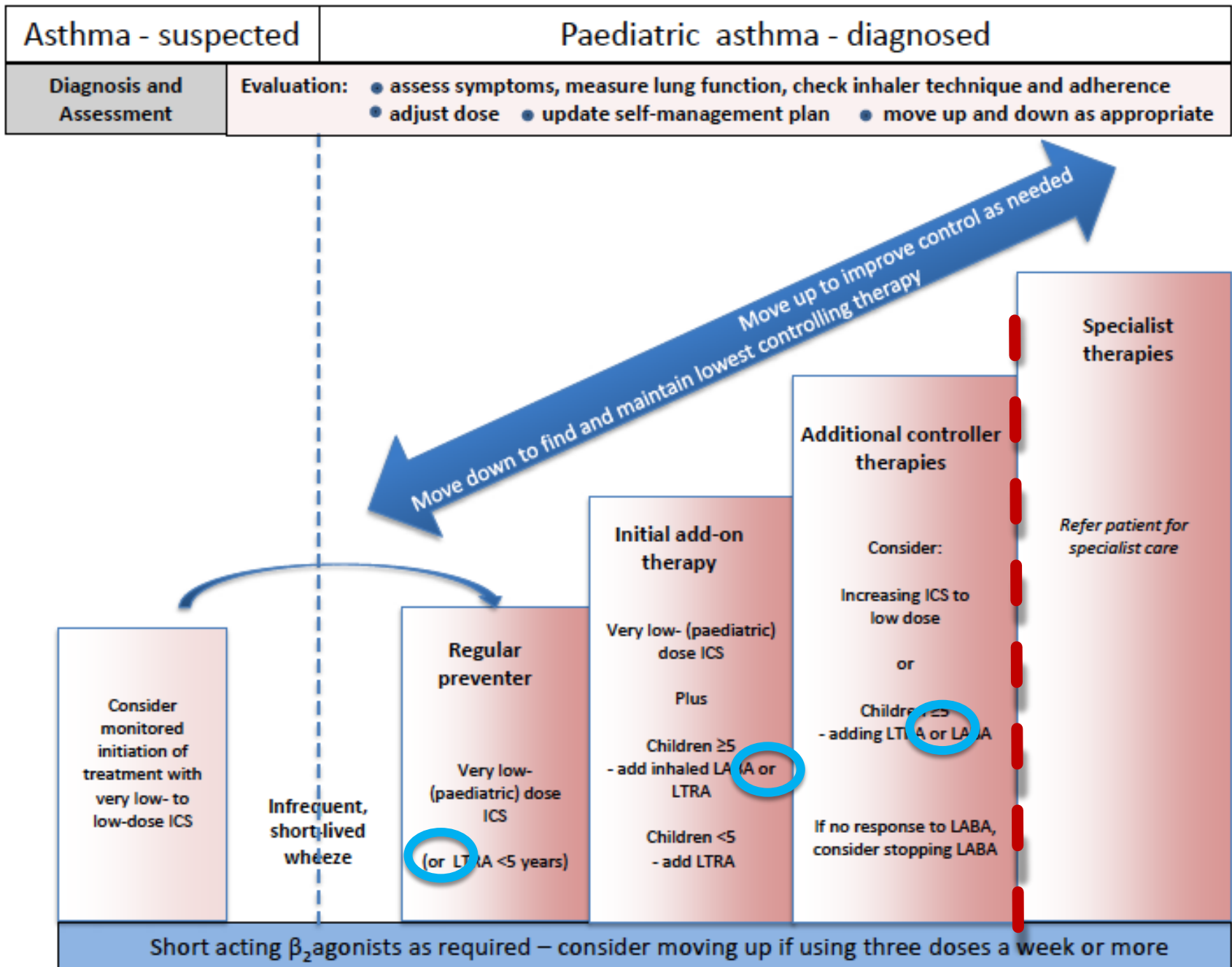
Age >5 years: Add Montelukast

Reassess ACT & PEFR

REFER

Of note....

- < 5 years...label with caution! Suspect diagnosis until confirmation with objective tests (when able)
- Never prescribe a pMDI without a spacer
- If symptoms persist*** – ask yourself:
 1. **alternative diagnosis**
 2. **under treatment**
 3. **adherence**



Montelukast – controversy & cautions

- ▶ Recent evidence Inhaled corticosteroids better than montelukast
 - ▶ daily & intermittently
- ▶ Further studies needed
 - ▶ **?specific montelukast responsive phenotype**
- ▶ Montelukast is not without potential risks – counsel your patients!
 - ▶ 1 in 100 to 1 in 1000 :
 - ▶ Sleep issues e.g. insomnia, night terrors or sleepwalking
 - ▶ Mood disorders such as anxiety, depression and irritability
 - ▶ 1 in 10,000
 - ▶ Suicidal ideation

Management in Primary care

- ▶ Aim = symptom free!
- ▶ Personalised, Evidence based
- ▶ Empowered and educated

Healthy London Partnership

- Asthma toolkit for primary care
- Templates for EMIS & SystemOne
- Peak Expiratory Flow Rate – normal values

Beat Asthma

- How to use your devices – information sheets & video guides

Approach to Asthma Review

When?

- ▶ Post acute exacerbation
 - ▶ Within 2 working days
 - ▶ 1 month later – Fully recovered?
- ▶ Annually

How? At least 20 minutes

- ▶ Clinical assessment
- ▶ Patient education

Why?

