Adult Chronic Lung Disease - COPD and Bronchiectasis

COPD - CASE DEFINITION

Airflow obstruction which is not fully reversible.

1. FEV1/FVC is < 70%

2. FEV1 < 80% predicted value **and**

3. FEV1 checked before and 15 minutes after 4 puffs of salbutamol with spacer improves by less than 12%.

SCREENING

Every 2 years ask / note:

1. **cough/sputum** production on most days for > 1 year.
2. ≥ 3 episodes of **chest infection** in past year.
3. unexplained **shortness of breath**.

Spirometry for anyone answering **YES** to any of the above

PRINCIPLES OF MANAGEMENT

- **Smoking cessation is the only proven strategy to stop further deterioration of the lungs.**
- Spirometry is vital for diagnosis.
- Pulmonary Rehabilitation (Physiotherapy) improves symptom control and lung function
- Stepwise introduction of inhalers (see over)
- Long-term oxygen therapy (>15 hr/day) prolongs life in patients with significant hypoxaemia.
- Prompt treatment of exacerbations (see below)
- Long term oral steroids is NOT recommended

BASELINE INVESTIGATIONS

- Spirometry, before and 15 minutes after salbutamol 4 puffs via spacer (within 2 months of diagnosis).
- Document maximum distance patient can walk on the flat without stopping.
- BMI: If high (> 25) see HEALTHY LIVING. If low (< 20) refer/discuss with Dietician.
- Oxygen saturation on room air, if O_2 saturation < 94% on room air, arrange arterial blood gas. Arrange echocardiogram if PaO_2 55 - 60 mmHg on room air. To consider home oxygen.
- Check puffer and spacer technique.
- FBC, ECG and CXR
- Explore social and emotional well-being: depression and anxiety.

For people with moderate-severe airflow obstruction AND < 40 years OR < 10 pack year smoking history or large volume sputum, consider α 1 antitrypsin deficiency or bronchiectasis.

Therefore check:

- α 1 antitrypsin genotype and level.
- Consider HRCT to investigate for bronchiectasis

SEVERITY FEV1 predicts symptom severity and mortality

STAGE	% FEV1	IMPACT
Mild	60 - 80%	Reduced activity
Moderate	40 - 59%	If FEV1 < 50%, acute episodes may impact daily life / prognosis
Severe	< 40%	Extremely impaired quality of life, acute episodes life- threatening

THERAPEUTIC PROTOCOLS

NON-PHARMACOLOGICAL – for ALL

- ENCOURAGE SMOKING CESSATION.
- Influenza and pneumococcal vaccination,
- see HEALTHY LIVING.
- Consider referral for Pulmonary Rehabilitation Plan (Graded exercise program and breathing exercises

INHALERS – DEPENDING ON SEVERITY

CLD / ASTHMA COEXISTING

i.e. FEV1 improves by >12% with salbutamol (but not fully reversible). Do not use LABA without inhaled corticosteroid.

COPD ALONE:

- MILD: **Salbutamol** as needed via spacer.
- MODERATE: as above and **tiotropium** 18mcg (Spiriva) daily via handihaler. If persistent symptoms add LABA (long acting beta agonist). This involves changing device to **umeclidnium and vilanterol** 62.5/25mcg (Anoro Ellipta).
- SEVERE: as above and consider adding ICS, **fluticasone** 500mcg bd (if ≥2 exacerbations in past year AND FEV1 <50% predicted). Another option is tiotropium and Seretide together for patients in this category. NOTE: ICS increases risk of pneumonia.
- Low dose theophylline is rarely useful.
- Ensure patient is not on 2 drugs from the same class (i.e. cease Spiriva if starting Anoro Ellipta)

ACUTE EXACERBATION MANAGEMENT

Definition: 2 out of 3 of: Increasing cough, purulence of sputum or SOB.

Management:

- BRONCHODILATORS: Increased ventolin frequency.
- ORAL STEROID: **prednisolone** 50mg od for 5 days .
- ANTIBIOTIC: ANTIBIOTICS (only if severe) **amoxycillin** 500 mg tds or **doxycycline** 100mg od for 5 days
- HOSPITALISATION: severe SOB, hypoxia, prior intubation etc.
- Refer to Australian Therapeutic Guidelines – Management of Community Acquired Pneumonia

EXACERBATION PREVENTION

- Smoking cessation and tiotropium/LABA are important.
- Consider ICS (i.e. Seretide) if ≥2 exacerbations in past year AND FEV1 <50% predicted.
- If increased frequency of exacerbations, repeat baseline assessment and consider alternative diagnoses (e.g. bronchiectasis).

Adult Chronic Lung Disease - COPD and Bronchiectasis

BRONCHIECTASIS – CASE DEFINITION

Permanent dilation of the distal airways. Diagnosis requires CT (ideally HRCT chest).

Key symptom is chronic daily productive cough. Often with SOB and frequent chest infections.

May coexist with COPD/Asthma

PRINCIPLES OF MANAGEMENT

- **Smoking cessation is important.**
- Keep the airways as clear of secretions as possible with chest physiotherapy/sputum clearance which improves symptom control and lung function.
- Postural drainage is no longer preferred due to increased reflux/aspiration.
- Prompt treatment of exacerbations is vital (see below). Duration of antibiotics during an exacerbation is longer than other diseases, generally 14 days.
- CT chest is essential for diagnosis.
- Generally there is less of a role for inhalers than COPD/asthma (useful in selected cases).
- Long-term oxygen therapy (>15 hr/day) may be useful in patients with significant hypoxaemia.

