MediConf UK.LTD

PROMOTING EXCELLENCE IN HEALTH EDUCATION

Respiratory Study Morning
A Year in Review: Applying new evidence to clinical practice

Steve Holmes (GP)

Manchester Conference Centre

Manchester

Sat 2nd April 2016

A Year in Review: Applying new evidence to clinical practice

9.30 – 11.00

Asthma Year in Review

- Diagnosis in adults and children
- Treatment update (non-pharmacological and pharmacological)

New Inhaler Devices (asthma/COPD)

- Structured review of new inhalers
- Simple teaching and assessment

11.00 – 11.30

Coffee time and chat

11.30 – 13.00

COPD Year in Review

- Early accurate diagnosis and spirometry interpretation
- Treatment update

Respiratory areas not to forget

- Smoking as a long term condition, carcinoma of the lung, interstitial lung disease, bronchiectasis, respiratory infections

Conflict of Interest

- General practitioner, Shepton Mallet
- Chair, Somerset CCG Respiratory Clinical Network
- Chair, British Lung Foundation South West Regional Committee
- Trustee REUK / Education for Health – Trustee - tutor
- PCRS-UK: Education Lead, ex Chair and involved in GPwSI and leadership; Executive committee member for more than a decade
- RCGP College Council (EKU, Conference and clinical expert)
- Associate Postgraduate Dean (Somerset); GP Trainer; previous Course Organiser / TPD

Standard bearer for primary care respiratory medicine
Credible and independent

npj Primary Care Respiratory Medicine

Research and scientific journal

National Conference

Quality Award
WWW.PCRS-UK.ORG
Recognising quality respiratory care in practice

Quality standards

National policy influencing

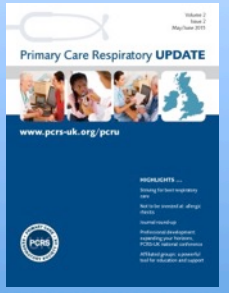
Delivering excellence locally
Equipping primary care to drive improvement

Respiratory Leaders Programme

Respiratory leaders programme

Improvement tools and resources

Affiliated groups



Membership

Network of PCRS-UK leaders

www.pcrs-uk.org

Asthma Diagnosis - adults

- “Illness is the night side of life, a more onerous citizenship. Everyone who is born holds dual citizenship, in the kingdom of the well and in the kingdom of the sick. Although we all prefer to use the good passport, sooner or later each of us is obliged, at least for a spell, to identify ourselves as citizens of that other place.”

{Susan Sontag, 1978 #6341}

Heath I. Role of fear in overdiagnosis and overtreatment—an essay by Iona Heath. British Medical Journal. 2014;349.

The NEW ENGLAND JOURNAL of MEDICINE

Perspective

Improving Diagnosis in Health Care — The Next Imperative for Patient Safety

Hardeep Singh, M.D., M.P.H., and Mark L. Graber, M.D.

Singh H, Graber ML. Improving Diagnosis in Health Care — The Next Imperative for Patient Safety. New England Journal of Medicine. 2015.

Consequences of overdiagnosis

- Physical
  - No treatment of the actual cause of their symptoms
  - Significant risks of “escalating” treatment being used
- Psychological
  - Impact of disease labelling
  - Impact on family members
  - Stories that are passed down
- Social
  - Exclusion from certain jobs
  - Stigma of disease (cultures)
  - Time from work / school with untreated symptoms

Singh H, Graber ML. Improving Diagnosis in Health Care — The Next Imperative for Patient Safety. New England Journal of Medicine. 2015.

Case History - Amy

- 18 year old – been feeling more tired and breathless on exertion for around 6 months since starting as a university student – people tell her she is “wheezing when walking” to lectures and she is worried as her grandmother had “terrible asthma for years”

What would you do?

A. Take a careful history and then examine prior to making a judgment on further appropriate testing
B. Take a rapid history – but getting going with tests as these are going to give me the answer
C. I am a generalist – she would be referred straight away

Definition of asthma

Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.

GINA Guidelines, 2015 Accessed 12/11/2015
Teaching slid set

Diagnosis of asthma

- The diagnosis of asthma should be based on:
  - A history of characteristic symptom patterns
  - Evidence of variable airflow limitation, from bronchodilator reversibility testing or other tests
- Document evidence for the diagnosis in the patient's notes, preferably before starting controller treatment
  - It is often more difficult to confirm the diagnosis after treatment has been started
- Asthma is usually characterized by airway inflammation and airway hyperresponsiveness, but these are not necessary or sufficient to make the diagnosis of asthma.

GINA Guidelines, 2015 Accessed 12/11/2015
Teaching slid set

How well are we doing at asthma diagnosis?

- 8 Canadian cities (random digit dialing)
- 540 individuals recruited
- Current asthma excluded if no evidence of (after weaning off treatment for six months):
  - acute worsening of asthma symptoms
  - Reversible airflow obstruction
  - Bronchial hyperresponsiveness

Aaron SD, Vandemheen KL, Boulet L-P, McIvor RA, FitzGerald JM, Hernandez P, et al. Overdiagnosis of asthma in obese and nonobese adults. Canadian Medical Association Journal. 2008;179(11):1121-31.

Table 2: Baseline characteristics of study participants whose diagnosis of asthma was confirmed or excluded after objective testing (part 1)

Characteristic	Asthma confirmed *n* = 346	Asthma excluded *n* = 150	*p* value
Age, yr, mean (SD)	44.2 (16.3)	44.3 (15.8)	0.98
Sex, female, no. (%)	240 (69.4)	93 (62.0)	0.11
Height, cm, mean (SD)	166.5 (9.3)	168.2 (8.6)	0.06
Weight, kg, mean (SD)	81.1 (21.9)	84.2 (22.0)	0.15
Body mass index, mean (SD)	29.2 (7.7)	29.8 (7.9)	0.42
Waist circumference, cm, mean (SD)	95.5 (18.8)	97.7 (19.8)	0.25
Asthma diagnosis			
Age at which asthma first diagnosed, yr, mean (SD)	24.5 (18.8)	28.9 (18.1)	0.02
Time since asthma diagnosed, yr, mean (SD)	20.1 (14.2)	15.5 (12.4)	< 0.001
Asthma diagnosed by family physician, no. (%)	221 (63.9)	95 (63.3)	0.91
Asthma diagnosed by specialist (respirologist, allergist, internist or pediatrician),* no. (%)	130 (37.6)	56 (37.3)	0.96
Use of health care services			
Asthma-related admission to hospital in past 12 months, no. (%)	2 (0.6)	1 (0.7)	0.91
Urgent visit to health care facility in past 12 months, no. (%)	50 (14.5)	23 (15.3)	0.80
Asthma medication use			
Currently using asthma medications, no. (%)	314 (90.8)	109 (72.7)	< 0.001
Daily use of asthma medications, no. (%)	170 (49.1)	37 (24.7)	< 0.001
Daily use of inhaled corticosteroids or daily use of inhaled corticosteroids / long-acting β-agonist combination, no. (%)	157 (45.3)	34 (22.7)	< 0.001

Aaron SD, Vandemheen KL, Boulet L-P, McIvor RA, FitzGerald JM, Hernandez P, et al. Overdiagnosis of asthma in obese and nonobese adults. Canadian Medical Association Journal. 2008;179(11):1121-31.

Results

- 496 patients
- 242 obese / 254 non-obese

- 31.8% of obese group excluded
- 28.7% in non obese group excluded

- 63% of diagnoses made in primary care

Aaron SD, Vandemheen KL, Boulet L-P, McIvor RA, FitzGerald JM, Hernandez P, et al. Overdiagnosis of asthma in obese and nonobese adults. Canadian Medical Association Journal. 2008;179(11):1121-31.

Results: family practice or hospital?

- Asthma diagnosed by family physician (316)
  - correctly diagnosed 221 (70%)
  - incorrectly diagnosed 95 (30%)
- Asthma diagnosed by hospital specialist (186)
  - correctly diagnosed 130 (70%)
  - Incorrectly diagnosed 56 (30%)

Aaron SD, Vandemheen KL, Boulet L-P, McIvor RA, FitzGerald JM, Hernandez P, et al. Overdiagnosis of asthma in obese and nonobese adults. Canadian Medical Association Journal. 2008;179(11):1121-31.

Symptoms

- wheeze
- shortness of breath
- chest tightness
- cough
- vary over time and in intensity

Other things to make us think?

- History of atopy (asthma / allergic rhinitis)
- Family history of asthma / atopy
- Occupational risk factors
- Medications?
- Professional sportsman

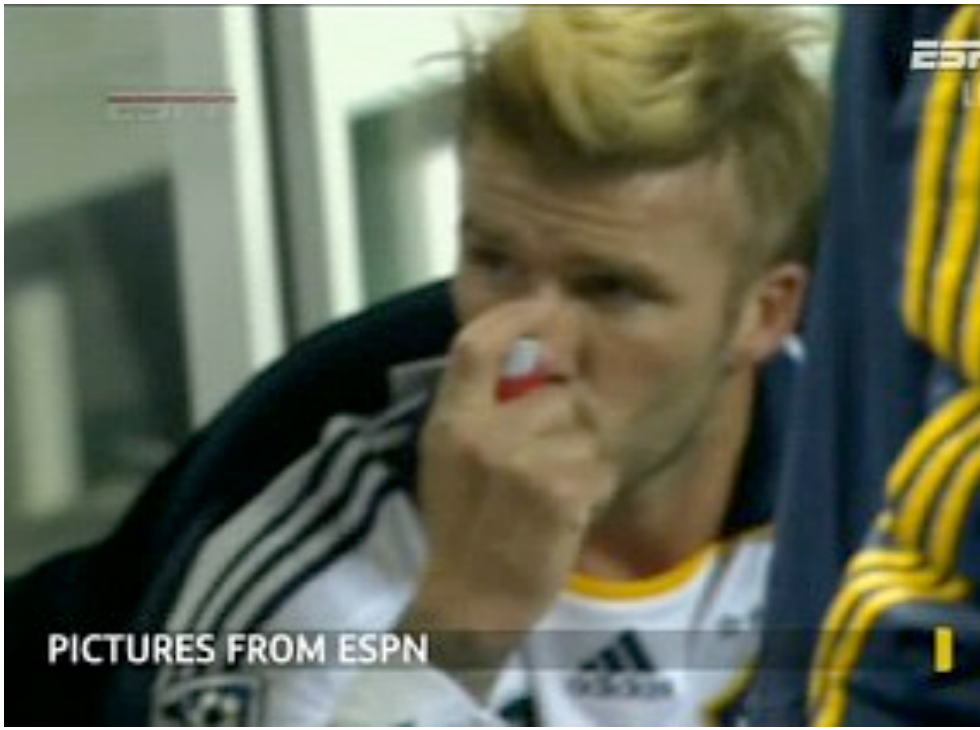


Photo of David Beckham from ESPN (2009)

Case History - Amy

- Amy has a family history of asthma, and as a child remembers being given an inhaler. She tells you she does not smoke cigarettes (or other substances)
- Examination clinically is normal, though her PEFR in your consultation is 85% of predicted.

