



Max
Healthcare

Caring for you... for life

Adult Asthma

Objective

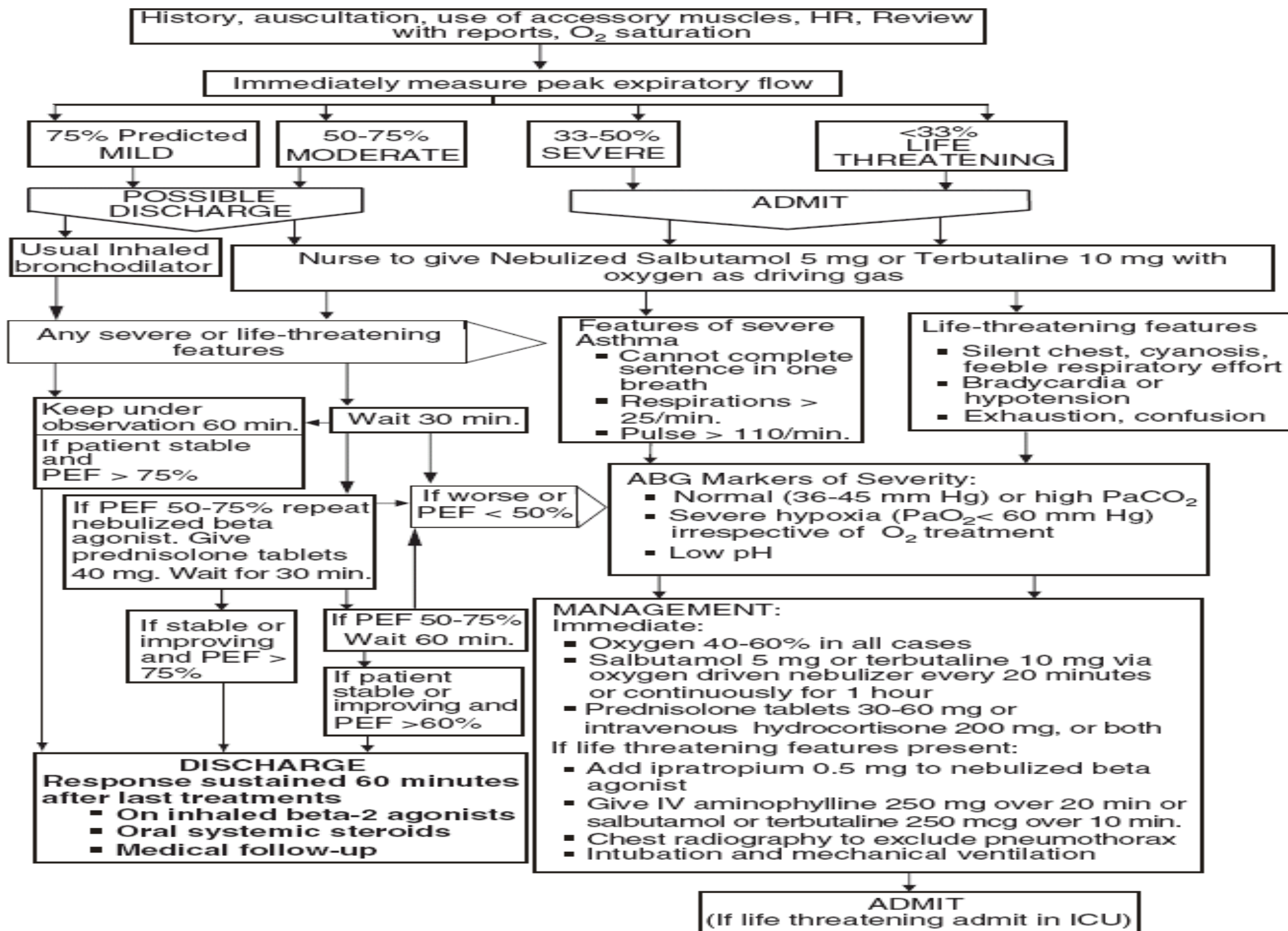
- For initial assessment (including severity) of adults of acute asthma for established cases as well as for the first attackers
- To differentiate between asthmatic and non-asthmatic wheeze
- To plan management of patients accordingly
- To provide guidelines for management of chronic cases

