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The Union of Myanmar, SR(1) Department of Health



Asthma

Standard Operating Procedure (SOP)



Union of Myanmar Special region - 1
Pediatric (SOP)

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Union of Myanmar Special region - 1
Pediatric (SOP)

Asthma

Diagnosis of Asthma

In children of 5 years and younger

Diagnosis based on symptom pattern and frequency, combined with family history and physical findings.

Table 4.2 Features suggesting diagnosis of asthma in children ≤ 5 years

<i>Features</i>	<i>Characteristics suggesting asthma</i>
<i>Cough</i>	• <i>Recurrent or persistent non-productive cough that can be worse at night or accompanied by some wheezing and breathing difficulties</i> • <i>Cough occurring with exercise, laughing, crying or exposure to tobacco smoke in the absence of an apparent respiratory infection.</i>
<i>Wheezing</i>	• <i>Occurring recurrently, during sleep or with triggers such as viral colds, activity, laughing, crying or exposure to tobacco smoke or air pollution (indoor or outdoor)</i>
<i>Difficulty or heavy breath or shortness of breath</i>	• <i>Occurring with colds, exercise, laughing or crying</i>
<i>Reduced activity</i>	• <i>Not running, playing or laughing at the same intensity as older children, tired earlier during walks (wants to be carried)</i>
<i>Past or family history</i>	• <i>Other allergic disease (atopic dermatitis or allergic rhinitis), asthma in first-degree relatives ie. Parents or siblings</i>
<i>Therapeutic trial with low dose ICS and as-needed SABA</i>	• <i>Clinical improvement during 2-3 months of controller treatment and worsening when treatment is stopped</i>

(ICS: inhaled corticosteroid, SABA: inhaled short acting beta- agonist)

