

Medi Quest BRS Hospital

A monthly News letter from BRS Hospital

MANAGEMENT OF ASTHMA UNDER FIVE YEARS OF AGE

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It is challenging to make a diagnosis of asthma under five years

A probability based approach, based on the pattern of symptoms during and between viral respiratory infections may be helpful for discussion with parents

Symptoms – cough, wheeze, heavy breathing < 10days during viral infection < 3episodes / year
No symptoms between episodes
Few develop Asthma

Symptoms > 10days > 3episodes / year
Severe episodes, night worsening
Symptoms between episodes
Some develop Asthma

Symptoms > 10days > 3episodes / year
Severe episodes night worsening
Symptoms between episodes
Allergic sensitisation, atopic dermatitis, food allergy or family history of Asthma
Most develop Asthma

Symptoms suggestive of Asthma in children 5 years or younger

Recurrent episodes of cough, wheeze, breathlessness manifested by limitation in activity and nocturnal symptoms or awakenings.

Presence of risk factors such as family history of asthma, allergic sensitisation

personal history of atopic dermatitis or food allergy

Response to controller medication

Exclusion of other diagnosis.

Goals of asthma management

The goals of asthma management in young children are

* To achieve good control of symptoms and maintain normal activity levels

* To minimise future risk: which is to reduce risk of flare ups, maintain lung function and lung development as close to normal as possible and minimize medication side effects

Achievement of goals of asthma

It is through a partnership between care given and the Pediatrician characterised by

- ASSESSMENT OF ASTHMA CONTROL
- ADJUSTING TREATMENT
- REVIEWING RESPONSE

Assessment of Asthma control

What does asthma control mean

Assessment of Asthma control has 2 components

i) The child's asthma status over the previous four weeks – current symptom control

ii) How asthma may effect the child in future



**GENERAL MEDICINE , GENERAL SURGERY,
PEDIATRICS AND NEONATOLOGY
PLASTIC AND COSMETIC SURGERY ENT SURGERY,
OB AND GYN
UROLOGY , VASCULAR AND NEUROLOGY**



(ISO 9001-2015 CERTIFIED)

GINA assessment of Asthma control in children 5 years or younger

A. Symptom control	Level of asthma symptom control		
1. In the past 4 weeks has the child had Day time asthma symptoms > few mins > once a week 2. Any activity limitation these (Runs, plays less gets tired easily) 3. Reliever medication Needed more than once a week 4. Any night waking or night cough due to asthma	Well controlled None of these	Partly controlled 1-2 of these	Poorly controlled 3-4 of these

B FUTURE RISK FOR POOR ASTHMA CONTROL

- * Uncontrolled asthma symptoms
- * One or more severe exacerbations
- * Exposure to tobacco smoke, in door or out door animal dander, molds, cock roaches
- * Major psychological or socio economic problems for child or family
- * Poor adherence with controller medication

Risk factors for persistent air flow limitation

- * Severe asthma with several hospitalisations
- * History of bronchiolitis

Risk factors for medication side effects

- * Systemic – Frequent courses of OCS, high doses and or potent ICS
- * Local – incorrect inhaler technique, failure to protect to protect eyes or skin when using ICS by nebuliser or face mask.

Assessing future risk for adverse outcome

Risk of exacerbations is greater in children if current symptom control is poor. However exacerbations may occur in children after months of apparent good symptom control.

Use the lowest dose of ICS for symptom control to avoid the side effects

If ICS is delivered through a face mask or nebulizer the skin on the nose and around mouth should be cleaned to avoid redness and atrophy.

MEDICATION:

A step wise treatment approach is recommended based on symptom patterns, risk of exacerbations side effects and response to initial treatment.

Generally treatment include – the daily use of long erm controller medications to keep asthma well controlled and reliever medications for as needed symptom relief.



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Personalised management of asthma in children 5years and younger

	Clinical Features	Reliever	Preferred controller	Other Control option
Step I	Viral wheezing	SABA as needed	Nil	
Step II	Symptom pattern not consistent with asthma but wheezing episodes ≥ 3 in a year. Symptom pattern consistent with asthma and Asthma symptoms not well controlled and ≥ 3 episodes in a year	SABA as needed SABA as needed	Daily Low dose ICS Daily Low dose ICS	LTRA or Intermittent Short course of high dose ICS at onset resp illness
Step III	Asthma diagnosis and not controlled on low dose ICS	SABA as needed	Double Low dose ICS	Low dose ICS & LTRA
Step IV	Asthma not controlled on double dose ICS	SABA as needed	Continue controller and refer for specialist opinion	Add LTRA. Increased frequency of ICS or add intermittent ICS

Daily low doses of inhaled corticosteroids for children 5years and younger

Inhaled Corticosteroid	Low total daily dose (mcg) (age group with effectiveness and safety data)
Budesonide Nebulised	500mcg (1year and older)
Beclomethasone dipropionate MDI	100 (ages 5years and older)
Fluticosone propionate MDI	50 (4years and older)

Reviewing response and adjusting treatment

Assessment at every visit should include asthma symptom control. The child's height should be measured every year.

