بسم الله الرحمن الرحيم

Pediatric Asthma Case Scenario

Adel Reyad

Case Presentation

Sara is a 30-month-old girl who has about 4-month history of a runny nose and coughing.

The cough seems to be worse during the night and early morning.

Case Presentation

For the last 3 nights, cough has interrupted her sleep.

Several cough preparations have been tried and have failed.

Case Presentation

She was recently seen by a pediatrician who prescribed **Montelukast**, but no improvement has been observed.

There has been no fever.

Case Presentation

Father is a smoker,

but tries not to smoke

in the house

or in the car.

Medical History:

She is a full-term girl, delivered by SVD.

Breast-fed for first 2 months.

Medical History:

She had **skin problems**

(dryness and erythema in the face and neck) from the age of 6 months to 1 year.

She was treated with skin emollients and topical hydrocortisone.

Family History:

Father had frequent "bronchitis" until age of 12 years.

Mother has morning sneezing with clear rhinorrhea.

Sister, aged 5 years, is healthy.

Social History:

Father works in an IT firm.

Mother is a house-wife.

Child attends daycare.

Review of Systems:

Negative (other than respiratory).

Current Medications:

Montelukast, 4 mg chewable tab every night

Over-the-counter **cough suppressants** for symptom relief 3 to 4 times a week.

Salbutamol syrup

Physical Exam:

Height is in 75th percentile,

weight in 50th percentile.

Adequate progress observed in the growth chart since birth.

Active, alert, happy child.

Physical Exam:

Normal ears and throat exam and

no rhonchi or wheezing detected on auscultation with the child at rest.

Physical Exam:

The mother was asked to take the child to the corridor and play area and have her run until tired and return while still breathing rapidly.

Physical Exam:

On subsequent auscultation,

a few scattered expiratory wheezes were detected in both lungs.

Some skin dryness but no active skin lesions were present.

Lab Tests:

Complete blood count : **normal**

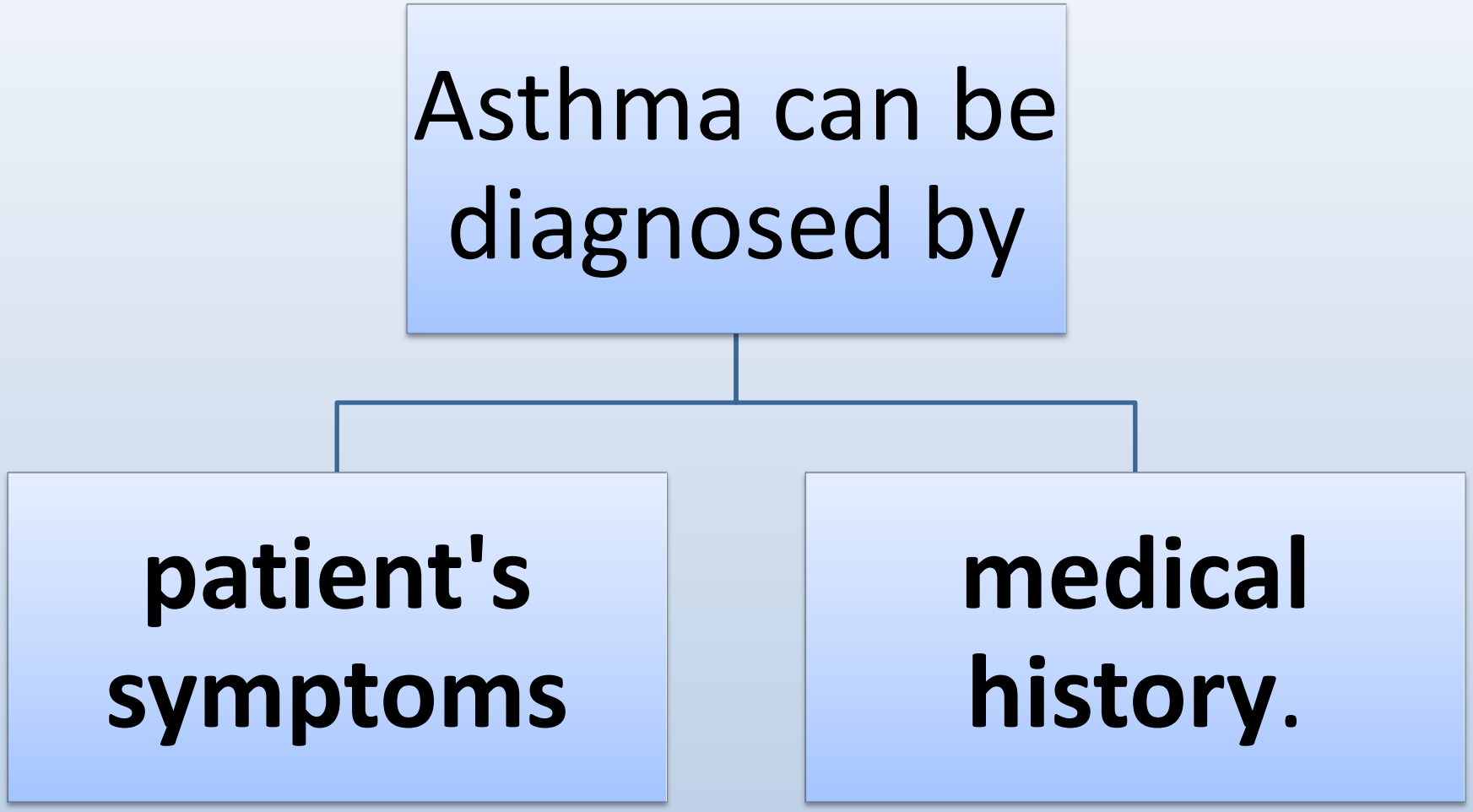
CRP : **negative**.

A chest film performed 3 weeks ago was read as **normal**.

Case Discussion

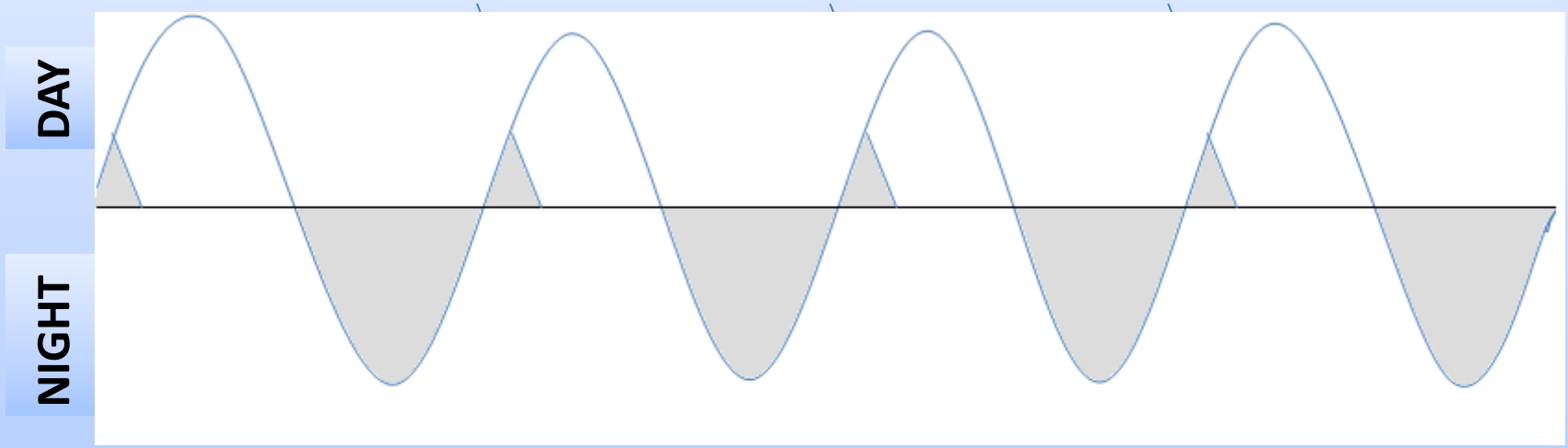
Diagnosis
and
Differential Diagnosis

HOW TO DIAGNOSE ASTHMA?

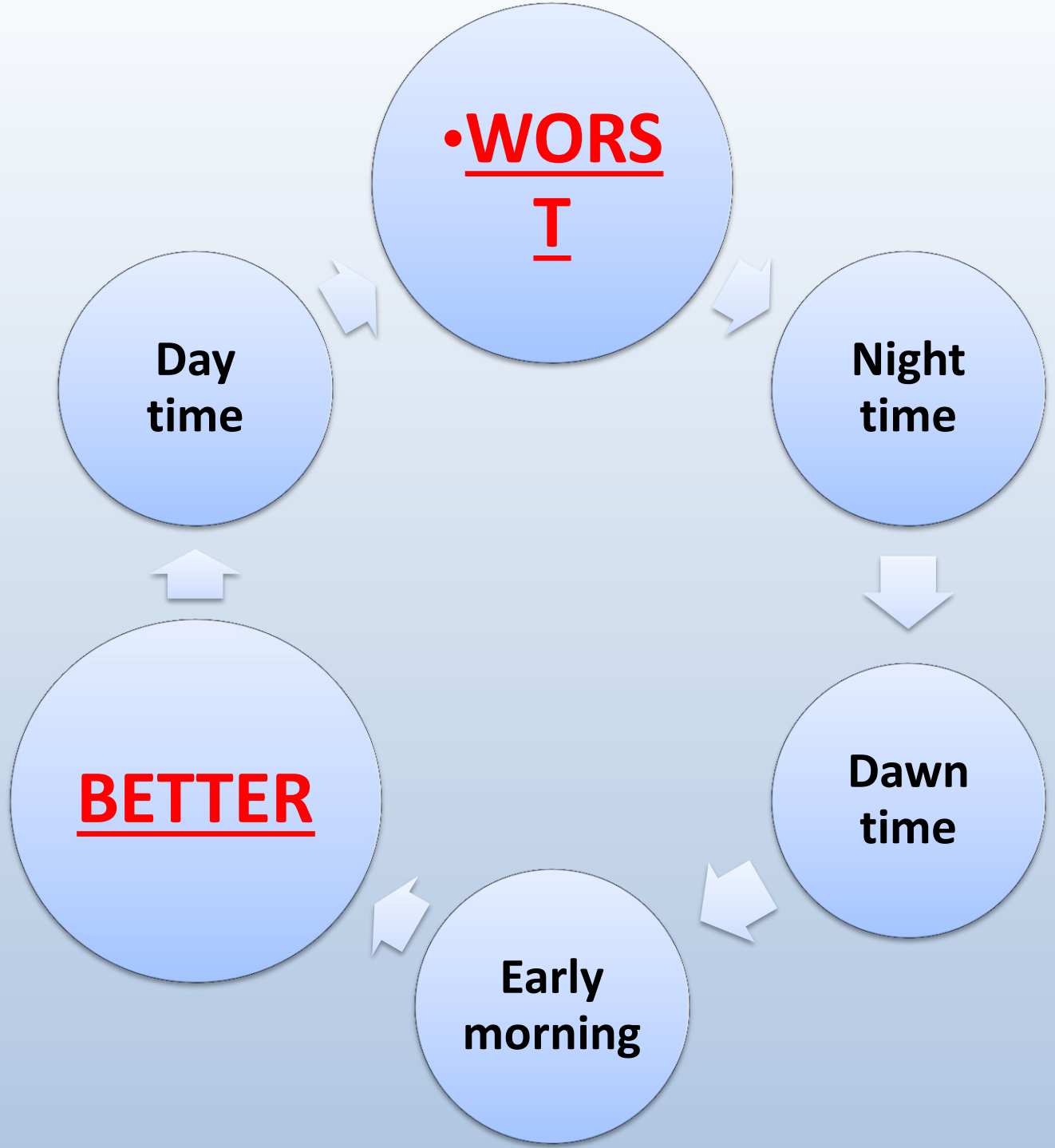

Asthma can be diagnosed by
patient's symptoms
medical history.

