Chronic Obstructive Pulmonary Disease (COPD)

Disease and epidemiology
Chronic obstructive pulmonary disease (COPD) is a partially reversible disorder characterised by chronic inflammation and progressive airflow obstruction. The course of which is punctuated by episodes of acute symptomatic worsening (exacerbations). Chronic bronchitis and emphysema are both forms of COPD. The disease is non-curable and can be managed, however it is still underappreciated, under-diagnosed and under-treated.¹ ²

COPD affects about 210 million people worldwide and is a leading cause of morbidity and mortality.³ By 2030, COPD will be the third largest killer in the world.³ The burden of COPD is estimated to increase in coming decades, due to continued exposure to COPD risk factors and the aging of the world’s population.⁴

Pathology and pathogenesis of COPD
COPD is characterised by an enhanced inflammatory reaction in response to exposure to noxious gases. Smoking is the best studied cause of COPD, but there is consistent evidence that non-smokers and people who gave up smoking years before may also develop breathing difficulties.⁵

The chronic inflammation in COPD causes structural changes and progressive narrowing of the airways. In general, this process increases with disease severity and once initiated, does not stop even when people quit smoking.⁵ There are marked differences in the inflammatory cells and mediators involved in asthma and COPD, which account for the differences in physiological effects, symptoms and response to therapy.⁶

Symptoms
The most common symptoms of COPD are breathlessness, excessive production of sputum (a mixture of saliva and mucus in the airways) and a chronic cough. These symptoms will vary depending on the patient and the severity of their disease.⁶ In mild cases, a cough, phlegm and shortness of breath may only be present during the winter or after a cold. More severely affected individuals may be very short of breath every day. Symptoms of chronic cough and sputum have been suggested as a marker of underlying bronchial inflammation and as an independent risk factor for frequent exacerbations.⁷
Exacerbations
Exacerbations are episodes of worsening of patients’ symptoms, leading to substantial morbidity and mortality. COPD exacerbations are associated with increased airway and systemic inflammation as well as physiological changes in the lungs. They include increased breathlessness and a chronic cough, mucus production, extreme fatigue and other signs of health deterioration. They are triggered mainly by respiratory viruses and bacteria, which infect the lower airway and increase airway inflammation. Patients with frequent exacerbations have increased baseline levels of inflammation, as compared to patients with infrequent exacerbations, indicating that patients with uncontrolled inflammation may be more susceptible to frequent exacerbations.

Exacerbations are frightening and distressing for patients and can lead to poorer health and faster disease progression including a decline in lung function and a higher risk of death. One study estimated that 61 percent of hospitalised patients reported a state of health ‘worse than death’ at admission. In addition, evidence shows that mortality at 12 months following hospital admission for an exacerbation of COPD is worse than the mortality observed at 12 months following hospital admission with an acute heart attack. Patients with frequent exacerbations also have a worse quality of life compared with those who have no or infrequent exacerbations. As many as 22, 33 and 47 percent respectively of patients with Stage II, III and IV COPD (as classified within the Guidelines from the Global Initiative for Chronic Obstructive Lung Disease), have been shown to suffer from frequent exacerbations, despite access to treatment with available therapies. Therefore, because of the long-term impact on the individual patient’s disease severity, prevention of exacerbations is recommended as a key goal of COPD management.

“The attacks can happen at any time. I begin to notice my breathing gets worse and even going from the settee to the kitchen I feel as if I have concrete boots on. I feel very weak and even small movements are really hard. You can’t get air into your lungs. Getting to the doctor’s surgery is like climbing Everest for me.”

Actual quote from a patient in the Hidden Depths of COPD Survey

Treatment and management
The Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommend that successful strategies for the clinical management of COPD should include a variety of measures for diagnosing, treating and monitoring the disease. In the 2011 revision, GOLD emphasised the need for clinicians to maintain a focus on both the short and long-term impact of COPD on their patients by dividing the
treatment objectives into two groups of equal importance: reducing symptoms and reducing risk.6 The new focus on these two groups represents a shifting paradigm in COPD management.18

Treatment plans for COPD should include both pharmacological and non-pharmacological interventions, such as risk factor reduction, patient counselling and pulmonary rehabilitation programmes.6 Bronchodilator therapy is used to manage symptoms of COPD.6 The addition of inhaled corticosteroids (ICS) therapy to bronchodilators is recommended for the treatment of patients with severe COPD who experience repeated exacerbations.6 In COPD patients at increased future risk (with severe to very severe airflow limitation. Chronic bronchitis and a history of frequent exacerbations) the PDE4 inhibitor roflumilast is a new treatment option shown to further reduce exacerbations and help stabilise the disease.19,20

**Current clinical unmet need**

Current treatments can help to reduce the severity of symptoms but they are not a cure and do not stop or reverse the progression of COPD. Many people with COPD, even those with optimum management, continue to have symptoms and exacerbations. Exacerbations are of a particular concern as they impose a substantial burden on patients and healthcare systems worldwide. The main problem is that up to half of the exacerbations are not reported by the patients.21 An exacerbation is often mistaken for a bad chest cold or a chest infection by patients and not linked to their COPD, so often patients don’t reach out to their physician when they experience an exacerbation. Identifying patients suffering from exacerbations in order to prevent and reduce the risk of future exacerbations is therefore still a major unmet need in COPD.

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**Abstract title:** Effects of roflumilast in highly symptomatic COPD patients  
**Abstract Number:** P742  
**Date of presentation:** Sunday 2 September  
**Time of presentation:** 12:50 – 14:40  
(Fabbri. Session 93. Thematic Poster Session: Effectiveness of therapeutic interventions in primary care)

**Abstract title:** Effect of roflumilast on hospitalizations in COPD patients  
**Abstract Number:** P2109  
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