

The Saudi Initiative for Asthma 2019

EASY ASTHMA FLOWCHARTS®

A QUICK GUIDE FOR ASTHMA MANAGEMENT IN Children



Children

INITIAL EMERGENCY MANAGEMENT OF ACUTE ASTHMA IN CHILDREN BASED ON PRAM ASSESSMENT

OBTAIN PEDIATRIC RESPIRATORY ASSESSMENT MEASURE (PRAM)

Sign	0	1	2	3
Suprasternal Indrawing	Absent		Present	
Scalene Contraction	Absent		Present	
Air-entry	Normal	Decreased at bases	Widespread decrease	Absent/minimal
Wheezing	Absent	Expiratory only	Inspiratory & expiratory	Audible wheezing/silent chest
SaO ₂ on R/A	≥95%	92 – 94%	<92%	

ER PRAM PATHWAY INCLUSION CRITERIA:

- Children 1-14 yrs of age presenting to ER with shortness of breath and wheezing, and either of the following:
 - Prior diagnosis of asthma by an MD,
 - Past-history of wheezing attack responsive to bronchodilator.
- Exclude infants presenting with first wheezing episode or children presenting with features of upper airway obstruction (e.g. stridor) as the cause for their shortness of breath.

MILD PRAM: 1-3

- Vital signs initially & at discharge
- Keep SaO₂ >92% (use O₂ if needed)
- Initial Salbutamol, re-assess, if no response:
 - Continue Salbutamol Q 20 min for two doses
 - Consider Ipratropium bromide and oral steroids
- Re-assess PRAM after one hour.

PRAM 1-3

(Discharge Plan)

- Salbutamol PRN
- Complete the course of prescribed oral steroids
- Inhaled steroid, if indicated
- Provide action plan/ asthma education
- Clinic visit within one week

PRAM > 3

- PRAM: 4-7** Follow instruction under "Moderate" pathway
- PRAM: 8-12** Follow instruction under "Severe" pathway

MODERATE PRAM: 4-7

- Vital signs initially & at discharge
- Keep SaO₂ >92% (use O₂ if needed)
- Salbutamol and Ipratropium bromide Q 20 min for 3 times
- Systemic steroid after first Bronchodilator
- Re-assess PRAM after 1 hour

PRAM 1-3

(Discharge Plan)

- Observe for 1 hour after last bronchodilator
- If PRAM ≤3 discharge home
- Salbutamol Q 4-6 hours X 24 hours then PRN
- Inhaled steroids till next clinic visit
- Complete oral steroids course
- Provide action plan/ asthma education
- Clinic visit within one week

PRAM 4-7

- Continue salbutamol Q 30 min for 3 doses, Re-assess PRAM
- If PRAM 4-7
 - IV magnesium sulphate
 - Admission is recommended

PRAM 8-12

- IV access and fluids
- Continuous Salbutamol Nebulizer
- Consider IV Salbutamol
- ABG and consider CXR
- Monitor electrolytes
- Contact PICU for Admission

SEVERE PRAM: 8-12

- Vital signs Q 20 min until improvement
- O₂ Supplementation to keep SaO₂ ≥94%
- Salbutamol + Ipratropium bromide Q 20 min for 3 times
- Systemic steroid after first Bronchodilator
- Consider IV access and fluids
- Re-assess PRAM after 1 hour

PRAM 1-3

(Discharge Plan)

- Observe for 1 hour after last Bronchodilator
- If PRAM ≤3 discharge home
- Salbutamol Q 4-6 hours for 24 hours then PRN
- Inhaled steroids till next clinic visit
- Oral steroid to complete the course
- Provide action plan/ asthma education
- Clinic visit within one week

PRAM 4-7

- Continue Salbutamol Q 30 min for 3 doses, Re- Assess PRAM
- If PRAM 4-7
 - IV magnesium sulphate
 - Admission is recommended

PRAM 8-12

- IV access and fluids
- Continuous Salbutamol Nebulizer
- Consider IV Salbutamol
- ABG and consider CXR
- Monitor electrolytes
- Re-assess PRAM after 1 hour

PRAM 8-12

Consult PICU for Admission

MEDICATION DOSAGE

- Salbutamol: <20 Kg: via MDI/spacer 5 puffs, via nebulizer 2.5 mg, >20 Kg: via MDI/spacer 10 puffs, via nebulizer 5 mg (titrate MDI/spacer dose based on response)
- Ipratropium: via MDI/spacer 4 puffs, via nebulizer 250 mcg
- IV Salbutamol: 1 mcg/Kg/min then titrate PRN (max dose 10 mcg/Kg/min)
- MgSO₄: 40 mg/Kg IV bolus over 20 min (max dose 2000 mg)
- Systemic steroids:
 - Hydrocortisone 8 mg/Kg (max dose 400 mg)
 - Dexamethasone 0.3 mg/Kg (max dose 10 mg)
 - Methylprednisolone/prednisolone 2 mg/Kg (max dose 60 mg)