For use in: All clinical areas, OPD, Emergency and IPD

For use by: Physicians/Internists involved in the emergency care

For use for: All adult cases of acute and chronic asthma

TRIAGE OF PATIENTS OF ACUTE ASTHMA



Diagnosing Asthma

History of

- Wheezing
- Cough particularly at night
- Recurrent chest tightness
- Recurrent difficulty breathing

- Exercise
- Viral infections
- Smoke
- Pollen
- Dust mite
- Animal furs
- Change in temperature
- Emotional stress
- Pesticide
- Drugs (aspirin, beta blockers)

Objectives of brief history

- Time of onset and cause of current exacerbation
- Severity of symptoms especially compared with previous exacerbations
- All current medicines and time of last dose
- Prior hospitalizations and emergency department visits for asthma especially within past year
- Prior intubation cardiac and comorbid diseases that may be aggravated by steroids, such as diabetes, peptic ulcer, hypertension and psychosis

Objectives of Physical Examination (Assess Severity)

- Severity of attack
- Levels of alertness
- Fluid status
- Cyanosis
- Respiratory distress
- Wheeze and “Silent Chest”
- Identification of the complication, e.g. Pneumonia, pneumo-mediastinum
- Rule out upper airway obstruction like epiglottitis, laryngitis

Risk factors for Death from Asthma

- Past history of sudden severe exacerbations
- Prior intubation for Asthma
- Prior admission to ICU for Asthma
- > 2 hospitalizations for asthma in the past year
- > 3 emergency-care visits for asthma in the past year
- Use of > 2 canisters per month of inhaled short acting beta-2 agonists

Risk factors for Death from Asthma

- Current use of corticosteroids or recent withdrawal from systemic corticosteroids
- Co-morbidity as in cardiovascular disease or COPD
- Serious psychiatric disease or psychosocial problems
- Low economic status
- Illicit drug use

Classifying Severity of Asthma Exacerbations

Symptoms	Mild	Moderate	Severe	Respiratory arrest imminent
• Breathlessness	While walking can lie down	While talking prefers sitting	At rest sits upright	
• Talks in	Sentences	Phrases	Words	
• Alertness	May be agitated	Usually agitated	Usually agitated	Drowsy or confused
Signs				
• Respiratory rate	Increased	Increased	Often >30/minute	
• Use of accessory muscles; suprasternal retractions	Usually not	Commonly	Usually	Paradoxical thoracoabdominal movement
• Wheeze	Moderate, often only end expirator	Loud throughout exhalation	Usually loud throughout inhalation and exhalation	Absence of wheeze
• Pulse/minute	<100	100–120	>120	Bradycardia
• Pulsus paradoxus	Absent <10 mm Hg	May be present 10–25 mm Hg	Often present >25 mm Hg	Absence suggests respiratory muscle fatigue
Functional Assessment				
• PEF % predicted or % personal best	>75%	50–75 %	33–50%	<33%
• PO ₂	Normal	>60 mm Hg	<60 mm, may be cyanosis	
• PCO ₂	<42 mm Hg	<42 mm Hg	>42 mm Hg	
• SaO ₂ (on air)	>95%	91–95 %	<91%	

Lab Status

1. ABG Analysis

- Respiratory drive is typically increased in asthma exacerbation,
- So a normal PaCO₂ (36-45 mm Hg) indicated severe airflow obstruction and a heightened risk of respiratory failure
- CO₂ may be high
- Low pH

2. CBC

- In patients with fever or purulent sputum
- Modest leucytosis is common with acute attacks and steroid use

