COPD: challenges, concepts and care

Pollution

Smoking

AAT Deficiency

Asthma

Age- 40+

DEB MACFIE RNBNSC MRCNA
Objectives

- Discuss diagnosing COPD (NICE/GOLD)
- Discuss GOLD risk stratification tools.
- Review local formularies.
- Risk for COPD.
- Role of alpha 1 anti-trypsin.
- Differential Diagnosis.
- Primary Care management of COPD.
- QOF changes.
Diagnosing COPD

- NICE, SIGN, GOLD
- Family history, spirometry, chest radiology
- Risk factors: smoking, air pollution, family history (alpha 1), pre-existing disease, high risk occupations, passive smoking?
Quality Spirometry

- Who, what, how and when?
- How many surgeries have access to a spirometer?
- How many practice staff are ARTP competent in performing and interpretation?
- Has the spirometry test met the BTS standards?
- Patients on long term antibiotics and steroids?
- Other contraindications?
### Assess severity of airflow obstruction using reduction in FEV1

<table>
<thead>
<tr>
<th>Post-bronchodilator FEV1/FVC</th>
<th>FEV1, % predicted</th>
<th>Post-bronchodilator</th>
<th>ATV/ERS 2004</th>
<th>GOLD 2008</th>
<th>NICE clinical guideline 101 (2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.7</td>
<td>80%</td>
<td>Mild</td>
<td>Stage 1 (mild)</td>
<td>Stage 1 (mild)*</td>
<td></td>
</tr>
<tr>
<td>&lt; 0.7</td>
<td>50–79%</td>
<td>Mild</td>
<td>Moderate</td>
<td>Stage 2 (moderate)</td>
<td></td>
</tr>
<tr>
<td>&lt; 0.7</td>
<td>30–49%</td>
<td>Moderate</td>
<td>Severe</td>
<td>Stage 3 (severe)</td>
<td></td>
</tr>
<tr>
<td>&lt; 0.7</td>
<td>&lt; 30%</td>
<td>Severe</td>
<td>Very severe</td>
<td>Stage 4 (very severe)**</td>
<td></td>
</tr>
</tbody>
</table>

* Symptoms should be present to diagnose COPD in people with mild airflow obstruction

** Or FEV1 < 50% with respiratory failure
Spirometrically confirmed diagnosis → Assessment of airflow limitation → Assessment of symptoms/risk of exacerbations

Post-bronchodilator FEV₁/FVC <0.7

<table>
<thead>
<tr>
<th>GOLD</th>
<th>FEV₁ (% of predicted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≥80</td>
</tr>
<tr>
<td>2</td>
<td>50–79</td>
</tr>
<tr>
<td>3</td>
<td>30–49</td>
</tr>
<tr>
<td>4</td>
<td>&lt;30</td>
</tr>
</tbody>
</table>

Moderate/severe exacerbation history

- ≥2 or ≥1 leading to hospital admission
- 0 or 1 (not leading to hospital admission)

Symptoms
- mMRC 0−1
- mMRC ≥2
- CAT <10
- CAT ≥10

FEV₁ = forced expiratory volume in the first second; FVC = forced vital capacity; mMRC = modified Medical Research Council; CAT = COPD assessment test.
## GOLD Classification (Risk Stratification)

### Exacerbations in the Prior Year

<table>
<thead>
<tr>
<th>FEWER</th>
<th>GROUP A</th>
<th>GROUP C</th>
<th>GROUP B</th>
<th>GROUP D</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2 outpatient</td>
<td>Bronchodilator (usually a short-acting beta agonist [SABA] or short-acting antimuscarinic antagonist [SAMA])</td>
<td>LAMA</td>
<td>Long-acting beta agonist (LABA) OR Long-acting antimuscarinic antagonist (LAMA)</td>
<td>LABA + LAMA</td>
</tr>
<tr>
<td>≥2 outpatient or ≥1 hospitalization</td>
<td></td>
<td>LAMA + LABA</td>
<td></td>
<td>LABA + LAMA + inhaled corticosteroid (ICS)</td>
</tr>
</tbody>
</table>

### Symptoms

- FEWER
- MORE*

*MORE*: ≥2 outpatient or ≥1 hospitalization
Risk Stratification

GOLD A, B, C and D

No longer necessary to add in ICS/LABA therapy unless high risk

Refer to local formularies and guidance.
## Ipswich and East Formulary

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>B</strong></td>
<td><strong>C</strong></td>
<td><strong>D</strong></td>
</tr>
<tr>
<td>SABA: Salbutamol</td>
<td>SABA Salbutamol MDI 100mcg LAMA Seebri Breezhaler</td>
<td>SABA Salbutamol MDI 100mcg LAMA Seebri Breezhaler</td>
<td>SABA Salbutamol MDI 100mcg LAMA Seebri Breezhaler</td>
</tr>
<tr>
<td>LAMA: Seebri Breezhaler</td>
<td>LAMA/LABA: Anoro Ellipta</td>
<td>LABA + ICS: Relvar Ellipta 92/22 or Fostair 100/6 OR ICS/LAMA/LABA: Trelegy or Trinmbow</td>
<td>Relvar Ellipta 92/22 mcg or Fostair 100/6 mcg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ICS/LAMA/LABA: Trelegy or Trinmbow</td>
</tr>
</tbody>
</table>
How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your well-being and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefits from treatment.