HISTORY

- **CORTISONE LEVEL**



Timing of cough


•WORST
Night time
Dawn time
Early morning
BETTER
Day time

- Family or child history of asthma or atopic diseases

Good response to bronchodilators e.g. Salbutamol

Coughing or wheezing on exertion (Exercise – induced asthma)

DURATION OF COUGH

- Following Viral Infection e.g. URTI
- Normally the course is about
- 1-2 weeks

In Asthmatics :

The course is usually prolonged
more than 2 weeks

•Symptoms occur or worsen in a seasonal pattern

Symptoms occur or worsen with:

- **Animals with fur**
- **Aerosol chemicals**
- **Changes in temperature**
- **Drugs (Aspirin and B-Blockers)**
- **Exercise**
- **Smoke**
- **Strong emotions**

Features suggesting asthma in children ≤ years

Feature	Characteristics suggesting asthma
Cough UPDATED 2017	Recurrent or persistent non-productive cough that may be worse at night or accompanied by some wheezing and breathing difficulties. Cough occurring with exercise, laughing, crying or exposure to tobacco smoke in the absence of an apparent respiratory infection **Prolonged cough in infancy, and cough without cold symptoms, are associated with later parent-reported physician-diagnosed asthma, independent of infant wheeze**
Wheezing	Recurrent wheezing, including during sleep or with triggers such as activity, laughing, crying or exposure to tobacco smoke or air pollution
Difficult or heavy breathing or shortness of breath	**Occurring with exercise, laughing, or crying**
Reduced activity	**Not running, playing** or **laughing** at the same intensity as other children; tires earlier during walks **(wants to be carried)**
Past or family history	Other allergic disease (atopic dermatitis or allergic rhinitis) **Asthma in first-degree relatives**
Therapeutic trial with low dose ICS and as-needed SABA	**Clinical improvement during 2–3 months of controller treatment** and worsening when treatment is stopped

GINA 2017, Box 6-2

Feature	Characteristics suggesting asthma
Cough	**Recurrent or persistent non-productive cough** that may be worse at night or accompanied by some wheezing and breathing difficulties. **Cough occurring with exercise, laughing, crying** or exposure to **tobacco smoke** in the absence of an apparent respiratory infection **Prolonged cough in infancy, and cough without cold symptoms, are associated with later parent-reported physician-diagnosed asthma, independent of infant wheeze**

Wheezing	**Recurrent wheezing, including:** **during sleep** **with triggers such as activity, laughing, crying** **exposure to tobacco smoke or air pollution**
Difficult or heavy breathing or shortness of breath	**Occurring with exercise,** **laughing, or crying**
Reduced activity	**Not running, playing** or **laughing** at the same intensity as other children; tires earlier during walks **(wants to be carried)**

Past or family history	Other allergic disease (atopic dermatitis or allergic rhinitis) Asthma in first-degree relatives
Therapeutic trial with low dose ICS and as-needed SABA	Clinical improvement during 2–3 months of controller treatment and worsening when treatment is stopped

Common differential diagnoses of asthma in children ≤5 years

Condition	Typical features
Recurrent viral respiratory infections	Mainly cough, runny congested nose for <10 days; wheeze usually mild; No symptoms between infections
Gastro-esophageal reflux	Cough when feeding; recurrent chest infections; vomits easily especially after large feeds; poor response to asthma medications
Foreign body aspiration	Episode of abrupt severe cough and/or stridor during eating or play; recurrent chest infections and cough; focal lung signs

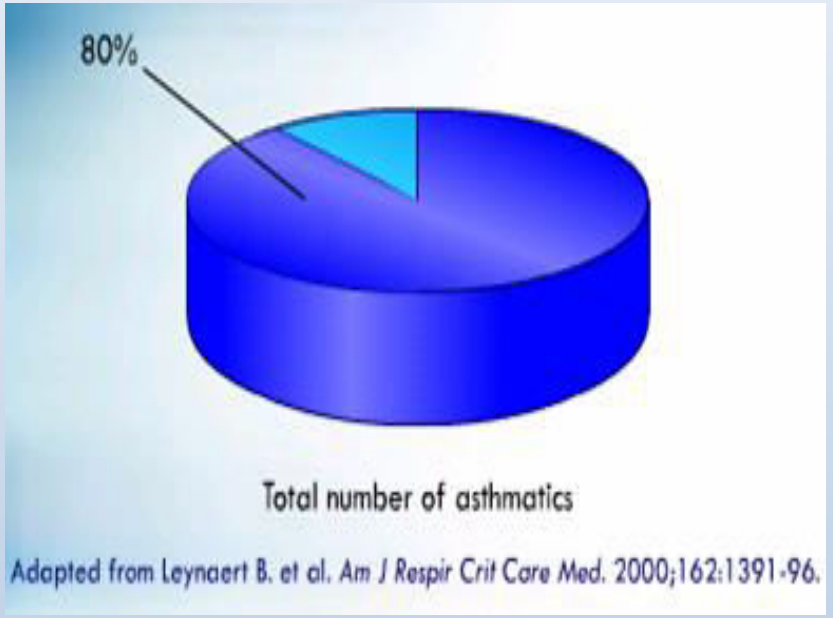
GINA 2017, Box 6-3 (1/2)

ALLERGIC RHINITIS

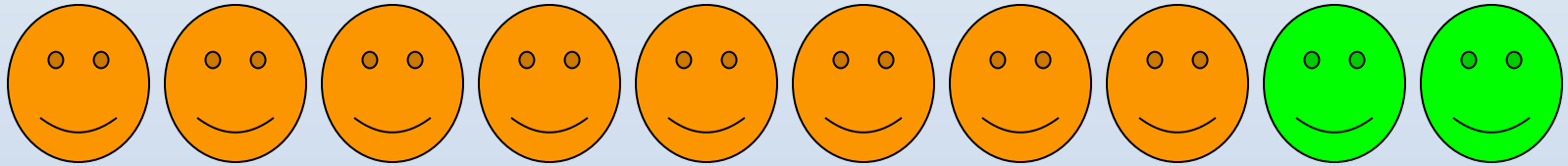
Allergic Rhinitis

Epidemiology of Allergic Rhinitis

- It affects approximately 10 to 25% of the population
- common in children.
- Evidence showed that up to 80 % of asthma patients had coexisting allergic rhinitis.



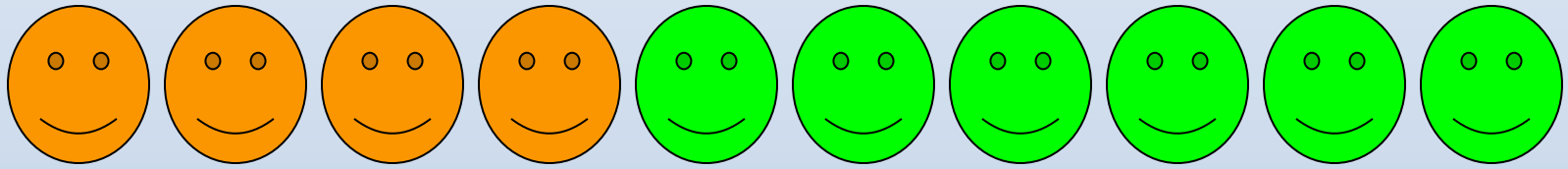
Up to 80% of all asthmatic patients have allergic rhinitis



All asthmatic patients

Adapted from Bousquet J et al *J Allergy Clin Immunol* 2001;108(suppl 5):S147–S334; Sibbald B, Rink E *Thorax* 1991;46:895–901; Leynaert B et al *J Allergy Clin Immunol* 1999;104:301–304; Brydon MJ *Asthma J* 1996:29–32.

Up to 40% of patients with Allergic Rhinitis have Asthma



Allergic Rhinitis patients

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Pathophysiology of Allergic Rhinitis and Asthma

1	Common **triggers**
2	Similar **inflammatory cascade** on exposure to allergens
3	Similar pattern of **early- and late-phase responses**
4	Infiltration by the **same inflammatory cells**
5	Several potential connecting pathways, including systemic transmission of **inflammatory mediators**
6	Cysteinyl leukotrienes are common mediators in upper and lower airway diseases

Adapted from National Institutes of Health *Global Initiative for Asthma: Global Strategy for Asthma Management and Prevention: A Pocket Guide for Physicians and Nurses.* Publication No. 95-3659B. Bethesda, MD: National Institutes of Health, 1998; Casale TB, Amin BV *Clin Rev Allergy Immunol* 2001;21(1):27–49; Workshop Expert Panel *Management of Allergic Rhinitis and its Impact on Asthma (ARIA) Pocket Guide. A Pocket Guide for Physicians and Nurses.* 2001; Kay AB *N Engl J Med* 2001;344:30–37; Varner AE, Lemanske RF Jr. In: *Asthma and Rhinitis*. 2nd ed. Oxford, UK: Blackwell Science, 2000:1172–1185; Togias A *J Allergy Clin Immunol* 2000;105(6 pt 2):S599–S604; Togias A *Allergy* 1999; 54(suppl 57):94–105.

Diagnosis of Allergic Rhinitis

Typical history

of allergic symptoms

Diagnostic tests

- **Typical symptoms of allergic rhinitis:**

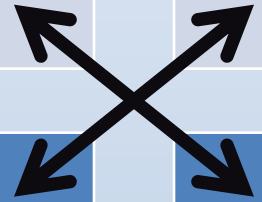
Rhinorrhea, sneezing, nasal obstruction, nasal pruritus and (allergic salute).

