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## Irish Association for Emergency Medicine (IAEM) submission to the National COPD Strategy

### 1 Introduction

Chronic obstructive pulmonary disease (COPD) is an important disease for patients, the health care system and the wider society.

- **COPD is common**

While estimates of the prevalence of COPD vary, recently published data report a worldwide prevalence of 10.1% (GOLD stage II or higher) <sup>1</sup>. In England and Wales some 900,000 people have a diagnosis of COPD <sup>2</sup>.

- **COPD causes significant mortality**

COPD is the fourth leading cause of death in the US and Europe. Given the increase in smoking in developing countries, it is estimated that by 2020 COPD will be the third leading cause of death worldwide. In 2003, COPD caused 4.9% of all deaths in the UK <sup>2</sup>.

- **COPD causes significant morbidity**

Acute exacerbations, impaired quality of life and occupational loss feature prominently in the morbidity associated with COPD. The impact on primary care and the hospital sector is considerable – at least 10% of emergency admissions to hospital are COPD related and most of these patients access the hospital through the Emergency Department (ED).

- **COPD is largely preventable**

Smoking is the single biggest cause of COPD, accounting for over 80% of cases. While other factors (e.g. alpha-1 antitrypsin deficiency, air pollution, occupational exposure etc) cause a minority of cases, it is clear that the prevalence of COPD largely reflects the prevalence of smoking in society.

- **COPD progression rate can be slowed**

While smoking causes most cases of COPD, cessation of smoking, even in established disease, slows disease progression and reduces the rate of decline in lung function to that of a non-smoker. This results in reduced morbidity and increased survival <sup>3</sup>.

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COPD is a common reason for ED attendance, usually related to an acute exacerbation of disease. The IAEM welcomes the opportunity to outline its vision for optimal emergency care for COPD and as the representative body for Emergency Medicine in Ireland seeks active involvement in its implementation.

## **2 Optimal Emergency Care**

The principal reason for ED attendance in COPD is an acute exacerbation that has not responded to care in the community. The optimal ED management of an acute exacerbation of COPD is well documented <sup>4,5</sup>.

- **Oxygen**  
Controlled oxygen therapy provided to maintain arterial oxygen saturation > 90% without a deterioration in arterial pH (as a result of carbon dioxide retention).
- **Bronchodilators**  
Inhaled or nebulised beta 2 agonists (e.g. salbutamol), often in combination with anticholinergic agents (e.g. ipratropium), are a mainstay in exacerbation management.
- **Steroids**  
Oral or intravenous glucocorticoids have been shown to improve lung function and shorten hospital stay <sup>6</sup>.
- **Antibiotics**  
Many exacerbations are caused by pulmonary infection and, while a proportion of these are viral in origin, antibiotics are often used in severe exacerbations, especially when associated with increased sputum volume and purulence.
- **Theophyllines**  
A recent meta-analysis of four trials failed to demonstrate a benefit of aminophylline over placebo in terms of lung function, symptoms or length of stay <sup>7</sup>. Nevertheless, published guidelines recommend its use if there is a poor response to nebulised bronchodilators <sup>4</sup>.

- **Non-invasive ventilation**

Over the past 15 years, non-invasive ventilation (NIV) has become an integral part of the management of acute exacerbations of COPD. The evidence for its efficacy appears convincing. In 2004, a Cochrane review reported that, when compared with usual care, NIV was associated with lower mortality, decreased need for intubation, lower likelihood of treatment failure, greater improvements in pH and respiratory rate at one hour, fewer treatment-related complications and shorter hospital stay<sup>8</sup>. In a systematic literature review, Keenan and colleagues report similar benefits but note that these are confined to those with severe rather than mild exacerbations<sup>9</sup>. Current recommendations are that NIV may be used for acute exacerbations of COPD associated with hypercapnic respiratory failure (especially those with an arterial pH of 7.25-7.35), that have not responded to standard medical therapy<sup>10,11</sup>.

