UNDERSTANDING COPD

MEDIA BACKGROUNDER

What is COPD?

Chronic Obstructive Pulmonary Disease (COPD) – also called emphysema and/or chronic obstructive bronchitis* – is a preventable lung disease caused by the long-term inhalation of pollutants, most commonly cigarette smoke, that progressively and permanently reduces the ability of adults to breathe well and maintain active lives. COPD is characterised by breathlessness (or dyspnoea), coughing, wheezing and increased sputum (mucus or phlegm) production. These symptoms, in particular shortness of breath, can restrict a patient’s ability to perform normal daily activities.¹ Patients with COPD may suffer exacerbations, a term used to describe a worsening or “flare up” of the disease, especially if their COPD is not treated and managed effectively.

What are the causes of COPD?

Cigarette smoking is the predominant cause of COPD, accounting for 80-90% of the risk for developing COPD.² Pollution, including indoor pollution from the use of wood and coal-burning stoves and heaters, and occupational exposure to a variety of pollutants, also greatly increases risk.¹ Total deaths from COPD are projected to increase by more than 30% in the next 10 years unless urgent action is taken to reduce underlying risk factors, especially tobacco use.³

Genetic factors play a role in the cause of COPD; researchers have identified COPD as a polygenetic condition, with genetic predisposition and the environment both playing a role in the disease. Researchers have yet to definitively identify the specific genetic variants influencing the development of COPD.¹

Diagnosing COPD

Due to its progressive nature, the early diagnosis and treatment of COPD is essential to prevent complications and exacerbations (sometimes referred to as a ‘COPD lung attack’) associated with the disease.¹

According to GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines, a clinical diagnosis of COPD should be considered in any patient over the age of 40 who has breathlessness, chronic cough or sputum production, and a history of risk factors for the disease.¹ It is often undiagnosed in its mild and moderate stages as symptoms such as breathlessness are often initially attributed to ageing.⁴ Many patients do not seek medical care until symptoms have

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¹ Referred to as chronic bronchitis in the U.S.
become severe, and it has been estimated that up to 50% of Americans and 75% of Europeans with COPD are undiagnosed.\textsuperscript{5,6}

Breathlessness is the hallmark symptom of COPD and is a major cause of disability and anxiety associated with the disease.\textsuperscript{1} In COPD, breathlessness is typically persistent and progressive. Initially it may only be noted during periods of extra effort such as climbing a flight of stairs; however, as the disease progresses and lung function deteriorates, breathlessness becomes more intrusive and impacts on everyday activities such as carrying groceries. At its most severe, it even limits a patient from performing simple tasks such as washing and dressing.

Diagnosis of COPD is confirmed by spirometry\textsuperscript{1} - a simple test which involves a patient ‘blowing’ into a machine. Spirometry measures:

- The volume of air exhaled in one second (forced expiratory volume in one second, or FEV\textsubscript{1}) when the patient inhales fully and exhales with as much force, and as quickly, as possible.
- The volume of air exhaled (forced vital capacity, or FVC) when the patient inhales fully and exhales with as much force, and as quickly, as possible.

These volumes are compared with those predicted for the patient’s age, sex and height to identify airflow obstruction and confirm a diagnosis of COPD.

**GOLD guidelines classify COPD patients into groups A-D, based on a combination of spirometry results, severity of symptoms and risk of exacerbations\textsuperscript{1}**

<table>
<thead>
<tr>
<th>Patient Category</th>
<th>Characteristics</th>
<th>Spirometric Classification</th>
<th>Exacerbations per Year</th>
<th>mMRC*</th>
<th>CAT**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Low risk, less symptoms</td>
<td>GOLD 1-2</td>
<td>≤1</td>
<td>0-1</td>
<td>&lt;10</td>
</tr>
<tr>
<td>B</td>
<td>Low risk, more symptoms</td>
<td>GOLD 1-2</td>
<td>≤1</td>
<td>≥2</td>
<td>≥10</td>
</tr>
<tr>
<td>C</td>
<td>High risk, less symptoms</td>
<td>GOLD 3-4</td>
<td>≥2***</td>
<td>0-1</td>
<td>&lt;10</td>
</tr>
<tr>
<td>D</td>
<td>High risk, more symptoms</td>
<td>GOLD 3-4</td>
<td>≥2***</td>
<td>≥2</td>
<td>≥10</td>
</tr>
</tbody>
</table>

* Modified British Medical Research Council (mMRC) questionnaire assesses disability due to breathlessness – an indicator of health status and future mortality risk
** COPD Assessment Test is an 8-item unidimensional measure of health status impairment in COPD and has a broader coverage of the impact of COPD on the patient’s daily life and well-being
*** Or ≥1 with hospitalisation for exacerbation
What is the prevalence of COPD?

COPD was among the leading causes of death globally in 2010 and the World Health Organization (WHO) predicts that it will become the third leading cause of death worldwide by 2030. By this time, COPD will also be the seventh leading cause of disability-adjusted life years (DALYs) lost worldwide. COPD is already the third leading cause of death in the United States.

What is the impact for patients?

