Chronic Obstructive Airway Disease

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COPD Management

• Outline of topics
  • Quiz
  • Case Vignette
  • Some facts on COPD
  • Update on Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017 Report
  • Pulmonary Rehabilitation
  • COPD action plan
Quiz

1. About 1/3\textsuperscript{rd} of adults aged over 75 years old has COPD (True/False/Maybe)

2. Smoking cessation is the ONLY proven strategy in influencing the natural progression of COPD (True/False/Maybe)

3. Inhaled corticosteroid should be a part of COPD maintenance therapy (True/False/Maybe)

4. Pulmonary Rehabilitation is shown in study to improve quality of life (True/False/Maybe)

5. Provision of COPD action plan reduces emergency visits and hospital admission (True/False/Maybe)
Case Vignette

70 years old gentleman:

- Current smoker with 30-40 pack years history
- Recent spirometry- FEV1/FVC 0.5, FEV1 30% predicted with no significant reversibility
- No personal or family history of atopy
- Ex tolerance- walks 50 meters on the flat (mMRC breathlessness scale= 3)
- Symbicort 200/6 2 puffs bd, Spiriva 18mcg od
- Presented with 3rd episode of infective exacerbation to hospital this year including 1 episode of pneumonia

mMRC: Modified Medical Research Council
COPD Definition

- Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable and treatable disease that is characterized by:
  - Persistent respiratory symptoms
  - Airflow limitation that is due to airway and/or alveolar abnormalities.
Airflow limitation/obstruction is defined as mild/moderate/severe/very severe based on FEV₁ (% of predicted) as follows:

- **GOLD 1**: $\geq 80$
- **GOLD 2**: 50–79
- **GOLD 3**: 30–49
- **GOLD 4**: $< 30$

Severity of airflow limitation is categorised as mild/moderate/severe/very severe based on moderate/severe exacerbation history and symptoms as follows:

- Moderate/severe exacerbation history:
  - $\geq 2$
  - or
  - $\geq 1$ leading to hospital admission
- 0 or 1 (not leading to hospital admission)

**Symptoms**:

- mMRC $0–1$
- mMRC $\geq 2$
- CAT $< 10$
- CAT $\geq 10$

**FEV₁** = forced expiratory volume in the first second; **FVC** = forced vital capacity; **mMRC** = modified Medical Research Council; **CAT** = COPD assessment test.
## Modified Medical Research Council scale (MMRC)

<table>
<thead>
<tr>
<th>Description of Breathlessness</th>
<th>Grade</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>I only get breathless with strenous exercise</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>I get short of breath when hurrying on level ground or walking up a slight hill</td>
<td>1</td>
<td>Slight</td>
</tr>
<tr>
<td>On level ground, I walk slower than people of the same age because of breathlessness, or have to stop for breath when walking at my own pace.</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>I stop for breath after walking about 100 yards or after a few minutes on level ground</td>
<td>3</td>
<td>Severe</td>
</tr>
<tr>
<td>I am too breathless to leave the house or I am breathless when dressing.</td>
<td>4</td>
<td>Very severe</td>
</tr>
</tbody>
</table>
COPD Assessment Test (CAT)

**CAT™ ASSESSMENT**

*For each item below, place a mark (x) in the box that best describes you currently. Be sure to only select one response for each question.*

**EXAMPLE:** I am very happy 0 1 2 3 4 5 I am very sad

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>I never cough</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>I have no phlegm (mucus) in my chest at all</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>My chest does not feel tight at all</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>When I walk up a hill or one flight of stairs I am not breathless</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>I am not limited doing any activities at home</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>I am confident leaving my home despite my lung condition</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>I sleep soundly</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>I have lots of energy</td>
<td>0 1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL SCORE:**

Reference: Jones et al. ERJ 2009; 34 (3); 648-54.

**FIGURE 2.3**
Facts on COPD

• Prevalence in Australia:
  • 7.5% in people aged 40 years and older, increasing to 29% in those aged 75 years and older.

• 2nd leading cause for hospitalisation.

• 5th leading cause of death in Australia (in 2014)

• Local statistics (Armadale Hospital)
  • In the FY to date, 287 admissions with COPD as DRG (5628 admissions in total) or about 5%.
  • The 287 admissions were made up of 218 patients.
  • 37 patients had more than one admission.
  • Length of stay per COPD admission (both complicated and uncomplicated) = 4.68 days
GOLD 2017 update

• 80% of COPD are due to smoking.