Ocular symptoms:

Conjunctival injection, pruritus, excessive tearing and **(allergic shiners)**

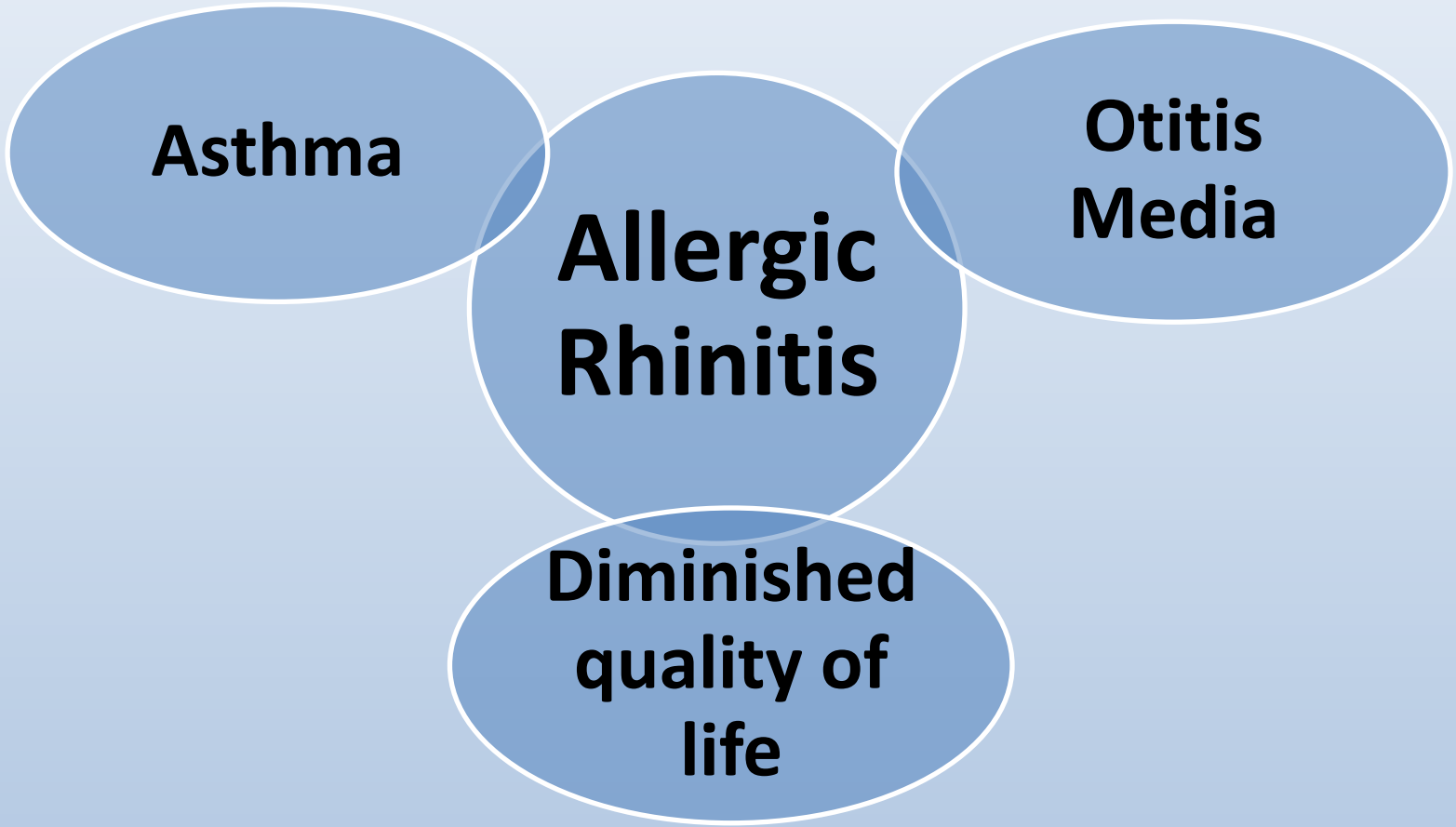
Classification of Allergic Rhinitis

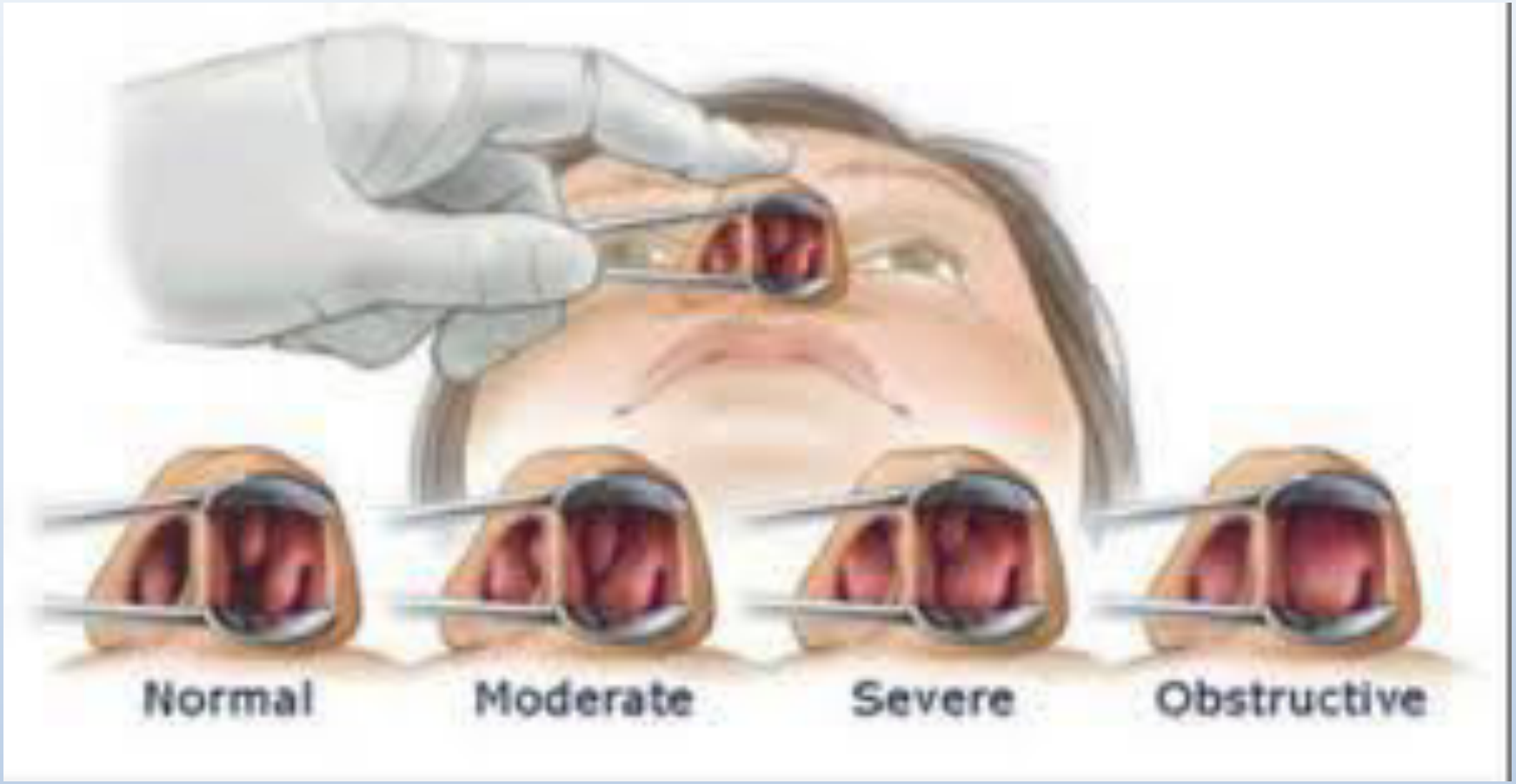
Intermittent Symptoms	Persistent Symptoms
< 4 days/week or < 4 weeks	> 4 days/week & > 4 weeks



Mild	Moderate severe One or more items
*Normal sleep *Normal daily activities, sport, leisure *No work or school problems	*Abnormal sleep *Impairment of daily activities, sport , leisure *Work or school problems

Allergic Rhinitis Co-morbidities



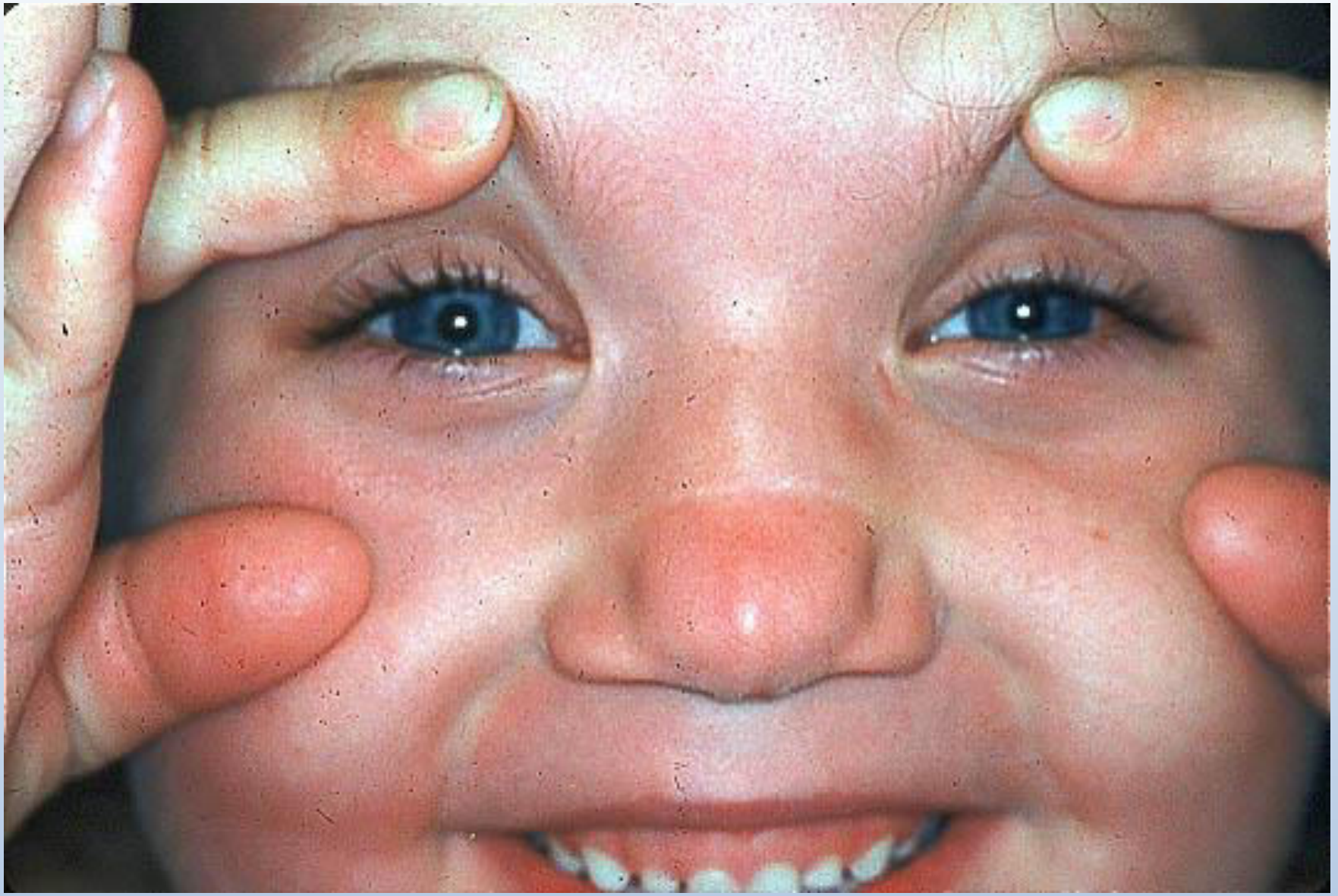

Normal
Moderate
Severe
Obstructive


Inferior
Turbinate
Septum

Allergic salute

Allergic shiners

Nasal turbinates




Classical allergic salute

Final Diagnosis:

Co-morbid Asthma and Allergic Rhinitis.

