

CHRONIC LUNG DISEASE - COPD AND BRONCHIECTASIS

Case Definition

Cough and sputum production most days for > 1 year
AND airflow obstruction which is not fully reversible i.e.

- 1. FEV1: FVC is < 70%** predicted value **and**
- 2. FEV1 < 80%** predicted value **and**
- 3. FEV1 checked before and 15 minutes after 2 puffs of salbutamol with spacer improves by less than 12%.**

where:

FEV1 = forced expiratory volume in 1 second and

FVC = forced vital capacity.

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 questions **and** for anyone presenting to clinic with any of the above problems at any other time.

Principles of Management

- Smoking cessation is the only proven strategy to stop further deterioration of the lungs.**
- Spirometry is essential for diagnosis.
- PEFR (peak expiratory flow rate) is useful for monitoring.
- Salbutamol may give symptom relief.
- Long term use of oral prednisolone is NOT recommended.
- Long-term oxygen therapy (>15 hr/day) prolongs life in patients with significant hypoxaemia.
- Prompt treatment of exacerbations.

SEVERITY

The % predicted FEV1 correlates with disability and risk of premature death:

STAGE	% PREDICTED 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 are now life threatening

BASELINE INVESTIGATIONS:

- Spirometry, before and 15 minutes after salbutamol 2 puffs via spacer (within 2 months of conditional diagnosis).
- Document maximum distance patient can walk on the flat without stopping.
- BMI.
- Oxygen saturation on room air:
 - if O₂ saturation < 94% on room air, do/arrange arterial blood gas.
 - arrange echocardiogram if PaO₂ 55 - 60 mmHg on room air.
- Check puffer and spacer technique.
- FBE.
- ECG.
- CXR.

For people with moderate-severe airflow obstruction AND < 40 years OR < 10 pack. year smoking history, consider α1 antitrypsin deficiency or bronchiectasis.

Therefore check:

- α 1 antitrypsin genotype and level.
- if CXR shows **no** evidence of bronchiectasis, organise high resolution CT scan of chest.
- If bronchiectasis confirmed (on CT or CXR), organise immunoglobulin levels, IgG subclasses, CF (cystic fibrosis) genotype and sputum x 3 for AFB/mycobacterial culture.

Therapeutic Protocols

- ENCOURAGE SMOKING CESSATION.**
- Ensure **influenza** and **pneumococcal vaccines** are up to date (see [HEALTHY LIVING](#)).

DISEASE SEVERITY:

Mild: Salbutamol as needed.

Moderate: As above and **tiotropium** 18mcg daily.

Severe: As above and **fluticasone** 500mcg bd.

CLD / ASTHMA COEXISTING:

i.e. FEV1 improves by >12% with salbutamol.

Either **add** or **replace** fluticasone with **Salmeterol + fluticasone**: MDI (25mcg/250mcg) 2 puffs bd or accuhaler (50mcg/500mcg) 1 bd.

≥ 3 exacerbations/infective episodes per year:
With CLD of any severity, add **fluticasone** 500mcg bd.

N.B. Theophylline: May be useful if patient unable to use inhaled medications. Requires monitoring and caution regarding interactions with other medications.

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Follow-up

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 and encourage patient to **quit**
- encourage exercise and **regular activity**
- 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 FBE.

Women of Child Bearing Age

- The key to good management is optimisation of lung function.
- **No** inhaled medications are contraindicated in pregnancy or breastfeeding.
- Pregnancy should be avoided in women with severe air flow obstruction.

Refer / Discuss

REGIONAL PHYSICIAN:

- If when stable, $pO_2 < 60\text{mmHg}$ OR $pCO_2 > 50\text{mmHg}$.
- Coexistent right heart failure.
- Hb $> 180\text{g/L}$ and Hct $> 55\%$ on 2 occasions after excluding dehydration.
- Unable to wean oral steroids after acute exacerbation.
- If planning a flight.
- Lack of response to therapies suggested in guideline.
- Severe disease to assess for appropriateness for lung volume reduction surgery or lung transplantation.

PALLIATIVE CARE: Severe CLD.

PHYSIOTHERAPIST: If severe CLD for pulmonary rehabilitation, home assessment and assessment of need for exercise related supplemental oxygen.

ACUTE EXACERBATIONS

Defined as person having 2 out of 3 of:

- increasing cough.
- increasing purulence of sputum.
- increasing SOB / medication requirements.

Management:

1. ANTIBIOTIC: **amoxicillin** 500 mg tds for 5 days.
2. STEROIDS: **prednisolone** 50mg daily for 5 days (unless confirmed bronchiectasis).
3. SPUTUM COLLECTION for MC&S if no improvement after 72 hours of amoxicillin.
4. ADMISSION if severe CLD or prior intubation / non-invasive ventilation.

Normal Spirometry Values

Table Key:

FEV1 = ■ (litres) **FVC (L)** = ■ (litres)

ABORIGINAL WOMEN

Age yrs → Height cm ↓	20	30	40	50	60	70
150	2.13 2.18	1.91 1.99	1.70 1.79	1.49 1.59	1.27 1.40	1.06 1.20
160	2.54 2.71	2.33 2.52	2.12 2.32	1.90 2.13	1.69 1.93	1.48 1.73
170	2.85 3.25	2.75 3.05	2.53 2.85	2.32 2.66	2.11 2.46	1.89 2.27
180	3.27 3.78	3.16 3.58	2.95 3.38	2.74 3.19	2.53 2.99	2.31 2.80

ABORIGINAL MEN

Age yrs → Height cm ↓	20	30	40	50	60	70
160	2.77 2.95	2.56 2.76	2.35 2.56	2.13 2.36	1.92 2.17	1.71 1.97
170	3.19 3.48	2.98 3.29	2.77 3.09	2.55 2.90	2.34 2.70	2.13 2.50
180	3.61 4.02	3.40 3.82	3.18 3.62	2.79 3.43	2.76 3.23	2.54 3.04
190	4.03 4.55	3.81 4.35	3.60 4.16	3.39 3.96	3.17 3.76	2.96 3.57

For non Aboriginal people x 1.15