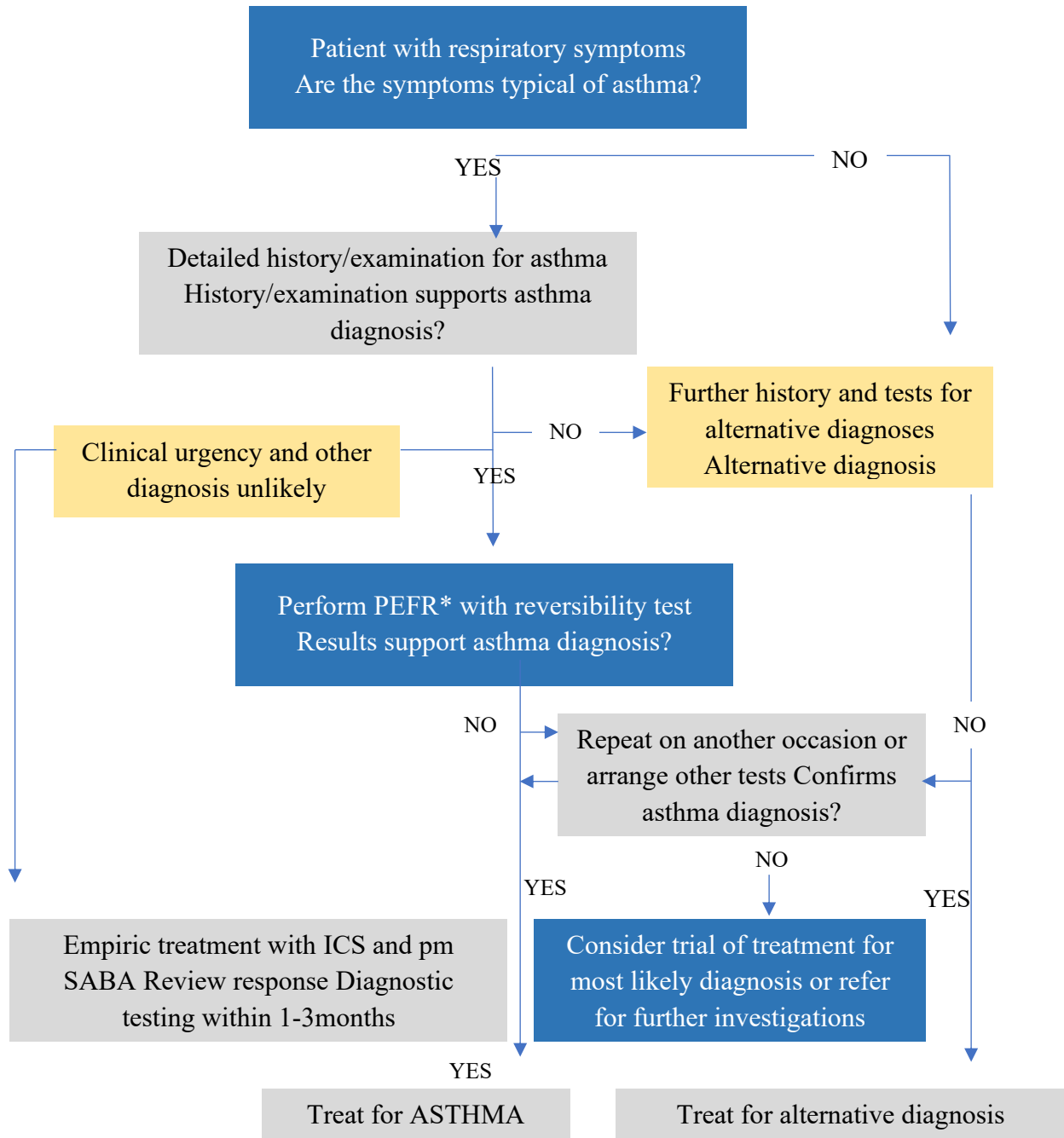
In children older than 5 years

There are 2 keys defining features for making diagnosis of asthma for children older than 5 years

<i>A history of variable respiratory symptoms</i>
<i>Typical symptoms are wheeze, shortness of breath, chest tightness and cough</i> • <i>People with asthma generally have more than one of these symptoms</i> • <i>The symptoms occur variably over time and vary in intensity</i> • <i>The symptoms often occur or worse at night or on waking</i> • <i>Symptoms are often triggered by exercise, laughter, allergens or cold air</i> • <i>Symptoms often occur with or worsen with viral infections</i>
<i>Evidence of variable expiratory airflow limitation</i>
• <i>At least one during the diagnostic process when FEV1 is low, document that FEV1 /FVC ratio is reduced (Normal - more than 0.9 in children)</i> • <i>Document that variation in lung function is greater than in healthy people.</i> <i>For e.g.</i> ○ <i>FEV1 increases by >12% of predicted value after inhaling a bronchodilator, This is called "bronchodilator reversibility"</i> ○ <i>Average daily diurnal PEF variability is >13%</i> ○ <i>FEV1 increases by >12% of predicted value after 4 weeks of anti inflammatory treatment (outside respiratory infections)</i> • <i>The greater the variation or the more times excess variation is seen , the more confident you can be off the diagnosis</i> • <i>Testing may need to be repeated during symptoms, in the early morning or after withholding bronchodilator medication.</i>

Physical examination is often normal but the most frequent finding is wheezing on auscultation, especially on forced expiration.

