Management of acute severe asthma in adults in hospital

Features of acute severe asthma
- Peak expiratory flow (PEF) 33-50% of best (use % predicted if recent best unknown)
- Can’t complete sentences in one breath
- Respirations ≥ 25 breaths/min
- Pulse ≥ 110 beats/min

Life threatening features
- PEF < 33% of best or predicted
- SpO₂ < 92%
- Silent chest, cyanosis, or feebler respiratory effort
- Arrhythmia or hypotension
- Exhaustion, altered consciousness

IF A PATIENT HAS ANY LIFE THREATENING FEATURE, MEASURE ARTERIAL BLOOD GASES. NO OTHER INVESTIGATIONS ARE NEEDED FOR IMMEDIATE MANAGEMENT.

Blood gas markers of a life threatening attack:
- ‘Normal’ (4.6-6 kPa, 35-45 mmHg) PaCO₂
- Severe hypoxia: PaO₂ < 8 kPa (60mmHg) irrespective of treatment with oxygen
- A low pH (or high H⁺)

Caution: Patients with severe or life threatening attacks may not be distressed and may not have all these abnormalities. The presence of any should alert the doctor.

Near fatal asthma
- Raised PaCO₂
- Requiring mechanical ventilation with raised inflation pressures

PEAK EXPIRATORY FLOW RATE - NORMAL VALUES

- Repeat measurement of PEF 15-30 minutes after starting treatment
- Oximetry: maintain SpO₂ > 94-98%
- Repeat blood gas measurements within 1 hour of starting treatment if:
  - initial PaO₂ < 8 kPa (60 mmHg) unless subsequent SpO₂ > 92%
  - PaCO₂ normal or raised
- patient deteriorates
- Chart PEF before and after giving β₂ agonist and at least 4 times daily throughout hospital stay

Transfer to ICU accompanied by a doctor prepared to intubate if:
- Deteriorating PEF, worsening or persisting hypoxia, or hypercapnea
- Exhaustion, altered consciousness
- Poor respiratory effort or respiratory arrest

DISCHARGE
When discharged from hospital, patients should have:
- Been on discharge medication for 12-24 hours and have had inhaler technique checked and recorded
- PEF > 75% of best or predicted and PEF diurnal variability < 25% unless discharge is agreed with respiratory physician
- Treatment with oral and inhaled steroids in addition to bronchodilators
- Own PEF meter and written asthma action plan
- GP follow up arranged within 2 working days
- Follow up appointment in respiratory clinic within 4 weeks

Patients with severe asthma (indicated by need for admission) and adverse behavioural or psychosocial features are at risk of further severe or fatal attacks
- Determine reason(s) for exacerbation and admission
- Send details of admission, discharge and potential best PEF to GP

Adapted by Clement Clarke for use with EN13826 / EU scale peak flow meters from Nunn AJ Gregg I, Br Med J 1989;298;106-70