What is your routine practice now?

A. Serial Peak Flow Diary
B. Pre – and post bronchodilator spirometry
C. Metacholine challenge or similar test of bronchial hyperresponsiveness
D. All of the above (A, B, C)
E. Therapeutic trial of treatment (either SABA or inhaled corticosteroid)

Who would do any of the following

A. Fractional exhaled nitric oxide
B. Full blood count
C. Chest xray or low dose HRCT scan
D. All of the above
E. I would only think about these tests if the lung function testing was normal

We've done the test

- Sensitivity or true positive rate (TPR) = it will correctly identify the condition

- Specificity or true negative rate (TNR) = it will correctly reject the condition from my thinking

National Clinical Guideline Centre

Asthma

Asthma: diagnosis and monitoring of asthma in adults, children and young people

Clinical guideline

Methods, evidence and recommendations

January 2015

Draft for Consultation

Commissioned by the National Institute for Health and Care Excellence

How reliable are symptoms ?

Table 10: Clinical evidence profile: Symptoms vs Reference Standard (physician Dx and objective test where appropriate to the age group)

Index Test (Threshold)	No of studies	n	Risk of bias(a)	Inconsistency	Indirectness	Imprecision	Sensitivity % (range)	Specificity % (range)	Area Under Curve (range)	Quality
ADULTS >16 years										
Paroxsymal coughing	1	302	Serious risk of bias[a]	No serious inconsistency	No serious indirectness	n/a[c]	16	42	-	MODERATE
Dyspnoea without wheeze	1	302	Serious risk of bias[a]	No serious inconsistency	No serious indirectness	n/a[c]	11	71	-	MODERATE
Wheeze without dyspnoea	1	302	Serious risk of bias[a]	No serious inconsistency	No serious indirectness	n/a[c]	9	79	-	MODERATE
Diurnal cough	1	174	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[d][e]	n/a[c]	66	26	-	LOW
Nocturnal cough	1	174	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[d][e]	n/a[c]	37	65	-	LOW
Diurnal wheeze	1	174	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[d][e]	n/a[c]	57	62	-	LOW
Nocturnal wheeze	1	174	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[d][e]	n/a[c]	56	79	-	LOW
Dyspnoea	2	393	Serious risk of bias[a]	Serious inconsistency[b]	Serious indirectness[e]	n/a[c]	Range 61 – 73	Range 38 – 55	-	LOW
Wheeze	2	785	Serious risk of bias[a]	Serious inconsistency[b]	No serious indirectness	n/a[c]	Range 30 – 52	Range 53 – 87	-	LOW
Cough	1	219	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[e]	n/a[c]	43	33	-	LOW
Nocturnal dyspnoea	1	219	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[e]	n/a[c]	30	81	-	LOW

Evidence for postbronchodilator spirometry

Table 28: Clinical evidence profile: Bronchodilator reversibility vs. Physician Dx of asthma

Bronchodilator reversibility (Threshold)	No of studies	n	Risk of bias	Inconsistency	Indirectness	Imprecision	Median Sensitivity % (range)	Median Specificity % (range)[e]	Area Under Curve (range)	Quality
ADULTS										
ΔFEV1%init ≥12% and ΔFEV1[L] ≥0.2L	2	868	Serious risk of bias[a]	Serious inconsistency[b]	Serious indirectness[d,e]	N/A[c]	Range 0.17-0.65	Range 0.61-0.81	-	VERY LOW
ΔFEV1%init >15% and ΔFEV1[L] >0.2L	2	269	Serious risk of bias[a]	No serious inconsistency[b]	Serious indirectness[d,e]	N/A[c]	Range 0.69-0.69	Range 0.55-0.71	-	LOW
CHILDREN 5-16 years										
No evidence identified	0									

Serial Peak Flow variability

Table 32: Clinical evidence profile: PEF variability vs. Physician Dx of asthma

PEF variability (Threshold)	No of studies	n	Risk of bias	Inconsistency	Indirectness	Imprecision	Median Sensitivity % (range)	Median Specificity % (range)[e]	Area Under Curve (range)	Quality
ADULTS >16 years										
Diurnal PEFv as amp%mean (mean over 3 weeks >5%)	1	323	Serious risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.56	0.69	-	MODERATE
Diurnal PEFv as amp%mean (mean over 3 weeks >10%)	1	323	Serious risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.14	0.96	-	MODERATE
Diurnal PEFv as amp%mean (mean over 3 weeks >15%)	1	323	Serious risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.05	0.98	-	MODERATE
Diurnal PEFv as amp%highest (diurnal variation >15% on 4 or more days)	1	170	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.20	0.97	-	HIGH
Diurnal PEFv as amp%highest (diurnal variation >20% on 3 or more days)	1	170	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.12	0.99	-	HIGH
Diurnal PEFv as amp%highest (mean over 2 weeks >10%)	1	170	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.14	0.97	-	HIGH
Diurnal PEFv as amp%highest (mean over 2 weeks >15%)	1	170	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.03	0.99	-	HIGH
CHILDREN 5-16 years										
Diurnal PEFv as amp%mean (mean over 2 weeks >12.3%)	1	61	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.50	0.72	-	HIGH
Amp%mean (>20% versus PC20 histamine >16mg/ml)	1	74	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.46	0.80	-	HIGH
Amp%mean (>20% versus bronchodilator reversibility change in FEV1 >10%)	1	74	No risk of bias[a]	No serious inconsistency[b]	No serious indirectness	N/A[c]	0.71	0.58	-	HIGH

Fractional Exhaled Nitric Oxide

Table 45: Clinical evidence profile: Diagnostic Test Accuracy for FeNO

Index Test (Threshold)	No of studies	n	Risk of bias	Inconsistency	Indirectness	Imprecision	Sensitivity % (range/median 95% CI)	Specificity % (range/median 95% CI)	Area Under Curve (range)	Quality
FeNO vs. Physician Dx with objective test: Adults										
FeNO >27ppb	1	114	No risk of bias[a]	No serious inconsistency	Serious indirectness[c][d][e]	n/a[f]	78.6	91.7	-	MODERATE
FeNO >30ppb	1	87	Serious risk of bias[a]	No serious inconsistency	Serious indirectness[c]	n/a[f]	43.0	89.0	0.738	LOW
FeNO >36ppb	1	48	No risk of bias[a]	No serious inconsistency	Serious indirectness[c]	n/a[f]	77.8	60.0	-	MODERATE
FeNO >38.8ppb	1	71	No risk of bias[a]	No serious inconsistency	Serious indirectness[e]	n/a[f]	79.2	91.3	-	MODERATE

Photo SH, 2012 Niice Musee Marc Chagall

A thought from Iona Heath

- Uncertainty exists in the gap between the territory of human suffering and the map of biomedical science. The task of making the medical map useful to those trapped within the territory of suffering is, and will always be, fraught with uncertainty because of the vast extent and infinite variation of the territory and because of the comparatively rudimentary nature of the map.

Heath I. Role of fear in overdiagnosis and overtreatment—an essay by Iona Heath. British Medical Journal. 2014;349.

Diagnosis of asthma

- The diagnosis of asthma should be based on:
  - A history of characteristic symptom patterns
  - Evidence of variable airflow limitation, from bronchodilator reversibility testing or other tests
- Document evidence for the diagnosis in the patient's notes, preferably before starting controller treatment
  - It is often more difficult to confirm the diagnosis after treatment has been started
- Asthma is usually characterized by airway inflammation and airway hyperresponsiveness, but these are not necessary or sufficient to make the diagnosis of asthma.

Children and Asthma

Clinical features that increase the probability of asthma in children

- More than one of the following symptoms: wheeze, cough, difficulty breathing, chest tightness, particularly if these symptoms:
  - are frequent and recurrent
  - are worse at night and in the early morning
  - occur in response to, or are worse after, exercise or other triggers, such as exposure to pets, cold or damp air, or with emotions or laughter
  - occur apart from colds
- Personal history of atopic disorder
- Family history of atopic disorder and/or asthma
- Widespread wheeze heard on auscultation
- History of improvement in symptoms or lung function in response to adequate therapy

British Guideline on the Management of Asthma (BTS / SIGN Guideline 101) (2011)

Clinical features that lower the probability of asthma in children

- Symptoms with colds only, with no interval symptoms
- Isolated cough in the absence of wheeze or difficulty breathing
- History of moist cough
- Prominent dizziness, light-headedness, peripheral tingling
- Repeatedly normal physical examination of chest when symptomatic
- Normal PEF or spirometry when symptomatic
- No response to a trial of asthma therapy
- Clinical features pointing to alternative diagnosis

British Guideline on the Management of Asthma (BTS / SIGN Guideline 101) (2011)

Under 5 wheezing – two patterns

Episodic Viral Wheeze

- Isolated wheezing episodes
- Often with evidence of viral cold
- Well between episodes
- No history of atopy in child or family

Multiple Trigger Wheeze

- Episodes of wheezing
- More triggers than just colds
- Symptoms of cough / wheeze between episodes
- Personal or family history of asthma/eczema/hay fever / allergy

Brand P. New guidelines on recurrent wheeze in preschool children: implications for primary care. Primary Care Respiratory Journal. 2008;17(4):243-5.

Treatment of under 5 wheezing

Episodic Viral Wheeze

- No treatment if mild
- If treatment needed – can try salbutamol by spacer, episodic montelukast 4mg daily - but evidence for effectiveness of all treatments weak

Multiple Trigger Wheeze

- No treatment if mild
- If treatment needed – treat like asthma

Brand P. New guidelines on recurrent wheeze in preschool children: implications for primary care. Primary Care Respiratory Journal. 2008;17(4):243-5.

