Acute Asthma

- Acute severe asthma is **a sudden severe asthma attack that doesn't get better after taking asthma medicine**.

- This type of asthma is life-threatening.

- Patients with severe asthma and one or more adverse psychosocial factors (psychiatric illness, alcohol or drug abuse, unemployment) have i mortality. Measure the peak expiratory flow rate (PEFR) and compare it against that expected

- Make an initial assessment of the severity of acute asthma based upon a
- combination of clinical features, peak flow measurement, and pulse oximetry, as outlined below.

Moderate exacerbation of asthma

- increased symptoms.
- Peak flow 50–75% best or predicted.
- No features of acute severe asthma

Acute severe asthma

- Any one of:
  - Peak flflow 33–50% best or predicted.
  - RR ≥25/min.
  - Heart rate ≥110/min.
  - Inability to complete sentences in one breath.

Life-threatening asthma

A patient with severe asthma with any one of:

- Peak flow <33% best or predicted.
- SpO2 <92%.
- pO2 <8kPa.
- Normal pCO2 (4.6–6.0kPa).
- Silent chest.
- Cyanosis.
- Poor respiratory effort.
- Arrhythmia.
- Exhaustion.
- Altered conscious level.
- Hypotension.

Near fatal asthma

- high pCO_2 and/or requiring mechanical ventilation with high inflation pressures.

- Associated with high mortality.

Investigations

- *Peak flow* is most useful when expressed as a percentage of that patient's previous best, but the percentage of predicted is a rough guide.

- *Pulse oximetry (SpO2*) determines the adequacy of O2 therapy and the

need for ABG measurement. Use O2 to aim for SpO2 of 94–98%.

- Obtain *ABG* if SpO2 <92% or if there are other features of life-threatening asthma.

Investigations

- Obtain a *CXR* (without delaying treatment) if there is:
  - Suspected pneumomediastinum or pneumothorax.
  - Suspected consolidation.
  - Life-threatening asthma.
  - Failure to respond to treatment satisfactorily.
  - Requirement for ventilation.

Initial management

- Provide high-flow O2.

- Put the trolley back and side rails up, so the patient is sitting up and holding on to the side rails (to use the pectoral muscles as accessory muscles of respiration).

- If the patient cannot talk, start treatment, but get senior ED and ICU help in case intubation and ventilation are required.

- Check the trachea and chest signs for pneumothorax.

- Ask about previous admissions to ICU.

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Initial management

- Administer high-dose (O2-driven) nebulized β2-agonist (eg salbutamol 5mg or terbutaline 10mg), or ten puffs of salbutamol into a spacer device and face mask.

- For severe asthma or asthma that responds poorly to the initial nebulizer, consider continuous nebulization.

- Reserve the use of IV salbutamol for those patients in whom inhaled therapy cannot be used reliably (in which case, draw up salbutamol 5mg into 500mL of 5% glucose and run at a rate of 30–60mL/hr).

Initial management

- Give a corticosteroid to all patients with acute asthma—either prednisolone 40–50mg PO or hydrocortisone (preferably as sodium succinate) 100mg IV.

- Add nebulized ipratropium bromide (500mcg 4- to 6-hourly) to β2-agonist treatment for patients with acute severe or life-threatening asthma or those with a poor initial response to β2-agonist therapy.

Initial management

- Consider a single dose of IV magnesium sulfate (1.2–2g IVI over 20min), after consultation with senior medical staff, for patients with acute severe asthma without a good initial response to inhaled bronchodilator therapy or for those with life-threatening or near-fatal asthma.

Initial management

- The use of IV aminophylline remains controversial and is not likely to result in any additional bronchodilation, compared to standard care. Use IV aminophylline only after consultation with senior medical staff.

- The loading dose of IVI aminophylline is 5mg/kg over 20min, unless on maintenance therapy, in which case check blood theophylline level and start IVI of aminophylline at 0.5–0.7mg/kg/hr.

Initial management

- A patient who cannot talk will be unable to drink fluids and may be dehydrated.

- Avoid ‘routine’ antibiotics.

- Repeat ABG within an hour if: initial pO2 is <8kPa (unless subsequent SpO2 is >92%), or pCO2 is normal or high, or if the patient deteriorates.

- Hypokalaemia may be caused or exacerbated by β2-agonist and/or steroid therapy. Correct electrolyte abnormalities.