Diagnostic Flow Chart for Asthma in Clinical Practice for Children >5 Years



* Perform PEFR only when it is available

Assessment

History

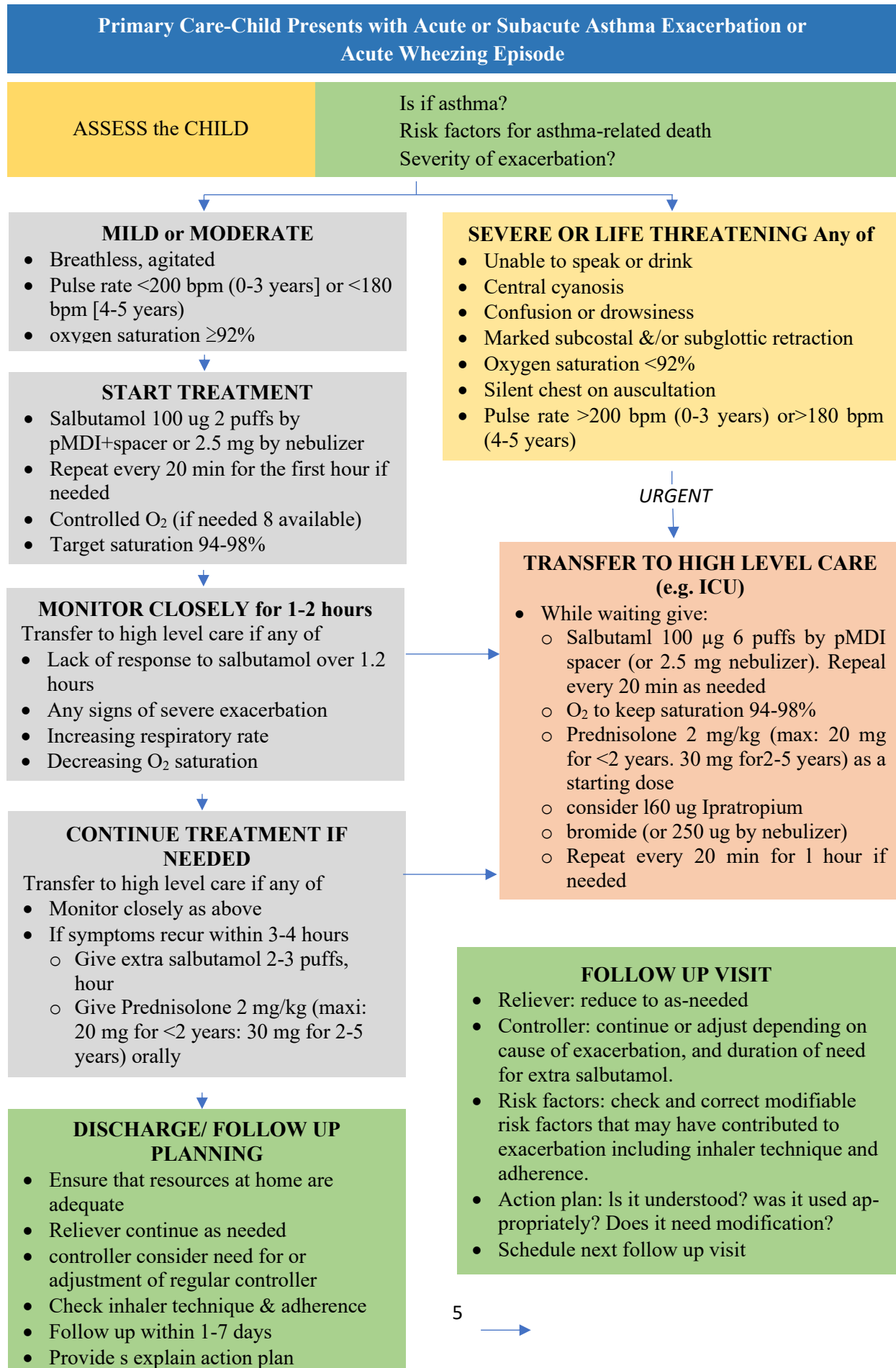
- *Present complaints*
 - *Duration of illness*
 - *Precipitants/Triggers*
 - *Any disturbance of sleep or day time activity*
 - *Any episodes of choking/vomiting/reflux*
- *Past history*
 - *Age of onset*
 - *Previous severe episodes-hospital admissions, emergency visits, PICU admissions, IV treatment*
 - *Interim symptoms e.g. cough/ wheeze at night or with exercise*
 - *Review the severity of symptoms. e.g. exercise limitation, sleep disturbance, school absence*
- *Current medications*
 - *Dose, method of delivery and emergency plan (action plan)*
- *Family history*
 - *Atopy, pets and smoking*