COPD has a significant physical and emotional impact on those who suffer from the disease. As COPD progresses, lung function declines and physical activity becomes severely limited, disrupting the patient’s ability to lead a full life, interfering with everyday tasks and participation in family routines. This can lead to people feeling afraid, anxious, frustrated, isolated and depressed.

Degree of limitation in activities of daily living in a study population (n=1,056).

<table>
<thead>
<tr>
<th>Activity</th>
<th>No Limitation</th>
<th>Minor Limitation</th>
<th>Major Limitation</th>
<th>No Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sport and leisure</td>
<td>15.5%</td>
<td>26.8%</td>
<td>52.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Habitual physical activity</td>
<td>6.3%</td>
<td>63.3%</td>
<td>30.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Social activities</td>
<td>31.5%</td>
<td>58.2%</td>
<td>9.3%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Family activities</td>
<td>37.4%</td>
<td>53.8%</td>
<td>8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Sleep</td>
<td>41.1%</td>
<td>50.3%</td>
<td>8%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Household chores</td>
<td>31.6%</td>
<td>48.7%</td>
<td>14%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Sex life</td>
<td>24.1%</td>
<td>47.4%</td>
<td>20.2%</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

* The Study population comprised COPD patients who visited outpatient respiratory medicine departments in different parts of Spain, was 95.2% male, >40 years (mean age of 67 years), had a FEV1 <70 % predicted (mean FEV1 of 41.8%, which correlates to a mean ‘severe COPD’ classification according to the Global Initiative for Chronic Obstructive Lung Disease 2013). Other inclusion criteria included clinical stability defined by an interval of at least six weeks since last exacerbation and a smoking history of at least 10-pack-years.

It is increasingly recognised that many patients with COPD have comorbidities, such as cardiovascular disease, osteoporosis and depression that have a major impact on quality of life and survival.
Treating COPD

GOLD states the goals for treatment of stable COPD are:¹

<table>
<thead>
<tr>
<th>Reduce symptoms</th>
<th>Relieve symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improve exercise tolerance</td>
</tr>
<tr>
<td></td>
<td>Improve health status</td>
</tr>
<tr>
<td>Reduce risk</td>
<td>Prevent disease progression</td>
</tr>
<tr>
<td></td>
<td>Prevent and treat exacerbations</td>
</tr>
<tr>
<td></td>
<td>Reduce mortality</td>
</tr>
</tbody>
</table>

Smoking cessation is the intervention with the greatest capacity to influence the natural evolution of COPD and have a substantial effect on subsequent mortality. All patients with COPD can benefit from exercise training programmes, which have been shown to increase quality of life, exercise tolerance and improve symptoms of breathlessness and fatigue.¹ Pharmacologic therapy for COPD is used to reduce symptoms, reduce the frequency and severity of exacerbations and improve health status and exercise tolerance.¹ Physicians will decide on the pharmacological treatment class based on an individual’s needs but may include options such as bronchodilators, methylxanthines, corticosteroids or phosphodiesterase-4 inhibitors. Maintenance therapy with long-acting bronchodilators is recommended for patients with moderate to very severe COPD (first choice for GOLD patient groups B-D, second option for patient group A).¹

COPD exacerbations

A COPD exacerbation – sometimes referred to as a ‘COPD lung attack’ – is defined as an acute worsening of clinical symptoms (e.g. breathlessness or sputum production) that requires acute treatment and can lead to hospitalisation. Exacerbations are associated with a more rapid decline in lung function over time and, in severe cases, an increased risk of mortality and they can severely compromise patients’ health-related quality of life.¹ Many COPD patients can experience two or more exacerbations per year.¹² It is important to treat exacerbations quickly and aggressively, as those patients who are treated promptly recover more rapidly than those who delay telling their physician.¹³

The risk of COPD exacerbations can be reduced with the use of long-acting bronchodilators (e.g. long-acting anticholinergics or long-acting beta₂-agonists). Long-acting anticholinergics are recommended as first line maintenance treatment for moderate to severe COPD (first choice for GOLD patient groups B-D, second option for patient group A).¹ Spiriva®† is the most prescribed COPD maintenance therapy which is proven to reduce the risk of COPD exacerbations and related-hospitalisations.¹⁴

¹ Spiriva® was discovered and developed by Boehringer Ingelheim and is co-promoted in some markets with Pfizer Inc.
The economic burden of COPD

As well as the personal cost to patients and their families, COPD places a considerable economic burden on a nation’s resources. Economic analyses suggest that hospitalisation due to COPD exacerbations accounts for 40-70% of all medical expenses for patients with COPD. In the European Union, COPD accounts for an estimated €38.8 billion of the total healthcare budget and in the United States the estimated direct costs of COPD are $30 billion.

Conclusion

COPD remains, and will continue to be, a significant burden for patients, society and healthcare systems. Due to its progressive nature, the early diagnosis and appropriate treatment of COPD is essential to prevent complications and exacerbations associated with the disease and to enable people with COPD to continue to do the things they enjoy, for as long as possible. Reducing the economic burden of COPD will also be a focus for health policy makers and prescribers as the prevalence of COPD is expected to continue to rise in the coming years.

References: