MANAGEMENT OF ACUTE EXACERBATION OF COPD

CLINICAL ASSESSMENT

Symptoms & Signs:

- Worsening dyspnoea
- Worsening cough
- Increase in sputum volume and purulence
- Increase wheeze and chest tightness
- Tachypnoea
- Prolonged expiratory phase, pursed lip breathing

Indicators of Severe Exacerbation:

- Tachypnoea (RR>30)
- Central cyanosis
- Unable to complete sentences
- Use of accessory respiratory muscles (sternomastoid and abdominal) at rest
- Signs of Type II Respiratory failure (exhaustion, drowsiness, confusion, cyanosis, bounding pulse, flapping tremor).
- **Decompensated respiratory acidosis graded by pH is the best predictor of mortality**. Patients with pH < 7.30 have a 50% risk of failing standard medical therapy.
- Greater than 1 organ failure

Baseline factors associated with a poor outcome:

- Housebound
- Low body mass index
- FEV1 < 33% predicted
- Signs of cor pulmonale (peripheral oedema, raised JVP)
- Qualifies for long term oxygen therapy (>16 hrs per day delivered via a concentrator)
- Other medical co-morbidities

Investigations

- Oxygen saturation
- ABG with inspired oxygen recorded for all patients with saturations of 92% or below
- ECG (cardiac co-morbidity is common, signs of RV strain or P pulmonale suggest severe disease with underlying co-pulmonale)
- FBC + U&Es + Albumin

- CRP (WCC is often normal even in bacterial infective exacerbations. A raised CRP + change in sputum characteristics is highly suggestive of bacterial infection)
- Sputum MC+S
- Blood cultures if pyrexial or pneumonia suspected.
- CXR (most often will show hyperexpansion. Focal consolidation changes the diagnosis to pneumonia in a patient with COPD and requires a different anti microbial approach – see community acquire pneumonia guideline –see separate guideline.

Differential Diagnosis:

- Pneumonia (consolidation on CXR)
- Acute exacerbation of asthma – asthma and COPD are differentiated on clinical history (age of onset, variability, atopy, smoking history)
- Pneumothorax – pneumothorax in a patient with underlying COPD is referred to as secondary and is accompanied by significant mortality. The threshold for chest drain insertion is lower than in primary pneumothorax – see separate guideline
- Pulmonary embolism
- Pulmonary oedema (clammy patient, chest pain, cardiac history, abnormal ECG, raised JVP, bilateral lung crackles, plethoric bilateral changes on CXR)
- Collapsed lobe/lung (e.g. secondary to proximal bronchial obstruction)
- Pleural effusion
- Drug induced deterioration in respiratory function- review medications for sedatives and beta-blockers

IMMEDIATE MANAGEMENT

Oxygen

- Target saturation to be prescribed on the treatment sheet. Patients with COPD should have target saturations of 88-92% until a blood gas has been performed (if this shows type I failure then the target saturation should be changed to 94-98%)
- Choose an appropriate device and flow rate to achieve the target saturations then titrate while continuously monitoring the saturations until in target range (see emergency oxygen guideline).

Bronchodilators

- Salbutamol 5mg via air driven nebulizer 4 hrly
- Ipratropium bromide (500 mcg) via air driven nebulizers 6 hrly in all severe cases
- If O_2 therapy required should be given simultaneously by nasal specs

Corticosteroids

- Prednisolone 30mg orally daily for 7 days
- Hydrocortisone is only required in patients where the steroids cannot be administered via the oral route

Antibiotics

- Increased sputum purulence and volume, often accompanied by a raised CRP suggest a bacterial exacerbation requiring antibiotics.
- Check previous microbiology results for drug resistant organisms.
- Streptococcus pneumoniae and H.Influenzae are the commonest organisms identified and are generally sensitive to Amoxicillin 500mg tds. Doxycycline is a good alternative in penicillin allergic patients.
- Moraxella cattarhalis is resistant to penicillin but sensitive to co-amoxiclav..
- If pseudomonas has been isolated previously and the exacerbation is severe, phone microbiology for advice (ciprofloxacin or tazosin may be required).
- THE TREATMENT OF EXACERBATIONS OF COPD AND COMMUNITY AQUIRED PNEUMONIA IS DIFFERENT. MOST PATIENTS WITH COPD DON'T NEED INTRAVENOUS CANNULAE TO DELIVER STEROID OR ANTIBIOTIC TREATMENT

Fluid management

- Patients with severe exacerbations are often exhausted and dehydrated. Intravenous fluids may be indicated where the patient is unable to maintain adequate oral hydration.
- Patients with decompensated co-pulmonale may require intravenous diuretic therapy

Intravenous bronchodilators including theophyllines

- There is very little evidence for the use of intravenous bronchodilators which are associated with potentially severe toxic effects. These drugs should only be used after consultation with a Consultant and should not delay more effective treatment including non-invasive ventilation.

Mechanical Ventilation

- Patients with severe cardio-respiratory instability must be considered for intubation and ventilation and the critical care team involved at the earliest opportunity. Treatment ceilings and patients wishes also need to taken into account.
- NIV must be considered in all patients with persistent respiratory acidosis ($pH<7.35$ and $pCO_2>6$) after 1 hour of intensive medical therapy including optimisation of oxygen therapy. The treatment plan in relation to NIV must be documented in the notes in all such patients.
- Ceiling of treatment and resuscitation status must be documented by SPR or Consultant prior to starting NIV (refer to Respiratory failure guidelines or the NIV care pathway for guidance)

Physiotherapy

- Where possible sit the patient in an upright position or possibly on the side of the bed leaning on a bedside table.
- Involve the chest physios at an early stage if you suspect sputum retention (rattly chest, weak cough, sudden fluctuations in breathlessness and saturations).

SUBSEQUENT MANAGEMENT

If improving:

- Continue with antibiotics. For 5-7 days. Where sputum colour does not improve reculture.
- Optimise and reestablish inhaler therapy as soon as wheeze starts to improve.
- Check inhaler technique - an inhaler used properly is as effective as nebulised therapy.
- Continue prednisolone at same dose for 7 days before stopping or returning to maintenance dose.
- If $pO_2 < 7.3$ on air, consider discharge with a temporary oxygen prescription. All such patients must be given an oxygen information leaflet and reassessed at 6 weeks (complete oxygen assessment request). In the majority of cases oxygen will be able to be withdrawn at this stage. NB. Patients discharged home with oxygen for end of life care do not need reassessment – please indicate this on the oxygen assessment request.

MONITORING

- Subjective improvement in dyspnoea and work of breathing
- Respiratory rate
- Oxygen saturations must be recored at least 4hrly in patients receiving oxygen therapy
- ABGs should be used to monitor recovery of patient with respiratory failure who are hypercapnic or acidotic until they are stable
- Sputum volume and colour
- NB – PEFR monitoring is unhelpful in COPD (unlike in asthma)

DISCHARGE POLICY

The Trust has a well developed early discharge scheme for patients with COPD

Contact early discharge team for assessment of home care if:

- No signs of severe exacerbation
- There is no consolidation on CXR
- ABG shows pH>7.35 and pO_2 >7

- Establish optimal maintenance therapy taking into account exacerbation frequency and FEV1 (see BTS guidelines) and check inhaler technique
- Provide smoking cessation information leaflet for current smokers and offer referral to smoking cessation service
- Check BMI and spirometry pre discharge
- Confirm influenza vaccination plans
- If still hypoxic $pO_2 < 7.3$ when clinically stable, arrange interim LTOT on discharge, pending formal assessment when stable (see above)
- Consider all patients requiring admission for a course of pulmonary rehabilitation and complete the referral form where appropriate.

-
- All patients requiring admission should be followed up in the respiratory nurse clinic in 4-6 weeks
- All patients requiring NIV must be offered a follow up with a respiratory physician.
- If CXR suggests consolidation, a 6 week f/u appointment must be offered to ensue radiological resolution.