ABBREVIATION:

- ABG: Arterial Blood Gas, CXR: Chest X-Ray, IV: Intravenous, O₂: Oxygen, PICU: Pediatric Intensive Care Unit, PRAM: Pediatric Respiratory Assessment Measure, SaO₂: Oxygen Saturation, R/A: Room Air

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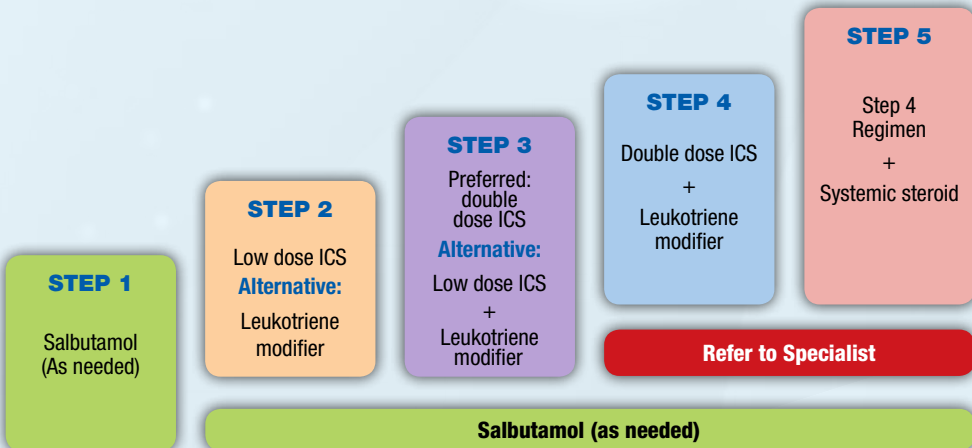
OUTPATIENT MANAGEMENT OF ASTHMA IN CHILDREN (< 5 YEARS)

PHYSICIAN ASSESSMENT OF ASTHMA CONTROL			
Characteristics	Controlled (all of the following)	Partially controlled (any of the following)	Uncontrolled (≥3 of the following)
Daytime symptoms	None (twice or less/week)	>2 days/week	>2 days/week
Limitations of activities	None	Any	Any
Nocturnal symptoms	None	Any	Any
Bronchodilator use	≤2 days/week	>2 days/week	>2 days/week

Additionally, you may use TRACK Score to further assess asthma control

- Challenge diagnosis (is it asthma?)
- Environmental control
- Asthma education
- Evaluate compliance
- Risk assesment

Use Step-Up approach if uncontrolled **or** Step-Down approach if controlled for 6-12 weeks



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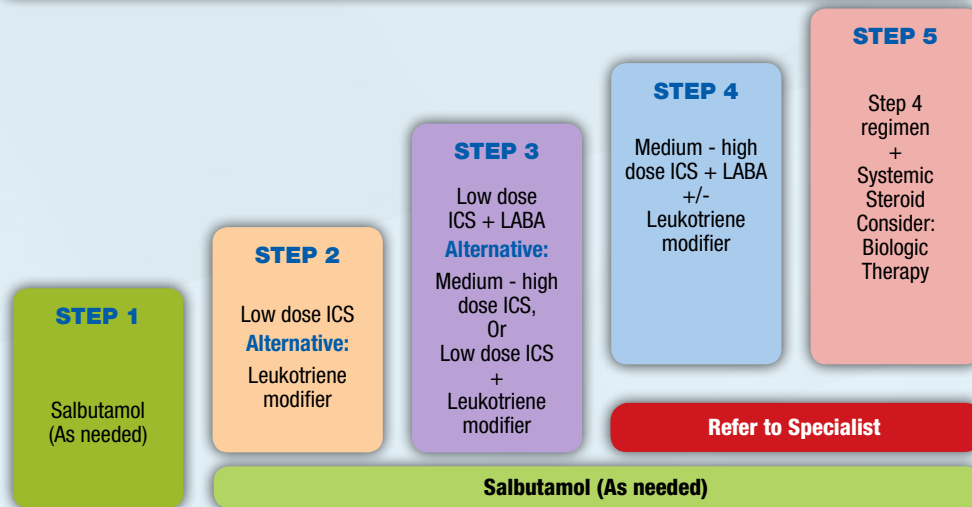
OUTPATIENT MANAGEMENT OF ASTHMA IN CHILDREN (> 5 YEARS)

PHYSICIAN ASSESSMENT OF ASTHMA CONTROL			
Characteristics	Controlled (all of the following)	Partially controlled (any of the following)	Uncontrolled (≥3 of the following)
Daytime symptoms	None (twice or less/week)	>2 days/week	>2 days/week
Limitations of activities	None	Any	Any
Nocturnal symptoms	None	Any	Any
Bronchodilator use	≤2 days/week	>2 days/week	>2 days/week