The diagnosis of asthma in a child of this age is essentially **a clinical diagnosis.**

A therapeutic response to a treatment plan should also help to solidify the diagnosis.

Asthma Management

TREATMENT

- CONTROLLERS (PREVENTION)

NON-STOP

MEDICINE

- RELEIVERS (RESCUE)

MUST-STOP

MEDICINE

TREATMENT

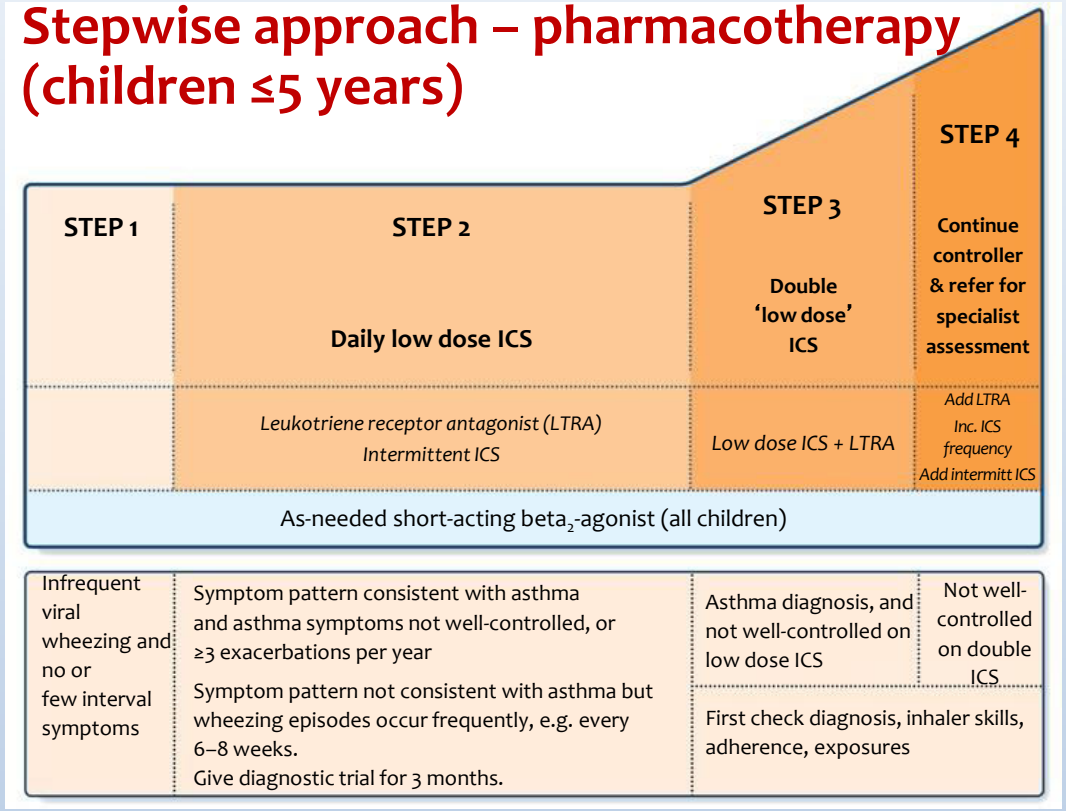
• CONTROLLERS

- KETOTIFEN
  (NO MORE PRESENT IN GINA GUIDELINES)
- INHALERS:
  *INTAL: 3-4 TIMES/DAY
  *ICS: TOPICAL
  200 ug
  SAFE
  *LABA: (+ ICS) 5 YEARS ↑
- (LTRA) MONTELUKAST

• RELEIVERS

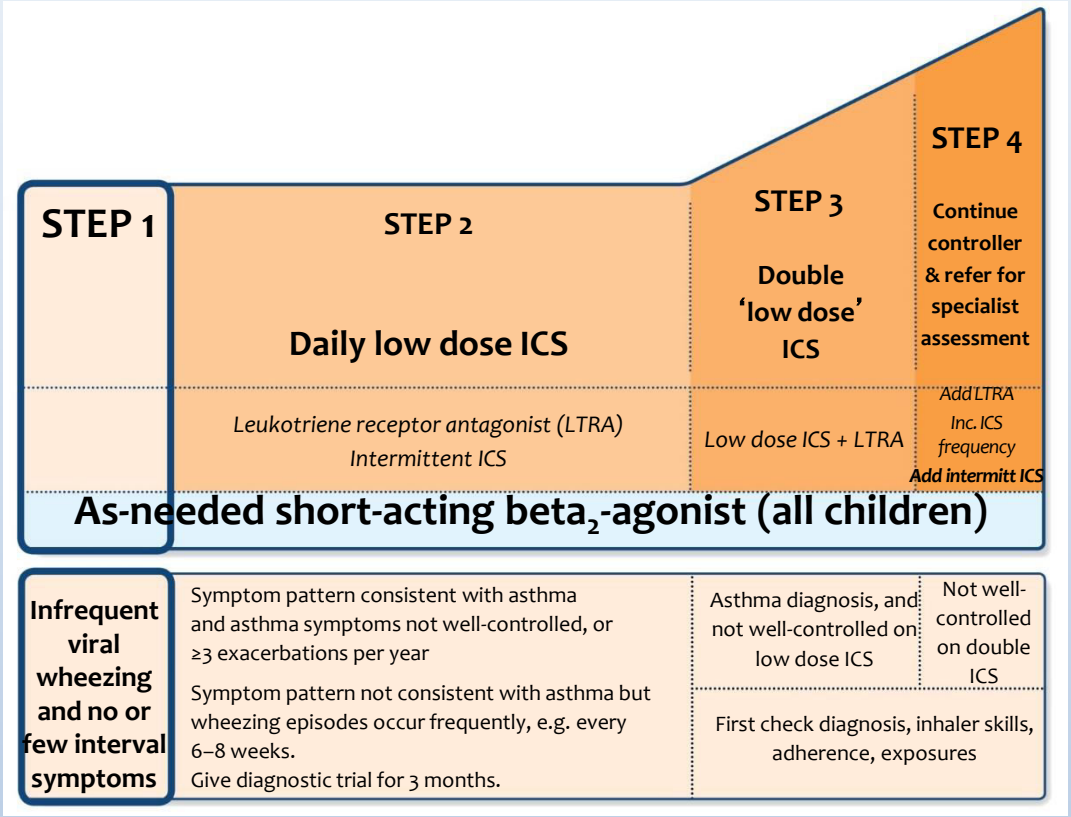
- B-AGONIST
  SALBUTAMOL,TERBUTALIN
- AMINOPHYLLIN XXXX
- MUCO-REGULATORS XXXX
- *SEVERE ASTHMA*
  ORAL / IV STEROID
  PREDNISOLONE
  FULL DOSE , SHORT COURSE

Stepwise approach – pharmacotherapy (children ≤5 years)



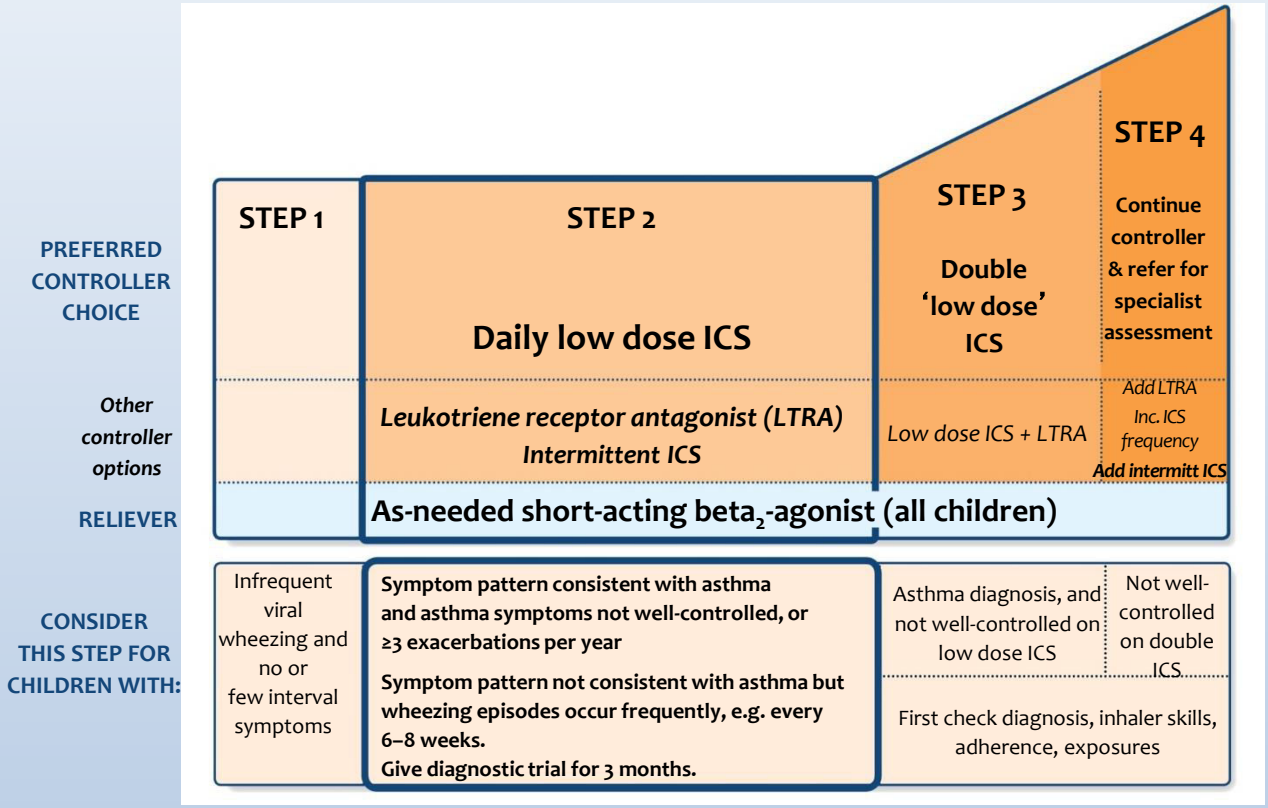
GINA 2017, Box 6-5 (3/8)

