

# Patients Hospitalised with an Acute Exacerbation of COPD: Is There a Need for a Discharge Bundle of Care?

## Abstract:

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## Abstract

Acute Exacerbations of COPD (AECOPD) are the commonest cause of hospitalisation for patients with COPD. A number of interventions are known to improve care for such patients. Internationally and in Ireland, there is significant variation in care delivered to such patients. We reviewed admissions with AECOPD (n=174) to an Irish teaching hospital during one year, to determine if recommended interventions had been delivered to patients prior to discharge. The most frequently delivered of such interventions were: assessment of oxygen requirements 151 (87%) and arrangements for follow-up 135 (78%). The least frequently delivered were: referral for pulmonary rehabilitation 19 (11%) and advice given regarding influenza vaccination 27 (17%). Patients who received care from a respiratory physician or respiratory clinical nurse specialist (RCNS) received more interventions than those cared for by other specialties. This study demonstrates poor compliance with internationally agreed interventions. The introduction of a discharge bundle of care for use in Irish hospitals should be considered.

## Introduction

Acute Exacerbations of COPD (AECOPD) are the main cause of hospitalisations among patients with COPD and place a considerable burden on health services. Ireland has a high rate of hospital admissions for AECOPD with an admission rate 60% greater than the UK<sup>1</sup>. AECOPD are associated with decreased quality of life, a more rapid rate of decline of lung function and with subsequent hospitalisations and death<sup>2</sup>. A number of interventions have been shown to be of benefit for patients hospitalised with an AECOPD<sup>3</sup>. Guidelines recommend that a number of interventions should be in place by the time patients are discharged from hospital to the community. Despite these guidelines, there is evidence that many patients do not receive the recommended interventions while in hospital<sup>4,5</sup>. Within hospitals, respiratory physicians are more likely to deliver recommended interventions when compared to other specialists<sup>6-12</sup>. The aim of the study was to identify the proportion of those patients admitted with AECOPD who had received a number of recommended interventions by the time of discharge. A secondary aim of the study was to examine the association between the delivery of recommended interventions and care under a respiratory physician and a respiratory clinical nurse specialist (RCNS).

## Methods

The Hospital Inpatient Enquiry (HIPE) database was searched to generate a report of discharges admitted with a principal diagnosis of AECOPD (ICD-10 J44, J44.1) between 01/01/2013 and 31/12/2013 to a university teaching hospital. A retrospective review of charts was carried out to determine if ten specific interventions had been delivered to patients prior to discharge (Table 1). The interventions included were agreed with key respiratory physicians in the hospital and are recommended by clinical guidelines (e.g. GOLD)<sup>13</sup>. A total of 219 eligible discharges were identified and of these, 174 (74%) charts were available for review. Each clinical record was reviewed to see if there was documentation of delivery of interventions and a checklist form was completed accordingly. Smoking cessation assistance was considered to have been given if there was documentation of a prescription of nicotine replacement therapy, bupropion or varenicline, and/or review by the smoking cessation team and/or brief intervention delivered by clinical staff. Spirometry was considered to have been done if there was a record of spirometry results in the patient's chart. Assessment of oxygen requirements were determined if there was documentation of satisfactory oxygen saturation of >90% on discharge, or if the patient was assessed for long term oxygen therapy (LTOT). Influenza vaccination advice or history was included as an intervention only for those admissions during the influenza season.

Patients who were transferred to another hospital before discharge (n=12) were excluded from analysis of some interventions e.g. arrangement of follow-up and arrangements made for vaccination. Nine patients documented as unsuitable for review of inhaler technique due to cognitive impairment were excluded from analysis. Thirty-two patients documented as unsuitable for pulmonary rehabilitation or living outside the catchment area for referral were excluded from analysis. Associations between variables were explored using the chi-square test for categorical variables (statistical significance set at P < 0.05).

## Results

The median age of the patients was 73 years, and 54% were male. More than 80% were General Medical Service (GMS) patients (Table 2). A total of 38% were current smokers. Smoking status was not recorded for 5.7% of patients. The proportion of patients who received each recommended intervention is shown in Table 3. Compliance with any single intervention was not 100% across the patient group. More than half (55.2%) of patients received care from a respiratory physician. Care under a respiratory physician was associated with a higher delivery of the following interventions: smoking cessation assistance, arrangements for follow-up, advice regarding pneumococcal vaccination, arrangements for vaccination when appropriate (Table 4). However, the delivery of many interventions remained low, even for respiratory physicians: 19.4% of patients were referred for pulmonary rehabilitation, 23.3% received influenza vaccination advice, and 32% were given a written management plan. For other specialties the rate was even lower at 10.3%, 11.1% and 19.1% respectively. No statistically significant association was found between referral rates to a RCNS by respiratory physicians vs. other specialties (73.9% vs. 73.2% p=0.923). A greater proportion of patients who were seen by a RCNS received the following interventions: review of inhaler technique, written management plan, smoking cessation assistance, documentation of FEV1, follow-up arranged, and recommendations regarding influenza vaccination. These differences were statistically significant (p<0.05).