Asthma Exacerbations

Early symptoms of exacerbation

Onset of symptoms of respiratory tract infection. An acute or sub acute increase in wheeze . An increase is coughing especially when child is asleep, lethargy or reduced exercise tolerance. Impairment of daily activities including feeding. Poor response to reliever medication

Initial treatment at home

Salbutamol 100mcg/puff 2 puffs repeat if needed every 20 minutes another two times. If no improvement to seek medical advice

Other modalities of treatment

Family initiated Corticosteroids is not advised. For children not previously on ICS. High dose ICS (1600mcg / day div 4times) has been given for five to 10 days in some studies , it should be considered only where the health care provider is confident that the medications will be used appropriately.

LTRA: Short course 7-20days commenced at start of URTI or first sign of asthma symptoms has reduced symptoms.

Parents should be advised to seek medical attention

- If child is acutely distressed
- Child's symptoms are not relieved promptly by inhaled bronchodilator
- The period of relief after doses of SABA becomes progressively shorter
- A child younger than 1year requiring repeat inhaled SABA over several hours.

Primary Care

Management of Acute Asthma Exacerbation in children 5years in a medical facility

Assessment of Exacerbation severity

Severe Asthma has the following features:

- Agitation, drowsiness, confusion speaks in words,
- Sats < 92%
- Pulse rate > 180 (0–3years)
- Cyanosis may be present
- Respiratory Rate > 40
- Pulse rate > 150 (4–5years)
- Chest may be Silent

Whom to admit?

Immediate Hospitalisation

At initial or subsequent assessment

- If child is unable to speak or drink
- Cyanosis
- Oxygen saturation < 92%
- 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 Tachypnoea despite 3 administrations of inhaled SABA even if child shows other signs of improvement

Note : Normal Respiratory Rates (0-2months <60 breaths/min

2-12months < 50 breaths/min, 1 year -5 years < 40 breaths/min)

Children with severe exacerbation that fail to resolve in 1-2 times despite repeated dosing with inhaled SABA

Recurrence of signs of severe exacerbation with 48 hours while on OCS

Management of Exacerbation of Asthma in the ER or Hospital Setting

Initial Bronchodilator treatment For Acute Severe Asthma

1. **Oxygen :** Treat hypoxemia with oxygen by face mask to maintain saturation 94-98 %

2. **Bronchodilator therapy :** 2-6 puffs of SABA every 20 mins for 1 hour
Or

2.5mg oxygen driven nebuliser of salbutamol every 20 minutes.

In children with a poor response to initial SABA nebulised Ipratropium bromide may be added every 20 minutes for 1 hour

Additional treatment:

In addition to SABA the following options are available

1. Short course of oral corticosteroids
2. High dose inhaled corticosteroids LTRA
3. Maintenance controller therapy.

Note: Maintain current controller treatment with ICS and LTRA during and after a exacerbation. If not on ICS an initial dose of ICS twice the low daily dose is commenced and continued for a few weeks or months.

Oral Corticosteroids

For children with severe exacerbations a dose of OCS equivalent to prednisolone 1-2mcg /kg/day maximum dose of 20mg/day for children 2-5 years

A course of 3-5 days can be given without taper

Additional treatment option

Inhaled Corticosteroids

Some studies have used. High dose ICS 1600mcg/day preferably

divided into four doses over the day and given for 5-10 days as this may reduce the need for OCS. Addition of ICS to standard care does not reduce risk of hospitalisation but reduces length of stay. However potential for side effects is high especially if used repeatedly.

Assessment of response

Children with a Severe Asthma exacerbation must be observed for at least an hour after initiation of treatment. The following three scenarios can be expected.

1. If symptoms persist after (2-6 puffs of SABA every 20 minutes for 3 times) should prompt hospitalisation
2. If symptoms have improved by one hour but recur within 3-4 hours child can be given more frequent doses of SABA 2-3 puffs every hour and oral Corticosteroids and child must remain in Emergency Department.

Note : If patient reaches >10 puffs in 3-4 hour period that patient should seek hospitalisation.

3. If symptoms resolve rapidly after initial bronchodilator therapy and do not recur for 1-2 hours no further treatment required

Further SABA may be given every 3-4 hours (up to total 10 puffs/24 hours). If symptoms persist beyond one day Oral corticosteroids may be given.

Discharge and Follow up

Before discharge the condition of the child should be stable. He or she should be out of bed and be able to eat and drink . Children with asthma exacerbation are at risk of recurrence and should be followed up.

Prior to discharge the parents/ care givers should receive the following advice

Instruction on recognition of signs of recurrence and worsening of asthma

Factors which precipitated the attack should be identified and strategies for future avoidance should be implemented

Care review of inhaler technique

Further treatment advice with SABA

ICS to be prescribed for children with Acute Exacerbation of Asthma needing systemic steroids. (GINA 2021 advises twice the low dose ICS for one month and then adjusted as needed).

A written individualized action plan, including details of accessible emergency services.