Physical examination

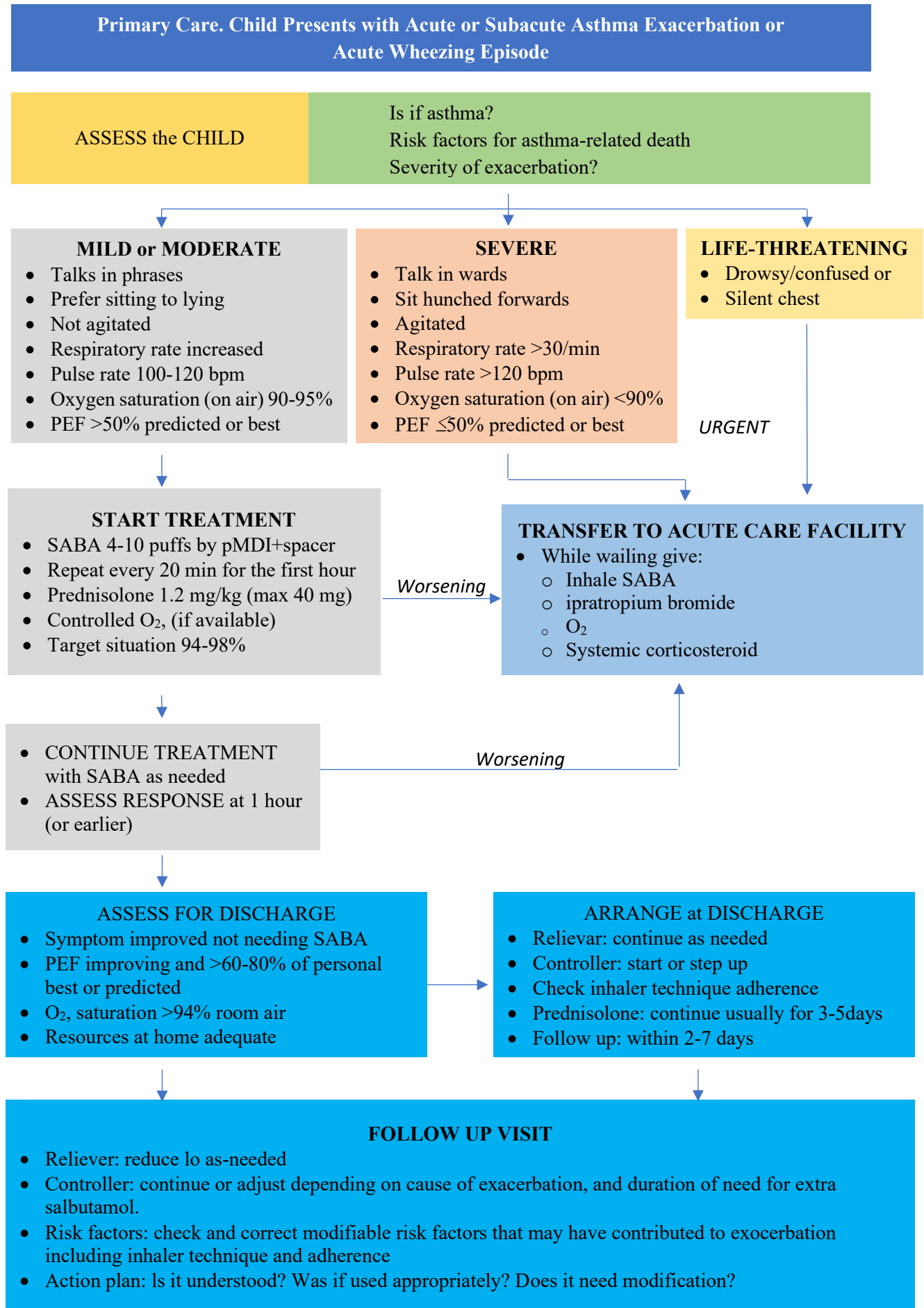
- *Assess for*
 - *Ability to speak*
 - *Conscious level/exhaustion*
 - *Feeding and drinking*
 - *Central cyanosis*
 - *Accessory muscle use*
 - *Sternal/Chest recession*
 - *Respiratory rate*
 - *Heart rate*
 - *Wheeze on auscultation*
 - *Pre and post nebulizer SpO₂%*