## Discussion

Our study is consistent with other studies<sup>6-9</sup>, which have demonstrated poor compliance with internationally agreed COPD discharge interventions. In our study, some interventions were delivered to only a minority of patients e.g. only 11% referred for pulmonary rehabilitation. Patients received more interventions if they were under the care of a respiratory physician or RCNS. In particular, patients seen by a RCNS during admission were more likely to receive interventions such as: review of inhaler technique, smoking cessation assistance and recommendations for influenza vaccination. However, some interventions were still not delivered to many patients. Many barriers to implementing interventions for patients with AECOPD have been identified in the literature. Lack of knowledge of the benefits of some interventions e.g. pulmonary rehabilitation may be a factor, particularly for non-respiratory physicians<sup>15</sup>. However, a lack of knowledge cannot explain the low level of delivery of some interventions by those specialised in respiratory medicine. Clinical staff, particularly non-respiratory physicians and nurses may not have the skills to demonstrate inhaler technique. In one study, as few as 7% of healthcare staff could demonstrate the correct use of inhalers to patients<sup>14</sup>. This was likely to be a factor in our study as only one patient not seen by a RCNS had their inhaler technique reviewed. There may be the perception amongst hospital doctors that some interventions are the responsibility of general practitioners. This has been reported in the literature in relation to smoking cessation and vaccination<sup>13</sup>. In Ireland, where vaccination is administered in primary care this may be an issue.

Smoking cessation in patients with COPD has been shown to decrease their mortality yet in our study smoking status was

not even documented in 5.7% of patients. Smoking cessation assistance was not offered to a quarter of smokers, and even for those smokers under the care of the respiratory team, the offer of smoking cessation assistance was sub-optimal. Therapeutic inertia may play a role. There is evidence that many physicians believe that COPD is not a treatable condition, and that nothing can be done for patients with COPD who continue to smoke. Hospital physicians may also believe that smoking cessation assistance is not part of their role. This is despite the benefits of smoking cessation assistance, which should be offered to all patients with COPD who smoke. Therapeutic inertia may also play a role in the low levels of other interventions delivered to patients. In addition, a perceived difficulty in implementing recommendations from guidelines where complex behaviour change is required e.g. written self-management plans, may be a barrier. This may help explain the low levels of delivery of some interventions by respiratory physicians and RCNS. Referral to pulmonary rehabilitation may be affected by the long waiting times reported for this service, which may be a deterrent to referral. The reasons for low rates of performance of spirometry and oxygen assessment require exploration.

A number of limitations to this study exist. As with other studies of this kind, it is possible that interventions were delivered to patients but not recorded in patients' charts. This study was carried out in a single centre and results may not be pertinent to other hospitals. Given that this centre has a multi-disciplinary respiratory team these results may in fact be more favourable than in other centres. Results of this study are however consistent with findings from other studies. Several initiatives have been described to improve the delivery of recommended interventions to patients hospitalised with AECOPD. One strategy is the use of electronic reminders. However, evaluation of this strategy did not demonstrate increased adherence to guidelines in one study. A survey of physicians in the USA identified measures that physicians themselves believed improved adherence to guidelines for COPD. These included changing responsibilities of clinical staff, and providing feedback on routine guideline adherence to clinicians. Whether these factors translate to an increased adherence to guidelines is unknown. Introducing quality improvement indicators for the management of COPD with reporting of performance to clinicians improved the delivery of interventions in an outpatient setting in one study.

Bundles of care have been introduced for the management of hospitalised patients with COPD at different stages in their care pathway, in order to help standardise the care of patients, and maximise adherence to guidelines. We have previously demonstrated that the introduction of an admission care bundle improves the quality of care delivered to patients admitted with AECOPD. The British Thoracic Society, together with a number of partners have developed discharge bundles of care for patients with COPD, which are now in use in 18 UK hospitals. A discharge bundle of care is a checklist to ensure that patients being discharged from hospital to the community have received a number of high impact interventions with the aim to reduce readmissions. The introduction of a discharge bundle of care in hospitals has resulted in reduced readmissions for COPD and increased adherence to guidelines. Introduction of a discharge bundle of care improved referral for smoking cessation assistance from 18.2% to 100% and review of inhaler technique increased from 59.1% to 91.2% of admissions. Referral rates to pulmonary rehabilitation rose from 13.6% to 68%. Similar improvements were seen in administration of self-management plans. While the barriers to the delivery of interventions in this hospital require further exploration, this study supports the introduction of measures to improve the delivery of interventions to patients with AECOPD. A discharge bundle of care for patients hospitalised with AECOPD should be considered and is supported by evidence from the literature. This is likely to aid in standardising care for patients and reduce variation in the delivery of care, particularly in hospitals, which may not have a dedicated respiratory team. On-going audit of the care of all patients admitted to hospital with AECOPD is required. Training of medical staff of the benefits of interventions for patients with COPD is also important.

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