Step 1 (children ≤5 years) – as-needed inhaled SABA



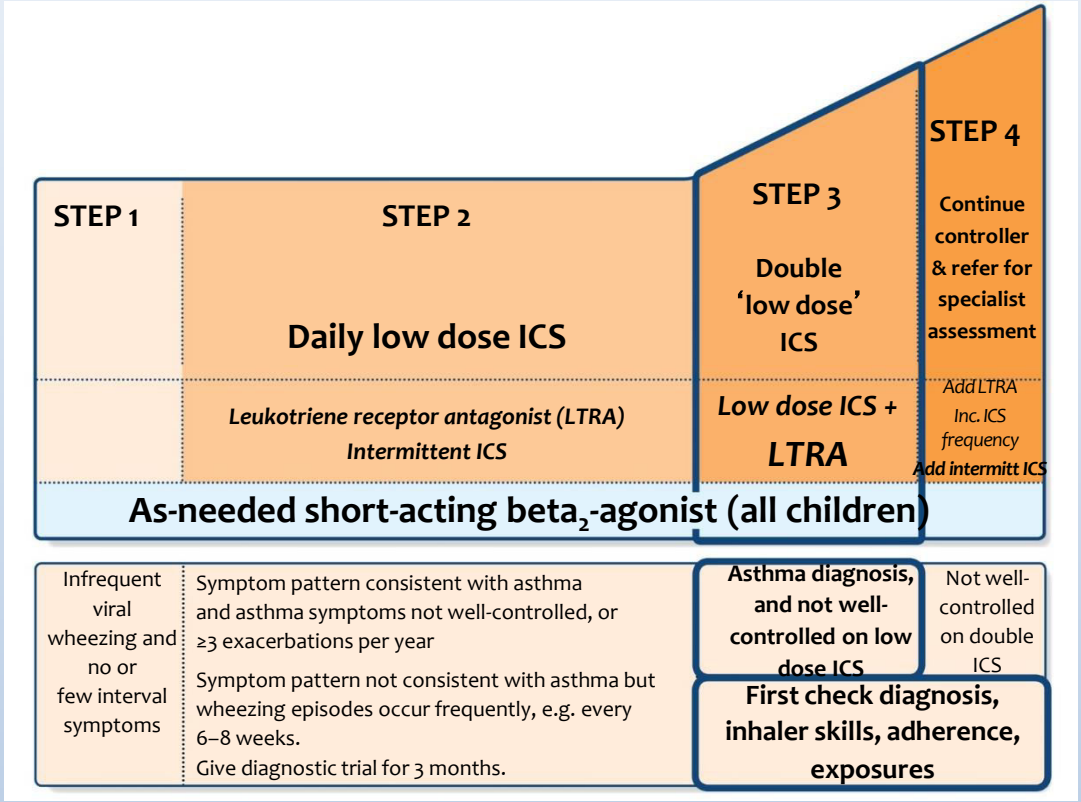
GINA 2017, Box 6-5 (5/8)

Step 2 (children ≤5 years) – initial controller + as-needed SABA



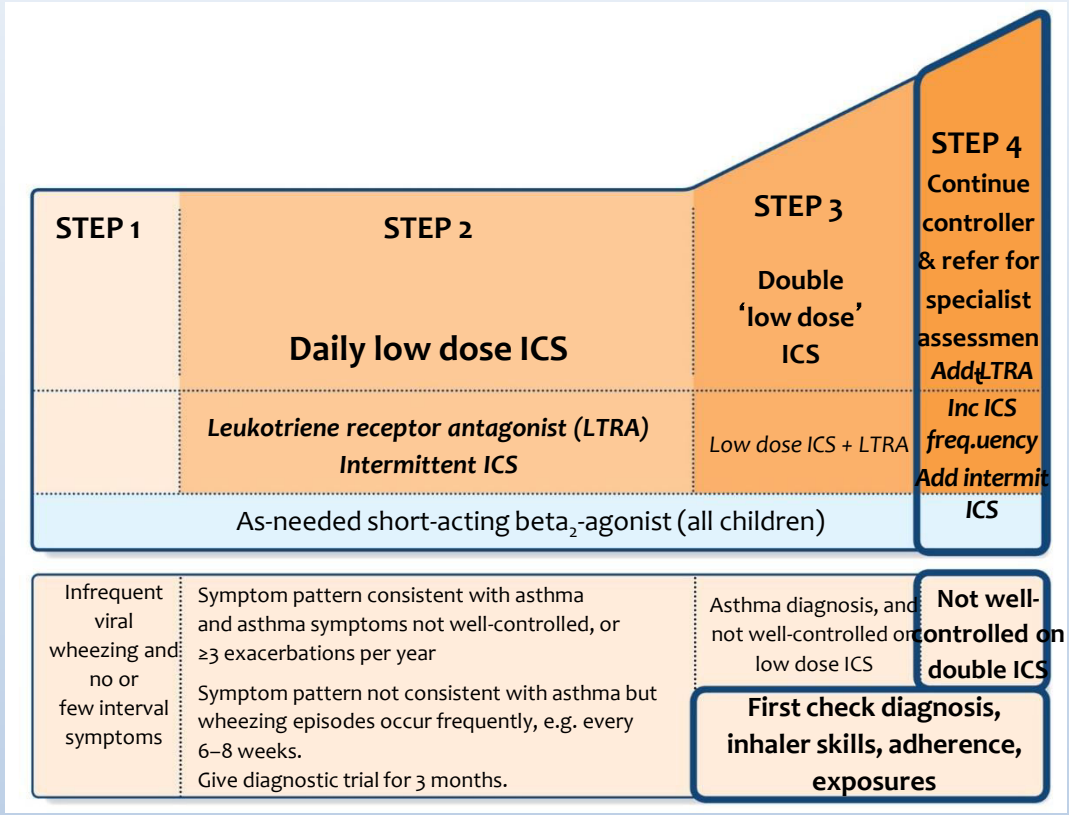
GINA 2017, Box 6-5 (5/8)

Step 3 (children ≤5 years) – medium dose ICS + as-needed inhaled SABA



GINA 2017, Box 6-5 (5/8)

Step 4 (children ≤5 years) – refer for expert assessment



GINA 2017, Box 6-5 (5/8)

Initial assessment of acute asthma exacerbations in children ≤5

Symptoms	Mild	Severe*
Altered consciousness	No	Agitated, confused or drowsy
Oximetry on presentation (SaO_2)**	>95%	<92%
Speech†	Sentences	Words
Pulse rate	<100 beats/min	>200 beats/min (0–3 years) >180 beats/min (4–5 years)
Central cyanosis	Absent	Likely to be present
Wheeze intensity	Variable	Chest may be quiet

*Any of these features indicates a severe exacerbation
**Oximetry before treatment with oxygen or bronchodilator
† Take into account the child's normal developmental capability

GINA 2017, Box 6-9

Indications for immediate transfer to hospital for children ≤5 years

Transfer immediately to hospital if ANY of the following are present:

Features of severe exacerbation at initial or subsequent assessment

- Child is unable to speak or drink
- Cyanosis
- Subcostal retraction
- Oxygen saturation <92% when breathing room air
- Silent chest on auscultation

Lack of response to initial bronchodilator treatment

- Lack of response to 6 puffs of inhaled SABA (2 separate puffs, repeated 3 times) over 1-2 hours
- Persisting tachypnea* despite 3 administrations of inhaled SABA, even if the child shows other clinical signs of improvement

Unable to be managed at home

- Social environment that impairs delivery of acute treatment
- Parent/carer unable to manage child at home

GINA 2017, Box 6-10

Initial management of asthma exacerbations in children ≤5 years

Therapy	Dose and administration
Supplemental oxygen	24% delivered by face mask (usually 1L/min) to maintain oxygen saturation 94-98%
Inhaled SABA	2–6 puffs of salbutamol by spacer, or 2.5mg by nebulizer, every 20 min for first hour, then reassess severity. If symptoms persist or recur, give an additional 2-3 puffs per hour. Admit to hospital if >10 puffs required in 3-4 hours.
Systemic corticosteroids	Give initial dose of oral prednisolone (1-2mg/kg up to maximum of 20mg for children <2 years; 30 mg for 2-5 years)

GINA 2017, Box 6-11 (1/2)

Initial management of asthma exacerbations in children ≤5 years

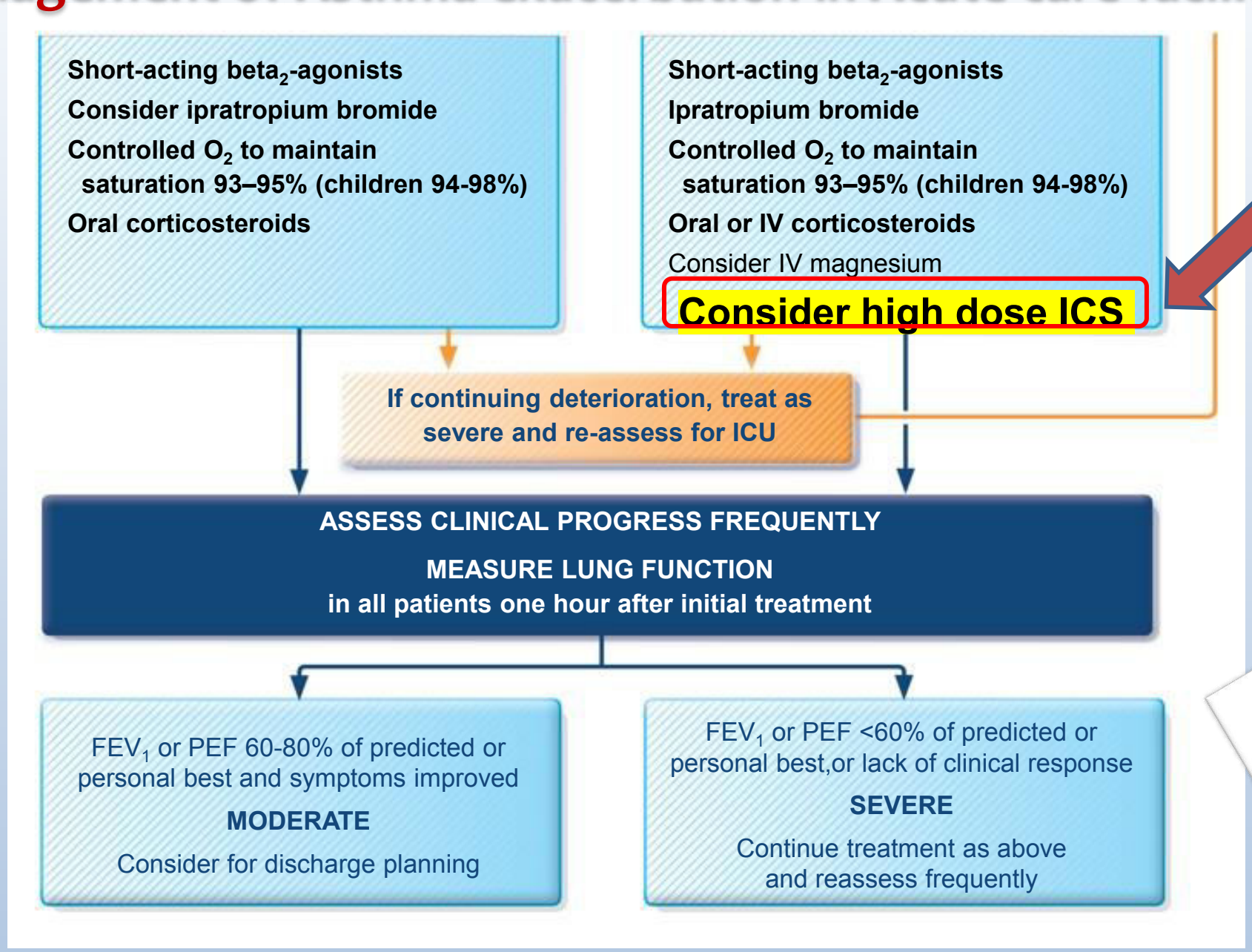
Additional options in the first hour of treatment	
Ipratropium bromide	For moderate/severe exacerbations, give 2 puffs of ipratropium bromide 80mcg (or 250mcg by nebulizer) every 20 minutes for one hour only
Magnesium sulfate	Consider nebulized isotonic $MgSO_4$ (150mg) 3 doses in first hour **for children ≥2 years with severe exacerbation**