When first used in exacerbations of COPD, NIV was instituted and monitored by respiratory or critical care specialists in specialist settings. As experience with its use has grown and its fundamental role in the management of severe exacerbations of COPD has been established, NIV has increasingly been instituted by specialists in Emergency Medicine. The value of this approach has been recognised in a consensus statement from the international Intensive Care Medicine community<sup>12</sup>: 'Noninvasive positive-pressure ventilation can be initiated in the ED if staff have been adequately trained.'

- **Mechanical ventilation**

Invasive mechanical ventilation is indicated in patients who fail to respond to NIV within 4 hours or whose clinical condition is such that NIV is precluded<sup>10,11</sup>.

### **3 IAEM recommendations**

#### **3.1 Prevention**

The IAEM strongly supports primary and secondary prevention of COPD, especially in the area of smoking avoidance and cessation.

#### **3.2 Avoiding acute exacerbations**

Several pharmacological treatments have been shown to reduce the frequency and severity of COPD exacerbations. These agents include

inhaled steroids and long-acting bronchodilators, alone or in combination. In addition, non-pharmacological therapies such as pulmonary rehabilitation, self-management and home ventilatory support show promise in this area <sup>13</sup>. Although the role of Emergency Medicine in COPD largely relates to management of acute exacerbations, the IAEM supports strategies to prevent such exacerbations and their attendant impact on the hospital system.

### **3.3 Optimal ED Management of exacerbations**

EDs should continue to play a central role in the management of acute severe exacerbations of COPD. The benefits of non-invasive ventilation in the management of acute severe exacerbations of COPD have been outlined above. Increasingly, NIV is being commenced in the ED. The IAEM recommends the further development of this role to ensure the early instigation of this critical treatment. EDs should be supported in providing NIV through staffing, equipment and training. EDs providing NIV should do so in close collaboration with specialists in Respiratory and Critical Care Medicine.

### **3.4 Hospital at home**

An important recent development in the care of acute exacerbations of COPD is the concept of Hospital-at-home (HaH). The British Thoracic Society (BTS) considers HaH a treatment modality that either avoids hospital admission or facilitates early supported discharge <sup>14</sup>. Admission avoidance schemes assess patients after ED treatment. If admission is not deemed mandatory after specialist respiratory assessment, patients are discharged home with a treatment package and respiratory nurse follow-up. In studies, approximately 30% of patients were eligible and subsequent admission rates were less than 10%. Early discharge schemes assess patients the day after admission, with subsequent early supported discharge. Randomised trials of early supported discharge reported eligibility rates of 36-38%. Studies of both approaches have shown no significant differences in re-admission rates, mortality or number of days in care between HaH and hospital care. National Institute for Clinical Excellence (NICE) guidelines for managing acute exacerbations of COPD suggest that admission avoidance or assisted-discharge schemes should be considered in patients referred to hospital <sup>4</sup>.

The most recent BTS guideline recommends offering HaH to patients with acute exacerbations of COPD unless there is impairment of consciousness, confusion, acidosis, serious co-morbidity or inadequate

social support. BTS favours the early assisted discharge approach because more patients are eligible and recruitment after admission (next day assessment) requires less specialist staffing and allows the HaH team to plan its activity economically. Whatever approach is used, the IAEM strongly supports Hospital-at-Home for COPD.

Emergency Medicine has been at the forefront of developing admission-avoidance schemes and Clinical Decision Units and many EDs now manage certain emergency conditions in their entirety, conditions which were previously admitted to hospital. These include low risk chest pain, head injury, deliberate self poisoning, cellulitis, deep vein thrombosis and headache, amongst others. Given this track record and the desire of specialists in Emergency Medicine to pursue the most efficient ways of managing patients, the IAEM welcomes the opportunity to offer its expertise and enthusiasm, to work in association with respiratory specialists and community colleagues to develop HaH for COPD patients in Ireland.

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