The three pragmatists

- "Cough without wheeze isn't asthma… unless it responds to asthma treatment"
  - Christine Small B.Sc. RGN

- "And if it doesn't respond to asthma treatment.. Chances are it isn't asthma"
  - Dr Vincent McGovern

- "And if it does respond, try stopping the asthma treatment after an interval to rule out natural resolution[1]"
  - Professor Andy Bush

1 - Bush A. Diagnosis of asthma in children under five. Primary Care Respiratory Journal. 2007;16(1):7-15

Non-pharmacological interventions

Acupuncture	Evidence appears subject to publication bias and is in general not demonstrating benefit
Air ionisers	Evidence is strong that we should not recommend
Air pollution	No evidence at present (more common in less polluted parts of the UK)
Allergens (pets)	Mixed evidence – often after removal no benefit found and some appear to gain tolerance to the allergen from exposure
Antoxidants	No evidence at present of benefit from introduction or supplementation
Electrolyte supplementation	Limited studies and more research needed before any recommendation
Fish oil / lipids	Limited evidence and no evidence to support at present

British Thoracic Society SIGN. SIGN 141: British Guideline on the Management of Asthma. Edinburgh: 2014.

Non-pharmacological interventions (2)

Herbal / Traditional Chinese Medicine	Weak evidence and a need for some randomized controlled trials
Homeopathy	Weak evidence, with poor methodology
House Dust Mite	No evidence and health care professionals should not recommend
Hypnosis and relaxation therapy	Weak evidence and poor methodology
Manual therapy including massage and spinal manipulation	No evidence at present
Physical exercise training	Cochrane review has shown no benefit on lung function parameters, but overall healthy active lifestyle recommended (no evidence)
Probiotics	No evidence of benefit

British Thoracic Society SIGN. SIGN 141: British Guideline on the Management of Asthma. Edinburgh: 2014.

Non – pharmacological interventions – the positive

- Smoking cessation
- Weight reduction
- Breathing exercises

Adults

Patients should start treatment at the step most appropriate to the initial severity of their asthma. Check concordance and reconsider diagnosis if response to treatment is unexpectedly poor.

MOVE UP TO IMPROVE CONTROL AS NEEDED

MOVE DOWN TO FIND AND MAINTAIN LOWEST CONTROLLING STEP

STEP 1

Mild intermittent asthma

Inhaled short-acting β_2 agonist as required

STEP 2

Regular preventer therapy

Add inhaled steroid 200-800 mcg/day*

400 mcg is an appropriate starting dose for many patients

Start at dose of inhaled steroid appropriate to severity of disease.

STEP 3

Initial add-on therapy

1. Add inhaled long-acting β_2 agonist (LABA)
2. Assess control of asthma:
   - **good response to LABA** - continue LABA
   - **benefit from LABA but control still inadequate** - continue LABA and increase inhaled steroid dose to 800 mcg/day* (if not already on this dose)
   - **no response to LABA** - stop LABA and increase inhaled steroid to 800 mcg/ day.*If control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or SR theophylline

STEP 4

Persistent poor control

Consider trials of:

- increasing inhaled steroid up to 2000 mcg/day*
- addition of a fourth drug e.g. leukotriene receptor antagonist, SR theophylline, β_2 agonist tablet

STEP 5

Continuous or frequent use of oral steroids

Use daily steroid tablet in lowest dose providing adequate control

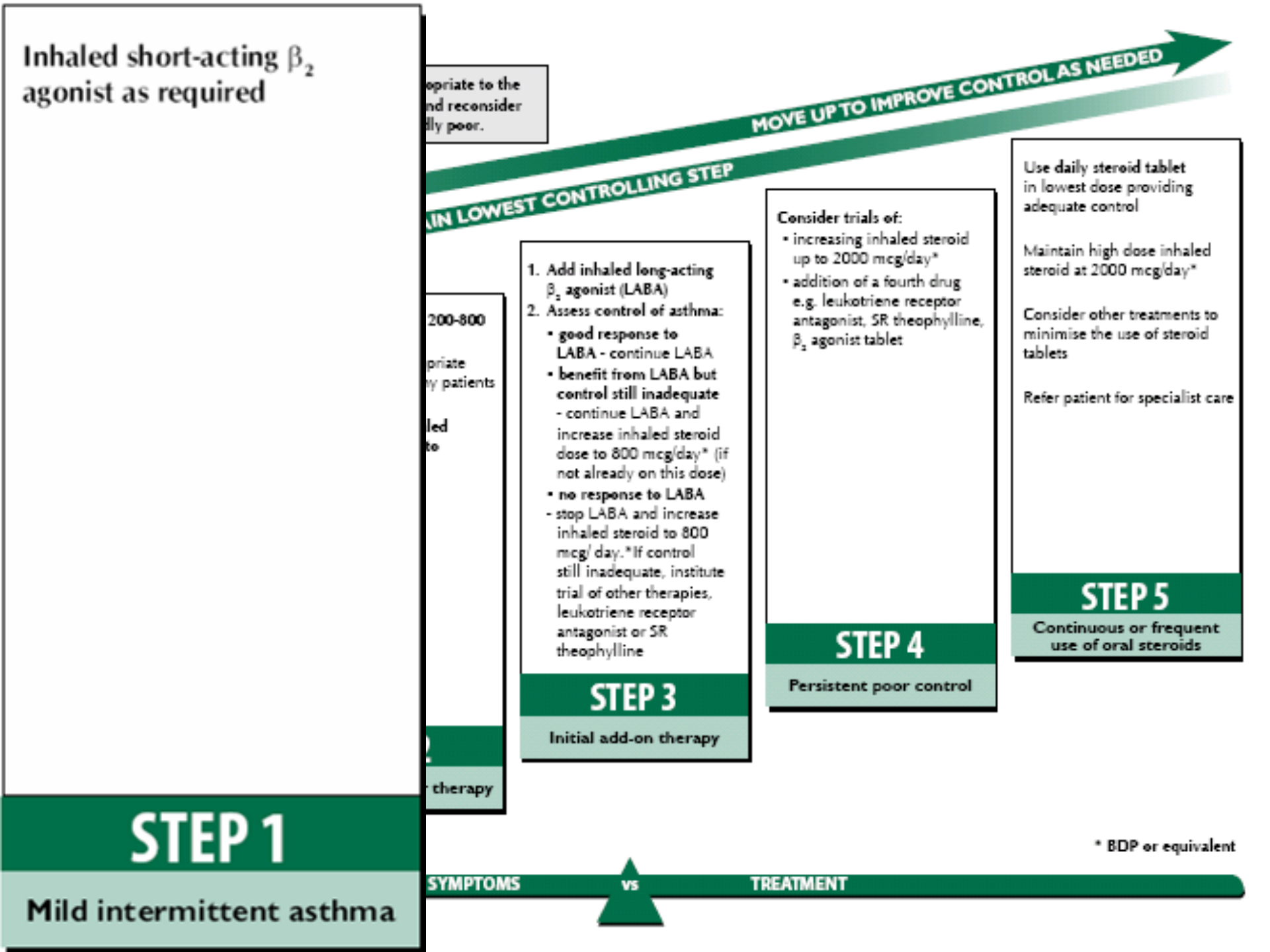
Maintain high dose inhaled steroid at 2000 mcg/day*

Consider other treatments to minimise the use of steroid tablets

Refer patient for specialist care

* BDP or equivalent

SYMPTOMS vs TREATMENT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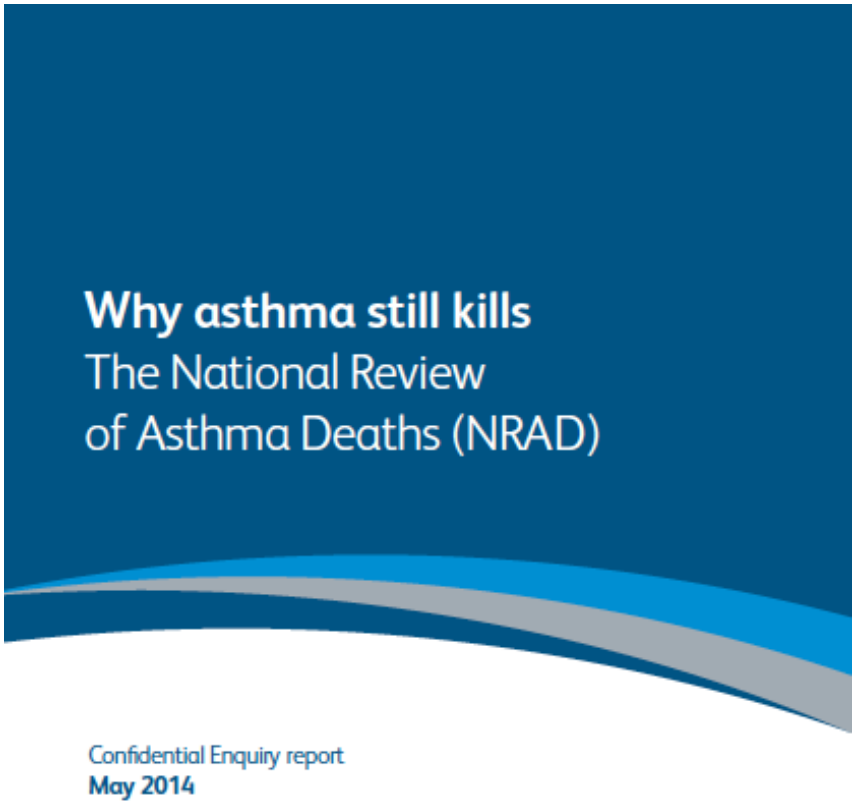
STEP 5
Continuous or frequent use of oral steroids
STEP 1
Mild intermittent asthma
* BDP or equivalent
SYMPTOMS
vs
TREATMENT

Prescribing factors in NRAD

- 39% had more than 12 SABA inhalers in last year
- 4% more than 50 SABA inhalers!!
- 3% using LABA without ICS (14% prescribed separately)
- Compliance with ICS low (not clear method from NRAD but 38% had fewer than four prescriptions in the year)



Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

How many inhalers for mild intermittent asthma?