3. Serum Theophylline- concentration if prior use

4. Serum electrolytes- frequent beta-2 agonist use causes transient decrease in potassium, magnesium and phosphate

5. Chest X ray to view pneumothorax, pneumomediastinum, pneumonia, lobar atelectasis and CHF

6. ECG- may show arrhythmia or right ventricular strain

Treatment Goals in Acute Exacerbations

- Correction of significant hypoxemia by o₂ inhalation +/- mechanical ventilation
- Rapid reversal of airflow obstruction- by repetitive or continuous administration of inhaled beta-2 agonists and systemic corticosteroids
- Reduction of likelihood of recurrence by short course of steroids and intensive therapy

Pre-hospital Ambulance management

- Inhaled bronchodilator
- If nebulizer not available, subcutaneous epinephrine or terbutaline

1. Oxygen- by nasal cannulae / mask to maintain SaO₂ > 90 % (> 95 % in pregnant women and in patient with coexistent heart disease).
2. Inhaled short-acting beta₂ – agonists –for all patients in the emergency department. Beta₂ – agonists can be spaced every 20 to 30 minutes as initial therapy.
3. Continuous administration of beta₂ – agonist maybe more effective in children and severely obstructed adults by nebulizer. Equivalent bronchodilatation can be achieved by either high doses (6-12 puffs) of beta₂ – agonist by MDI with a spacer under supervision if nebulizer is not available.
4. Onset of response of beta₂ agonists is less than 5 minutes and repetitive administration produces incremental bronchodilation.

4. Anticholinergics: Ipratropium bromide (0.5 mg in adults, 0.25 mg in children) causes additional bronchodilation especially in severe asthma
5. Systemic corticosteroids recommended in most patients of moderate to severe exacerbation. Role is to speed up bronchodilation and prevent relapses.
6. Oral administration of prednisone has equivalent effects as intravenous methyl prednisolone. Give supplemental doses of oral corticosteroids in steroid dependent asthmatics.

7. Methylxanthines are not generally recommended and use remains controversial. Intravenous aminophylline- Loading dose 5.6 mg/kg over 30 minutes for a person not using theophylline; maintenance dose is 0.7 mg/kg/hr by infusion pump. Lower the dose if patient is on macrolides or has liver disease, heart failure. Monitor theophylline levels.
8. Antibiotics are not recommended for asthma but may be recommended for co- morbid conditions. Use in patients with fever, purulent sputum, pneumonia, sinusitis.
9. Aggressive hydration is not recommended for older children and adults unless dehydrated.

10. Chest physiotherapy is not recommended.
11. Mucolytics are not recommended (eg acetylcysteine) and may worsen cough and airflow obstruction.
12. Sedation is not recommended.

Repeat Assessment: Strict monitoring during severe attack and
Re - assess every 60 to 90 minutes

Respiratory Failure (Impending)