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

I never cough    0 1 2 3 4 5  I cough all the time
I have no phlegm (mucus) in my chest at all    0 1 2 3 4 5  My chest is completely full of phlegm (mucus)
My chest does not feel tight at all    0 1 2 3 4 5  My chest feels very tight
When I walk up a hill or one flight of stairs I am not breathless    0 1 2 3 4 5  When I walk up a hill or one flight of stairs I am very breathless
I am not limited doing any activities at home    0 1 2 3 4 5  I am very limited doing activities at home
I am confident leaving my home despite my lung condition    0 1 2 3 4 5  I am not at all confident leaving my home because of my lung condition
I sleep soundly    0 1 2 3 4 5  I do not sleep soundly because of my lung condition
I have lots of energy    0 1 2 3 4 5  I have no energy at all

Total score
<table>
<thead>
<tr>
<th><strong>MMRC</strong></th>
<th><strong>Equivalent MRC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade</strong></td>
<td><strong>Description of Breathlessness</strong></td>
</tr>
<tr>
<td><strong>Grade 0</strong></td>
<td>I only get breathless with strenuous exercise</td>
</tr>
<tr>
<td><strong>Grade 1</strong></td>
<td>I get short of breath when hurrying on level ground or walking up a slight hill</td>
</tr>
<tr>
<td><strong>Grade 2</strong></td>
<td>On level ground, I walk slower than people of the same age because of breathlessness, or I have to stop for breath when walking at my own pace on the level</td>
</tr>
<tr>
<td><strong>Grade 3</strong></td>
<td>I stop for breath after walking about 100 yards or after a few minutes on level ground</td>
</tr>
<tr>
<td><strong>Grade 4</strong></td>
<td>I am too breathless to leave the house or I am breathless when dressing</td>
</tr>
</tbody>
</table>
Risks for COPD

- Smoking.
- Long term exposure to pollutants.
- Occupational exposure (bakers, builders…candlestick makers). Exposure to carbon and charcoal based heating and heating fuels.
- Family history (alpha 1 antitrypsin), PIZZ (phenotype of COPD).
- History of lung disease: airways remodelling. (asthmatics more likely to develop COPD).
- Age
- DON'T FORGET LUNG CANCER. (1% of COPD patients develop lung cancer, 1.2 million patients have COPD that we know of!) 72% of lung cancer in the UK is caused by smoking. (Cancer research UK).
Risks for COPD

- **Modifiable risk factors**
  - smoking or exposure to environmental tobacco smoke (including in childhood)
  - poor nutrition
  - pneumonia or childhood respiratory infection.
  - In people with COPD, risk factors for poor health outcomes such as worsening symptoms, exacerbations (flare-ups) and increased risk of death include:
    - being underweight
    - physical inactivity
    - presence of comorbidities
    - cold weather.
Alpha-1-antitrypsin deficiency (AATD) significantly increases the risk of developing COPD, and testing of all COPD patients for AATD is recommended by the WHO, ERS and GOLD.

A study conducted in 2018 analysed all patients diagnosed with COPD from 550 UK OPCRD (optimum patient care database) general practices, including a subgroup of those diagnosed before the age of 60 years.

We identified 107,024 COPD individuals, of whom 29,596 (27.6%) were diagnosed before 60 years of age.

Of them, only 2.2% had any record of being tested for AATD.

Of those tested 23.7% were diagnosed with AATD.
Systemic effects of AATD allows uninterrupted flow of neutrophil elastase which leads to possible degradation connective tissue.

Alpha 1 in the lungs protects against the neutrophils elastase which leads to alveolar destruction.
<table>
<thead>
<tr>
<th>Red flag symptom</th>
<th>Possible respiratory causes</th>
<th>Further Investigations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoptysis</td>
<td>Lung cancer</td>
<td>Chest radiography</td>
</tr>
<tr>
<td></td>
<td>Infections</td>
<td>CT of the chest</td>
</tr>
<tr>
<td></td>
<td>Bronchiectasis</td>
<td>Bronchoscopy</td>
</tr>
<tr>
<td>Marked weight loss</td>
<td>Lung cancer</td>
<td>CT of the chest</td>
</tr>
<tr>
<td></td>
<td>Severe disease</td>
<td></td>
</tr>
<tr>
<td>Copious sputum production</td>
<td>Bronchiectasis</td>
<td>Sputum cultures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Immunological investigations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CT of the chest</td>
</tr>
<tr>
<td>Cyanosis and/or day time somnolence</td>
<td>Respiratory failure</td>
<td>Arterial blood gasses</td>
</tr>
<tr>
<td>and headaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peripheral oedema</td>
<td>Pulmonary hypertension +/- cor pulmonale</td>
<td>Echocardiography</td>
</tr>
</tbody>
</table>
Non Smoking related COPD

- Yes it happens!
- Alpha 1.
- Overlap (asthma/OSA).
- PizZ (phenotype).