Management of Acute Exacerbations of Asthma

Primary care management of acute asthma or wheezing in children ≤ 5 year



Primary care management of acute asthma or wheezing in children >5 years



Long Term Management of Asthma

The goal of asthma care is to achieve and maintain control of the clinical manifestations of the disease for prolonged periods. When asthma is controlled, patients can prevent most attacks, avoid troublesome symptoms day and night, and keep physically active.

To reach this goal, four interrelated components of therapy are required:

Component 1. Develop patient/family/doctor partnership

Component 2. Identify and reduce exposure to risk factors

Component 3. Assess, treat, and monitor asthma

Component 4. Manage asthma exacerbations

Every component is equally important for successful achievement of good asthma control.

Component 1: *Develop patient /family/ doctor partnership Interactive education of patient and family using all available methods is an integral part of management.*

They should learn to

- *Avoid risk factors*
- *Take medications correctly*
- *Understand the difference between “controller” and “reliever” medications*
- *Monitor asthma control status using symptoms and, if available, PEF in children older than 5 years of age*
- *Recognize signs that asthma is worsening and take action*
- *Seek medical help as appropriate*

Component 2: *Identify and reduce exposure to risk factors*

Risk factors should be identified and exposure to risk factor should be reduced or, if possible, avoided.

- *Multiple factors that are ubiquitous to environment-tobacco smoke, drugs, allergens and additives, house dust mites, animals with fur, cockroaches, outdoor pollens and mold, indoor mold*
- *Should not avoid exercise (use preventive therapy-rapid acting Beta 2 agonist inhalation or oral Leucotriene antagonist)*
- *Influenza vaccination should be provided to patients with asthma when vaccination to the general population is advised, However, routine influenza vaccination of children and adults with asthma does not appear to protect them from asthma exacerbations or improve asthma control.*

Component 3: *Assess, Treat, and Monitor Asthma*

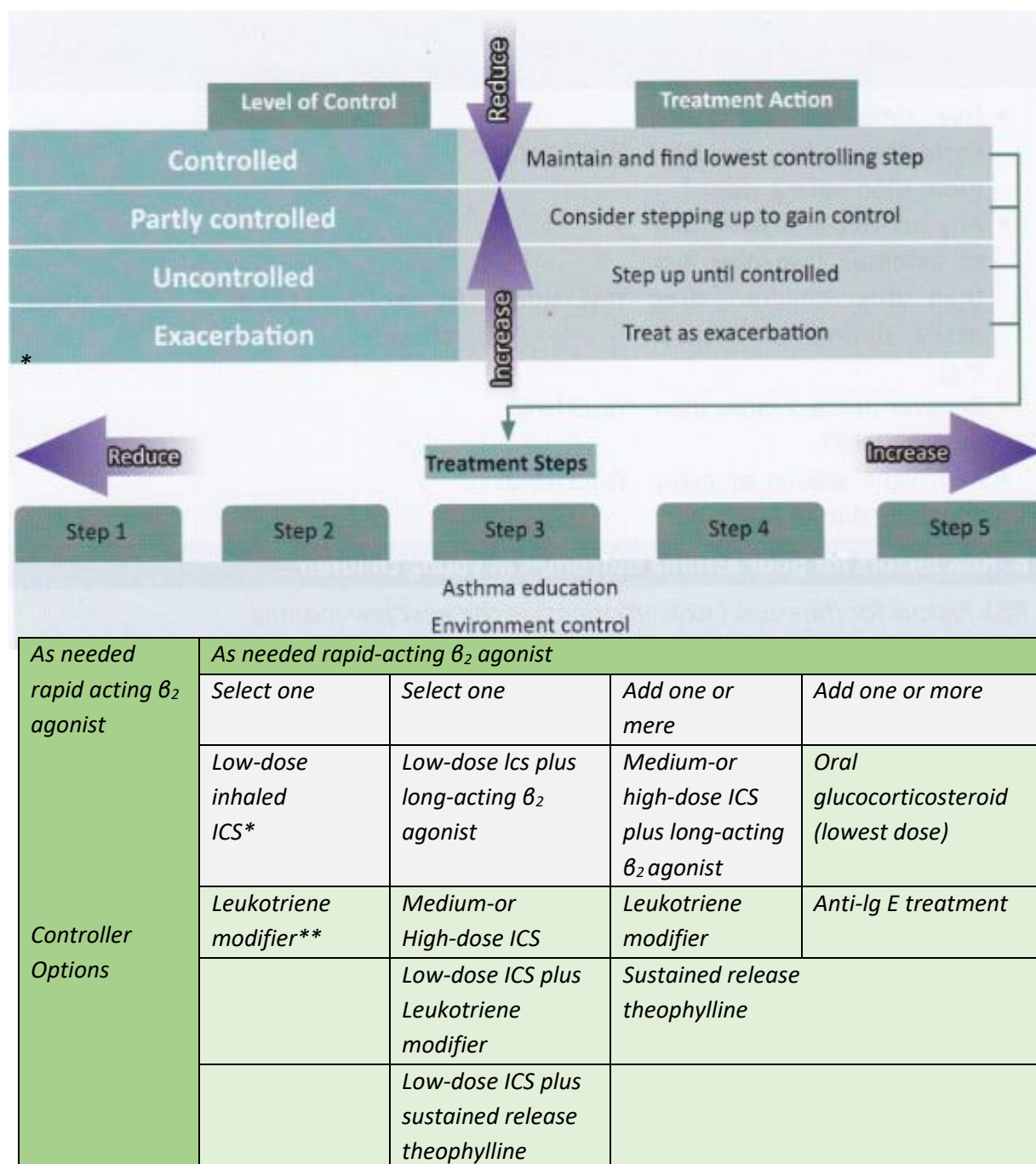
- *Assessing Asthma control is reviewed by day and night time symptom, limitation of activities, need for reliever/rescue treatment, and exacerbations If possible monitor lung function (PEF or FEV1).*

Table 4.3 Assessment of Asthma Control in Children 5 Years and Younger

A. Level of asthma control in young children				
In the past 4 weeks, has the child had		Well controlled	Partly controlled	Uncontrolled
Day time symptoms for more than a few minutes, more than once a week?	Yes No			
Any activity limitation due to asthma? (run/play less than other children, tires easily during walks/playing)	Yes ☐ No ☐	None of these	1-2 of these	3-4 of these
Reliever needed more than once a week?	Yes ☐ No ☐			
Any night waking or night coughing due to asthma?	Yes ☐ No ☐			
B. Risk factors for poor asthma outcomes in young children				
<i>Risk factors for flare-ups (exacerbations) in the next few months</i> - Uncontrolled asthma - One or severe exacerbation in the previous year - The start of the child's usual flare-up' season (especially if autumn/fall) - Exposures: tobacco smoke, indoor or outdoor air pollution, indoor allergens (e.g: house dust mite, cockroach, pets, mold) especially in combination with viral infection - Major psychological or socio-economic problems for child or family - Poor adherence with controller medication or incorrect inhaler technique <i>Risk factors for fixed airflow limitation</i> - Severe asthma with several hospitalizations - History of bronchiolitis <i>Risk factors for medication side-effects</i> <i>Systemic: frequent courses of OCS, high dose and/or potent ICS</i> <i>Local: moderate/high dose or potent ICS, incorrect inhaler technique, failure to protect skin or eyes when using ICS by nebulizer or spacer with face mask</i>				

