GUIDELINES FOR THE MANAGEMENT OF ACUTE ASTHMA

RECOGNISING ASTHMA
A diagnosis of asthma is suggested by the presence of symptoms of wheeze, dyspnoea, chest tightness and cough. However, these are not specific for asthma. The hallmark of asthma is that these symptoms tend to be variable, intermittent, worse at night and provoked by triggers.

ASSESSMENT OF PATIENTS
The appropriate management of patients admitted with acute asthma depends on the initial assessment of these patients.

In the clinical history, particular note should be made regarding:
- Previous hospital admissions/intensive care for acute asthma
- Need for oral steroids over the last 6 months
- Best peak flow recording
- Domestic pets/occupation

All patients admitted with acute asthma should have the following carried out:
- Heart rate and blood pressure
- Respiratory rate
- Peak expiratory flow
- Oxygen saturation
- Arterial blood gases if \( O_2 \) saturation < 93% on air
- Chest x-ray and ECG
- Full blood count and urea & electrolytes

SEVERITY
Patients have acute severe asthma if they have any of the following:
- Peak expiratory flow 33-50% of best or predicted
- Respiratory rate > 25 per minute
- Heart rate > 110 per minute
- Inability to complete sentences in one breath
- Severe dyspnoea

A patient has life-threatening asthma if they have severe asthma with any of the following:
- Peak expiratory flow < 33% of best or predicted
- \( O_2 \) saturation < 92% or \( PaO_2 < 8kPa \)
- Silent chest or feeble respiratory effort
- Cyanosis, exhaustion
- Bradycardia/dysrhythmia
- Hypotension, confusion or coma
INITIAL TREATMENT

1) BRONCHODILATOR THERAPY

- High-dose $\beta_2$-agonists and ipratropium bromide should be used as first-line agents and administered as soon as possible. Combivent®l nebule 6-hourly should be adequate in most patients.
- It is important that nebulised bronchodilator should be driven by oxygen at 6-8 L/min to prevent desaturation during therapy.

2) OXYGEN

- Patients with acute severe asthma are often hypoxic and this should be corrected urgently with high concentration of oxygen (40-60% inspired $O_2$). Unlike patients with COPD, there is little risk of hypercapnia with high-flow oxygen.

3) STEROID THERAPY

- Systemic steroids should be given immediately in all cases of acute asthma. Prednisolone 40 mg daily should be given for at least 5 days or until recovery.
- Inhaled steroids should be continued during treatment. If patients are not already on this prior to admission, then inhaled steroids will be required on discharge with an appropriate inhaler device.

4) ANTIBIOTICS

- Routine prescription of antibiotics is not indicated for acute asthma unless there is clear evidence of bacterial infection.

FOR THOSE WITH LIFE-THREATENING FEATURES:

INTRAVENTOUS MAGNESIUM

IV magnesium (2g infusion over 20 minutes) should be given. This should not be repeated and serum magnesium levels do not require to be checked.
FAILURE TO RESPOND

1) REPEAT DOSES OF BRONCHODILATORS
Repeated doses of β-agonist should be given at 15-30 minute intervals. Intravenous β2-agonists should be reserved for those patients in whom inhaled therapy cannot be used reliably (eg ventilated patients or those in extremis). Inhaled β2-agonists are at least as efficacious as intravenous or subcutaneous β2-agonists in the majority of cases.

2) INTRAVENOUS MAGNESIUM
Intravenous magnesium should be given if not administered previously.

3) INTRAVENOUS AMINOPHYLLINE
In acute asthma, the use of IV aminophylline is not likely to result in any additional bronchodilation compared to standard care with nebulised bronchodilators and systemic steroids. The use of IV aminophylline should only be used after consultation with senior medical staff.

4) REFERRAL TO ADULT CRITICAL CARE UNIT
Patients should be referred to ACCU if acute severe or life-threatening asthma fail to respond to therapy as evidenced by:
• Deteriorating peak expiratory flow
• Persisting or worsening hypoxia
• Rising $P_{CO2}$
• Acidosis
• Exhaustion or feeble respiratory effort
• Drowsiness or confusion

5) NON-INVASIVE VENTILATION
Non-invasive ventilation is NOT appropriate for acute asthma.

6) REFERRAL TO RESPIRATORY UNIT
All patients admitted with acute severe asthma should be referred to the Asthma Nurse Specialist. Patients who do not appear to recover as expected should be referred to a Respiratory Physician.
MONITORING TREATMENT

Response to treatment is assessed by the following:

- Measure and record peak expiratory flow 30 minutes after starting treatment. Thereafter it should be measured and recorded before and after nebulised or inhaled bronchodilator at least four times daily.
- Record oxygen saturation and maintain > 92%
- Measure arterial blood gases if SaO$_2$ < 93% or if initial PaO$_2$ < 8 kPa or if patient’s condition deteriorates. If initial PaO$_2$ < 8kPa or if P$_{CO2}$ > 4.5kPa, then gases should be repeated within a few hours while on supplemental O$_2$ or if patient becomes distressed.
- Measure and record heart rate and respiratory rate.
- Measure serum theophylline if IV aminophylline is continued for > 24 hours.

PLANNING FOR DISCHARGE

- Patients should be on discharge medication for 24 hours prior to discharge.
- Peak expiratory flow should be > 75% of best or predicted with < 25% variability prior to discharge.
- Inhaler technique should be checked and a written asthma action plan (with or without peak flow monitor) provided prior to discharge by the respiratory nurse specialist.
- Patients should be advised to see their GP or practice asthma nurse within 1 week of discharge.
- They should be referred to the hospital asthma clinic by letter to the respiratory consultants.
- Patients should be on oral prednisolone for 7 days or until recovery.
- Inhaled steroid therapy should be commenced with appropriate device selection depending on inhaler technique.