excellent / kind / responsible / respectful /

St George's University Hospitals NHS
NHS Foundation Trust

Asthma in Children & Inhalers

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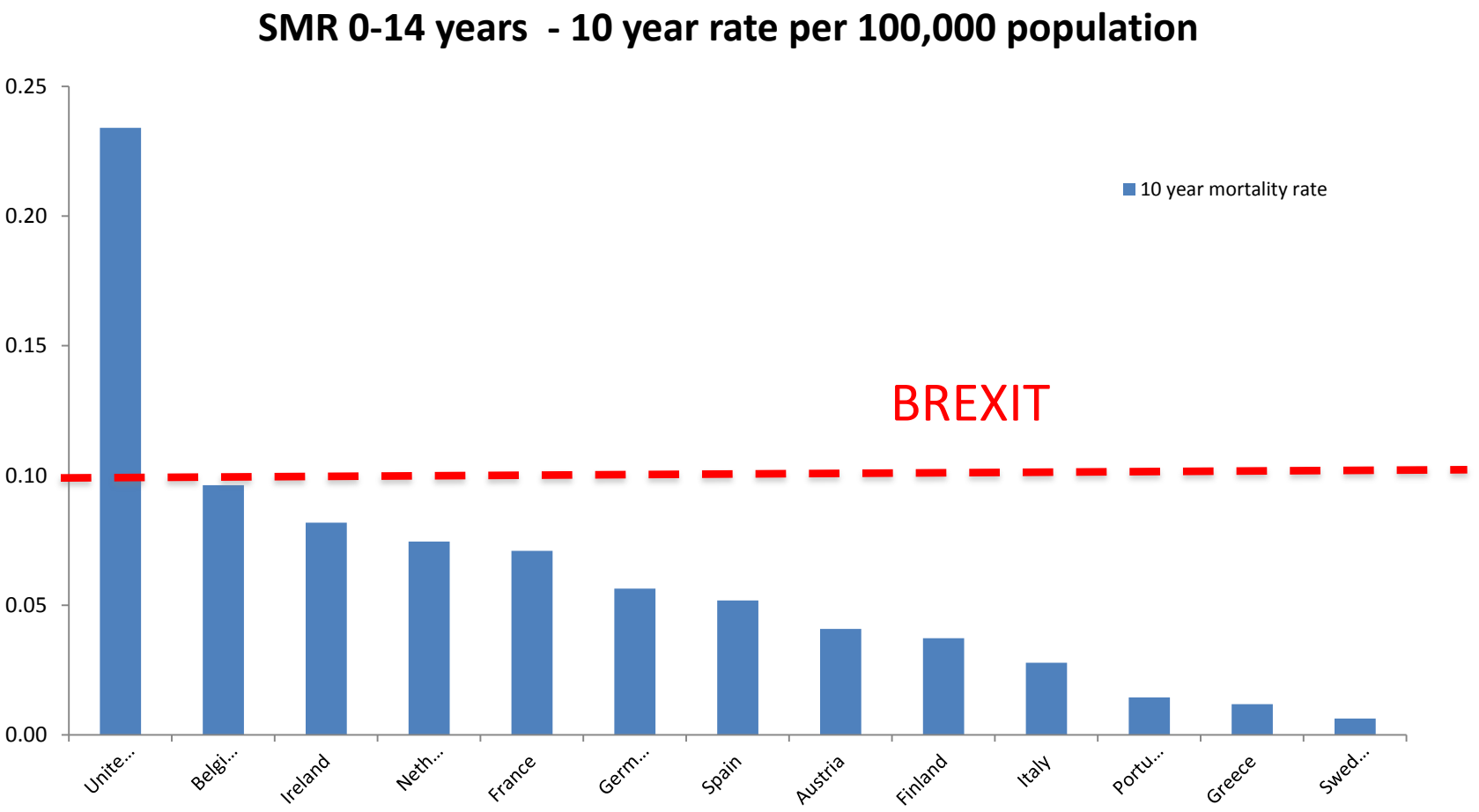
30/11/2017

Excellence in specialist and community healthcare

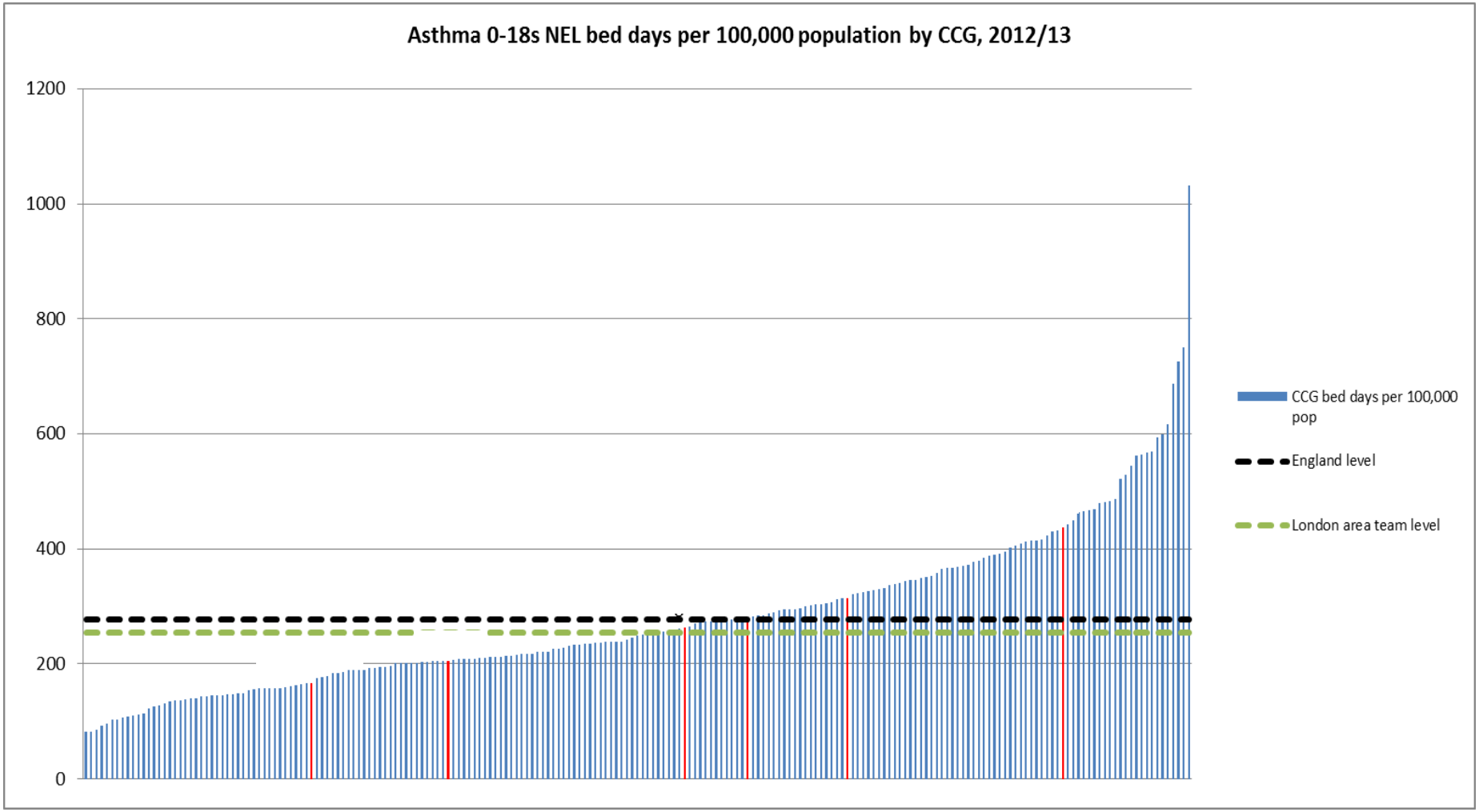
Asthma/Wheeze mortality in UK compared with the rest of Europe



Asthma in Children 2017/ St George's University Hospitals NHS Foundation Trust

Asthma acute bed days per 100,000

Four of the six SWL CCGs were above the London average for 0-18 asthma bed days per 100,000 population in 12/13, and Croydon was highest quartile nationally