- Good asthma control is defined as less than 2 puffs reliever therapy twice weekly.
- *This is around 4 x 50 puffs per year*
- *Hence – no more than one reliever (salbutamol inhaler per year)*

Changes due to asthma

Bronchoconstriction

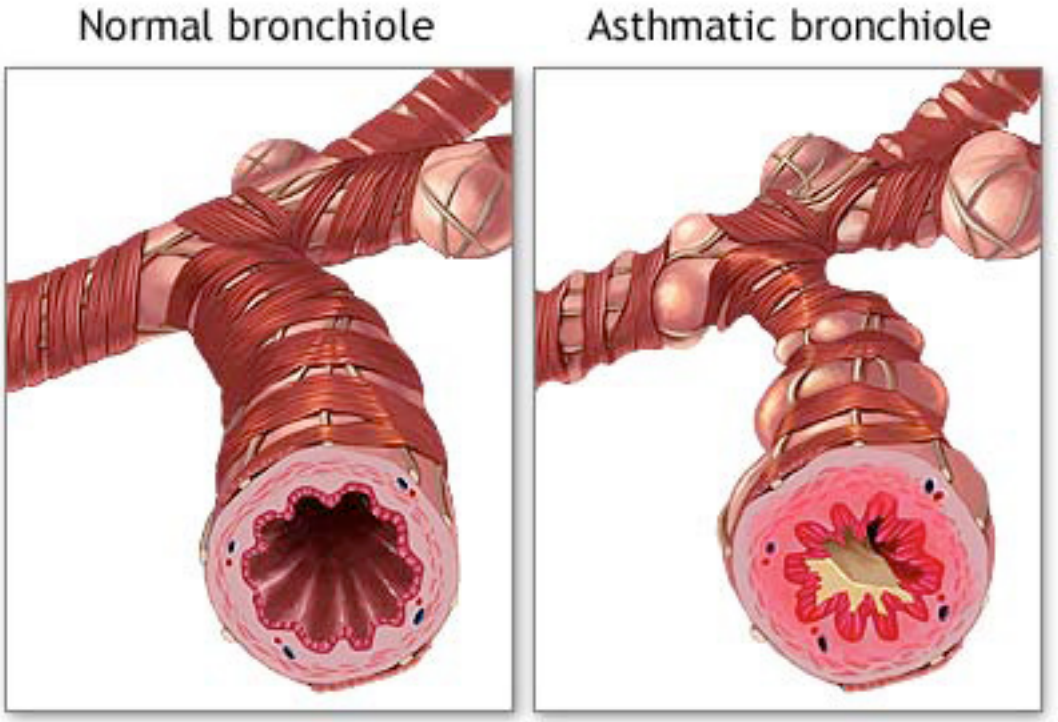
- Mucus secretion
- Epithelial damage
- Mucosal oedema