BASELINE INVESTIGATIONS:

- As above for COPD plus
- Organise high resolution CT scan of the chest.
- If bronchiectasis confirmed (on CT), organise immunoglobulin levels, IgG subclasses and sputum x 3 for AFB/mycobacterial culture.
- If age <40 organise CF (cystic fibrosis) genotype and α 1 antitrypsin genotype and level.

THERAPEUTIC PROTOCOLS

NON-PHARMACOLOGICAL – for ALL

- ENCOURAGE SMOKING CESSATION.
- Sputum clearance education with physiotherapy and self directed at home.
- Consider Pulmonary Rehabilitation Plan
- Ensure influenza and pneumococcal vaccines are up to date (see HEALTHY LIVING).

INHALERS

Generally less useful in bronchiectasis. If significant reversible airflow obstruction on spirometry (i.e. FEV1 improves by >12% with salbutamol) threat as asthma (with ICS and bronchodilators). If suspected component of COPD treat as above.

ACUTE EXACERBATION

Definition

- Increasing volume and/or purulence of sputum.
- With or without increasing SOB and or fever

Management:

MICROBIOLOGY: Collect sputum MC+S (consider AFB testing if not previously done)

SPUTUM CLEARANCE: Refer to physio/encourage patient to perform exercises at home/on the ward if inpatient.

ANTIBIOTICS:

- Directed by prior micro results. Check recent sputum MC+S results.
- MILD exacerbation empirical therapy: PO **amoxycillin** 500 mg tds or **doxycyclin** 100mg od for 14 days.
- MODERATE to SEVERE exacerbation: IV therapy is preferred, seek specialist advice.
- Pseudomonas: If current or recently cultured AND current exacerbation, treat with **ciprofloxacin** 750mg bd for 14 days if outpatient.

  Note: this is the only oral agent that remains effective against pseudomonas, it should be reserved for patients with no other alternative (i.e. IV therapy if inpatient) as resistance is likely to develop.
- In clinically stable patients it is NOT appropriate to treat colonising organisms.

BRONCHODILATORS: Increased frequency of Salbutamol.

HOSPITALISATION: If severe SOB, hypoxia, prior intubation, need for IV therapy etc.

Note: oral steroids are generally avoided in bronchiectasis exacerbations unless significant COPD/asthma component.

EXACERBATION PREVENTION

- Smoking cessation and sputum clearance exercises are important.
- If ≥2 exacerbations in a 12 month period, regular azithromycin or doxycycline has been shown to reduce exacerbation frequency (refer to physician team for consideration).
- Consider ICS (i.e. fluticasone) only in selected cases with comorbid disease (COPD/asthma as above).

HAEMOPTYSIS

Haemoptysis is common in patients with bronchiectasis. Minor haemoptysis should be treated with antibiotics as above. If possible stop drugs that may promote bleeding. If recurrent/persistent refer for specialist opinion.

Massive haemoptysis (>250mL/24h) can occur and is life threatening. Send immediately to ED. Management should be in conjunction with a respiratory physician in Perth.

Adult Chronic Lung Disease - COPD and Bronchiectasis

FOLLOW UP – BOTH COPD and BRONCHIECTASIS

INITIALLY

Review 2 weeks after any medication change and assess symptom control, PEFR and inhaler technique.

LONG TERM

2 yearly spirometry for all levels of severity.

Mild and moderate:

Review every 12 months.

Assess:

- **smoking** status - encourage patient to **quit.**
- progress of Pulmonary Rehab Program/chest physiotherapy.
- adequacy of **symptom control** (SOB, exercise tolerance, exacerbation frequency).
- **inhaler technique.**

Check:

- BMI.

Severe:

Review every 6 months.

Assess: as above.

Check: as above + oxygen saturation and FBC.

Women of childbearing age

- The key to good management is optimisation of lung function.
- The benefits of inhaled medications usually outweigh the risks while pregnant or breastfeeding. Discuss with Doctor before ceasing medications.
- Pregnancy should be avoided in women with severe air flow obstruction.

Refer/ Discuss

REGIONAL PHYSICIAN:

- Age of onset < 40 years.
- Assessment for long term oxygen therapy.
- If when stable, pO_2 < 60mmHg OR pCO_2 > 50mmHg.
- Coexistent right heart failure.
- Hb > 180g/L and Hct > 55% on 2 occasions after excluding dehydration.
- Frequent exacerbations (≥ 2 year) or unable to wean oral steroids after acute exacerbation.
- Recurrent or massive haemoptysis (may be life threatening in bronchiectasis)
- Resistant or unusual organisms in sputum
- If oxygen saturation <95% on room air and planning a flight.
- Lack of response to therapies suggested in guideline.
- Severe disease to assess suitability for lung volume reduction surgery, lobectomy or lung transplantation.

PALLIATIVE CARE:

End stage CLD particularly if difficult to manage symptoms.

PAEDIATRIC CARE:

For patients under 16 years of age please see RESPIRATORY DISEASE IN CHILDREN. protocol and or consider referral or discussion with Paediatrician.