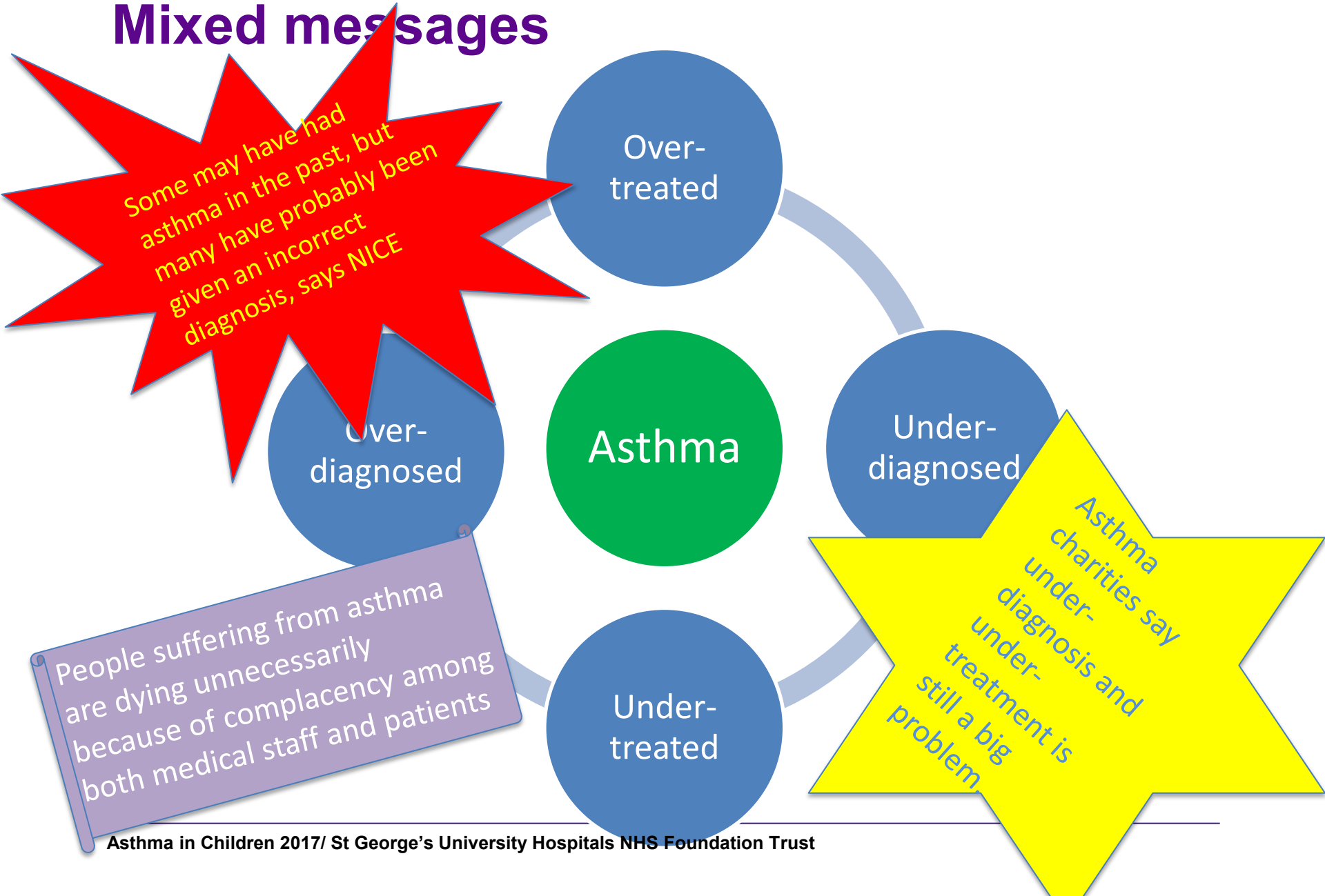


Source: Chimat/HES. Emergency admissions for asthma for patients registered at a GP practice within the CCG, 2012/13. **Population not weighted.** Includes admissions (first finished consultant episodes) with a primary diagnosis code of J45 or J46 and method of admission coded 21,22,23,24 or 28

NRAD Panel Conclusions:
Quality of Care

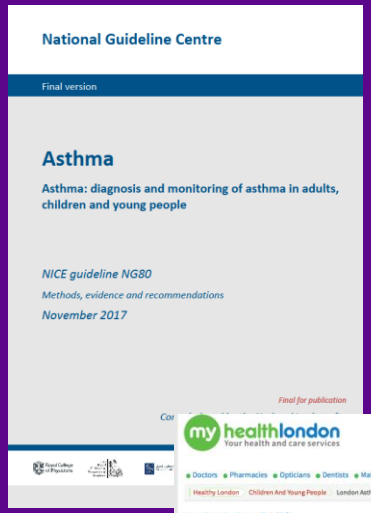
Conclusion	All ages (195)	0-19 (28)
Chronic Management - Adequate	**56 (29%)**	**2 (7%)**
Previous Attack Management - Adequate	**69 (35%)**	**8 (29%)***
Final Attack Management - Adequate	**66 (34%)**	**13 (46%)***
Overall Standard of Asthma Care - Good practice	**31 (16%)**	**1 (4%)**

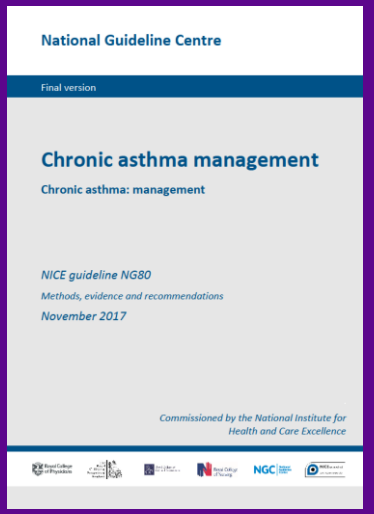
Mixed messages

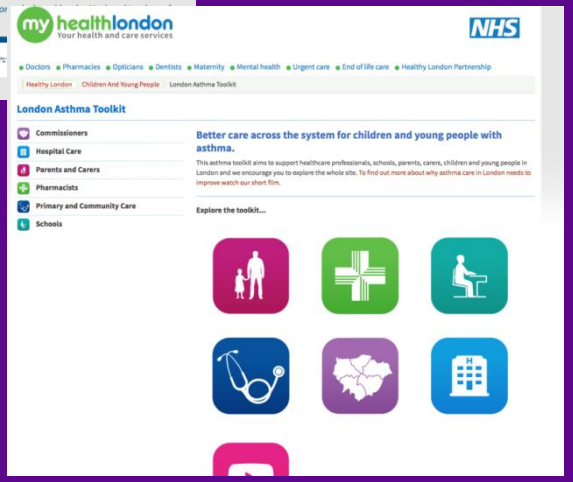



NHS
London
Strategic Clinical Networks
London children and young people
strategic clinical network
June 2015
London asthma standards
for children and young people
Driving consistency in outcomes for children and young people across the capital


Healthcare Improvement Scotland
SIGN
SIGN 153 • British guideline on the management of asthma
A national clinical guideline
September 2016


National Guideline Centre
Final version
Asthma
Asthma: diagnosis and monitoring of asthma in adults, children and young people
NICE guideline NG80
Methods, evidence and recommendations
November 2017
Final for publication


National Guideline Centre
Final version
Chronic asthma management
Chronic asthma: management
NICE guideline NG80
Methods, evidence and recommendations
November 2017
Commissioned by the National Institute for Health and Care Excellence
NGC


my healthlondon
Your health and care services
NHS
Doctors
Pharmacies
Opticians
Dentists
Maternity
Mental health
Urgent care
End of life care
Healthy London Partnership
Healthy London
Children And Young People
London Asthma Toolkit
London Asthma Toolkit
Commissioners
Hospital Care
Parents and Carers
Pharmacists
Primary and Community Care
Schools
Better care across the system for children and young people with asthma.
Explore the toolkit...