GINA 2017, Box 6-11 (2/2)

Management of Asthma exacerbation in Acute care facility

MILD or MODERATE	SEVERE
Talks in phrases	Talks in words
Prefers sitting to lying	Sits hunched forwards
Not agitated	Agitated
Respiratory rate increased	Respiratory rate >30/min
Accessory muscles not used	Accessory muscles being used
Pulse rate 100–120 bpm	Pulse rate >120 bpm
O_2 saturation (on air) 90–95%	O_2 saturation (on air) < 90%
PEF >50% predicted or best	PEF ≤50% predicted or best
Short-acting beta$_2$-agonists	**Short-acting beta$_2$-agonists**
Consider ipratropium bromide	**Ipratropium bromide**
Controlled O_2 to maintain saturation 93–95% (children 94-98%)	**Controlled O_2 to maintain saturation 93–95% (children 94-98%)**
Oral corticosteroids	**Oral or IV corticosteroids**
	Consider IV magnesium
	Consider high dose ICS

Management of Asthma exacerbation in Acute care facility



2016

Initial management of asthma exacerbations in children ≤5 years

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Inhaled SABA	2–6 puffs of salbutamol by spacer, or 2.5mg by nebulizer, every 20 min for first hour, then reassess severity. If symptoms persist or recur, give an additional 2-3 puffs per hour. Admit to hospital if

Inhaled steroids

Very high-dose inhaled steroids may also be EFFECTIVE either during the exacerbation or preemptively after a common cold

Step 1 (children ≤5 years) – as-needed inhaled SABA

- Oral bronchodilator therapy is NOT recommended
- (slower onset of action, more side-effects)

Step 3 (children ≤5 years) – medium dose ICS + as-needed inhaled SABA

-check adherence, inhaler technique and environmental exposures

Review response after 3 months

Choosing an inhaler device for children ≤5 years

Age	Preferred device	Alternate device
0–3 years 	Pressurized metered dose inhaler plus dedicated spacer with face mask	Nebulizer with face mask
4–5 	Pressurized metered dose inhaler plus dedicated spacer with mouthpiece	Pressurized metered dose inhaler plus dedicated spacer with face mask, or nebulizer with mouthpiece or face mask

Indications of Theophylline

- There are **four clinical** circumstances for which theophylline may be considered in the treatment of asthma [25]:
- ●**Additive maintenance therapy** in a patient whose asthma is not adequately controlled with conventional doses of inhaled glucocorticoids, or when addition of a long acting beta agonist either provides no benefit or actually causes worsening of control [26].

Indications of Theophylline

- ●**Primary maintenance therapy** in a patient who is more likely to adhere to an oral than an inhaled regimen and montelukast is not sufficiently effective.

Indications of Theophylline

- ●**Primary maintenance therapy** when the administration of an inhaled glucocorticoid is difficult or cumbersome (eg, toddlers and preschool-age children) and montelukast is not effective.

Indications of Theophylline

- ●**Additive acute therapy** in the intensive care unit for patients failing to respond to vigorous use of inhaled beta2-selective agonists in combination with ipratropium and/or intravenous magnesium and systemically administered glucocorticoids, **although evidence for benefit in this situation is lacking.**

"Theophylline: Pediatric drug information"

- Dosing: Pediatric Doses should be individualized based on steady-state serum concentrations and ideal body weight.
- ***Acute symptoms:*** Manufacturer's labeling:
- ***Loading dose:*** Oral, IV:
- ***Asthma exacerbations:*** **The treatment of asthma exacerbations with theophylline is not supported or recommended by current clinical practice guidelines (GINA 2015; NAEPP 2007).**

"Theophylline: Pediatric drug information"

- **If no theophylline received within the previous 24 hours:** 4.6 mg/kg loading dose (~5.8 mg/kg hydrous aminophylline) IV or 5 mg/kg orally. Loading dose intended to achieve a serum level of approximately 10 mcg/mL; loading doses should be given intravenously (preferred) or with a rapidly absorbed oral product (not an extended-release product). **Note:** On the average, for every 1 mg/kg theophylline given, blood levels will rise 2 mcg/mL.
- **If theophylline has been administered in the previous 24 hours:** A loading dose is not recommended without obtaining a serum theophylline concentration. The loading dose should be calculated as follows:
- Dose = (desired serum theophylline concentration - measured serum theophylline concentration) (V_d)

Medications used in acute asthma

- **GINA:** In acute asthma, the use of

intravenous aminophylline

did not result in any additional bronchodilation

compared to standard care with B2-agonists

& should not be used.

Magnesium Sulfate

- **In acute severe asthma**
- I.V. or Nebulized
- Together with B2-agonist and systemic steroids
- Systematic review and meta-analysis (**March 2013**) 25 trials, 1754 patients
- Improves pulmonary functions and reduces hospital admissions in children
- Nebulized MgSO4 is beneficial for adults and children starting 2 ys.
- **Nebulized** isotonic MgSO4 **(150 mg) 3 doses in the 1st hour.**
- **I.V. Dose: 40-50 mg/kg can be repeated up to 2.5g**

Dexamethasone in Asthma

- Giving children with acute asthma flare-ups **1-2 doses** of dexamethasone in the Emergency Department provides equivalent relief to a **5-day course** of prednisone with less vomiting.

(*Pediatrics*. Online February 10, 2014)

Role of Nebulised Corticosteroid in Acute Asthma Attack

Trial protocol

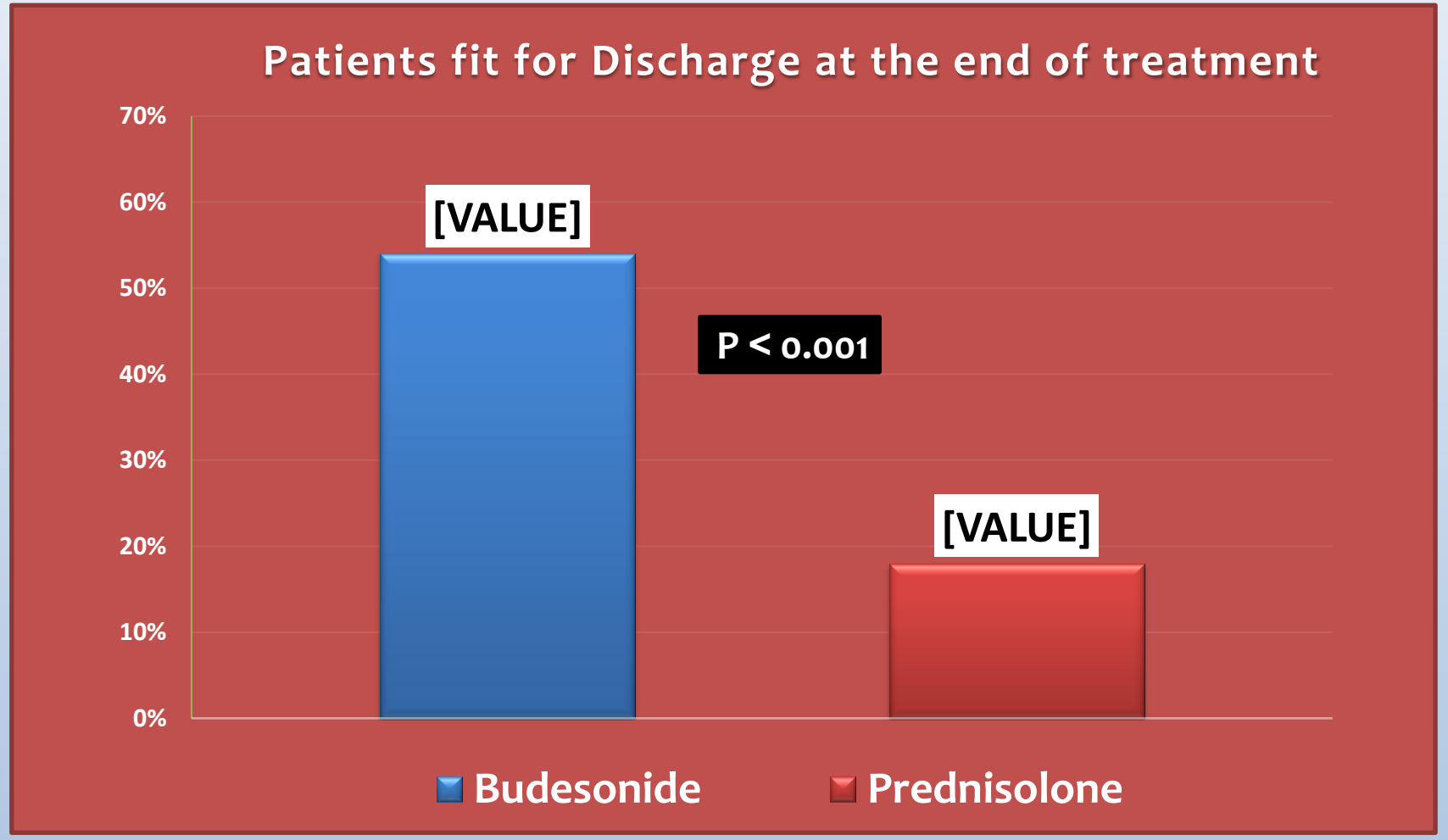
Prednisolone group

- Nebulized 0.5 % salbutamol (0.15mg/kg)
- Placebo at half-hourly intervals for three doses
- Single dose of oral prednisolone (2 mg/kg)

Budesonide group

- Nebulized 0.5 % salbutamol (0.15mg/kg)
- **Budesonide (800 µg) at half-hourly intervals for three doses**
- Single dose of oral prednisolone (2mg/kg)
- Single dose of placebo tablets

The proportion of patients who were fit for discharge at the end of 2 h after the third dose of nebulization was significantly higher in the budesonide group than in the prednisolone group



Conclusion

The data suggest that a **combination of nebulized salbutamol and budesonide should be preferred in the emergency room** management of children with acute moderate to severe exacerbation of asthma and who are not on prior oral or inhaled steroid therapy.

2014

CHEST™
AMERICAN COLLEGE of CHEST PHYSICIANS

Budesonide Nebulization Added to Systemic Prednisolone in the Treatment of Acute Asthma in Children

A Double-Blind, Randomized, Controlled Trial

Abdullah A. Alangari, MD; Nidal Malhis, MD; Mohamed Mubasher, PhD; Najwa Al-Ghamedi, PharmD; Mohamad Al-Tannir, DMD; Muhammad Riaz, MSc; Dale T. Umetsu, MD, PhD; and Saleh Al-Tamimi, MD

Patients Number

3,099

Patient Population

Children aged **2 to 12** years with **moderate or severe acute**

Trial Protocol

Eligible children were **randomized** within the pharmacy to **receive three doses** of :

- **Budesonide solution (500 µg/dose)**
- Or placebo(normal saline).