• Smoking cessation is the only proven strategy in influencing the natural progression of COPD
  • Nicotine replacement therapies
  • Pharmacological options e.g. Varenicline, Bupropion
  • Long term abstinence rate of up to 25% can be achieved
  • E-cigarettes is controversial and further studies need to be undertaken. Should not be actively promoted at this stage.
A man has died from vaping with an expert warning of its dangers

A patient who developed lung disease after vaping has died in a “world first”, as fears grow about the safety of e-cigarettes.

**LUNG ILLNESSES**
The Centre for Disease Control and Prevention (CDC) says nearly 200 people have contracted severe respiratory illnesses after vaping.
• Pharmacotherapy
  • **NO** conclusive clinical evidence that any existing medications modify the long-term decline in lung function.

• Bronchodilators
  • Reduced symptoms, reduce the frequency and severity of exacerbations, improve exercise tolerance.
  • SABA, SAMA
  • LABA, LAMA
  • Methylxanthines e.g. Theophylline, Roflumilast
• Inhaled corticosteroids
  
• Results:  
No consistent long-term benefit in the rate of decline in breathing capacity. Death rates were unchanged. Inhaled steroids were beneficial in slowing down the rate of decline in quality of life and reducing the frequency of exacerbations. Inhaled steroids increased the risk of side effects including thrush (candida) infection in the mouth and hoarseness, and the rate of pneumonia.
  
• Authors' conclusions
Patients and clinicians should balance the potential benefits of inhaled steroids in COPD (reduced rate of exacerbations, reduced rate of decline in quality of life and possibly reduced rate of decline in FEV₁) against the potential side effects (oropharyngeal candidiasis and hoarseness, and risk of pneumonia).
### ‘ABCD’ assessment tool

<table>
<thead>
<tr>
<th>Risk (Exac. History)</th>
<th>C (High Risk, Low Symptoms)</th>
<th>D (High Risk, More Symptoms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥2 or 1 hospital admission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1 and without hospital admission</td>
<td>A (Low Risk, Low Symptoms)</td>
<td>B (Low Risk, More Symptoms)</td>
</tr>
</tbody>
</table>

#### Symptoms

<table>
<thead>
<tr>
<th>mMRC 0-1</th>
<th>CAT &lt;10</th>
</tr>
</thead>
<tbody>
<tr>
<td>mMRC 2-4</td>
<td>CAT ≥10</td>
</tr>
</tbody>
</table>
Pharmacologic Treatment Algorithms by GOLD Grade

**Group C**
- LAMA + LABA
- LABA + ICS
  - Further Exacerbation(s)
  - LAMA

**Group D**
- Consider Roflumilast if FEV₁ < 50% pred. and patient has chronic bronchitis
- Further Exacerbation(s)
  - Persistent Symptoms / Further Exacerbation(s)
  - LAMA + LABA + ICS
  - LAMA + LABA
  - LAMA + ICS

**Group A**
- Continue, stop or try alternative class of bronchodilator
- Evaluate effect
- A Bronchodilator

**Group B**
- LAMA + LABA
  - Persistent symptoms
  - A Long-Acting Bronchodilator

**Symptoms**
- mMRC 0 – 1
  - CAT < 10
- mMRC ≥ 2
  - CAT ≥ 10

Highlighted arrows & boxes equals preferred treatment pathways. In patients with a major discrepancy between the perceived level of symptoms and severity of airflow limitation, further evaluation is warranted.
There is no patient group where ICS is the preferred starting treatment option in COPD.
70 years old gentleman:

- Current smoker with 30-40 pack years history
- Recent spirometry - FEV1/FVC 0.5, FEV1 30% predicted with no significant reversibility
- No personal or family history of atopy
- Ex tolerance - walks 50 meters on the flat (mMRC breathlessness scale=3)
- Symbicort 200/6 2 puffs bd, Spiriva 18mcg od

- Presented with 3rd episode of infective exacerbation to hospital this year including 1 episode of pneumonia
- Options include
  - Desescalating therapy from symbicort (LABA/ICS) and spiriva (LAMA) to LABA/LAMA combination i.e.
  - spiolto respimat 2/5/2.5mcg 2 puffs once daily (tiotropium/olodaterol) or
  - Brimica Genuair 340/12 (aclidinium/ eformoterol) one puff twice daily.
  - This is done in view of the recurrent infection and pneumonia.
  - Addition of azithromycin 500mg three times a week.
Pulmonary Rehabilitation