Guidelines

BTS / SIGN

- Whole guideline

NICE

- Diagnosis & Monitoring
- Management

Differences

Diagnosis: NICE – only diagnose with objective measures (current feasibility)

Management: NICE

Step 2 Trial of ICS for two months - then stop

Step 3 Initial add on – LTRA (all ages) then LABA if no help

Step 3 MART therapy - ? Evidence in children / current licenced preparations

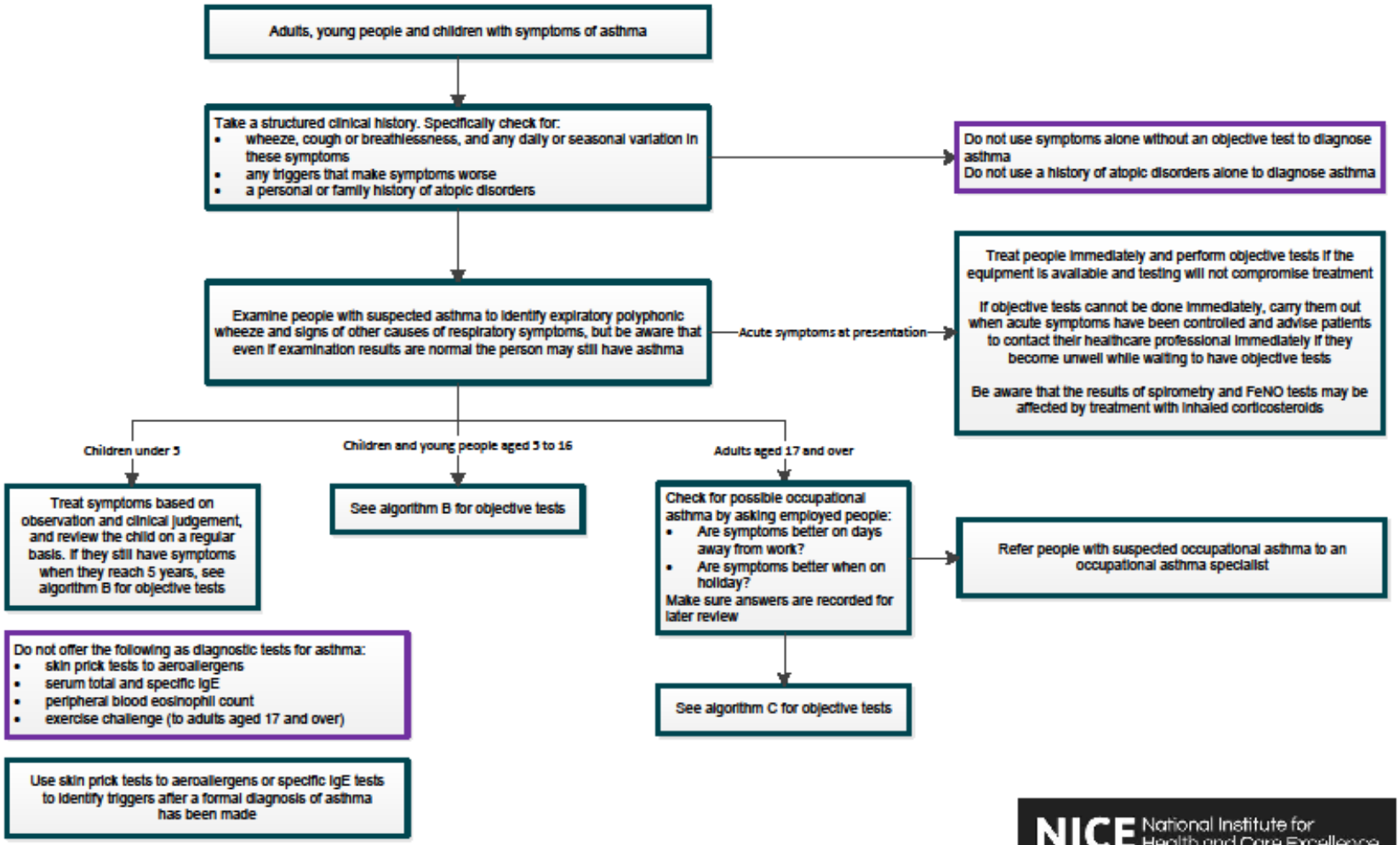
Acute – Increase ICS (not laba) but not to more than licenced dose

ASTHMA - Get the diagnosis

- A ssess symptom patterns – recognise wheeze / cough
- S pirometry / BDR if suitable (age >5)
- H istory of atopy - family
- T rial of treatment (NICE start/stop)
- M onitor / measure response FOLLOW UP
- A ccurate identification of triggers

- 7 C's: Competency, Complexity, Consistency, Complacency, Compliance, Communication, aCcountability

Algorithm A Initial clinical assessment for adults, young people and children with suspected asthma



This algorithm is based on recommendations from NICE's guideline on asthma: diagnosis, monitoring and chronic asthma management (2017)

Algorithm B Objective tests for asthma in children and young people aged 5 to 16

Order of tests

- Perform spirometry in children and young people with symptoms of asthma
- Consider BDR test if spirometry shows an obstruction

If a child is unable to perform objective tests:

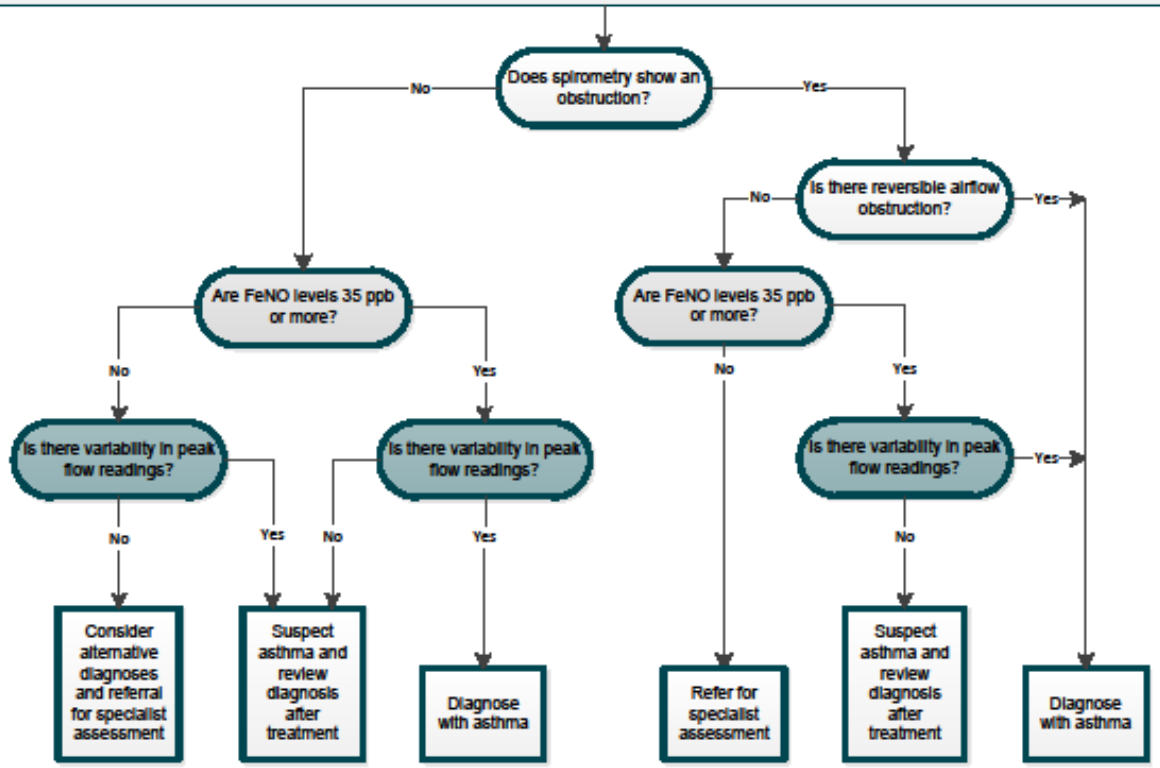
- treat based on observation and clinical judgement **and**
- try doing the tests again every 6 to 12 months

If diagnostic uncertainty remains after spirometry and BDR, consider FeNO

If diagnostic uncertainty remains after FeNO, monitor peak flow variability for 2 to 4 weeks

Abbreviations:
FeNO, fractional exhaled nitric oxide
BDR, bronchodilator reversibility

Interpretation of test results for children and young people aged 5 to 16 with symptoms suggestive of asthma



This algorithm is based on recommendations from NICE's guideline on asthma: diagnosis, monitoring and chronic asthma management (2017)

Positive test thresholds
Obstructive spirometry: FEV1/FVC ratio less than 70% (or below the lower limit of normal if available)
FeNO: 35 ppb or more
BDR: Improvement in FEV1 of 12% or more
Peak flow variability: variability over 20%

NICE National Institute for Health and Care Excellence

Is it asthma?