20% of COPD is not smoking-related

www.blf.org.uk/World-COPD-Day
Differential Diagnosis.

- **Pulmonary**
  - **Asthma**
  - Bronchogenic carcinoma
  - **Bronchiectasis**
  - **Tuberculosis, Cystic fibrosis, Interstitial lung disease**
  - **Bronchiolitis obliterans**
  - Alpha-1 antitrypsin deficiency
  - Pleural effusion, Pulmonary edema
  - **Tracheobronchomalacia**
  - Recurrent pulmonary emboli, Foreign body

- **Non Pulmonary**
  - **Congestive heart failure**
  - Hyperventilation syndrome/panic attacks
  - Vocal cord dysfunction
  - Obstructive sleep apnea (undiagnosed)
  - Aspergillosis
  - Chronic fatigue syndrome
Managing COPD

- Annual Review? Is it enough? What is the evidence saying?
- Smoking CESSATION
- Quality Spirometry
- Immunisations
- Pulmonary Rehabilitation
- MRC
- CAT scores
- Medication regimes: trio-therapies in mono devices, GOLD risk stratification.
- Rescue Packs
The link between smoking and cancer is very clear. It causes at least 15 different types of cancer (Cancer research UK).

Smoking causes around 7 in 10 lung cancer cases in the UK, which is also the most common cause of cancer death.

It causes other cancers including mouth, pharynx, nose and sinuses, larynx, oesophagus, liver, pancreas, stomach, kidney, bowel, ovary, bladder, cervix, and some types of leukaemia.

Smoking causes other diseases such as heart disease and various lung disease.

The more cigarettes smoked a day, the higher the risk of cancer.

Research has shown that for every 15 cigarettes smoked, there is a DNA change which could cause a cell in the body to become cancerous. (Cancer Research UK 2018).
Smoking Cessation
Why smoking cessation?

- 72% of lung cancers are caused by smoking.
- There are immediate and long-term health benefits of quitting for all smokers.
- Within 20 minutes, your heart rate and blood pressure drop.
- 12 hours, the carbon monoxide level in your blood drops to normal.
- 2-12 weeks, your circulation improves and your lung function increases.
- 1-9 months, coughing and shortness of breath decrease.
- 1 year, your risk of coronary heart disease is about half that of a smoker’s.
- 73,000 NHS employees are smokers!

The cost of smoking in the UK

Number of UK deaths in 2012 from:

- Smoking: 100,000
- Obesity: 34,100
- Alcohol: 6,490
- Road accidents: 1,713
- Illegal drugs: 1,605
- HIV: 504

Data sources:
Action on Smoking and Health fact sheet, November 2014; Health and Social Care Information Centre; Dept for Transport;
Why quit smoking?

- 5 years, your stroke risk is reduced to that of a non-smoker 5 to 15 years after quitting.
- 10 years, your risk of lung cancer falls to about half that of a smoker and your risk of cancer of the mouth, throat, oesophagus, bladder, cervix, and pancreas decreases.
- 15 years, the risk of coronary heart disease is that of a non-smoker’s.
- Average cost of cigarettes £10 a packet, a 20 cigarette a day smoker would spend close to £4000 annually.
- Cost to NHS £2.5 billion (2017 estimate).

Costs of smoking to society

**Smoking costs approximately:**

- **£12.6 billion** a year
- **£1.4 billion** from social care
- **£2.5 billion** on the NHS

This cost includes:
Vaping vs Smoking
Martin Dockrell, Tobacco Control Programme Lead at PHE, said: “We know that e-cigarettes are probably not completely safe, The question is, are e-cigarettes safer than the alternative? for almost all e-cigarette users the alternative is smoking, and it’s really important that they understand how much safer e-cigarettes are, compared to smoking”.