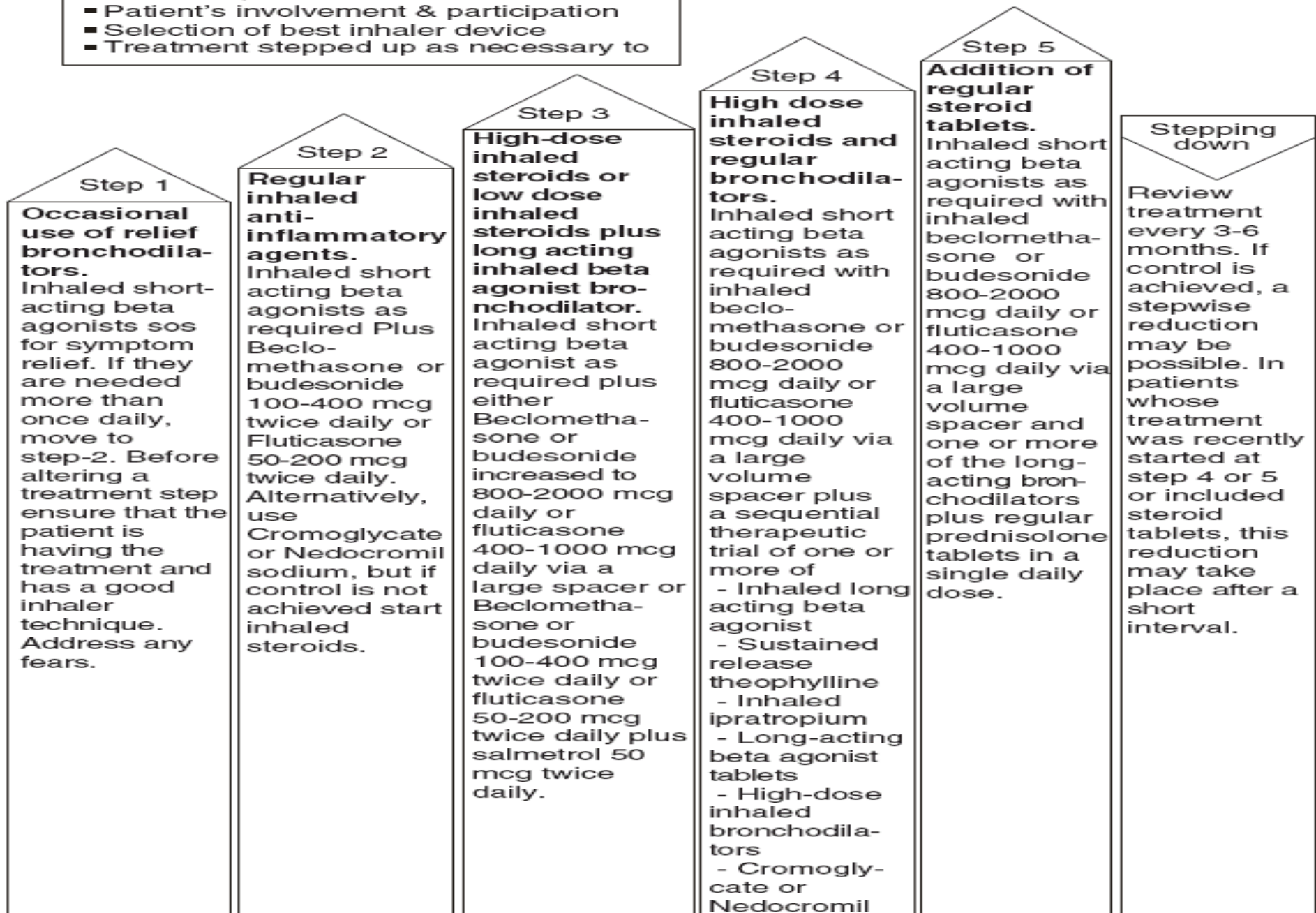
- Worsening airflow obstruction.
- Worsening respiratory muscle fatigue

Intubation

- Exactly when to intubate is a clinical judgement but not to be delayed once deemed necessary.
- Close attention to be given to maintaining or replacing intravascular volume, because hypotension commonly accompanies the initiation of positive pressure ventilation.
- Avoid high ventilator pressure to prevent barotraumas.

MANAGEMENT OF CHRONIC ASTHMA IN ADULTS

- Avoidance of provoking factors wherever possible
- Patient's involvement & participation
- Selection of best inhaler device
- Treatment stepped up as necessary to





Outcome of steps 1-3: control of asthma

- Minimal (ideally no) chronic symptoms, including nocturnal symptoms
- Minimal (infrequent) exacerbations
- Minimal need for relieving bronchodilators
- No limitations on activities including exercise
- Circadian variation in PEF $< 20\%$
- PEF $> 80\%$ of predicted or best
- Minimal (or no) adverse effects from medicine

Outcome of steps 4-5: best possible results

- Least possible symptoms
- Least possible need for relieving bronchodilators
- Least possible limitation of activity
- Least possible variation in PEF
- Best PEF
- Least adverse effects from medicine





INHALATIONAL THERAPY FOR BRONCHIAL ASTHMA

Beclomethasone

- ❑ Beclate inhaler (50, 100, 200, 250 mcg/md)
- ❑ Beclate rotacaps (100, 200, 400 mcg)
- ❑ Becoride inhaler (50, 100, 250 mcg/md)
- ❑ Becoride forte inhaler (250 mcg/md)
- ❑ Becoride junior inhaler (50 mcg/md)