Figure 4.3. Management Approach Based on Control

For children older than 5 years and adolescents



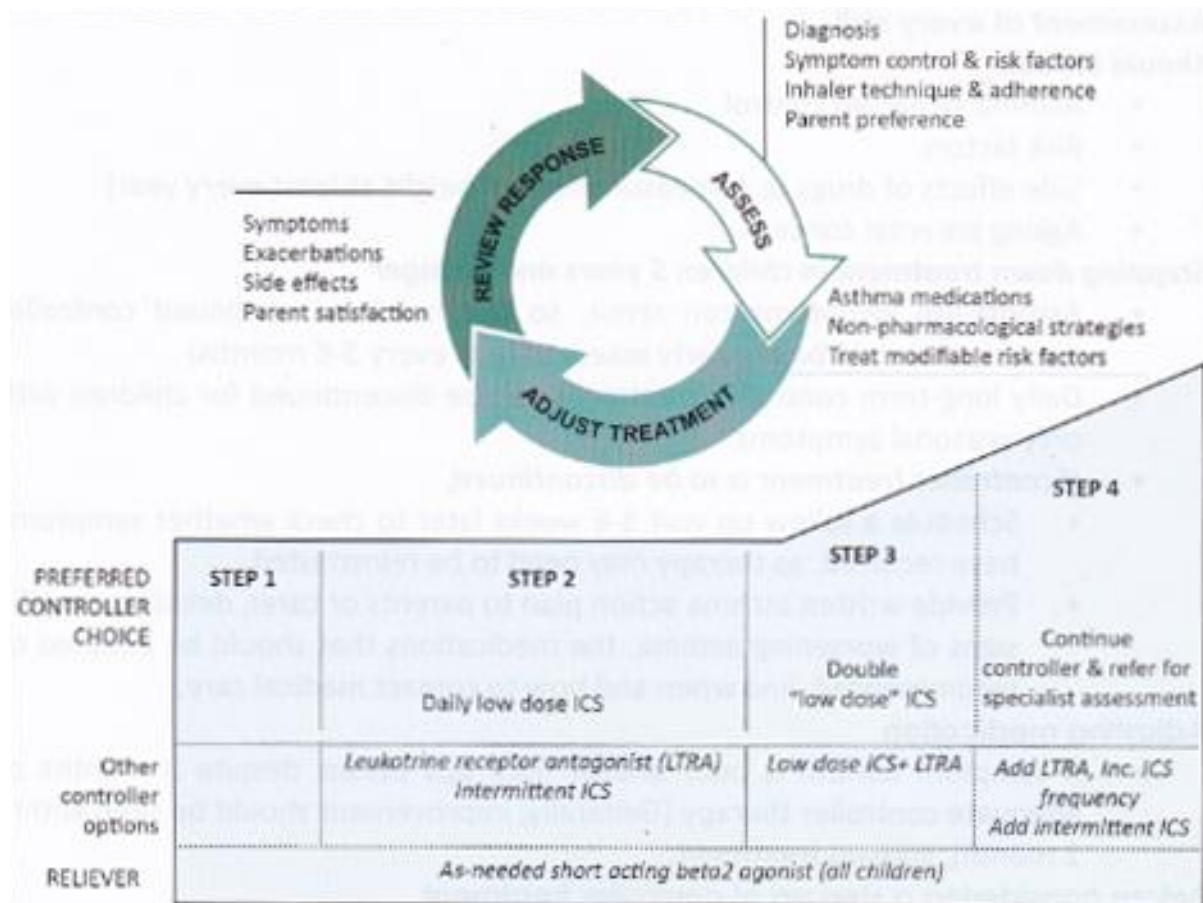
ICS inhaled corticosteroid

**Receptor antagonist or synthesis inhibitors

Alternative reliever treatments include inhaled anticholinergic, short-acting oral β_2 agonists, some long acting β_2 agonist, and short-acting theophylline

Regular dosing with short and long-acting β_2 agonist is not advised unless accompanied