• Referring patients with COPD to pulmonary rehabilitation program can have significant benefits on important patient outcomes
  • Reduces symptoms of breathlessness and fatigue
  • Increases exercise capacity
  • Reduces anxiety and depression
  • Improves quality of life
  • Reduces hospital admission
• Criteria for referral to a pulmonary rehabilitation program
  • Inclusions:
    • Clinical diagnosis of chronic obstructive pulmonary disease by spirometry
    • Optimised medical management
    • Breathlessness on physical activity, especially if the patient walks slower than people of the same age on the level because of shortness of breath
  • Exclusions:
    • Comorbidities that compromise a patient’s safety or ability to participate in exercise testing or training e.g. unstable angina, severe cognitive impairment, severe neurological deficit
    • No motivation to attend
• Evidence based intervention for patients with chronic lung disease.

• Includes:
  • Exercise training, nutritional counselling, patient education on disease management, energy conserving techniques, breathing techniques, psychological counselling and group support
  • Attendance twice a week for eight weeks
  • Exercise sessions typically last for 60 to 90 minutes
Figure. An example of a pulmonary rehabilitation program session.

Step 1. Flexibility exercises (e.g., trunk rotation, side flexion) for 5 to 10 minutes

Step 2. Lower limb endurance training (e.g., walking) for 20 minutes

Step 3. Upper limb strengthening exercises (e.g., bicep curls, arm raises) for 10 minutes

Step 4. Lower limb endurance training (e.g., cycling) for 20 minutes

Step 5. Lower limb strengthening exercises (e.g., sit-to-stand, squats) for 10 minutes

Step 6. Cool-down exercises such as stretching for 5 minutes.
COPD action plan

“A Cochrane review conducted in November 2015 found that People with COPD who are given an action plan have fewer emergency department visits and hospital stays related to breathing problems over a year. We calculated that for every 19 people given an action plan, one person would avoid a hospital stay for an exacerbation.”

COPD ACTION PLAN
(Chronic Obstructive Pulmonary Disease)

Date: ____________________________ (Ask your doctor to review each year with your GPMP)

**Feeling your usual self (easy to breathe)**
- Feeling your usual self
- Sleeping well
- No headaches, not dizzy
- Have lots of energy
- Usual amount of phlegm

**ACTION:** Continue taking your usual medicines as listed below.

Annual Influenza Immunisation - Date: ____________________________
Last Pneumococcal Immunisation - Date: ____________________________

<table>
<thead>
<tr>
<th>My usual medicines</th>
<th>Colour of device</th>
<th>How many puffs or tablets</th>
<th>How often</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen</td>
<td>Yes/No</td>
<td>Setting or inhaled</td>
<td>hrs/day</td>
</tr>
</tbody>
</table>

**Feeling a little bit sick (harder to breathe)**
- Harder to breathe than usual
- Fever
- More coughing
- More phlegm or thicker than usual
- A change of colour of phlegm
- Loss of appetite
- Not sleeping well
- Not much energy
- Taking more reliever medicine

**ACTION:** Follow plan below for extra medicines. Plan your day, get rest, relax, use breathing techniques, huff and cough to clear phlegm as required. Consider contacting your Health Worker/Nurse or Doctor.

<table>
<thead>
<tr>
<th>My extra medicine</th>
<th>Colour of device</th>
<th>How many puffs or tablets</th>
<th>How often</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Strength</th>
<th>Tablets each day</th>
<th>No. of days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibiotics*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* GP to fill in if prescribed. Identify if reducing schedule is required.

**Not Good (trouble breathing and wheezing)**
- Very short of breath at rest
- Drowsy
- High fever
- Chest Pain
- Confused, slurring of speech
- Afraid/scared
- Blood in your phlegm
- Difficulty sleeping/woken easily
- Swollen Ankles

**ACTION:** Phone an Ambulance 000

**CALL AMBULANCE 000 IMMEDIATELY**
Show them this plan and say you have a flare up of your COPD

**CAUTION:** Ambulance/Paramedics: CO, Retainer

<table>
<thead>
<tr>
<th>YES - Please keep SpO2 88-92%</th>
<th>N/A</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Patient Name:</th>
<th>Date of Birth:</th>
<th>GP Name:</th>
<th>GP Phone:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A/H:</td>
<td></td>
</tr>
</tbody>
</table>

Health Worker Name: ____________________________
Health Worker Phone: ____________________________

Building Collaborative Care with Community Services
Acknowledgments

• GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE (GOLD)
• Dr Hua Kiat Chen- Respiratory and General Physician, Armadale Health Service

Thank You