The Royal College of Physicians has reviewed the available evidence and advises GPs to promote e-cigarettes “as widely as possible as a substitute for smoking”.
Risks of Vaping

- E-cigarettes and other vaping devices are NOT risk-free.
- They contain nicotine, a highly addictive drug with known health risks.
- Using e-cigarettes and other vaping products is not a proven method for quitting smoking.
- E-cigarettes and other vaping devices are not used exclusively by people trying to quit smoking.
Risks of Vaping

- E-cigarettes and other vaping devices are frequently used in addition to smoked cigarettes, rather than in place of them.
- There is little consistency across different products.
- There is no evidence that the aerosol from these products is safe.
- The spread of e-cigarettes and other vaping devices may be re-normalizing smoking behaviour.
- E-cigarette vapour boosts the production of inflammatory chemicals and disables key protective cells in the lung that keep the air spaces clear of potentially harmful particles, reveals a new study in the journal *Thorax*.
Advantages of Vaping

THE EVIDENCE SO FAR SHOWS THAT E-CIGARETTES ARE FAR SAFER THAN SMOKING

1. E-cigarettes contain nicotine but not cancer causing tobacco
2. Nicotine is addictive, but does not cause cancer
3. Tobacco is the biggest cause of preventable death in the UK
   Over 100,000 deaths per year
   = 10,000
4. Passively breathing vapour from e-cigarettes is unlikely to be harmful
5. Growing evidence shows e-cigarettes are helping people to stop smoking

LET'S BEAT CANCER SOONER
cruk.org
Immunisations

- Once only pneumovax (in most cases), unless AATD where it is recommended every 5 years.
- Annual fluvax.
Pulmonary Rehabilitation
Pulmonary rehabilitation is a programme of exercise and education for people with long-term chest problems. Many studies have shown that pulmonary rehabilitation improves measurements of health and wellbeing, such as the distance an individual can walk or their likelihood of needing to go to hospital (BTS 2014).

Engaging patient commitment can be a challenge! However, PR improves exercise tolerance, health status and muscle force. (Perez-Boger 2018, Seymour 2010).
Contraindications: uncontrolled HTN, diabetes, angina, dementia. **Angina pectoris**, recent **myocardial infarction**, severe **pulmonary hypertension**, **CCF**, Inability to do exercise due to orthopaedic or other reasons.

Psychiatric illness, **dementia.**, Severe exercise-induced hypoxemia, not correctable with $O_2$ supplementation.

Availability and waiting list?

Evidence supports Pulmonary Rehab as high priority intervention.
COPD Reviews: What is New?

- “As for the retirement of two COPD indicators, it is now well recognised that FEV1 is not useful as a standalone test in determining the progression of COPD as there is a poor correlation between lung function and severity of disease. We also hope that its removal as an indicator will encourage a more holistic and patient centred approach to the annual review”.

- Offering pulmonary rehabilitation (evidence supports this as an high impact intervention).
QOF for COPD

- The contractor establishes and maintains a register of patients with COPD. Smoking Cessation is now considered part of the core professional practice.

- Offering Pulmonary Rehabilitation (excluding those previously attended).

- Medical Research Council (MRC) dyspnoea scale ≥3 at any time in the preceding 12 months. National COPD primary care audit indicated that over a third of patients with COPD did not have a record of their breathlessness in the last year.

- The percentage of patients with COPD (diagnosed on or after 1 April 2011) in whom the diagnosis has been confirmed by post bronchodilator spirometry between 3 months before and 12 months after entering onto the register.
The percentage of patients with COPD who have had influenza immunisation.

Professional annual review. (Definition of health care professional?) The annual review should include:

- current lung function
- exacerbation history
- the degree of breathlessness (Medical Research Council [MRC] dyspnoea scale).
- A tool such as the COPD Assessment Test (CAT) could be used to assess current health status.
Rationale for QOF removal

- Why the removal of smoking cessation: now considered basis of professional reviews
- Why no longer FEV1: It is now well recognised that FEV1 is not useful as a standalone test in determining the progression of COPD as there is a poor correlation between lung function and severity of disease.
- It is hoped the removal as an indicator will encourage a more holistic and patient centred approach to the annual review.
- Issues with access to annual spirometry in general practice.
- Oxygen saturation is being measured fairly routinely according to the National COPD audit in primary care in Wales, so the quality improvement opportunities now lie elsewhere. (Prof Noel Baxter PCRS UK 2019).
Why is SPO2 no longer a QOF indicator?

- Oxygen saturation is being measured fairly routinely according to the National COPD audit in primary care in Wales, so the quality improvement opportunities now lie elsewhere. (Prof Noel Baxter PCRS UK 2019).

Rescue Packs: Is it QOF? Should it be QOF? With antibiotic stewardship should we be prescribing antibiotics without confirmation of infection?

This is a question Dr Hurst (PCRS UK) responded to by stating: “No is the answer, but we can and must do it better.” “We need to do more research into the subject otherwise, if we don’t address this question, we will be having the same discussion in 10 and 20 and 30 years’ time”. 
Questions

- KEEP CALM AND ASK QUESTIONS
References


References