Patients also received :

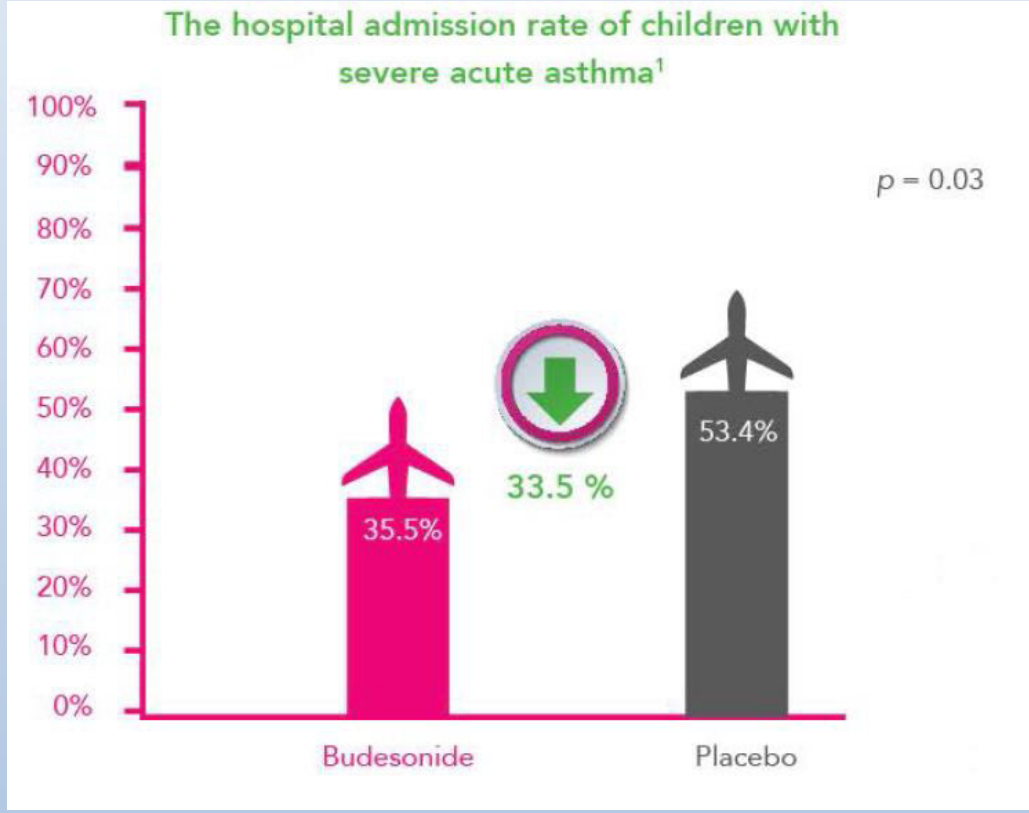
- B2 -agonist (2.5 mg **salbutamol** if patient weight was < 20 kg or 5 mg if ≥ 20 kg)
- **Ipratropium** 250 µg/dose.

Each dose every 20 min by jet nebulization over 1 hour

Conclusion

❑**Hospital Admission Rate :**

The **addition** of **budesonide nebulization decreased** the **admission rate** of **severe** acute asthma by ⬇ **33.5 %**



2013

Official Journal of the Asian Pacific Society of Respirology
Respirology

Effects of nebulized high-dose budesonide on moderate-to-severe acute exacerbation of asthma in children: A randomized, double-blind, placebo-controlled study

AI-HUAN CHEN,* GUANG-QIAO ZENG,* RONG-CHANG CHEN, JIE-YI ZHAN, LI-HONG SUN, SHUN-KAI HUANG, CUI-ZHEN YANG AND NANSHAN ZHONG

Conclusion

- **Rates of complete remission :**

2 h post treatment were:

84.7% in the **BUD group**

46.3% in the **control group**

- **Need for SCS therapy :**

16.9% in the **BUD group**

46.3% in the **controls group**

ANTIPYRETICS

- **PARACETAMOL**
  ALLOWED ??
- **IBUPROFEN**
  ALLOWED

DICLOFENAC
?? ***CONTRAINDICATED***

GUIDELINES

ITALY

GUIDELINES
UK

Since the withdrawal of aspirin for use in children due to its association with Reye's syndrome, **Ibuprofen is the only NSAID licensed for use as an antipyretic in UK.**[2] (May 2009)

GUIDELINES

CANADA

GUIDELINES

UK

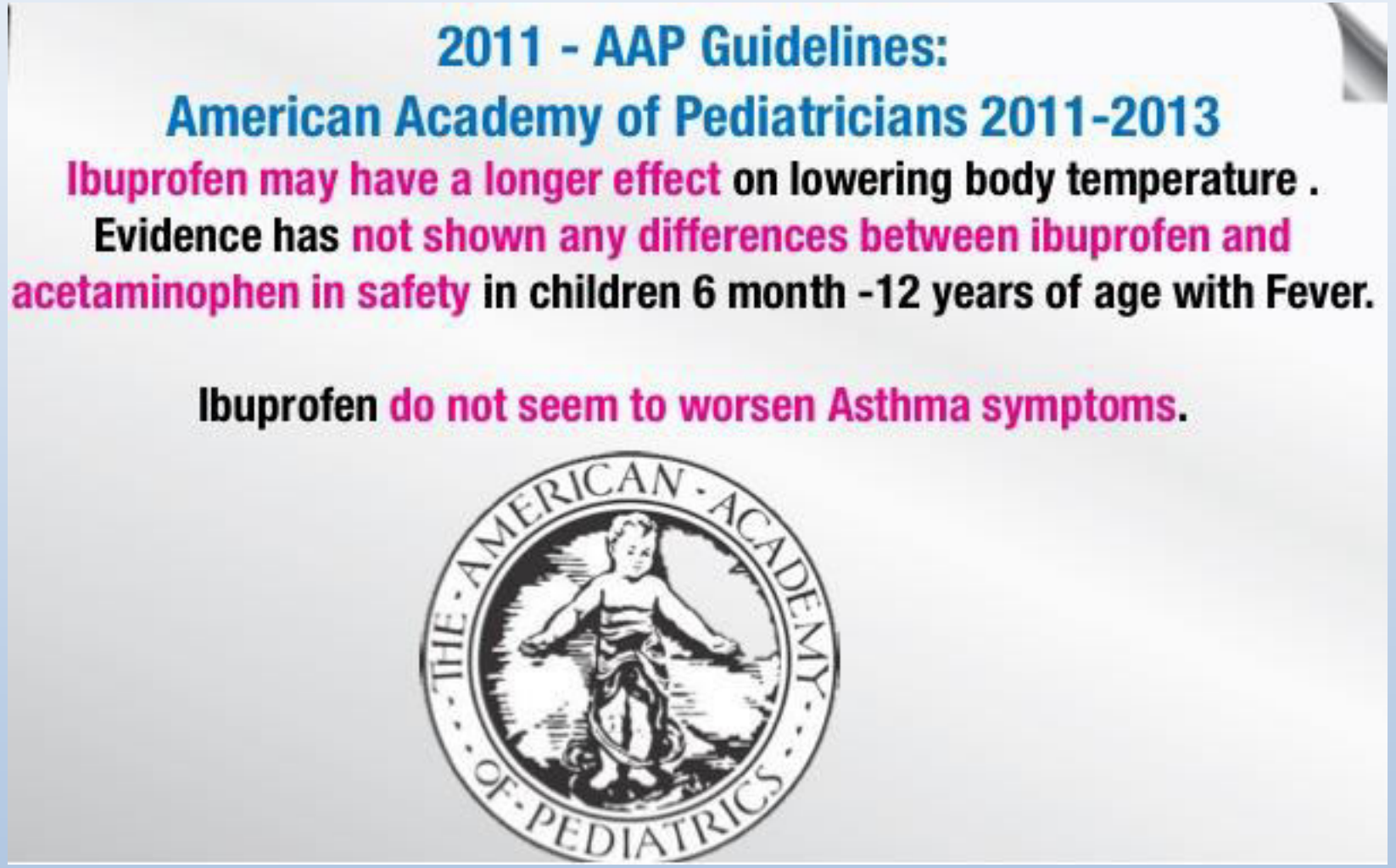
BMJ Pediatrics – 2010
British Medical Journal Publication

Parents, nurses, pharmacists, and doctors wanting to use medicines to supplement physical measures to maximize the time that children spend without fever should use ibuprofen first.

BMJ
British Medical Journal

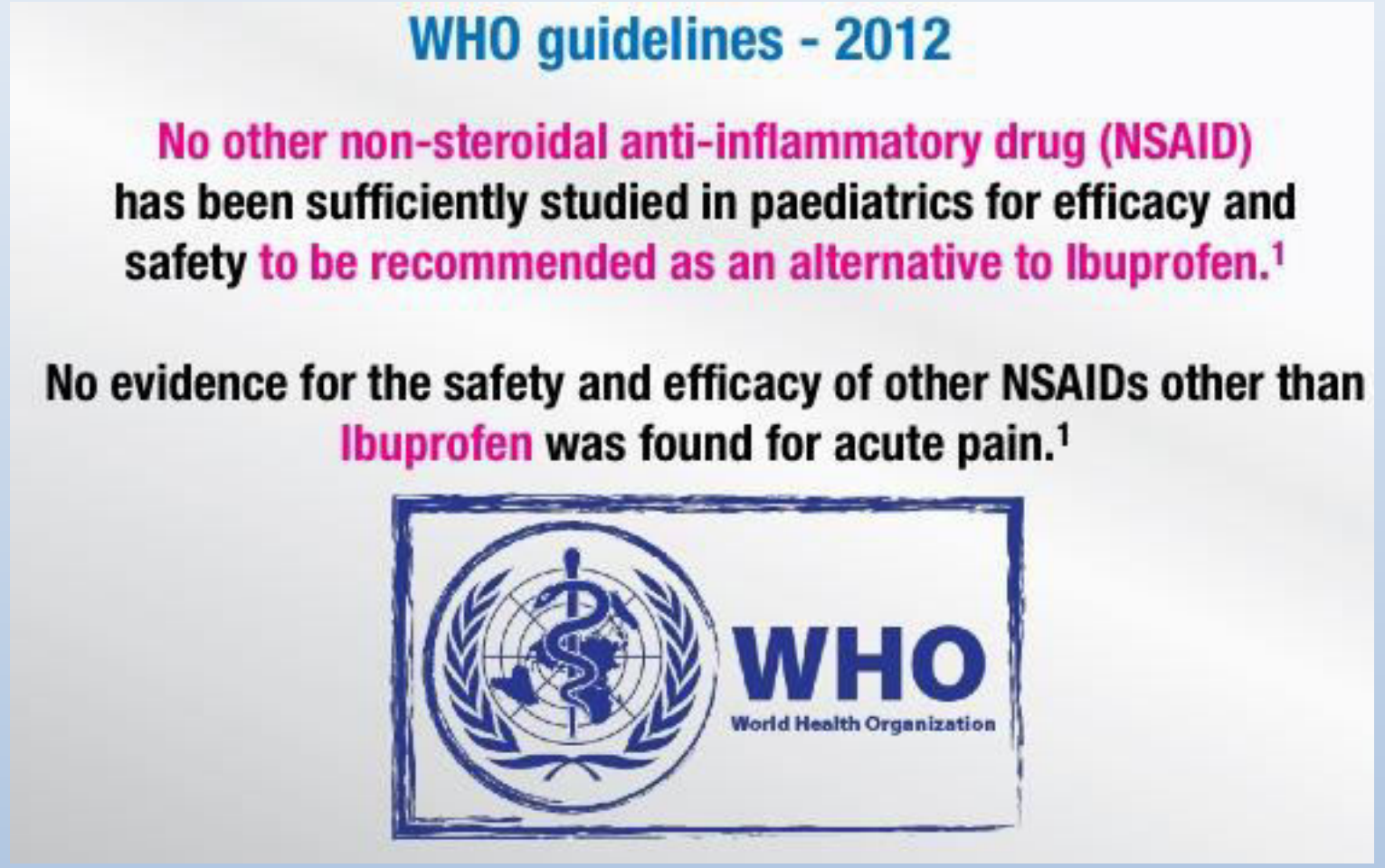
GUIDELINES

USA



GUIDELINES

WHO



GUIDELINES
USA

Multiple studies, including randomized, double-blind, and placebo-controlled studies,

