Learn simply

Acute Asthma Exacerbation

Passion profession same

Initial evaluation

- Confirm the diagnosis[1]
- Consider differential diagnosis[2]
- Document fetal wellbeing
- Confirm gestational age

Initial testing

- Obtain chest x-ray irrespective of gestational age
- **Check ABG (arterial blood gas)[3]**

Is the patient in respiratory distress?[4]

Yes

Initial management

- **Admit to ICU immediately**
- **Obtain urgent pulmonary consultation**
- Administer supplemental oxygen[5]
- Start first-line bronchodilator therapy[6]
- Start IV steroids[7]
- *Start empiric antibiotic therapy*

Good clinical response?

No

- **Consider intubation** and ventilation if patient is retaining CO_2 (i.e., if $PCO_2 > 32$ mmHg)[8]
- Consider delivery, if indicated

Yes

Continue inpatient management

No

Initial management

- **Administer supplemental oxygen[5]**
- **Start first-line bronchodilator therapy[6]**
- Check PEFR both before and after bronchodilator therapy

Good clinical response?

No

- **Admit to hospital[9]**
- Continue supplemental oxygen[5]
- Continue bronchodilator therapy[6]
- Check PEFR before and after bronchodilator therapy
- **Start IV steroids followed by oral steroid taper[7]**
- Pulmonary consultation
- *Consider antibiotic therapy*

Yes

- Consider outpatient management
- Continue inhaled short-acting β-agonist every 3–4 hours for 24–48 hours
- Consider a short course of oral corticosteroids
- Outpatient follow-up

1. Asthma is a chronic inflammatory disorder of the airways characterized by intermittent episodes of reversible bronchospasm.
2. The “classic” signs and symptoms of asthma are intermittent dyspnea, cough, and wheezing.

3. To confirm the diagnosis, take a detailed history, perform a physical examination, and perform relevant pulmonary function tests, including peak expiratory flow rate (PEFR) and spirometry, which includes measurement of forced expiratory volume in one second (FEV1) and forced vital capacity (FVC) before and after administration of a bronchodilator.

4. The differential diagnosis of an acute asthma exacerbation includes pneumonia, pulmonary embolism, pneumothorax, congestive cardiac failure, pericarditis, pulmonary edema, and rib fracture.

1. Respiratory adaptations in pregnancy are designed to optimize maternal and fetal oxygenation, and to facilitate transfer of CO_2 waste from the fetus to the mother Pregnancy thus represents a state of compensated respiratory alkalosis.
2. Non-pregnant.

   pH 7.40
   P O_2 (mmHg)93 -100
   P CO_2 (mmHg)35-40
3. Pregnant

   pH 7.40
   P O_2 (mmHg)100 -105
   P CO_2 (mmHg)28-30

4. Symptoms and signs suggestive of a serious asthma attack and respiratory distress include marked breathlessness, inability to speak more than short phrases, use of accessory muscles, or drowsiness.
5. A PEFR of <50% expected or of personal best (or <200 L/minute in most adults) indicates a need for urgent medical intervention.
6. Supplemental oxygen is typically administered by non-rebreather mask at 4–8 L/min to keep the O_2 saturation >95% in pregnancy (>92% in non-pregnant women).

KAWITA BAPAT

1. As initial treatment, inhaled short-acting β-agonists should be used early and frequently. Albuterol can be given either as 4–8 puffs of a metered dose inhaler (MDI) with spacer every 20 minutes for up to four hours or by nebulizer treatment (2.5 mg repeated every 20 minutes for two or three doses or 10–15 mg given by continuous nebulization over one hour).
2. Consider concomitant use of ipratropium bromide for severe exacerbations given as 500 mcg by nebulization every 20 minutes for 3 doses or 8 puffs by MDI with spacer every 20 minutes as needed for up to 3 hours.
3. Start systemic glucocorticoids if there is not an immediate and marked response to the inhaled short-acting β-agonists. Recommended steroid regimens include methylprednisolone 60–125 mg IV or prednisone 40–60 mg orally; alternative regimens include dexamethazone 6–10 mg IV or hydrocortisone 150–200 mg IV. Steroids may be given IM or orally if IV access is unavailable.
4. Steroids should be repeated at 8–12 hourly intervals.

1. Other treatment options for asthma that is severe and unresponsive to standard therapies include terbutaline (0.25 mg by SC injection every 30 minutes for 3 doses) or epinephrine (0.2–0.5 mL of 1:1000 solution by SC injection). Give either terbutaline or epinephrine, but not both.
2. Hypercapniaa sign of impending respiratory failure) usually only occurs if the PEFR is <25% of normal (or <100–150 L/min). In the absence of anticipated intubation difficulty, rapid sequence intubation is preferred. Nasal intubation is not recommended.
3. Patients should be admitted to hospital if they do not respond well after 4–6 hours in a setting of high surveillance and care. Frequent (every 1–2 hourly) objective clinical assessments of the response to therapy are needed once admitted until a definite and sustained improvement is documented.