- ▶ NRAD
 - ▶ unlike other long-term conditions, symptom changes

Asthma Review Structure

1. **Is this asthma?**

- ▶ Symptoms, triggers, response to reliever
- ▶ PEFr

2. **Is it controlled?**

- ▶ ACT, time off school, growth
- ▶ Salbutamol prescriptions
- ▶ Triggers, Exacerbations
- ▶ **Adherence**

3. **Do I need to change management?**

- ▶ Inhaler technique, change inhaler?
- ▶ Asthma plan
- ▶ Step up or down or refer?



My Asthma Plan

1 My usual asthma medicines

• My preventer inhaler is called _____
 _____ and its colour is _____

• I take _____ puff/s of my preventer inhaler in the morning and _____ puff/s at night. I do this every day even if I feel well.

• Other asthma medicines I take every day:

• My reliever inhaler is called _____
 _____ and its colour is _____

I take _____ puff/s of my reliever inhaler when I wheeze or cough, my chest hurts or it's hard to breathe.

• My best peak flow is _____

If I need my blue inhaler to do any sport or activity, I need to see my doctor or asthma nurse.



2 My asthma is getting worse if...

- I wheeze or cough, my chest hurts or it's hard to breathe, **or**
- I need my reliever inhaler (usually blue) three or more times a week, **or**
- My peak flow is less than _____, **or**
- I'm waking up at night because of my asthma (this is an important sign and I will book a next day appointment)

If my asthma gets worse, I will:

- Take my preventer medicines as normal
- And also take _____ puff/s of my blue reliever inhaler every four hours
- See my doctor or nurse within 24 hours if I don't feel better



URGENT! "If your blue reliever inhaler isn't lasting for four hours you are having an asthma attack and you need to take emergency action now (see section 3)"



Remember to use my spacer with my inhaler if I have one.

(If I don't have one, I'll check with my doctor or nurse if it would help me)

Other things to do if my asthma is getting worse

3 I'm having an asthma attack if...

- My reliever inhaler isn't helping or I need it more than every four hours, **or**
- I can't talk, walk or eat easily, **or**
- I'm finding it hard to breathe, **or**
- I'm coughing or wheezing a lot or my chest is tight/hurts, **or**
- My peak flow is less than _____

If I have an asthma attack, I will:



Call for help



Sit up — don't lie down. Try to be calm.



Take one puff of my reliever inhaler (with my spacer if I have it) **every 30 to 60 seconds** up to a total of 10 puffs.



If I don't have my blue inhaler, or it's not helping, I need to call **999** straightaway.



While I wait for an ambulance I can use my blue reliever again, every 30 to 60 seconds (up to 10 puffs) if I need to.

Even if I start to feel better, I don't want this to happen again, so I need to see my doctor or asthma nurse **today.**

When to refer?

- ▶ Red flag clinical features
- ▶ Diagnosis isn't clear
- ▶ Poor response to age-appropriate treatment (table referenced), with satisfactory technique & adherence
- ▶ Severe/Life-threatening asthma attack
- ▶ Doctor / child / family unhappy

Take home messages

- ▶ Asthma kills - deaths preventable
- ▶ Every presentation – marker of future risk
- ▶ The diagnosis might be wrong
- ▶ Asthma reviews – extremely important!

Resources

- ▶ **Asthma UK**
<https://www.asthma.org.uk/>
- ▶ **Interactive Asthma Plan:**
<https://www.asthma.org.uk/971689d1/globalassets/health-advice/resources/children/myasthmaplan-trifold-interactive-041219.pdf>
- ▶ **Asthma Control Test**
<https://www.asthmacontroltest.com/en-gb/welcome/>
- ▶ **Healthy London Partnership:**
<https://www.healthy london.org/resource/london-asthma-toolkit/primary-community-care/>
- ▶ **Beat Asthma**
<https://www.beatasthma.co.uk/resources/primary-healthcare-professionals/>





Thank you!

REFER

Table 2 ICS dosages for children aged 5 to 11 years

	Paediatric low dose	Paediatric moderate dose	Paediatric high dose
Beclometasone dipropionate¹			
Standard particle CFC-free inhalers	100–200 micrograms per day in 2 divided doses	300–400 micrograms per day in 2 divided doses	500–800 micrograms per day
Extra-fine particle CFC-free inhalers ²	100 micrograms per day in 2 divided doses	150–200 micrograms per day in 2 divided doses	300–400 micrograms per day in 2 divided doses
Budesonide			
Dry powder inhalers	100–200 micrograms per day as a single dose or 2 divided doses	300–400 micrograms per day as a single dose or 2 divided doses	500–800 micrograms per day in 2 divided doses
Ciclesonide			
Metered dose inhaler ³	80 micrograms per day as a single dose	160 micrograms per day as a single dose or in 2 divided doses	240–320 micrograms per day in 2 divided doses
Fluticasone propionate			
Metered dose and dry powder inhalers ⁴	100 micrograms per day in 2 divided doses	150–200 micrograms per day in 2 divided doses	250–400 micrograms per day in 2 divided doses

Further Investigations : if access to & ability to perform

1. Is there airflow **obstruction**?
 - ▶ Spirometry: Forced Expiratory Volume in 1 second/Forced Vital Capacity ratio <70% (FEV1/FVC) = obstructive airway disease
2. Is this **reversible**?
 - ▶ Bronchodilator Reversibility (BDR): Improvement in FEV1 >12%
3. If diagnostic uncertainty - is there eosinophilic airway **inflammation**?
 - ▶ Fractional exhaled Nitric Oxide (FeNO) >35ppb
4. Skin prick tests, or specific IgE to aeroallergens can be used to help identify **triggers**, once a diagnosis has been made.