Aim of treatment

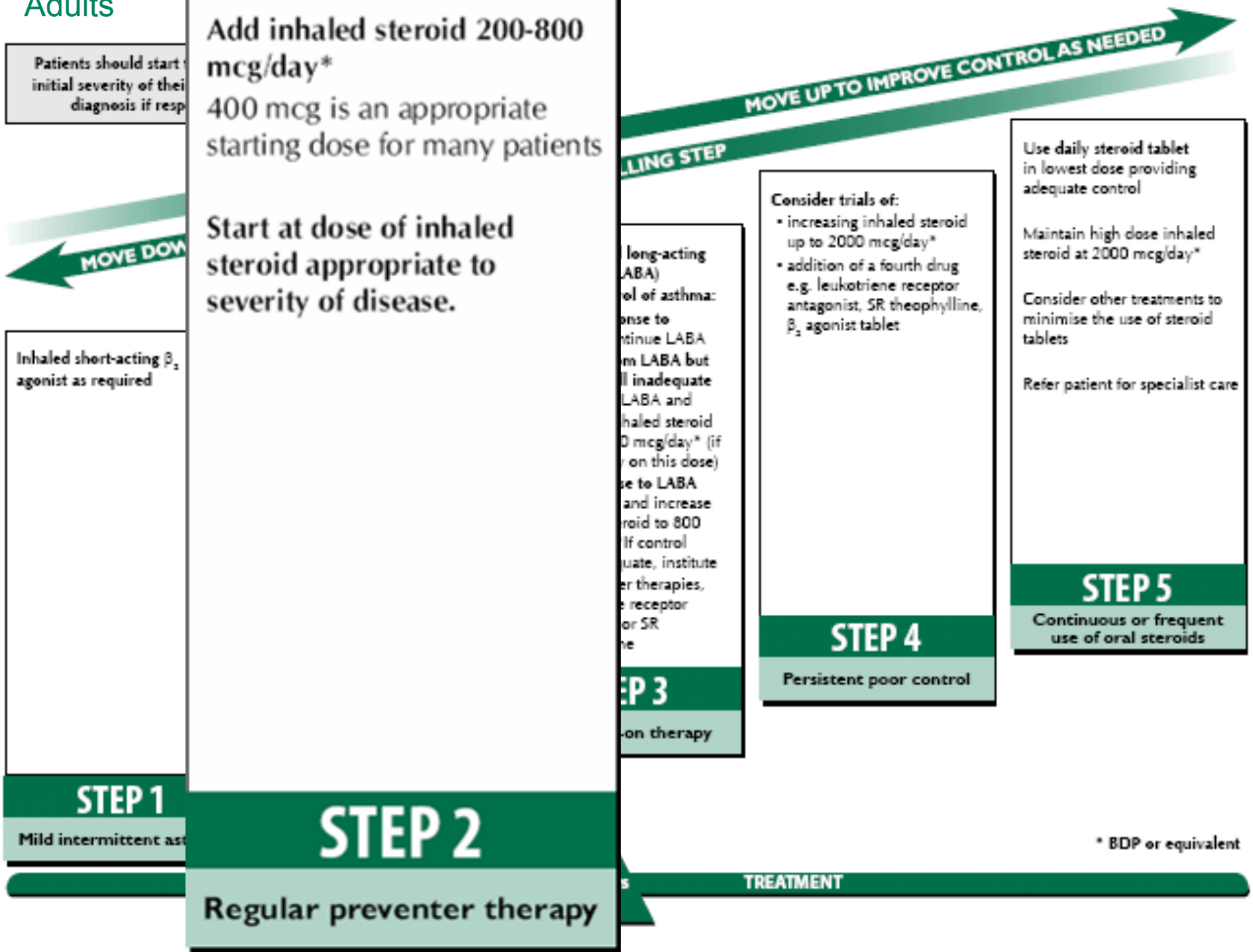
Symptomatic relief

Disease modification

Reduce inflammation and lung damage



Adults


Patients should start
initial severity of thei
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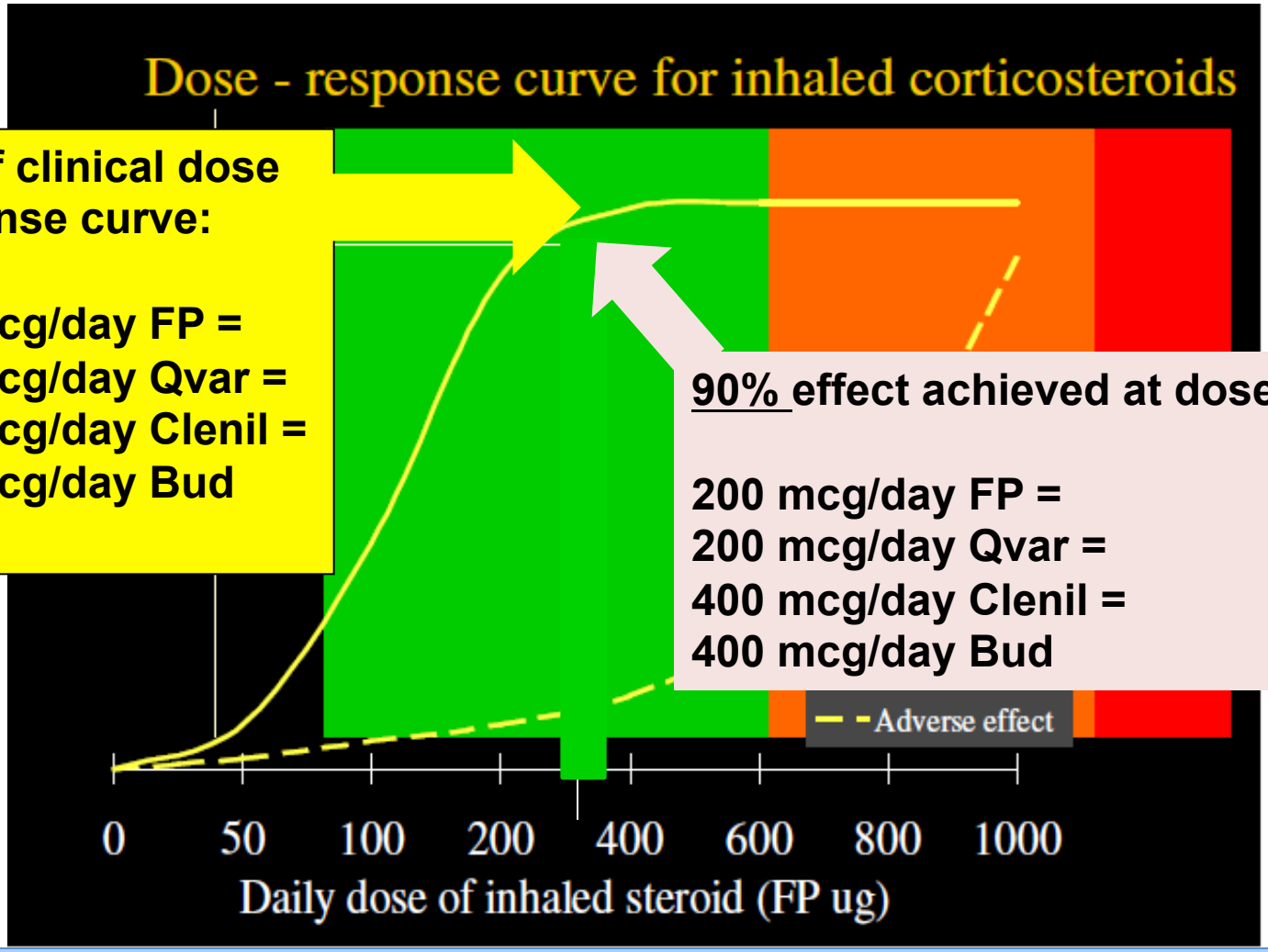
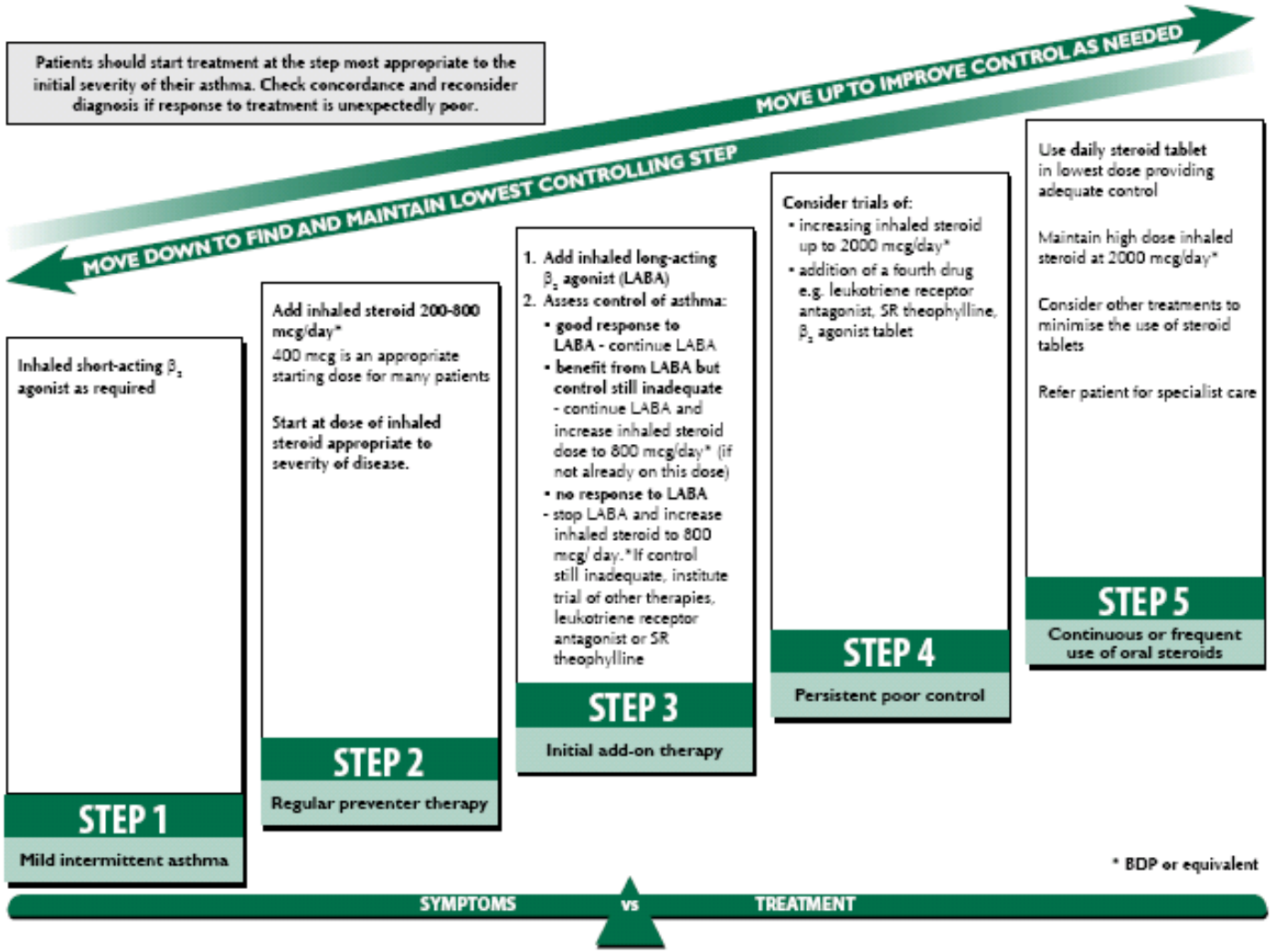
STEP 4
Persistent poor control
Use daily steroid tablet in lowest dose providing adequate control
Maintain high dose inhaled steroid at 2000 mcg/day*
Consider other treatments to minimise the use of steroid tablets
Refer patient for specialist care
STEP 5
Continuous or frequent use of oral steroids
* BDP or equivalent
TREATMENT

Dose of inhaled corticosteroids



Masoli M et al. Thorax 2004; 59:16-20
Holt S et al. BMJ 2001: 323:253-256


Patients should start treatment at the step most appropriate to the initial severity of their asthma. Check concordance and reconsider diagnosis if response to treatment is unexpectedly poor.
MOVE UP TO IMPROVE CONTROL AS NEEDED
MOVE DOWN TO FIND AND MAINTAIN LOWEST CONTROLLING STEP
Inhaled short-acting β2 agonist as required
STEP 1
Mild intermittent asthma
Add inhaled steroid 200-800 mcg/day*
400 mcg is an appropriate starting dose for many patients
Start at dose of inhaled steroid appropriate to severity of disease.
STEP 2
Regular preventer therapy
1. Add inhaled long-acting β2 agonist (LABA)
2. Assess control of asthma:
• good response to LABA - continue LABA
• benefit from LABA but control still inadequate - continue LABA and increase inhaled steroid dose to 800 mcg/day* (if not already on this dose)
• no response to LABA - stop LABA and increase inhaled steroid to 800 mcg/ day.*If control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or SR theophylline
STEP 3
Initial add-on therapy
Consider trials of:
• increasing inhaled steroid up to 2000 mcg/day*
• addition of a fourth drug e.g. leukotriene receptor antagonist, SR theophylline, β2 agonist tablet
STEP 4
Persistent poor control
Use daily steroid tablet in lowest dose providing adequate control
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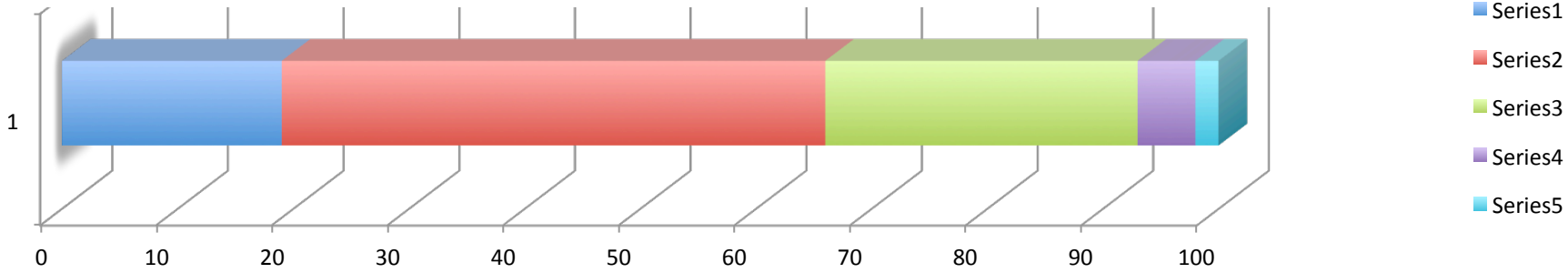
SYMPTOMS
vs
TREATMENT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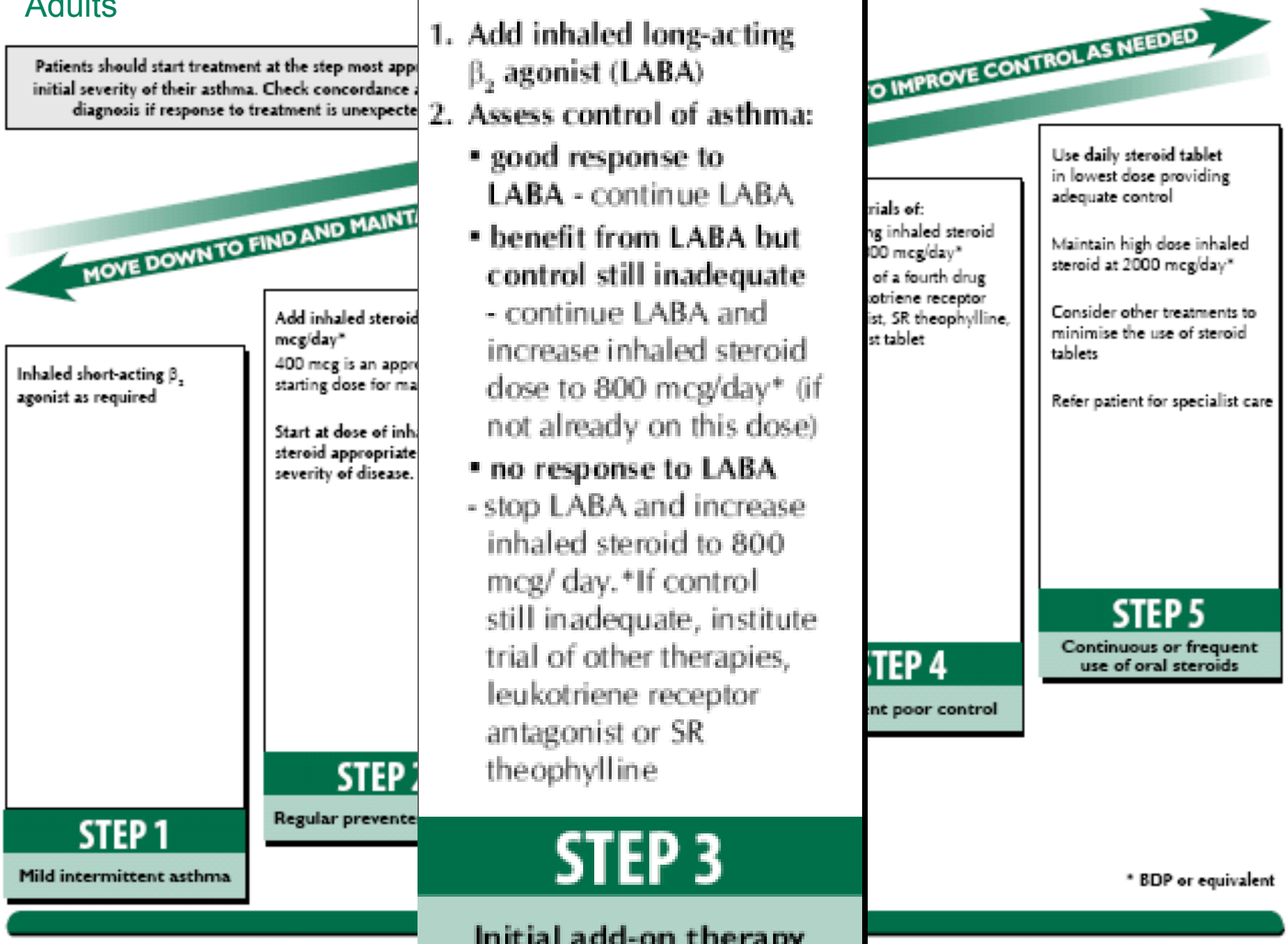
Adults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Adults