- Clarabelle – 6 year old girl
  Admitted with acute wheeze. 4 year history of night cough and difficulty in breathing. Uses salbutamol twice per day for 4 years (helps). Mum has asthma.

- Ayad – 15 yrs old.
  2 year history of increasing SOB with exercise. Intermittent (but frequent) cough. Trials of seretide and symbicort not helpful. Using BDP via MDI (no spacer).

- Jerome – 6 year old boy
  10 month history of cough in morning. 2 presentations with acute SOB and wheeze. SOB with exercise. Eczema. Rib cage deformity, clubbing

- Fred – 2 yrs.
  Recurrent episodes of wheeze and cough. 2 x ED over winter.
  No exercise symptoms. FH of asthma – Dad as child.

Preschool - Is it asthma?

ASTHMA →

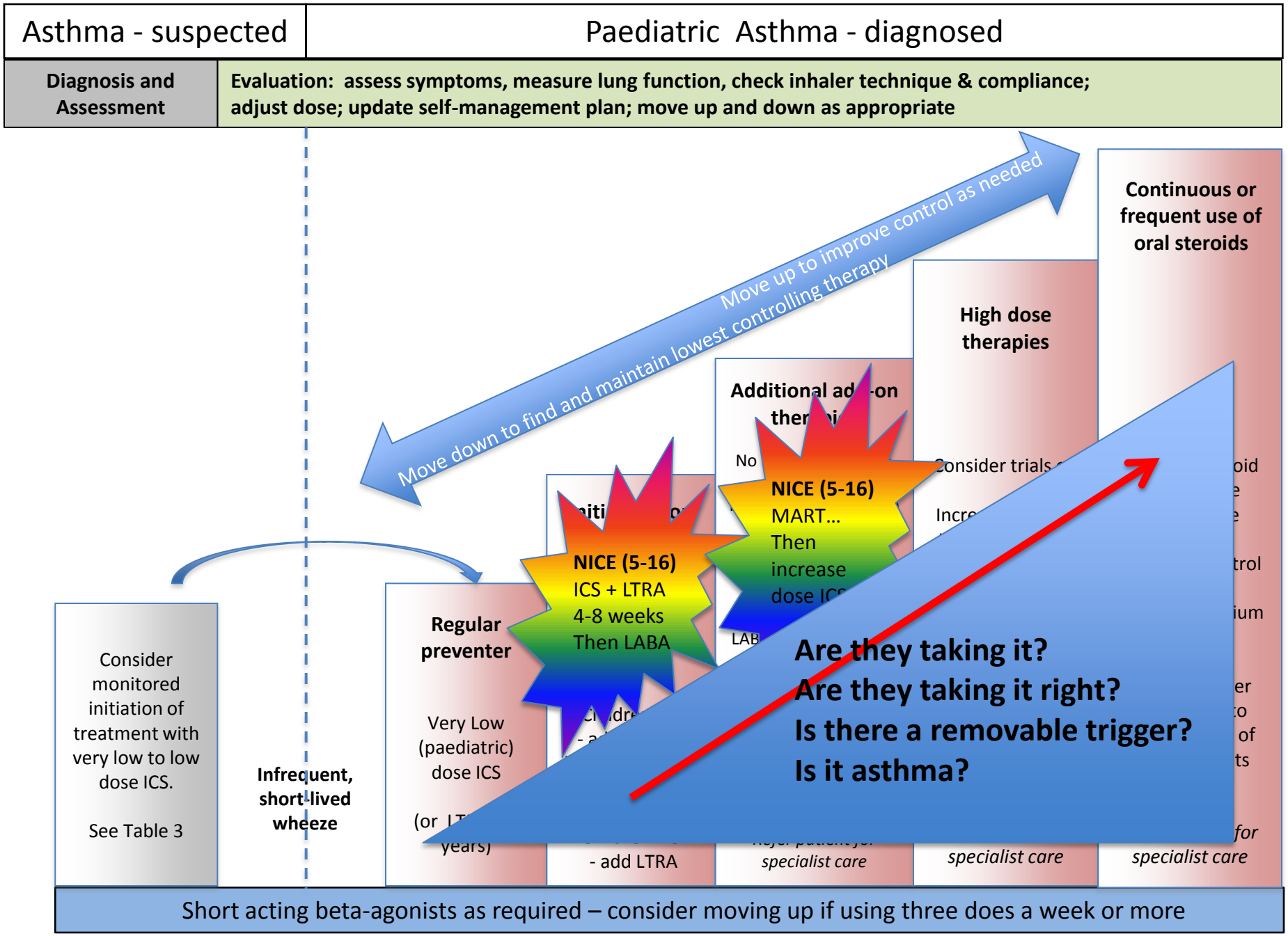
	Episodic Viral Wheeze	Multi Trigger Wheeze
Wheeze	With colds	In between colds
Onset	First year (NOT from birth)	Second to third year
Atopy	Nil	Eczema, Food allergy
Family History	Early life only	1st degree relative
Smoking	Yes	
Childcare	Possible relationship	

Consider other factors
Prematurity
'True' bronchiolitis (RSV+ve / crackles)

SIMPLE Asthma Care
Getting it right

- S tepwise pharmacological management Inhaled CorticSteroids
- I nhaler technique and device suitable for age
- M onitor control (ACT, B2A use, preventer uptake)
- P ersonalised Asthma Action Plan
- L ifestyle. Learn symptoms and triggers
- E ducation / ETS / Every Time

- 7 C's: Competency, Complexity, Consistency, Complacency, Compliance, Communication, aCcountability


Asthma - suspected
Paediatric Asthma - diagnosed
Diagnosis and Assessment
Evaluation: assess symptoms, measure lung function, check inhaler technique & compliance; adjust dose; update self-management plan; move up and down as appropriate
Move up to improve control as needed
Move down to find and maintain lowest controlling therapy
Continuous or frequent use of oral steroids
High dose therapies
Additional add-on therapies
Regular preventer
Consider monitored initiation of treatment with very low to low dose ICS.
See Table 3
Infrequent, short-lived wheeze
Very Low (paediatric) dose ICS
NICE (5-16)
ICS + LTRA
4-8 weeks
Then LABA
NICE (5-16)
MART…
Then increase dose ICS
- add LTRA
specialist care
specialist care
specialist care
Are they taking it?
Are they taking it right?
Is there a removable trigger?
Is it asthma?
Short acting beta-agonists as required – consider moving up if using three does a week or more

Inhaler Technique
Back to BASICs

- B enefit
- A sthmatics

with

- S uitable
- I nhalers &
- C hamber

5 tidal breath technique

- All do the same: GP, Pharmacy, HospitalED, OPD, Ward
- 7 C's: Competency, Complexity, Consistency, Complacency, Compliance, Communication, aCcountability

Inhalers / Spacer

EVERY CHILD:

Must have a spacer:

Mask <3

No Mask >3

Consistent technique:

5 tidal breath technique

Single breath > 10 years

Consider DPI > 10 years (secondary school)

MUST have MDI / spacer for acute attacks

Paediatric Respiratory Medicine

Which Spacer Should I Use?

Age	Device	Compatible Inhalers	Alternatives	Indicative Cost
0-2 years	Volumatic + Mask – Tilted or vertical 10 second tidal breath technique 	Salbutamol (Ventolin ®) Clenil Modulite Fluticasone	Yellow Aerochamber with Mask	Volumatic with Mask = £6.70 Yellow Aerochamber = £8.02
2 – 3 years	Volumatic + Mask 5 tidal breath technique 	Salbutamol (Ventolin ®) Clenil Modulite Fluticasone	Yellow Aerochamber with mask	Volumatic with Mask = £6.70 Yellow Aerochamber = £8.02
3-10 years	Volumatic with mouthpiece 5 tidal breath technique 	Salbutamol (Ventolin ®) Clenil Modulite Fluticasone Seretide	Blue Aerochamber with mouthpiece	Volumatic without Mask = £3.81 Blue Aerochamber = £4.81
10 years +	Volumatic with mouthpiece Single breath – breathhold technique 	Salbutamol (Ventolin ®) Clenil Modulite Fluticasone Seretide	Blue Aerochamber with Mouthpiece Dry powder devices: Accuhaler Turbohaler	Volumatic without Mask = £3.81 Blue Aerochamber = £4.81

Inhaler with a Spacer

3 years and older

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NHS Foundation Trust

Children's Asthma Team

Wash new spacers in warm, soapy water and leave to drip-dry.
Wash every month. Do not put in the dishwasher.

