INITIAL MANAGEMENT OF ACUTE ASTHMA IN ADULTS

Assess Asthma Severity by History, Physical Examination, Oxygen Saturation, and PEFR

**Moderate**
- Talking Phrases or full sentences
- Agitated but alert
- Respiratory Rate 20-30/min
- May or may not use accessory muscles
- Heart Rate <120/min
- SaO₂ on R/A ≥ 92%
- PEFR of 50-75% of predicted

**Severe**
- Talking only words or unable to complete sentence
- Agitated
- Respiratory Rate >30/min
- Use of accessory muscles
- Heart Rate >120/min
- SaO₂ on R/A ≥ 92%
- PEFR of 33-50% of predicted

**Life Threatening**
- Unable to talk
- Confused, drowsy, or coma
- Respiratory Rate >30/min or in respiratory failure
- Use of accessory muscles
- Heart Rate >120/min or bradycardia, and silent chest
- SaO₂ on R/A <90% or Cyanosis
- Normal or high PaCO₂, Acidosis
- PEFR of <33% of predicted

**TREATMENT**
- Oxygen to keep SaO₂ ≥ 92%
- Salbutamol can be delivered by either:
  - MDI with spacer: 6 - 12 puffs every 20 min for 1 hour, then every 2-4 hours according to the response
  - Nebulizer: 2.5 - 5 mg salbutamol every 20 min for 1 hour, then every 2-4 hours according to response
- Oral Prednisone 50 mg PO STAT

**Assess response to treatment by assessing mental status, respiratory rate, heart rate, SaO₂, and PEFR every 30-60 min.**

FOLLOW-UP MANAGEMENT OF ACUTE ASTHMA IN ADULTS

Reassess Asthma Severity by History, Physical Examination, Oxygen Saturation, and PEFR

**Moderate**
- Talking Phrases or full sentences
- Agitated but alert
- Respiratory Rate 20-30/min
- May or may not use accessory muscles
- Heart Rate <120/min
- SaO₂ on R/A ≥ 92%
- PEFR of 50-75% of predicted

**Severe**
- Talking only words or unable to complete sentence
- Agitated
- Respiratory Rate >30/min
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**Life Threatening**
- Unable to talk
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- SaO₂ on R/A <90% or Cyanosis
- Normal or high PaCO₂, Acidosis
- PEFR of <33% of predicted

**Adequate Response**
- Improving Symptoms and stable vital signs
- PEFR >60% of predicted
- SaO₂ ≥ 92%
- Adequate response to be maintained for at least 4 hours
- Continue bronchodilators for 1-4 hour PRN
- May be safely discharged
- Continue oral Prednisone for 5-7 days

**Partial Response**
- Minimal improvement of respiratory symptoms after 4 hours of therapy
- Stable vital signs
- SaO₂ ≥ 92% on oxygen therapy
- PEFR 33-60% of predicted
- Continue bronchodilators therapy (β₂Agonist + ipratropium bromide) every 1-4 hour

**Poor Response**
- No improvement of respiratory symptoms after 4 hours of therapy
- Fatigue and acidosis
- PEFR <33% of predicted
- SaO₂ <92% with high flow oxygen
- Continue bronchodilators and systemic steroids
- ICU consultation for possible admission
- Consider admission

**Upon Discharge**
- Ensure stable on a 4 hourly inhaled bronchodilator
- Prescribe combination of inhaled steroids/LABA
- Review inhaler technique and encourage compliance
- Ensure adequate rescue treatment
- Provide written asthma self-management action plan
- Arrange follow up in pulmonary clinic or primary care clinic within a few days
- Continue oral steroid in the form of oral prednisone 1mg/kg (maximum dose 50mg) daily if the patient can tolerate orally
- Observe closely for any signs of fatigue of exhaustion
- Monitor O₂ saturation, serum electrolytes, ECG and PEFR
- If the patients is responding, follow “adequate response” track
- If there is no adequate response after 4 hours, consider admission
- Continue bronchodilators and systematic steroids
- ICU consultation for possible admission

**What is next?**
- Continue bronchodilators and systematic steroids
- ICU consultation for possible admission
- Consider admission

**What is next?**
- Continue bronchodilators and systematic steroids
- ICU consultation for possible admission
- Consider admission

Source: Annals of Thoracic Medicine 2016; Volume:11, Issue:1
OUTPATIENT MANAGEMENT OF ASTHMA FOR ADULTS AND CHILDREN > 12 YEARS

**Initiation**
- History & Physical Examination
- Obtain ACT score and PEFR
- Patient education and environmental control of triggers/inducers
- Treat aggravating factors e.g., GERD, Allergic Rhinitis
- Based on ACT result, initiate therapy as follows:

  - **ACT ≥20**
    - Patients with risk factors or fixed obstruction
      - No
      - Yes
      - **STEP 1**
    - Severe uncontrolled asthma at presentation
      - No
      - Yes
      - **STEP 2**
  - **ACT = 16-19**
  - **ACT <16**

**Adjustment and Maintenance**
- Clinical Assessment
- Obtain ACT score and PEFR
- Based on ACT, Adjust treatment as follows:
  - ACT = 20-25: Well controlled ➔ Maintain treatment with lowest dose of ICS or step down
  - ACT = 16-19: Partial control ➔ Step up
  - ACT <16: Uncontrolled ➔ Step up

Introduce Self-management Plan

**STEP 1**
- **Recommended**
  - Salbutamol Inhaler (PRN)

**STEP 2**
- **Recommended**
  - Low Dose ICS
  - Alternative:
  - LTRA

**STEP 3**
- **Recommended**
  - Low-Medium Dose ICS + LABA
  - Alternatives:
  - Low-Medium Dose ICS + LTRA
  - Medium-high Dose ICS
  - Low-Medium Dose ICS + Theophylline

**STEP 4**
- **Recommended**
  - Use high-dose ICS + LABA AND
  - ±Tiotropium
  - ±LTRA
  - ±Theophylline
  - Consider:
  - Omalizumab in Allergic Asthma, if applicable

**STEP 5**
- **Recommended**
  - Step 4 options +
  - Omalizumab in Allergic Asthma, if applicable
  - AND/OR
  - Long-term Oral Steroids

**STEP 2**
- **Recommended**
  - Low Dose ICS
  - Alternative:
  - LTRA

**STEP 3**
- **Recommended**
  - Low-Medium Dose ICS + LABA
  - Alternatives:
  - Low-Medium Dose ICS + LTRA
  - Medium-high Dose ICS
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**STEP 5**
- **Recommended**
  - Step 4 options +
  - Omalizumab in Allergic Asthma, if applicable
  - AND/OR
  - Long-term Oral Steroids

**Refer to a Specialist**

Salbutamol Inhaler (PRN) for all patients

Patient education, environmental control, and management of comorbidities

**ACT = Asthma Control Test, ICS = Inhaled Corticosteroids, LABA = Long Acting β2-Agonist, LTRA = Leukotriene Receptor Antagonist, PEFR = Peak Expiratory Flow Rate**

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