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SYMPTOMS vs

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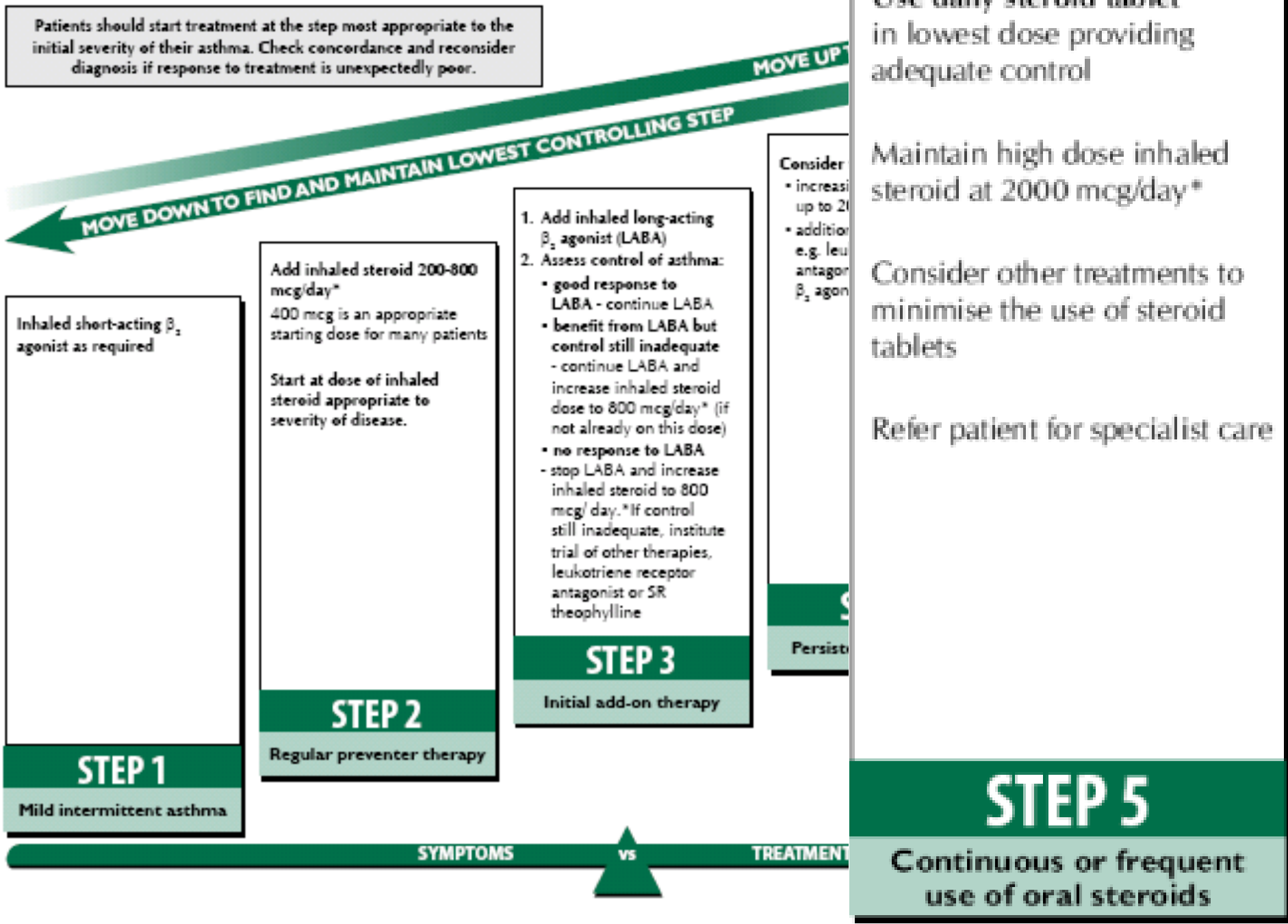
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SYMPTOMS
vs
TREATMENT

Management of acute asthma

Acute treatment – assess carefully

- *Use of oxygen*
  - Adjusted as necessary to maintain SpO2 of 94-98%
- *Beta agonists*
  - Usually spacer and beta agonist
  - If fail to respond continue to use beta agonist and add ipratropium
  - **Routine prescription of antibiotics is not indicated for acute asthma.**

British Guideline on the Management of Asthma (BTS / SIGN Guideline 101) (2011)

Acute Management (2)

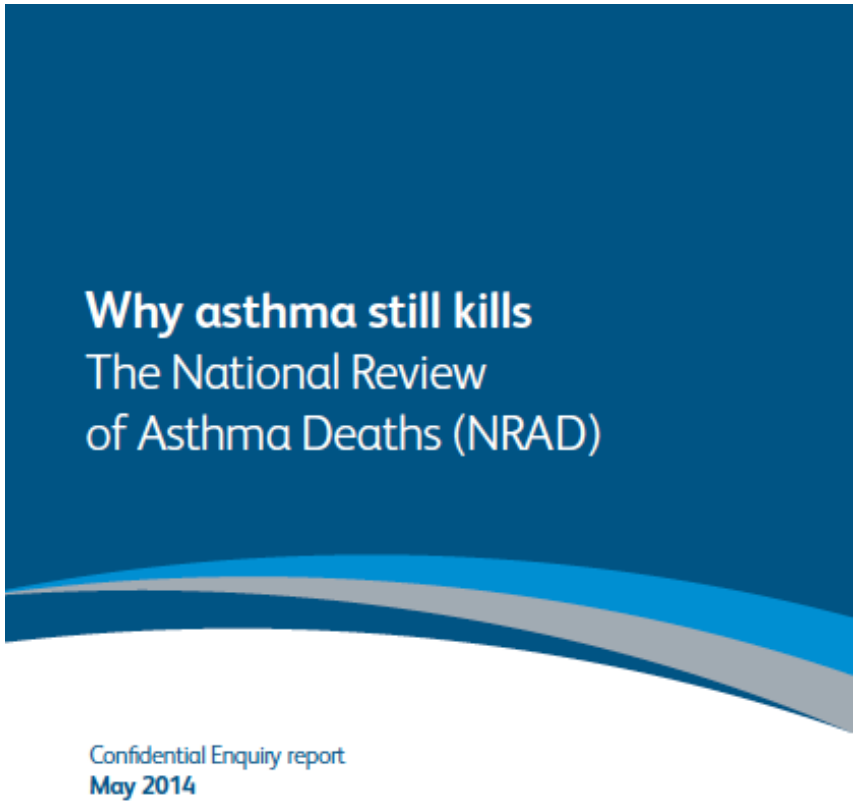
- *Prednisolone tablets*
  - 40-50mg daily for at least 5 days or until recovery
  - As rapid as injected if they can be swallowed and retained
- *Antibiotics*
  - When an infection precipitates an exacerbation of asthma it is likely to be viral. The role of bacterial infection has been overestimated
  - **Routine prescription of antibiotics is not indicated for acute asthma.**

British Guideline on the Management of Asthma (BTS / SIGN Guideline 101) (2011)

Prescribing factors in NRAD

- 43% not reviewed by GP practice in last year
- 23% had Personal Asthma Action Plans

- 46% had factors that could have avoided death:
  - Lack of specific asthma expertise 17%
  - Lack of knowledge of UK asthma guidelines 25%



Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

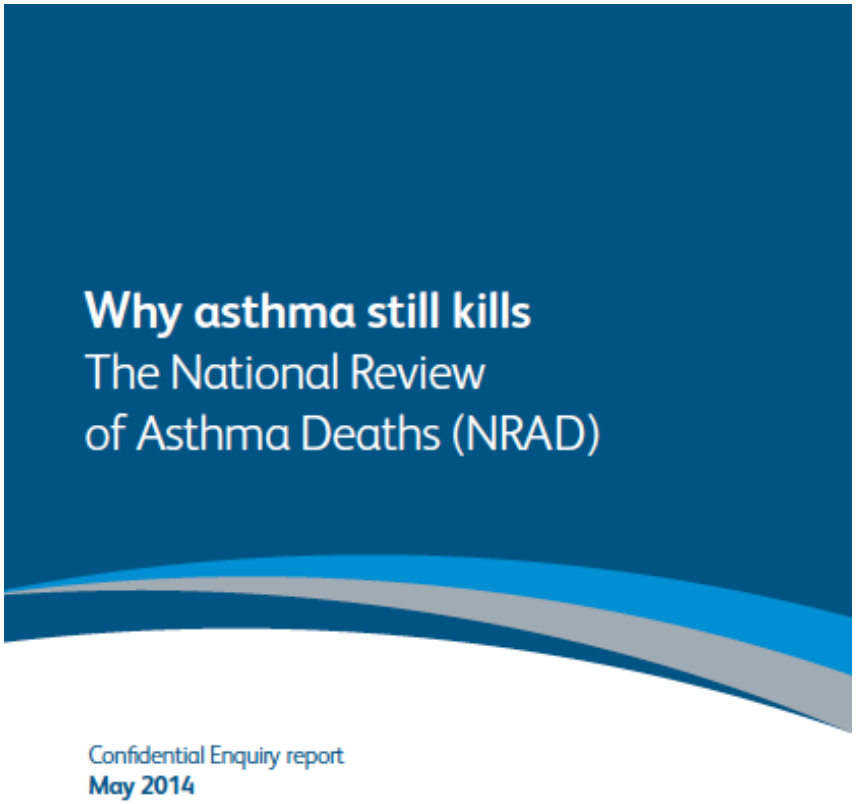
Key findings

- 195 people who died from asthma
- 45% died without seeking medical assistance in their last attack
- 43% were under specialist (secondary or tertiary)supervision within 1y
- 47% had previous admissions (21% in last year)
- 21% seen in A&E in previous year (and 11% seen twice or more in A&E)
- 10% had been admitted within 28d of death
- 39% severe asthma, 9% mild

Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

Prescribing factors in NRAD

- 39% had more than 12 SABA inhalers in last year
- 4% more than 50 SABA inhalers!!
- 3% using LABA without ICS (14% prescribed separately)
- Compliance with ICS low (not clear method from NRAD but 38% had fewer than four prescriptions in the year)



Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

Actions for Primary Care (adapted)

1. Every practice should have a **named lead clinician** for asthma services (responsible for acute and routine care)
2. Patients must be referred to specialist service if more than **two courses of systemic corticosteroid**s in last 12 months or require BTS Step 4 or 5 therapy (or if attend A&E or if admitted)
3. All patients should have a **personal asthma action plan (PAAP)**
4. **Structured reviews** should be undertaken by people with specialist training in asthma (at least annually)
5. **Education** is important for parents and children and those who teach them

Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

Actions during a review (adapted)

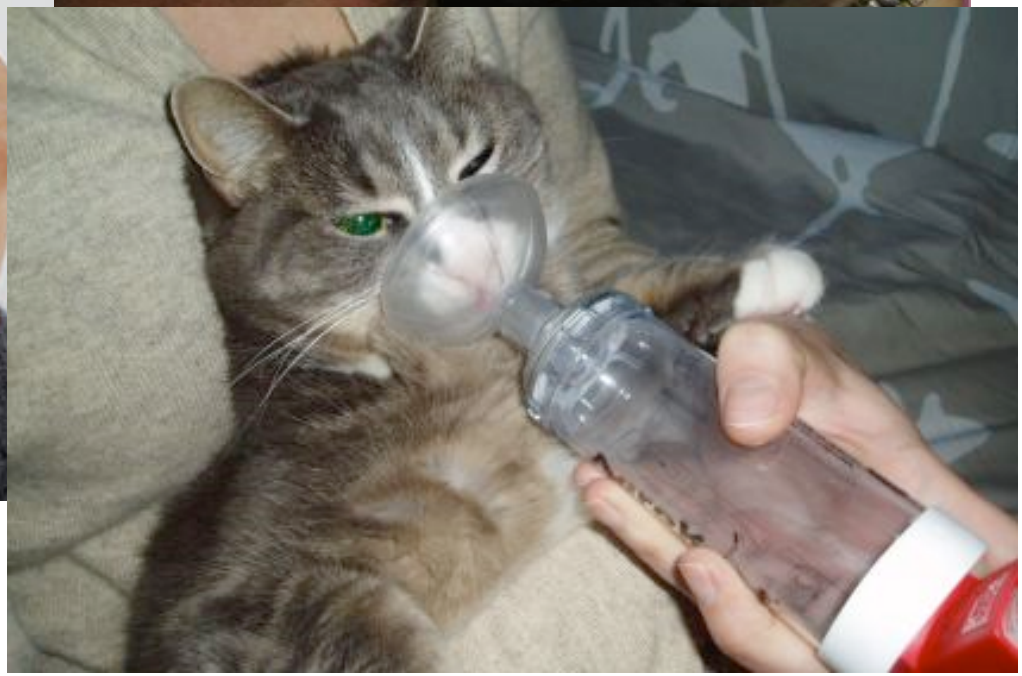
6. Should record triggers in the medical records and PAAP
7. Should review control at each asthma review
8. **Inhaler technique** should be routinely undertaken and documented
9. **Non-adherence** should be identified and monitored
10. **Smoking record** should be documented and support for smoking cessation
11. Urgent review for all with more than **12 short-acting reliever inhalers** in the previous 12 months
12. Patients should **not be prescribed a long acting beta agonist alone** (should be in combination with an inhaled corticosteroid

Royal College of Physicians (2014) Why Asthma Still Kills – The National Review of Asthma Deaths

Questions?

Inhalers in Asthma and COPD

Examples of poor technique



How many don't take their medication?

- Ranges from 30-70%
- Particular problem in children and adolescents[1]
- In trials 70-90%
- In real life <50%[2 3]
- Analysis of prescription records of people with difficult asthma. A third of people used less inhaled medication than prescribed[4]

[1] WHO Adherence to long-term therapies: evidence for action WHO ISBN 92-4-1545992 http://www.who.int/chp/knowledge/publications/adherence_full_reportpdf

[2] Breekveldt-Postma NS, Gerrits CMJM, Lammers JWJ, Raaijmakers JAM, Herings RMC. Persistence with inhaled corticosteroid therapy in daily practice. Respiratory medicine. 2004;98(8):752-9.

[3] Haupt D, Krigsman K, Nilsson JL. Medication persistence among patients with asthma/COPD drugs. Pharmacy World & Science. 2008 2008/10/01;30(5):509-14. English.

[4] Asthma UK http://www.asthma.org.uk/how-we-help/groundbreaking-research/how-your-money-helps/identifying-non-adherence-in-difficult-asthma/

How would you breathe in for those?

How about these?

Quick and Deep

Here are the main ones!

- Metered Dose Inhaler
- Easi-breathe
- Autohaler
- Turbohaler
- Accuhaler
- Easyhaler
- Handihaler
- Respimat
- Clickhaler
- Novolizer / Genuair
- Ellipta
- Spiromax
- NEXThaler
- Breezhaler

Newer and common inhaled therapy licenced for COPD

DEVICE	SABA	SAMA	LAMA	LABA	ICS
Metered dose inhaler (GSK, Teva, Boehringer, Chiesi) 	Salbutamol (Airomir®, Ventolin®)	Ipratropium (Atrovent®)		Formoterol (Atimos®) Salmeterol (Serevent®)	Formoterol/beclometasone (Fostair®)
Easi-Breathe® (Teva) 	Salbutamol (Salamol®)				
Autohaler® (Teva) 	Salbutamol (Airomir®)				
Respirmat® (Boehringer) 			Tiotropium (Spiriva®)	Tiotropium/olodaterol (Spiolto®)	Olodaterol (Striverdi®▼)
HandiHaler® (Boehringer) 			Tiotropium (Spiriva®)		
Easyhaler® (Orion) 	Easyhaler® salbutamol			Easyhaler® formoterol	
Turbohaler® (AstraZeneca) 	Terbutaline (Bricanyl®)			Formoterol (Oxis®)	Formoterol/budesonide (Symbicort®)
Accuhaler® (GSK) 	Salbutamol (Ventolin®)			Salmeterol (Serevent®)	Salmeterol/fluticasone (Seretide®)
Breezhaler® (Novartis/Pfizer) 			Glycopyrronium (Seebri®▼)	Glycopyrronium/indacaterol (Ultibro®▼)	Indacaterol (Onbrez®)
Genuair® (Almirall) 			Aclidinium (Eklira®▼)	Aclidinium/formoterol (DuaKlir®▼)	
Ellipta® (GSK) 			Umeclidinium (Incruse®▼)	Umeclidinium/vilanterol (Anoro®▼)	Vilanterol/fluticasone (Relvar®▼)
Spiromax® (Teva) 					Formoterol/budesonide (DuoResp®)

Reference: SPCs accessed at www.medicines.org.uk (Accessed October 2015)

And since October 2015

New Bronchodilators

- Long acting beta-2 agonists (LABA)
  - Olodaterol (Striverdi) Respimat
  - Indacaterol (OnBrez) Breezhaler
- Long acting muscarinic antagonist (LAMA)
  - Aclidinium (Eklira) Genuair
  - Glycopyrronium (Seebri) Breezhaler
  - Umeclidinium (Incruse) Ellipta
- Long acting beta-2 agonists / long acting antimuscarinic (LABA/LAMA)
  - Ultibro (glycopyrronium/indacterol) Breezhaler
  - Anoro (umeclidinium/vilanterol) Ellipta
  - DuaKlir (aclidinium/formoterol) Genuair
  - (Tiotropium/olodaterol) Respimat

Elderly patients may

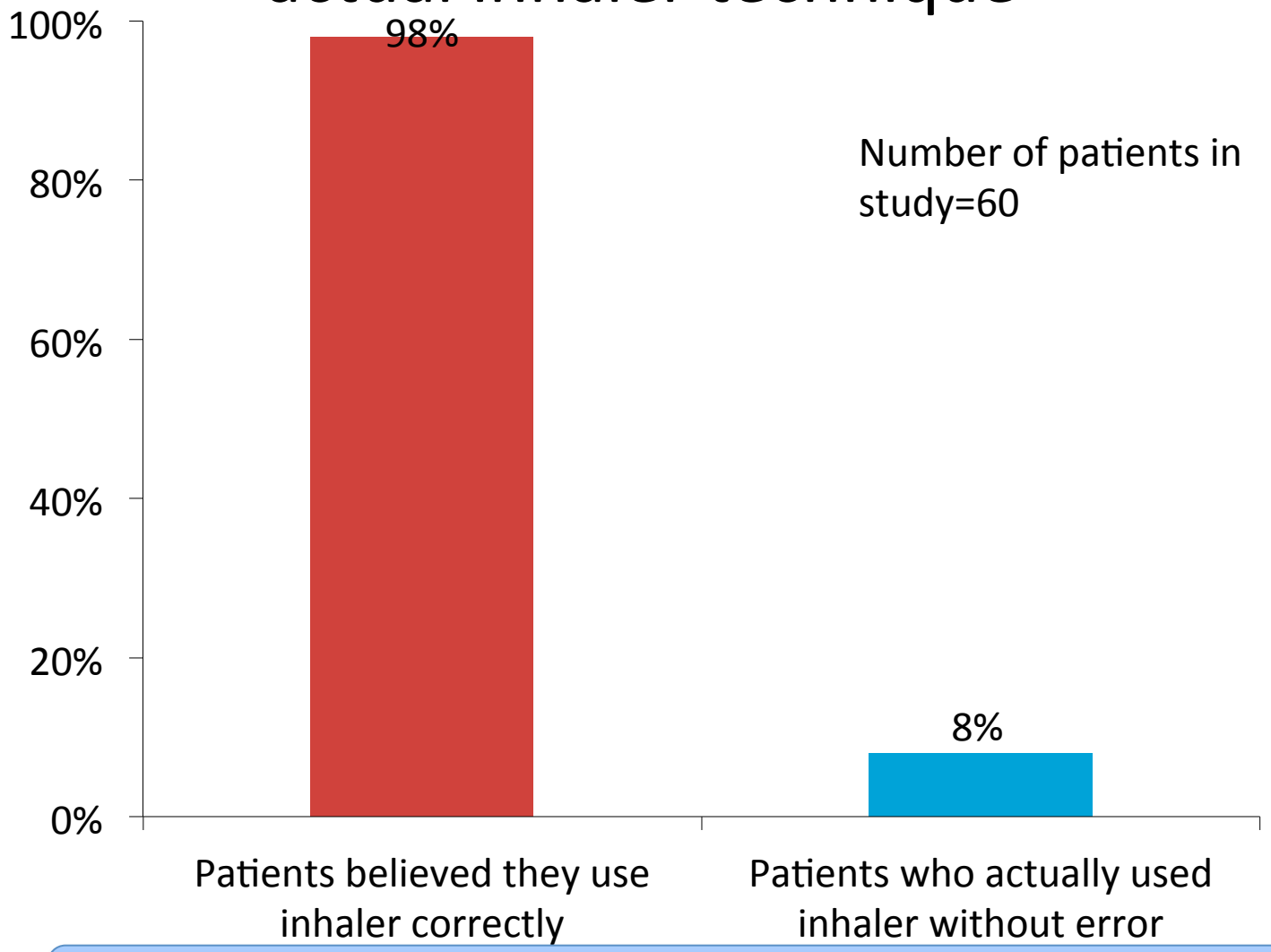
- Inspiratory flow and volume
- Co-ordination
- Manual dexterity
- Hand strength
- Visual acuity
- Less likely to retain instructions
- 30x risk of errors vs tablets