Step Wise Approach to Asthma Treatment in Children ≤ 5 Years



CONSIDER THIS STEP FOR CHILDREN WITH:	Infrequent viral wheezing and no or few interval symptoms	Symptom pattern consistent with asthma and asthma symptoms not well-controlled, or 23 exacerbations per year Symptom pattern not consistent with asthma but wheezing episodes occur frequently. e.g. every 6-8 weeks. Give diagnostic trial for 3 months	Asthma diagnosis and not well-controlled on low dose ICS	Not well-controlled on double ICS
			First check diagnosis, inhaler skills, adherence. exposure	

KEY ISSUES	ALL CHILDREN - Assess symptom control, future risk, comorbidities - Self-management: education, inhaler skills, written asthma action plan, adherence - Regular review: assess response, adverse events, establish minimal effective treatment (Where relevant): environmental control for smoke, allergens, indoor/outdoor air pollution
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Reviewing Treatment Response and Adjusting Treatment

Assessment at every visit

Should include

- *Asthma symptom control*
- *Risk factors*
- *Side effects of drugs (e.g. measurement of height at least every year)*
- *Asking parental concern*

Stepping down treatment in children 5 years and younger

- *Asthma-like symptoms can remit, so the need for continued controller treatment should be regularly assessed (e.g. every 3-6 months)*
- *Daily long-term controller treatment can be discontinued for children with only seasonal symptoms.*
- *If controller treatment is to be discontinued.*
 - *Schedule a follow up visit 3-6 weeks later to check whether symptoms have recurred, as therapy may need to be reinstituted.*
 - *Provide written asthma action plan to parents or carer, detailing specific signs of worsening asthma, the medications that should be initiated or recommenced, and when and how to contact medical care.*

Adjusting medication

- *If symptom control is poor and/or flare ups persist despite 3 months of adequate controller therapy (Generally, improvement should be seen within 1 month), step up treatment.*

Before considering a step up of controller treatment

Check the following before any step up in treatment is considered

- *Check and instruct in correct inhaler technique*
- *Confirm good adherence with the prescribed dose and frequency of medication*
- *Enquire about risk factors such as allergen or tobacco smoke exposure*
- *Confirm that the symptoms are due to asthma rather than a concomitant or alternative condition*
- *Refer for expert assessment if the diagnosis is in doubt, or if asthma control remains sub-optimal*
- *If asthma is partly controlled, consider stepping up treatment, depending on whether more effective options are available, safety and cost of possible treatment options, and the patient's satisfaction with the level of control achieved*

- If control is maintained for at least 3 months, step down with a gradual, stepwise reduction in treatment, The goal is to decrease treatment to the least medication necessary to maintain control.
 - For the children younger than 5 years of age, start low-dose inhaled corticosteroids for partly controlled cases.
 - For children uncontrolled or partly controlled with low-dose inhaled steroids, either double the ICS dose or add Leukotriene antagonists.

Table 4.4 low daily dose of inhaled corticosteroids for children ≤5 year

Drug	Low daily dose (μg)
Beclomethasone dipropionate	100
Budesonide pMDI+spacer	200
Budesonide nebulizer	500
Fluticasone propionate (HFA)	100
Ciclesonide	160
Mometasone furoate	not studied below age 4 years
Triamcinolone acetonide	not studied in this age group

pMDI-pressurized metered dose inhaler, HFA-hydrofluorokane propellant

Table 4.5 choosing an inhaler device for children ≤5 year

Age group	Preferred device	Alternate device
0-3 year	Pressurized metered-dose inhaler plus dedicated spacer with face mask	Nebulizer with face mask
4-5 year	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

Component 4: Manage acute asthma exacerbations should be based on clinical severity

Primary therapies for exacerbations include

- Repetitive administration of rapid-acting inhaled β_2 agonist
- Early introduction of systemic corticosteroids.
- Oxygen supplementation

Closely monitor response to treatment with serial measures of lung function is necessary.