Support the benefits of NSAIDs such as ibuprofen in reducing fever and pain relative to placebo among both children and adults with pharyngitis. No significant adverse events were noted.[5]

2013 – AAOHN Guidelines

New American Academy of Otolaryngology Guidelines 2013

AMERICAN ACADEMY OF OTOLARYNGOLOGY– HEAD AND NECK SURGERY

1st Line For Kids with Pain In URTIs

The use of ibuprofen had no effect on the bleeding rate.

Ibuprofen can be used safely for pain control after surgery.

Ibuprofen used routinely in Otitis Media with Antibiotics.

UNNECESSARY THERAPY

- ANTIBIOTICS
- MUCOLYTICS
- COUGH SYRUPS
- IONIZERS
- BREATHING EXERCISES

PHYSIOTHERAPY IS INDICATED IN CHILDREN

ONLY WHERE *LOBAR COLLAPSE* IS DOCUMENTED

PRACTALL treatment guidelines

No more one cornerstone in asthma management

ICS (200 µg BDP equivalent) **OR** **LTRA[a]** (Dose depends on age)

INSUFFICIENT CONTROL[b]

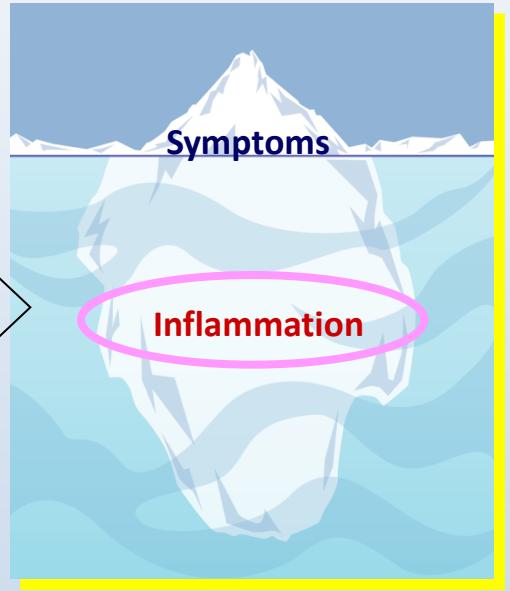
Increase ICS dose (400 µg BDP equivalent)
OR
Add ICS to LTRA

INSUFFICIENT CONTROL[c]

Increase ICS dose (800 µg BDP equivalent)
OR
Add LTRA to ICS
OR
Add LABA

INSUFFICIENT CONTROL [c]

Consider other options
- Theophylline **SR**
- Oral corticosteroids

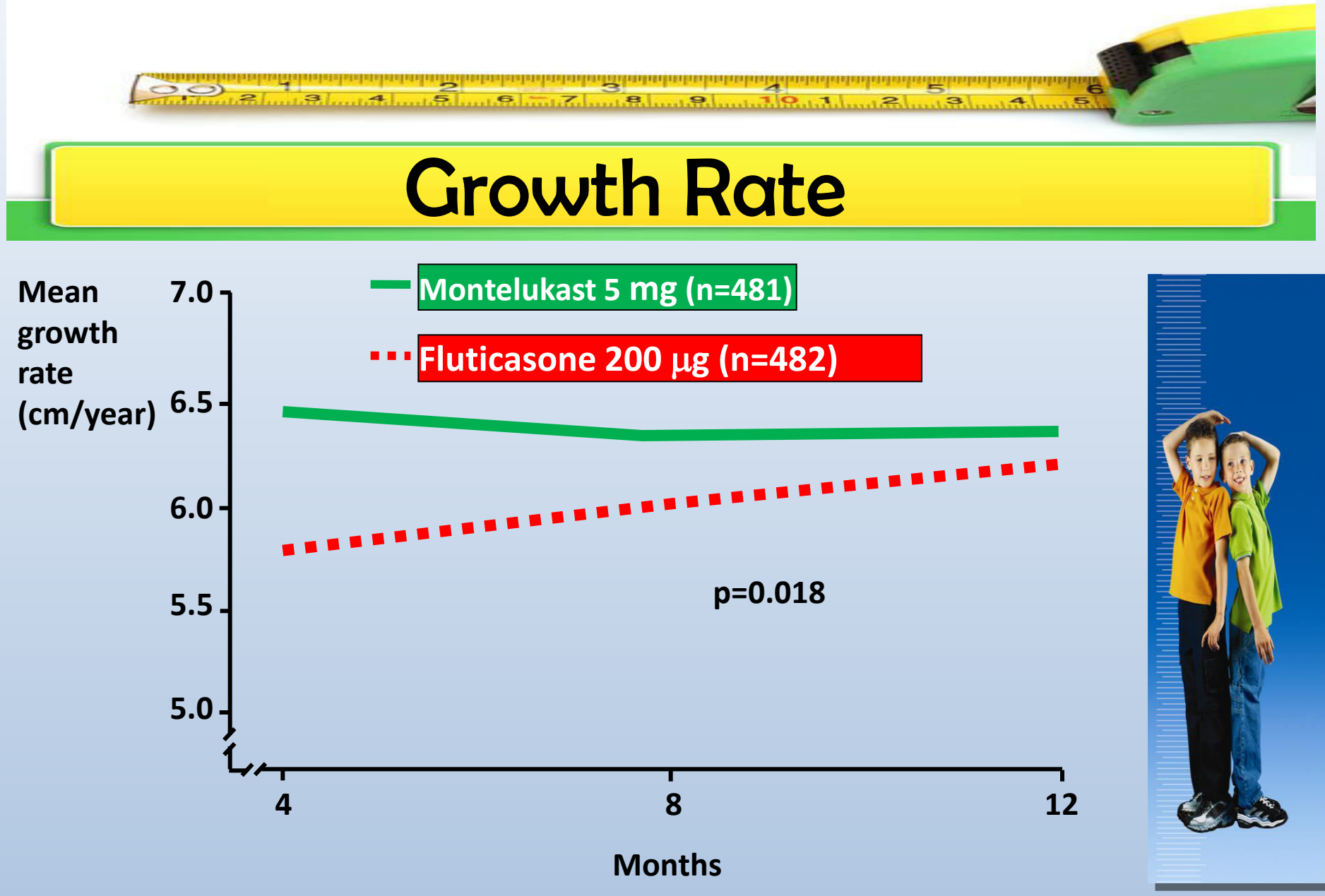


Step Up Therapy to Gain Control

Step down if appropriate

Step down if appropriate

Growth Rate


Mean growth rate (cm/year)
7.0
6.5
6.0
5.5
5.0
Montelukast 5 mg (n=481)
Fluticasone 200 µg (n=482)
p=0.018
4
8
12
Months

The mean growth rate over 12 months of treatment was

6.2 cm/year in the montelukast group and

5.8 cm/year in the fluticasone group.

Although statistically significant, this

4 mm difference in growth over one year

may not be clinically important

The Childhood Asthma Management Program

(CAMP) study

randomised **1041 children** aged 5–12 years with mild to moderate asthma to treatment with inhaled budesonide, nedocromil, or placebo for a duration of **4 to 6 years**.[17,18]

This long-term study showed

NO IMPAIRMENT IN GROWTH

with budesonide compared with placebo

MANAGEMENT OF ALLERGIC RHINITIS

1- Environmental Control

AVOIDANCE

Cigarette SMOKING

Furred Pets ?!

2- Drug Treatment

Intranasal Steroids

Recommended for the treatment of allergic rhinitis in children **2 years** and older.

THE MOST EFFECTIVE DRUGS

Topical CROMONES

modestly effective.

- **Montelukast**

Recommended in the treatment of allergic rhinitis especially seasonal.

CAUTION

IM and long-term use of oral **glucocorticosteroids** are **NOT RECOMMENDED** due to safety concern.

Intranasal decongestants may be used for a short period of time in patients with severe nasal obstruction.

Oral nasal decongestants (and their associations) may be used in the treatment of allergic rhinitis in **ADULTS**, but side effects are common.

ARIA Guidelines Recommend a Combined Approach to Managing Asthma and Allergic Rhinitis

- Patients with allergic rhinitis should be evaluated for asthma
- Patients with asthma should be evaluated for allergic rhinitis
- A strategy should combine the treatment of upper and lower airways in terms of efficacy and tolerability

ARIA: Allergic Rhinitis & its Impact on Asthma

Adapted from Bousquet J et al *J Allergy Clin Immunol* 2001;108(suppl 5):S147–S334.

PRACTALL Guidelines 2008

ICS (200 µg BDP equivalent)	OR	LTRA (Dose depends on age)

- A first-line treatment for persistent asthma
- Should be introduced as initial maintenance treatment when asthma control inadequate
- Atopy and poor lung function predict favorable response
- If control inadequate on low dose, i… reasons. If indicated, an increased IC… additional therapy with LTRAs or LABAs … considered
- Effect in older children begins to disappear as soon as treatment is discontinued
- New evidence does not support a di… modifying role after cessation of treatm… preschool children

- First-line treatment for persistent asthma
- Evidence supports LTRA as initial controller therapy for mild asthma in children
- Younger age (<10 years) and high levels of urinary leukotrienes predict favorable response
- Therapy for patients who cannot or will not use ICS
- Useful also as add-on therapy to ICS: different and complementary mechanisms of action
- **Suggested for viral-induced wheeze in young children**
- Benefit shown in children as young as 6 months
- **LTRA may be particularly useful if the patient has concomitant rhinitis**

Adapted from Bacharier LB, et al. *Allergy.* 2008;63(1):5–34.

Guidelines Confirm The Role of Montelukast in Asthma with AR

- A more prominent role in asthma management
- A UNIQUE ROLE in patients with asthma and AR

- High efficacy in AR
- Superior to AH on nasal blockage
- The RECOMMENDED DRUG in patient with asthma and AR

Thank You

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