Do not wipe or dry with a towel

To Give the Inhaler:

1. **Shake** the inhaler well
2. Remove lid and fit the inhaler into the end of the spacer
3. Put the mouthpiece into your child's mouth. **Ensure a good seal with their lips**
4. Press the inhaler **once**
5. Your child needs to take **five slow, normal breaths** in and out through the mouthpiece. The valve will "click" with every breath.
6. If your child needs a second puff, press the inhaler again and take another five normal breaths
7. **If more than two puffs are required, shake the inhaler after every second puff.**

Rules to Remember:

- **Only press the inhaler once** at a time otherwise puffs stick together and coat the sides of the spacer so your child gets less medicine
- **Wash the spacer monthly in warm, soapy water and leave to drip-dry** to prevent the medication from sticking to the sides of the spacer
- Spacers used every day should be replace every year
- **Always rinse your child's mouth or brush their teeth after using a preventer inhaler**

Further information

Children's Asthma Nurses Team
0208 725 3043
Monday-Friday 8am-6pm
outside of these times contact NHS111

paediatricasthma@stgeorges.nhs.uk

www.asthma.org.uk/

Follow us on Twitter @SGHAsthma

Sarah Hawkins Children's Asthma Nurse Specialist May 2017

Monitoring Control

- Use of B2 agonist
  - How often <> 3 uses / week
  - How many > 12 devices / year
- Use of Preventers
  - How often do they pick up rpt prescriptions
- Acute attacks
  - How many courses of prednisolone / ED / Unscheduled.
  - >1 per year
- Night time disturbance
- Exercise limitation
- Symptom diary
- PEFR

- 7 C's: Competency, Complexity, Consistency, Complacency, Compliance, Communication, aCcountability

Asthma Control Test

Asthma Control Test

Please complete the following questions before you see the doctor / nurse

Read each question carefully and choose one answer for each question

1	During the **past 4 weeks**, how often did asthma prevent your child getting as much done at school or home?					
	All the time	Most of the time	Some of the time	A little of the time	None of the time	
2	During the **past 4 weeks**, how often has your child had shortness of breath?					
	More than once a day	Once a day	3-6 times per week	1-2 times per week	Not at all	
3	During the past **4 weeks**, how often did their asthma symptoms (wheeze, cough, tightness, short of breath) wake them at night or early in the morning?					
	4 or more times per week	2-3 nights per week	Once per week	Once or twice	Not at all	
4	During the past **4 weeks**, how often have they had to use their blue inhaler?					
	3 or more times per day	1-2 times per day	2-3 times per week	Once per week or less	Not at all	
5	How would you rate their asthma control during the **past 4 weeks**?					
	Not controlled	Poorly controlled	Somewhat controlled	Well controlled	Completely controlled	
					TOTAL	

Asthma Control Test – Urdu

دمہ کنٹرول ٹیسٹ

آپ کا ڈاکٹر / نرس سے ملنے سے پہلے درج ذیل سوالات کو مکمل کریں
ہر سوال کو احتیاط سے پڑھیں اور ہر سوال کے لئے ایک جواب کا انتخاب کریں

1	گزشتہ 4 ہفتوں کے دوران، اکثر کس طرح آپ کا دمہ آپ کے بچے کے طور پر زیادہ اسکول یا گھر میں کیا ہو رہی ہے کو روکنے کی تھی؟					
	وقت کا کوئی بھی نہیں	وقت تھوڑا	وقت میں سے کچھ	زیادہ تر وقت	ہر وقت	
2	پڑا ہے؟shortnessگزشتہ 4 ہفتوں کے دوران، اکثر کس طرح آپ کے بچے کو سانس لینے میں					
	بالکل نہیں	فی ہفتہ 1-2 بار	فی ہفتہ 3-6 اوقات	ایک دن میں ایک بار	ایک دن میں ایک سے زائد بار	
3	، کھانسی، جکڑن،) ان کے دمہ کی علامات انہیں رات میں ہو یا صبح سویرے اٹھنا گزشتہ w heeze(سانس کی کمی 4 ہفتوں کے دوران، اکثر کس طرح کیا؟					
	بالکل نہیں	ایک یا دو بار	ایک بار فی ہفتہ	فی ہفتہ 2-3 راتوں	فی ہفتہ 4 یا اس سے زیادہ بار	
4	گزشتہ 4 ہفتوں کے دوران، اکثر کس طرح وہ ان کے نیلے انہیلر استعمال کرنا پڑا ہے؟					
	بالکل نہیں	ہفتے یا اس سے کم ایک بار فی	فی ہفتہ 2-3 بار	فی دن 1-2 بار	فی دن 3 یا اس سے زیادہ بار	
5	تم کس طرح گزشتہ 4 ہفتوں کے دوران ان کا دمہ قابو درجہ دیں گے؟					
	مکمل طور پر کنٹرول	اچھی طرح کنٹرول	کسی حد تک کنٹرول	غیر تسلی بخش کنٹرول	کنٹرول نہیں	
					TOTAL	

Case Studies

Male – age 13

- Poor control, poor recognition
- FEV1 46%, Reversibility 17%
- FeNO 77ppb

- Both parents smoke

- Prescription History:
  - 1yr got 36 salbutamol MDI
  - 4/12 got *Symbicort* for 6/52
  - Last script for montelukast >1yr ago
  - Epipen out of date

- Post admission FEV1 – 88%p

Female – age 15

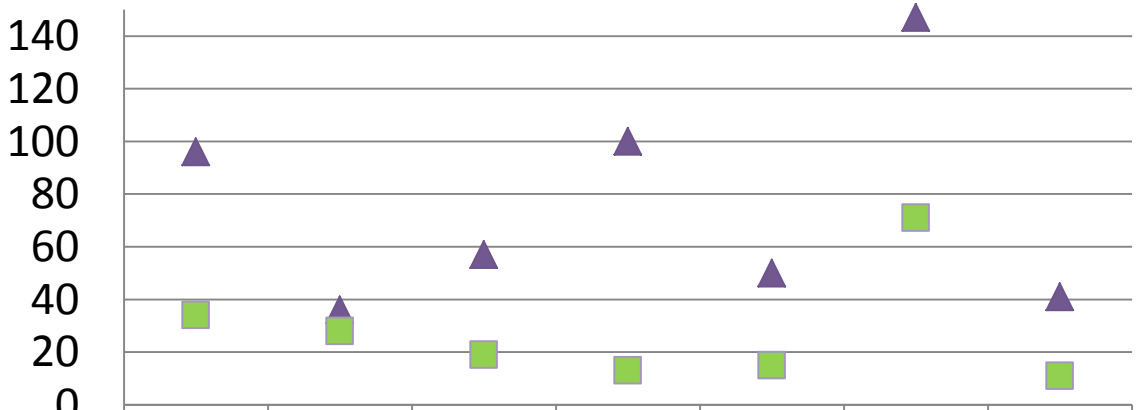
- Poor control, multiple admissions
- Home tutored, CFS
- Cat allergy
- FEV1 68%p, FeNO 186 ppb

- Grandparents have cats
- Dad dogs
- Mum smokes

- Prescription History:
  - Over 17 mo got 7 *Seretide* inhalers
    2 puffs bd = 1/mo

