Five steps to reducing the burden of COPD

An older person with a long history of smoking, persistent dyspnoea and sputum production, who struggles to manage daily activities typifies the COPD patient. Ultimately, most COPD patients will need maintenance therapy with bronchodilators and anti-inflammatory agents.[1] Periodically, patients experience distressing and potentially life-threatening exacerbations of their COPD,[1] most of which are caused by infection in the already inflamed and injured lung and each exacerbation amplifies the permanent lung damage.[2] About 50% of infective exacerbations are bacterial in origin.[3]

Managing COPD involves difficult lifestyle changes for the patient; and preventive, maintenance and curative treatments managed by the physician.

Step 1: Help patients to help themselves

Smoking cessation is the single most effective means of preventing the development of COPD and slowing disease progression.[1] Chronic cough and sputum production are often evident years before the development of airway obstruction and smoking cessation at this early stage could prevent patients developing COPD. However, with early COPD symptoms seeming relatively minor, the need to stop smoking may not be obvious to patients. Patient education, counselling and medications to counter nicotine dependence are key at this stage.[1]

COPD-associated breathlessness often leads patients to become immobile and unfit; possibly resulting in sputum thickening and further congestion. Measures including exercise and diet modification can relieve dyspnoea and fatigue, improve emotional function, and enhance patients' sense of control over their condition.[1,4]

Patient education should include how to recognise exacerbations, and the need to seek immediate treatment.[1] Prompt therapy provides symptomatic relief, minimises lung damage and allows accurate recording of the annual number of exacerbations, facilitating assessment of risk for further exacerbations.

Step 2: Actively reduce risk factors through immunisation

The influenza vaccine can reduce serious illness and death by about 50% in vulnerable COPD patients.[1] Viral lung infections may increase the likelihood of secondary bacterial chest infections.[5] Therefore, COPD patients should be a priority group for influenza vaccination.[1,6]

While the evidence for the efficacy of pneumococcal vaccines is not as strong as that for influenza vaccines, it should still be considered in patients at high risk of pneumococcal disease, i.e. those ≥65 years of age, in residential care, or with chronic liver disease, diabetes mellitus, functional or anatomic asplenia, or chronic cerebrospinal fluid leakage.[1,6]

Step 3: Optimise maintenance therapy

Optimising maintenance therapy slows the underlying lung function decline and provides symptomatic relief for patients. Such treatments include beta-agonists, anticholinergics, methylxanthines and inhaled and systemic glucocorticosteroids.[1,6] Each tends to be added successively as the underlying disease worsens, so periodic medication reviews are useful in assessing treatment efficacy and/or the requirement for further medication, including long-term oxygen therapy.

Step 4: Focus preventive care on patients most likely to experience an exacerbation

Patient factors are good indicators of future exacerbation frequency.[1,2,7,8] Characteristics associated with high exacerbation frequency are age ≥65 years, more than three exacerbations in the previous 12 months, concomitant cardiac disease, poor lung function (post-bronchodilator forced expiratory volume in 1 second [FEV1] ≤50% predicted) or requirement for antibiotics in the last three months.

Once at-risk patients have been identified, consideration should be given to preventive and therapeutic measures to reduce exacerbation frequency.[9]

Step 5: Manage exacerbations quickly and effectively

Curing the current COPD exacerbation and minimising the risk of a subsequent exacerbation are important therapeutic goals.[9] Currently, the mainstay of treatment for exacerbations are antibiotics with or without systemic glucocorticosteroids, plus possible intensification of long-term respiratory medications e.g. inhaled beta-agonists.[10]

Antibiotic therapy should be restricted to patients with a high likelihood of a bacterial exacerbation; exacerbations with other causes should be treated symptomatically.[1] The decision to use an antibiotic can be made based on symptoms, as patients with a COPD exacerbation typically have at least one of the following: increased dyspnoea, or increased sputum volume or purulence.[11] Patients with only one symptom (Anthonisen type III) are likely to have mild, self-limiting disease and do not require antibiotics. Those with two or three symptoms (Anthonisen type II and I patients), particularly those with purulent sputum[6] are likely to have more severe exacerbations and require antibiotic treatment. Sputum colour can also help to distinguish between bacterial and non-bacterial exacerbations; green (purulent) sputum indicates a higher likelihood of bacterial infection.[12]

For a good clinical outcome, the antibiotic chosen should rapidly and effectively kill the bacteria likely to have precipitated the exacerbation (in COPD these are *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis*) .[1,6] Using a short course of antibiotics wherever possible reduces the likelihood of resistance developing.[13]

MAESTRAL: A new approach to AECOPD (Acute Exacerbations of COPD) studies

The international MAESTRAL (moxifloxacin in AECBs trial) study[14] uses a new approach to measure the efficacy of two antibiotics (moxifloxacin and amoxicillin/clavulanic acid) against exacerbations in patients with moderate-to-severe COPD.

The study design[15] has been developed to overcome several shortcomings of previous trials in terms of patient selection, choice of endpoint and accurate clinical assessments. To prevent inconsistencies in assessments of clinical outcomes, all clinical failures have been assessed by a blinded Data Review Committee to independently confirm the primary clinical outcome.

The results of the MAESTRAL study will be distributed shortly and it is hoped that they will answer some of the questions on the most appropriate way to manage AECOPD.

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