Additionally, you may use C-ACT Score to further assess asthma control

- Challenge diagnosis (is it asthma?)
- Environmental control
- Asthma education
- Evaluate compliance
- Risk assesment

Use Step-Up approach if uncontrolled **or** Step-Down approach if controlled for 6-12 weeks



ABBREVIATION:

ABG: Arterial Blood Gas, CXR: Chest X-Ray, IV: Intravenous, O₂: Oxygen, PICU: Pediatric Intensive Care Unit, PRAM: Pediatric Respiratory Assessment Measure, SaO₂: Oxygen Saturation, R/A: Room Air

SUPPLEMENTS

TABLE 1: THE TEST FOR RESPIRATORY AND ASTHMA CONTROL IN KIDS (TRACK) FOR CHILDREN < 5 YEARS OF AGE

QUESTION	SCORE			
1. During the past 4 weeks, how often was your child bothered by breathing problems (wheezing, coughing, SOB)?				
○ Not at all (20)	○ Once or twice (15)	○ Once every week (10)	○ 2-3 times/week (5)	○ ≥4 times/week (0)
2. During the past 4 weeks, how often did your child's breathing problems, such as wheezing, coughing, or SOB, wake him/her at night?				
○ Not at all (20)	○ Once or twice (15)	○ Once every week (10)	○ 2-3 times/week (5)	○ ≥4 times/week (0)
3. During the past 4 weeks, to what extent did your child's breathing problems, such as wheezing, coughing, or SOB, interfere with his/her ability to play, go to school, or engage in usual activities that a child should be doing at his/her age?				
○ Not at all (20)	○ Once or twice (15)	○ Once every week (10)	○ 2-3 times/week (5)	○ ≥4 times/week (0)
4. During the past 3 months, how often did you need to treat your child's breathing problems (wheezing, coughing, or SOB) with quick-relief medications?				
○ Not at all (20)	○ Once or twice (15)	○ Once every week (10)	○ 2-3 times/week (5)	○ ≥4 times/week (0)
5. In the past 12 months, how often did your child need to take oral corticosteroids for breathing problems not controlled by other medications?				
○ Not at all (20)	○ Once or twice (15)	○ Once every week (10)	○ 2-3 times/week (5)	○ ≥4 times/week (0)
TRACK Score < 80 Indicates Uncontrolled Asthma				
				TOTAL SCORE

TABLE 2: THE CHILDHOOD ASTHMA CONTROL TEST (C-ACT) FOR KIDS 4-12 YEARS OF AGE

QUESTION	SCORE			
1. How is your asthma today?				
○ Very bad (0)	○ Bad (1)	○ Good (2)	○ Very good (3)	
2. How much of a problem is your asthma when you run, exercise, or play sports?				
○ It's a big problem; I can't do what I want to do! (0)	○ It's a problem & I don't like it (1)	○ It's a little problem and but it's okay (2)	○ It's not a problem (3)	
3. Do you cough because of your asthma?				
○ Yes, all of the time (0)	○ Yes, most of the time (1)	○ Yes, some of the time (2)	○ No, none of the time (3)	
4. Do you wake up during the night because of your asthma?				
○ Yes, all of the time (0)	○ Yes, most of the time (1)	○ Yes, some of the time (2)	○ No, none of the time (3)	
5. During the last 4 weeks, how many days did your child have any daytime asthma symptoms?				
○ Not at all (5)	○ 1-3 days (4)	○ 4-10 days (3)	○ 11-18 days (2)	
6. During the last 4 weeks, how many days did your child wheeze during the day because of asthma?				
○ Not at all (5)	○ 1-3 days (4)	○ 4-10 days (3)	○ 11-18 days (2)	
7. During the last 4 weeks, how many days did your child wake up during the night because of asthma?				
○ Not at all (5)	○ 1-3 days (4)	○ 4-10 days (3)	○ 11-18 days (2)	
C-ACT Score < 19 Indicates Uncontrolled Asthma				
				TOTAL SCORE

Table 3: Selection of inhaler device in children

AGE	PREFERRED DEVICE	ALTERNATE DEVICE
<4 years	Pressurized MDI + dedicated spacer with face mask	Nebulizer with face mask
4-6 years	Pressurized MDI + dedicated spacer with mouthpiece	Nebulizer with mouthpiece
>6 years	Dry-powder inhaler, or, Breath-actuated pressurized MDI, or Pressurized MDI + dedicated spacer with mouthpiece	Nebulizer with mouthpiece

ABBREVIATION:

C-ACT: Childhood Asthma Control Test, ICS: Inhaled Corticosteroids, Ig E: immunoglobulin E, LABA: Long Acting β₂Agonist, PRN: As Needed, TRACK: Test for Respiratory and Asthma Control in Kids