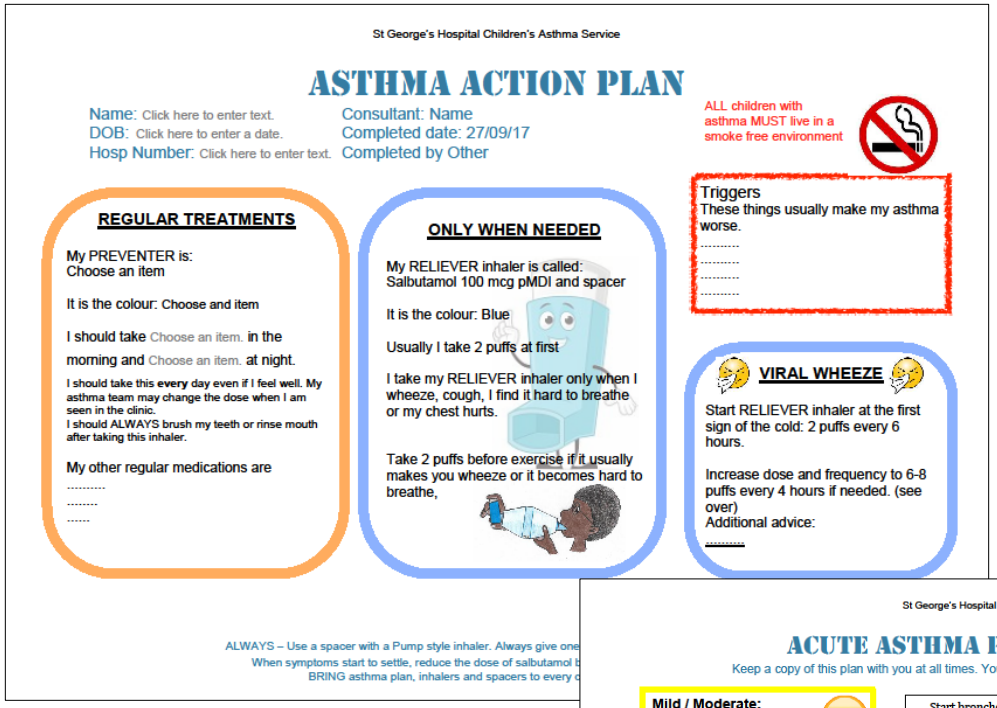
- Post admission FEV1 – 97%p

Smartinhaler Monitoring Improving Adherence Objective measures - FeNO



	1	2	3	4	5	6	7
▲ PRE	96	36	57	100	50	147	41
■ DURING	34	28	19	13	15	71	11

Personalised Asthma Action Plans



St George's Hospital Children's Asthma Service

ASTHMA ACTION PLAN

Name: Click here to enter text.
DOB: Click here to enter a date.
Hosp Number: Click here to enter text.
Consultant: Name
Completed date: 27/09/17
Completed by Other

ALL children with asthma MUST live in a smoke free environment

REGULAR TREATMENTS

My PREVENTER is:
Choose an item

It is the colour: Choose and item

I should take Choose an item. in the morning and Choose an item. at night.

I should take this every day even if I feel well. My asthma team may change the dose when I am seen in the clinic.
I should ALWAYS brush my teeth or rinse mouth after taking this inhaler.

My other regular medications are
.....
.....
.....

ONLY WHEN NEEDED

My RELIEVER inhaler is called:
Salbutamol 100 mcg pMDI and spacer

It is the colour: Blue

Usually I take 2 puffs at first

I take my RELIEVER inhaler only when I wheeze, cough, I find it hard to breathe or my chest hurts.

Take 2 puffs before exercise if it usually makes you wheeze or it becomes hard to breathe,

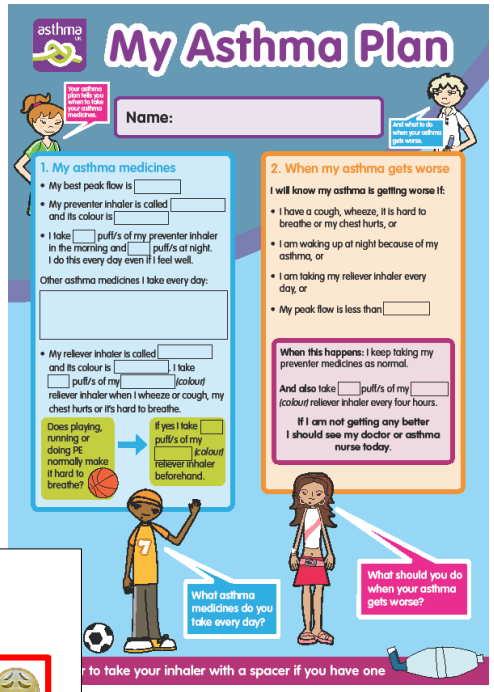
Triggers
These things usually make my asthma worse.
.....
.....
.....
.....

VIRAL WHEEZE

Start RELIEVER inhaler at the first sign of the cold: 2 puffs every 6 hours.

Increase dose and frequency to 6-8 puffs every 4 hours if needed. (see over)
Additional advice:
.....

ALWAYS – Use a spacer with a Pump style inhaler. Always give one
When symptoms start to settle, reduce the dose of salbutamol
BRING asthma plan, inhalers and spacers to every



St George's Hospital Children's Asthma Service

ACUTE ASTHMA PLAN - I AM UNWELL

Keep a copy of this plan with you at all times. You can photocopy it or take a photo of it on your phone.

Mild / Moderate:
Wheeze and/or tight cough
Breathing fast
Not breathing hard

Give Salbutamol pMDI with spacer (blue) 2 puffs

Repeat after 4 hours if needed until symptoms settle.

If symptoms not settling:

Do not give 10 puffs more than every 4 hours at home. If unable to wait 4 hours, give an extra dose and take to the emergency department.

If symptoms last for more than 12 hours; arrange GP review.
Continue Preventer Treatments as normal.

Start bronchodilator with symptoms
Continue until symptoms settle

Severe:
Difficulty in breathing
Chest sucking in
Cannot walk or talk easily

Give Salbutamol pMDI and spacer (blue) choose dose puffs via spacer.

Observe for response.
If starting at a low dose, increase dose by 2 puffs every 2 minutes up to 10 puffs if needed

Repeat dose after 4 hours and continue until symptoms settle.

If salbutamol needed more frequently than every 4 hours:
Dial 999

Arrange GP review.
Continue Preventer Treatments as normal.

Additional Treatment:

Emergency:
Distressed
Lips blue
Not with it / Drowsy

Give Salbutamol pMDI and spacer (blue) 10 puffs via spacer.

Dial 999

Repeat 10 puffs of salbutamol every 15 minutes until ambulance arrives

Stay Calm
Keep child sitting up straight

Children's Asthma Nurses Team
0208 725 3043 Mon-Fri 8am-6pm
Outside of these times contact NHS111
paediatricasthma@stgeorges.nhs.uk
@SGHAsthma

ALWAYS – Use a spacer with a Pump style inhaler. Always give one puff at a time followed by 5 breaths.
When symptoms start to settle, reduce the dose of salbutamol by 2 puffs / dose every 24 hours
BRING asthma plan, inhalers and spacers to every clinic or hospital visit.

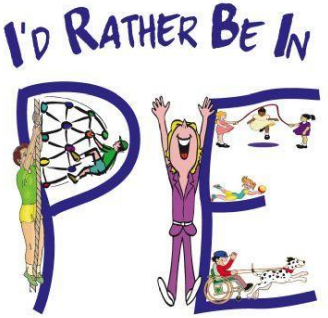
R. Chavasse 2017
ePAAP v1.0

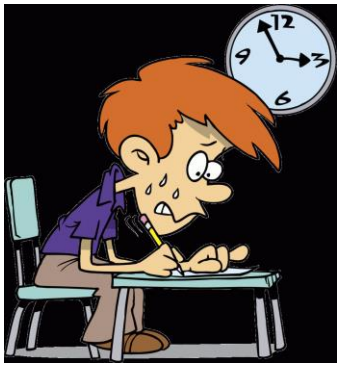
X2, x4, x8 ICS dose with attacks
NICE Nov 2017

Asthma in Children 2017/ St George's University Hospitals NHS Foundation Trust

Triggers

Traffic Inducing Traffic





Not all wheeze is asthma ……
Dysfunctional Breathing

- Symptoms disappear when asleep.
- Often occur suddenly without an obvious trigger, including at rest.
- Acute episode usually improves quickly and spontaneously, but can be variable duration
- Ability to speak during the period of acute symptoms.
- Child usually otherwise well (but may accompany underlying asthma).
- Child often unconcerned (especially compared to parents and teachers).
- Normal physical examination.
- Normal investigations.
- No response to cough medicines or anti-asthma therapy.