Budesonide

- ❑ Budecort inhaler HFA (100,200 mcg/md)
- ❑ Pulmicort inhaler (100, 200, 400 mcg/md)

Fluticasone Propionate

- ❑ Flohale inhaler (25, 50, 125 mcg/md)
- ❑ Flohale rotacaps (50, 100, 250 mcg/md)





Ipratropium Bromide

- ❑ Ipravent inhaler (20 mcg/md)
- ❑ Ipravent rotacaps (40 mcg/md)
- ❑ Ipratop inhaler

Salbutamol

- ❑ Asthalin inhaler, ventorlin inhaler, desihaler (100 mcg/md)
- ❑ Asthalin rotacaps (200 mcg)
- ❑ Glaxo salbutamol inhaler (100 mcg/md)

Salbutamol + Beclomethasone

- ❑ Aerocort inhaler (salbutamol 100 mcg + beclomethasone 50 mcg/md)
- ❑ Aerocort rotacaps (salbutamol 200 mcg + beclomethasone 100 mcg/md)
- ❑ Aerocort forte rotacaps (400/200 mcg)

Salmeterol

- ❑ Azrol inhaler (25 mcg/md)
- ❑ Serobid inhaler (25 mcg/md)
- ❑ Serobid rotacaps (50 mcg)

Salmeterol + Fluticasone

- ❑ Seroflo rotacaps/FORAIR salmeterol + 25 mcg, fluticasone 50, 125, 250 (250 mcg)





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- ❑ Seroflow inhaler (50, 250 mcg/md)
- ❑ Seretide diskhaler (11, 250 mcg/md – total 60 md)

Formoterol

- ❑ Foratec MDI or rotacaps (12 mcg formetrol)

Firniterol Fumarate + Budesonide

- ❑ Foracort Neohaler Formaterol 6 mcg, budesonide 100, 200, 400 mcg
- ❑ Forecort rotacaps Formaterol 6 mcg, budesonide 100, 200, 400 mcg

Terbutaline

- ❑ Bricanyl inhaler (200 mcg/md–250 mcg/md)
- ❑ Bricanyl misthaler (250 mcg/md)

Sodium Cromoglycate

- ❑ Cromal-5 inhaler (5 mg/md)
- ❑ Fintal inhaler (1 mg/md)
- ❑ Ifiral inhaler (20 mg/md)



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- The diagnosis and severity of asthma is frequently underdiagnosed in elderly. Anticholinergic bronchodilators may have a slightly greater role in this age group.
- Evidence regarding absorption of inhaled steroids from lung and hence systemic effects, including growth delay in children is conflicting. To avoid any possible side effects, the following should be done.
- Give the lowest dose of inhaled steroid compatible with asthma control
- In patients taking high dose therapy general measures to counteract osteoporosis should be considered.
- Use a large volume spacer with an MDI or with mouth washing without swallowing or with a dry powder inhaler.
- The Turbohaler delivers approximately twice as much inhaled steroid to the lung and doses should be halved when this device is used.

- MDI versus Rotahalers: Patient preference is of major importance in the choice of device. Many patients are unable to use MDIs correctly and even, with good inhaler technique, only 10-15% of the dose is delivered to lungs. In such cases, use spacer devices. With rotahalers, there are variations in deposition ranging from 10-30% and inspiratory flow rates cause variation with these devices.
- Always teach the right technique of inhaler/rotahaler use to the patient and ask him/her to demonstrate it in front of you. Wrong technique is a common cause of inadequate asthma control inspite of adequate treatment.
- Stepping down the dose of inhaled steroids once asthma is controlled should be slow (reductions should take place every 1-3 months by decreasing the dose of inhaled steroid by approximately 25-50% at each step).
- PEF monitoring a MUST at each step of asthma management.

Therapies NOT recommended for treating asthma attacks include:

- Sedatives
- Mucolytic drugs
- Magnesium sulfate
- Chest physical therapy
- Hydration with large volumes of fluid for adults & older children
- Antibiotics



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Thank You



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