6. Priority diseases and reasons for inclusion

6.13 Chronic obstructive pulmonary disease

See Background Paper 6.13 (BP6_13COPD.pdf)

Background

Chronic obstructive pulmonary disease (COPD) is a complex respiratory disease involving progressive and partly irreversible airway obstruction and persistent, low-grade pulmonary and systemic lung inflammation. The main risk factor for the development of and deterioration of COPD is smoking. However, the disease can also occur in non-smokers and persists even after smoking cessation.

In 2010, COPD was estimated to account for 2.7% of the disease burden and 3.2% of deaths in Europe, and for 3.1% of the global disease burden and 5.5% of deaths worldwide. Over the past two decades, there has been a marked increase in COPD deaths (in most, but not all countries), a trend that is predicted to continue. Moreover, the impact of COPD is believed to be underestimated due to a lack of accurate epidemiological data from some countries, misdiagnosis, and inconsistent use of the International Classification of Diseases (ICD) codes when reporting causes of death in patients with COPD.

A number of coexisting conditions not directly related to COPD are associated with the disease, including cardiovascular disease, muscle wasting, type 2 diabetes, and asthma. As a result, deaths in people with COPD are frequently attributed to another cause. In addition, among the coexisting conditions, depression deserves particular attention. COPD (especially at severe levels) leads to impairment in the activities of daily living, social and psychological functioning, and recreational activities. In view of the fragmentary nature of available information on COPD, there is a need for a comprehensive study of the disease, including the coexisting conditions and the burden of illness they cause in people with COPD.

Chronic obstructive pulmonary disease also incurs significant financial costs associated with the care of patients and lost productivity of patients and care takers. However, estimating the costs of COPD is challenging, due to under-diagnosis and the presence of other coexisting diseases, and there appear to be no recent estimates. Many different methodologies are used to estimate the costs of chronic diseases such as COPD. In 2003, the United States National Heart, Lung, and Blood Institute estimated that total costs (direct and indirect) of COPD in the United States were US$ 32.1 billion, with direct costs of US$ 18 billion.

The European Lung White Book 2003, estimated that the total annual cost of COPD in Europe was €38.7 billion (including €4.7 billion for ambulatory care, €2.7 billion for medicines, and €2.9 billion for in-patient care) and a total of 28.5 million work days lost due to the disease. As these data exclude mortality costs, the actual cost incurred by COPD may be much higher.
Yet despite the high disease burden and financial costs incurred, efforts to address the problem of chronic respiratory diseases, and COPD in particular, have not received adequate funding in any country, whether for research, prevention, or clinical services.

Smoking cessation is currently the single most effective intervention to improve outcomes in patients with COPD. However, even in the best programmes less than one-third of patients maintain abstinence, and even those people who stop smoking will usually continue to experience shortness of breath and other symptoms as airflow limitation persists.

The overall approach to managing COPD is characterized by a stepwise increase in treatment, depending on the severity of the disease. These treatments fall into three broad areas: prevention of disease progression; management of stable disease; and management of exacerbations.

In placebo-controlled clinical trials, inhaled anticholinergics and beta-2 agonists have been shown to improve lung function and symptoms and reduce exacerbations in people with stable COPD. While inhaled corticosteroids have been shown to reduce exacerbations in COPD and reduce decline in lung function, the beneficial effects are small. However, the use of combined inhaled corticosteroids plus long-acting beta-2 agonists has been shown to improve lung function, symptoms, and health-related quality of life, and reduce exacerbations, compared with a placebo, and may be more effective than the use of either treatment alone.

**Developments since 2004**

The fact that in 2013, the available treatments for COPD are still mainly palliative, and that no therapies are available that can halt the decline in lung function or the progressive destruction of the airways, suggests that not much has changed since the original 2004 Priority Medicines Report. Although our understanding of COPD has grown over the past few years, many questions still remain.

**Remaining challenges**

One of the main challenges in developing new therapeutic agents for the treatment or prevention of acute exacerbations of COPD is that their potential success cannot be known before the outcome of relatively large Phase II trials, assessing clinical outcome over a three to six month period or longer.2 To date, only two interventions, smoking cessation and long-term treatment with oxygen (in people with hypoxaemia), have been found to alter the long-term course of COPD. Pulmonary rehabilitation, (including patient assessment, exercise training, education, nutritional intervention and psychosocial support), was not found to have an impact on the long-term course of the disease.7 Current therapies neither arrest nor reverse inflammation and the resulting decline in lung function or health status. New therapies are needed especially for the 10% of COPD patients with refractory asthma whose symptoms cannot be controlled with currently available medicines.
Following significant delays and failures in developing classes such as phosphodiesterase 4 (PDE4) inhibitors, the large pharmaceutical companies have few genuinely novel medicines for COPD in the pipeline. While new treatment initiatives have come from information on the physiology of COPD, to date no new therapy has come from information on pathogenic inflammatory processes.

**Research needs**

There is a need to develop surrogate markers of inflammation that can predict the clinical usefulness of new management and prevention strategies for COPD, and new clinical end points to assess the impact of different COPD interventions. In addition, standardized methods are needed to enable countries to track trends in the prevalence of COPD and morbidity and mortality over time, in order to plan health care services that can respond to the predicted increases in COPD. This need is especially urgent in low- and middle-income countries, which have limited health care resources.

**Conclusion**

In the short- and medium-term, prospects for the development of new therapies to treat lung inflammation or reverse COPD remain poor. Therefore the overriding imperative should be to reduce the prevalence and incidence of smoking.

**References**