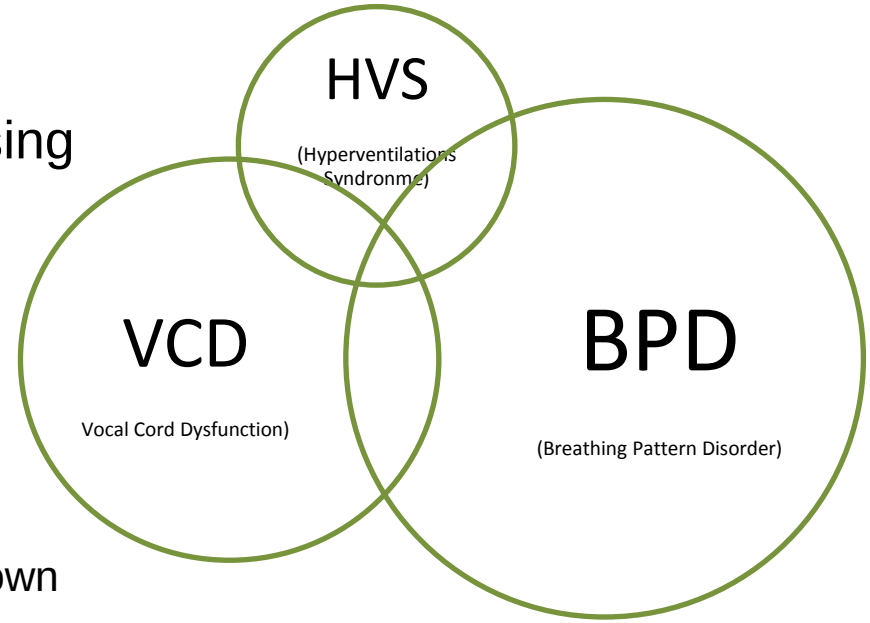
- Chest Tightness
- Wheezing
- Shortness of breath
- Yawning/Sighing
- Burping
- Palpitations
- Dizziness/light headiness
- Anxiety
- Confusion
- Agitation
- Numbness & Tingling
- Dry Mouth

Poor response to treatment
Atypical symptoms
Psychosocial factors

7 C's: Competency, Complexity, Consistency, Complacency, Compliance, Communication, aCcountability

Dysfunctional Breathing
SGH Breathing Clinic (Psychology / Physiotherapy)

- ‘Dysfunctional breathing has been defined as a chronic or recurrent changes in breathing pattern, causing respiratory and non-respiratory complaints’



- Symptoms may include, chest pain, deep sighing, chest tightness, shortness of breath, frequent yawning, hyperventilation,
- The severity may range from mild to full-blown attacks of hyperventilation.
- Can be a single diagnosis or co-exist with other respiratory or cardiac disease.
- Can mimic other respiratory and cardiac conditions.

Clinic Referral

Secondary Care

- Add on therapies
- 2nd or more ED attendance
- 2nd or more PO steroids / yr
- >10 salbutamol inhalers /year
- Admission to hospital
- (Uncertain) diagnosis

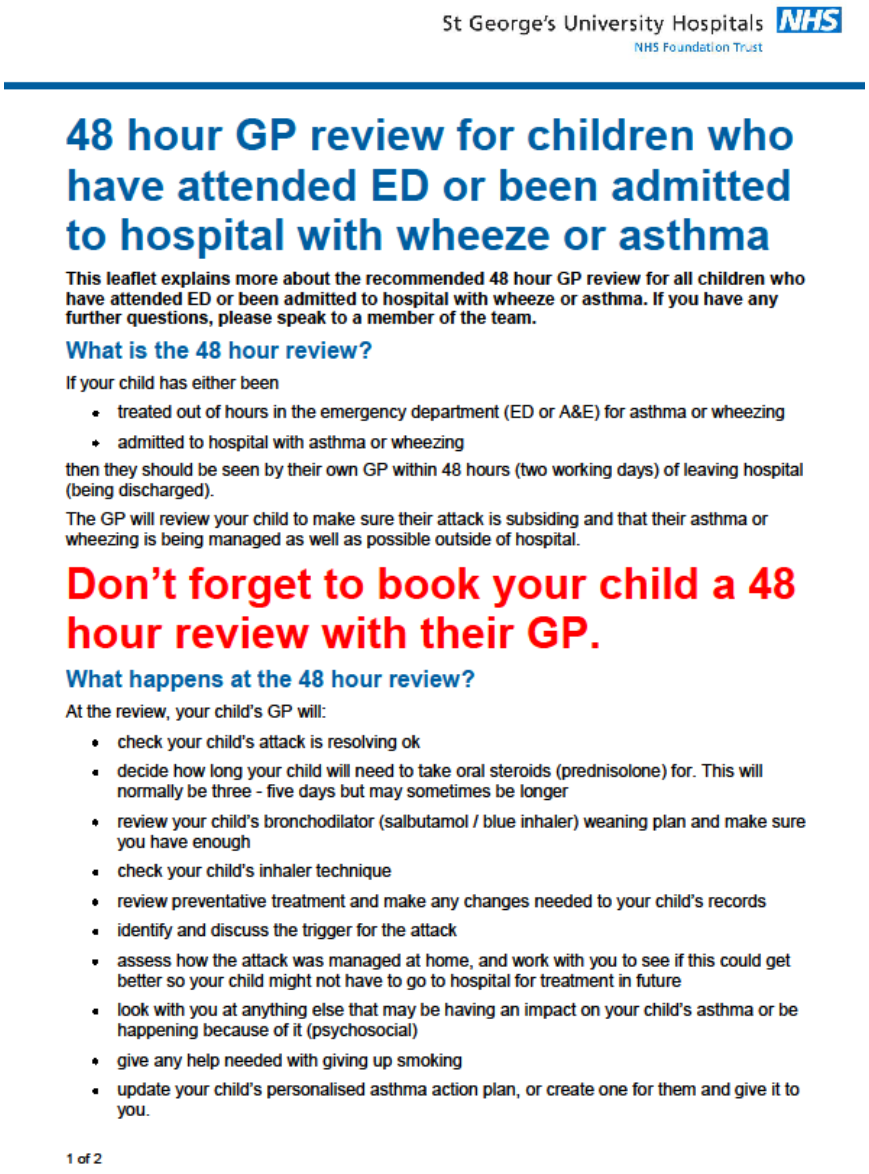
Tertiary Care

- Poor control step 3
- IV therapy
- PICU admission
- Poor adherence
- Psychosocial
- Uncertain diagnosis

Follow Up

Following acute attack:

- Follow up by primary care services within two working days
- Follow up in a paediatric asthma clinic within one to two months
- Follow up by a paediatric respiratory specialist if there have been life threatening features.
  - PICU
  - IVs
  - Or frequent admissions



St George's University Hospitals NHS
NHS Foundation Trust

48 hour GP review for children who have attended ED or been admitted to hospital with wheeze or asthma

This leaflet explains more about the recommended 48 hour GP review for all children who have attended ED or been admitted to hospital with wheeze or asthma. If you have any further questions, please speak to a member of the team.

What is the 48 hour review?

If your child has either been

- treated out of hours in the emergency department (ED or A&E) for asthma or wheezing
- admitted to hospital with asthma or wheezing

then they should be seen by their own GP within 48 hours (two working days) of leaving hospital (being discharged).

The GP will review your child to make sure their attack is subsiding and that their asthma or wheezing is being managed as well as possible outside of hospital.

Don't forget to book your child a 48 hour review with their GP.

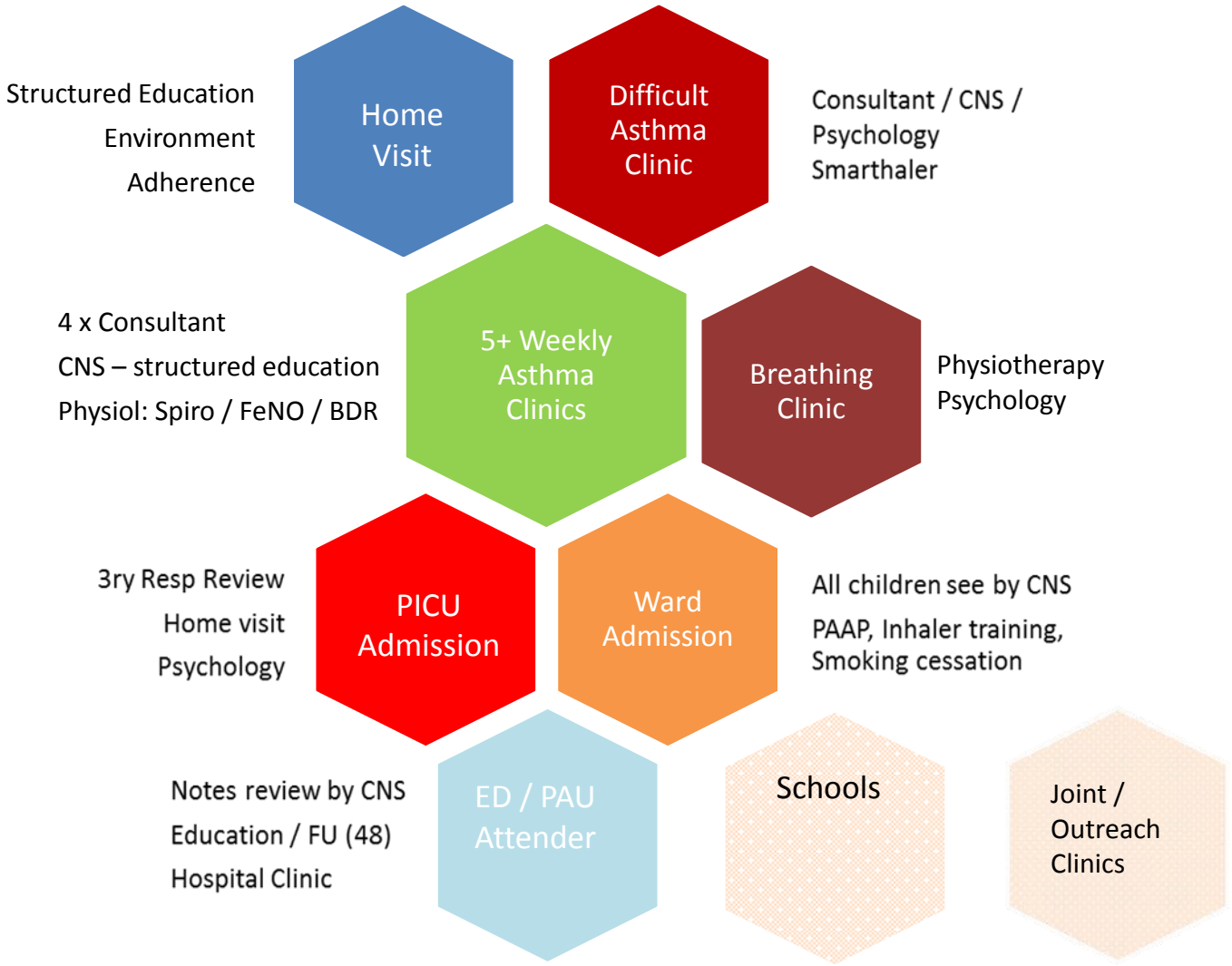
What happens at the 48 hour review?

At the review, your child's GP will:

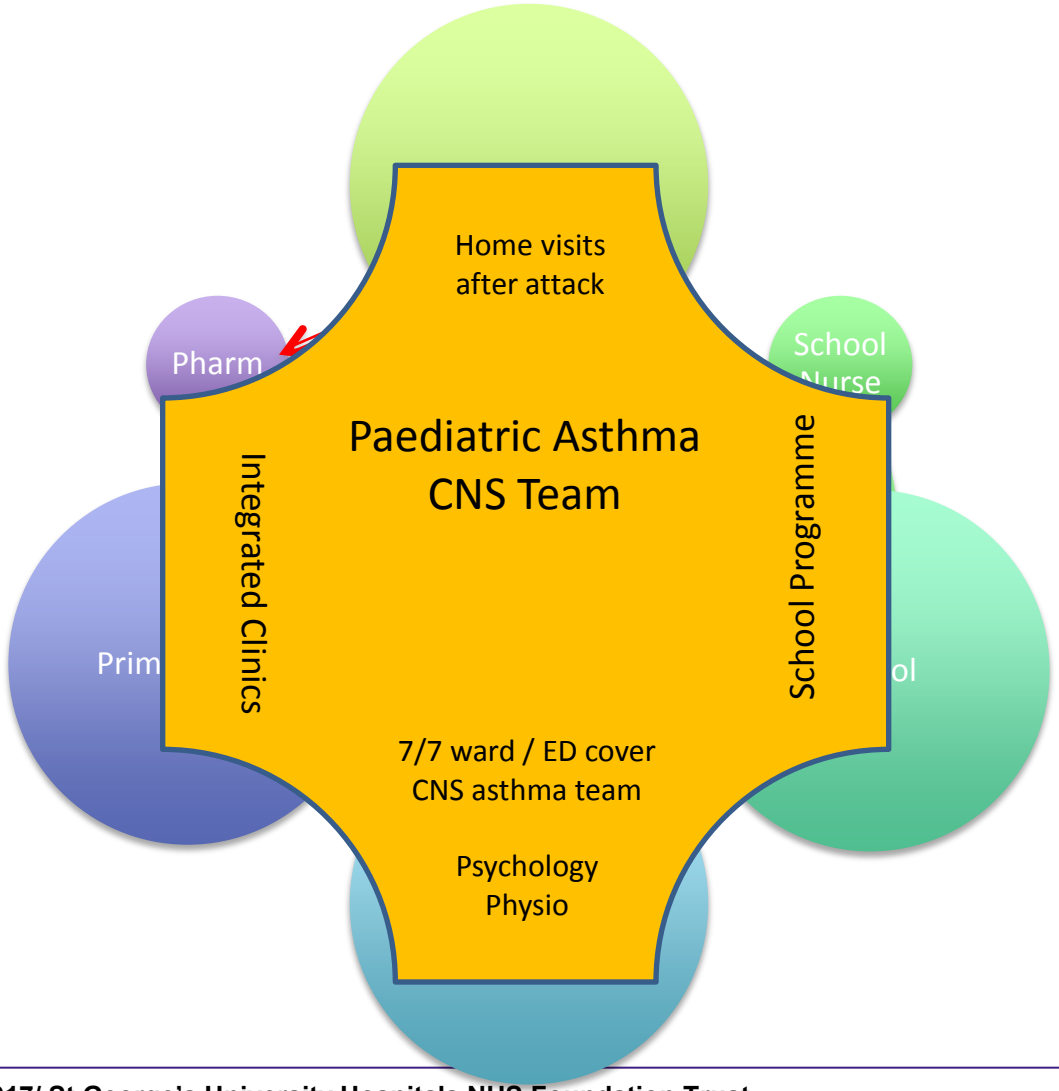
- check your child's attack is resolving ok
- decide how long your child will need to take oral steroids (prednisolone) for. This will normally be three - five days but may sometimes be longer
- review your child's bronchodilator (salbutamol / blue inhaler) weaning plan and make sure you have enough
- check your child's inhaler technique
- review preventative treatment and make any changes needed to your child's records
- identify and discuss the trigger for the attack
- assess how the attack was managed at home, and work with you to see if this could get better so your child might not have to go to hospital for treatment in future
- look with you at anything else that may be having an impact on your child's asthma or be happening because of it (psychosocial)
- give any help needed with giving up smoking
- update your child's personalised asthma action plan, or create one for them and give it to you.

1 of 2

SGH Asthma Service



Whole Systems Approach



Subliminal Confounders

Understanding Acute Asthma Attacks: Answers.com

Allergy website
Acute Asthma
Attack Kills Teenage
Girl – Did She Have
Hidden Allergies?

…imab
New asthma drug can cut hospital admissions by half: study
Daily Telegraph

North West and Wales Transport Service acute asthma guideline

Medical Observer
CHILDREN with severe or persistent asthma could be at a higher risk of …. Dying!

Daily News
New asthma procedure 'cooks' lungs ….