Barrons R, Pegram A, Borries A. Inhaler device selection: Special considerations in elderly patients with chronic obstructive pulmonary disease. American Journal of Health-System Pharmacy. 2011;68(13): 1221-32

Broeders M, Sanchis J, Levy M, Crompton G, Dekhuijzen P. The ADMIT series--issues in inhalation therapy. 2. Improving technique and clinical effectiveness. Prim Care Respir J. 2009;18(2):76-82.

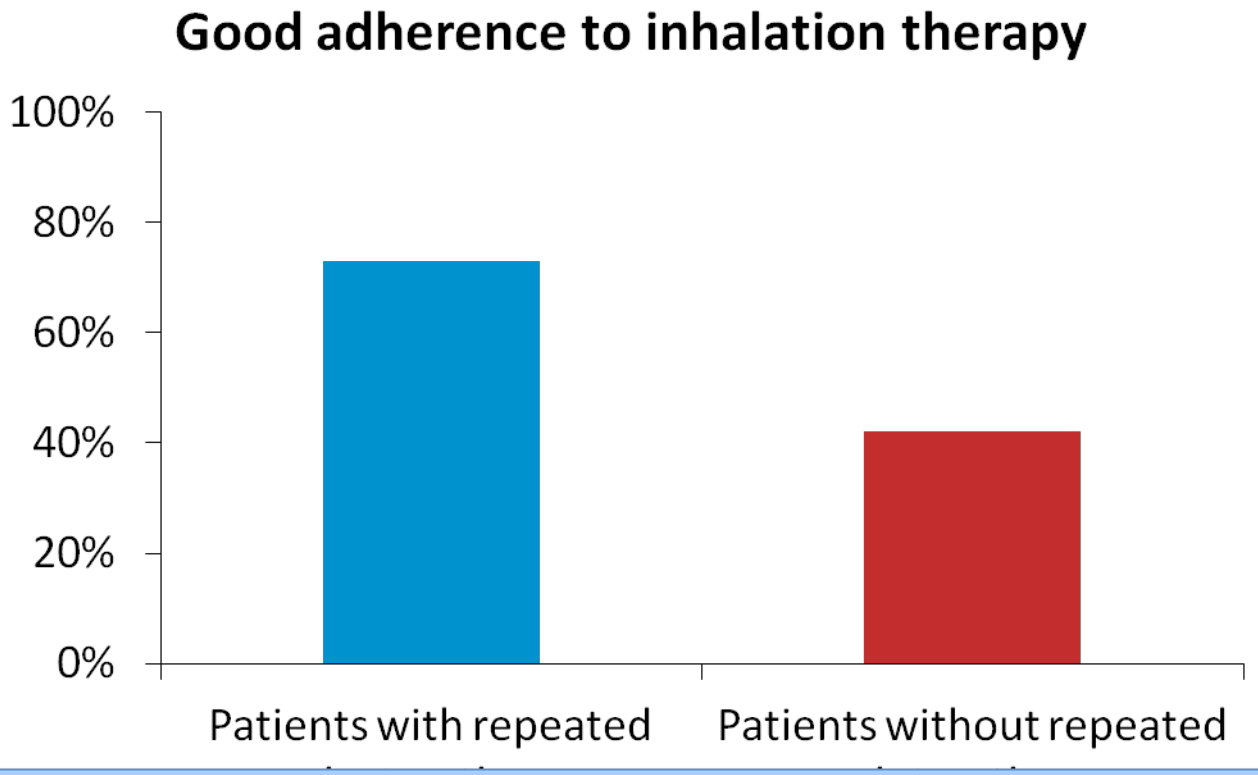
How common are inhaler device issues?

Patient perception of inhaler technique and actual inhaler technique



Adapted from: Souza ML, et al. J Bras Pneumol. 2009;35:824-831.

Impact of repeated inhaler instruction on patients

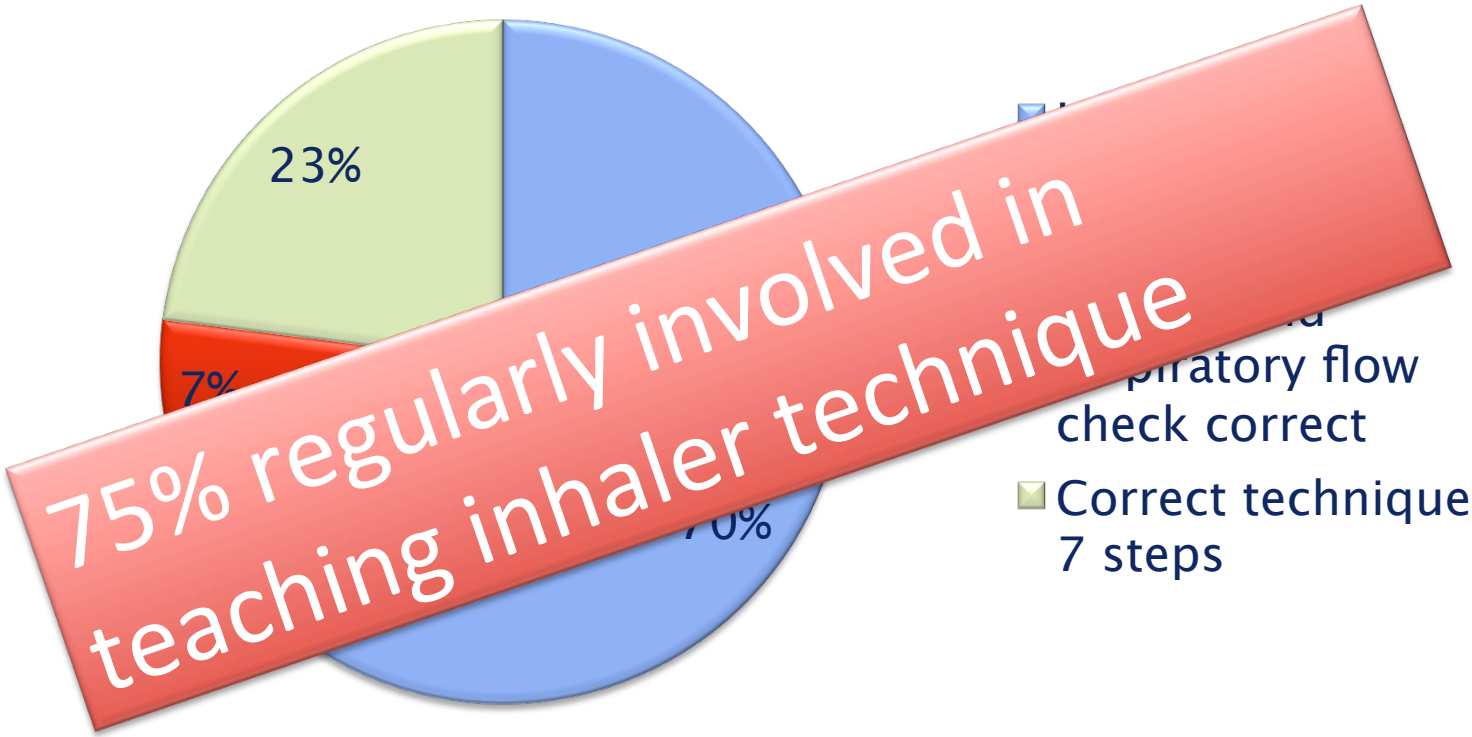


Takemura M, Mitsui K, Itotani R, Ishitoko M, Suzuki S, Matsumoto M, et al. Relationships between repeated instruction on inhalation therapy, medication adherence, and health status in chronic obstructive pulmonary disease. Int J Chron Obstruct Pulmon Dis. 2011;6:97-104

Inhaler technique and concordance / adherence vital – step back before you step up!

How do we do using inhalers?

Do healthcare professionals have sufficient knowledge of inhaler techniques in order to educate their patients effectively in their use?



Baverstock M, Woodhall N, Maarman V. P94 Do healthcare professionals have sufficient knowledge of inhaler techniques in order to educate patients effectively in their use? Thorax. 2010;65:A118-A9

How would you breathe in for those?

How about these?

Quick and Deep

Prescribing for patients (expert or not)!

1. Stick to the local formulary wherever possible
2. Use devices you are familiar with
3. Use a device the patient can use and is prepared to take
4. Check the dose is right
5. Arrange follow up

Respiratory Study Morning
Inspiring Excellence in Primary Care

Steve Holmes