

Caring for the burden of COPD

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P M A Calverley

How delivery of care affects the subsequent progress of COPD patients

In the five years since the publication of the first Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) report,¹ awareness of COPD has increased appreciably. The early hope that the problem of COPD would recede as smoking numbers fell has not been realised, partly because of the ageing population in developed countries and the increase in tobacco consumption and air pollution in developing economies.² This problem is strikingly illustrated by the high prevalence of COPD recorded in the PLATINO study from South America which used carefully standardised techniques to make comparisons between five large South American cities where the prevalence of COPD varied from 7.8% to 19%.³

The problem of COPD is therefore rather larger than many had anticipated, but we are not short of effective responses to it. Intensive smoking cessation programmes can produce long term benefits, although it may take many years before these become evident,⁴ while simply changing the form of heating used in developing countries can have more immediate effects.⁵ Several authoritative guidelines have evaluated different management strategies and produced coherent programmes for their implementation.^{6,7} We now have safe long acting inhaled bronchodilator drugs that work throughout the day,⁸ while inhaled corticosteroids not only reduce the risk of exacerbation⁹ but may impact on mortality.¹⁰ Combining long acting β agonists and inhaled corticosteroids is more effective than either treatment alone,¹¹ and the treatment effects are apparent earlier than previously thought.¹² Pulmonary rehabilitation produces important clinical benefits in those who complete the programme¹³ and may help reduce hospital admissions.¹⁴ Oxygen therapy can improve exercise performance¹⁵ but is not needed to reduce post-exercise breathlessness.¹⁶ These and many other interventions form a rational basis for the management of stable disease and almost certainly decrease hospital admissions and mortality. COPD exacerbations predict future mortality¹⁷ and are related

not only to the degree of airflow obstruction but the amount of activity the patient takes,¹⁸ thus providing a rationale for early pulmonary rehabilitation following discharge from hospital.¹⁹

However, having evidence based treatment is only half the battle. It is just as important to use it in everyday clinical care and here the picture is less cheerful. Until now we have had little information about how the delivery of care influences the patient's subsequent progress. This gap has now been filled by two papers from the Royal College of Physicians (London) Clinical Effectiveness Unit published in this issue of *Thorax*. Their conclusions are important and have implications for COPD care that are likely to extend beyond the UK. The data of Price *et al*²⁰ and Connolly *et al*²¹ are taken from a national audit of COPD patients conducted in 2003 in 234 units around the UK. A detailed questionnaire was sent to each hospital, asking them randomly to select 40 patients with a diagnosis of COPD who had been admitted and followed for at least 90 days. A cross-check of the reliability of the clinical data in a subset of patients found good agreement between data analysed in different ways with a kappa score of 0.8. In addition, the authors developed an organisational score to identify desirable features in the hospital care of COPD. These included the availability of a high dependency unit, an appropriate number of intensive care beds, an early warning system to detect patients who were deteriorating, an early discharge scheme, pulmonary rehabilitation, and non-invasive ventilation. The higher the score, the better organised was the hospital for COPD care. Altogether, almost 8000 episodes of care were available in 7529 patients from the 234 contributing units. The first episode of care was the basis of the reports in these studies.

Hospitalisation with COPD in the UK is a serious event. The inpatient mortality of 7.4% and 90 day mortality of 15% compare unfavourably with reported outcomes for acute myocardial infarction treated in hospital. Almost a third of patients were readmitted within

90 days of discharge and over 40% of admissions spent more than a week in hospital. These findings were similar to those in a previous UK survey of COPD patients²² and indicate either that we have made little progress in managing COPD or that even sicker patients are now admitted to hospital but are being managed better. The present data cannot resolve this issue. Certainly, similar factors to the previous studies were identified as being important in prognosis and readmission. One striking finding was the usefulness of a simple performance score in determining prognosis, length of stay, and likelihood of readmission. This scale, adapted from the cancer literature and familiar to physicians managing patients with lung cancer, appears to be a valuable adjunct to the more usual ways of monitoring patient progress. Length of hospital stay was related to the availability of an early discharge scheme which has been shown to reduce length of stay in specific clinical trials,^{23,24} but it was also related to having written guidelines for COPD management and to the number of respiratory specialists available to manage the patients.

Rather more disappointing is the lack of a clear relationship between the organisational score and more favourable outcomes. This may reflect the limitation of a simple composite unweighted score that has not previously been validated. Alternatively, only some of the variables contained within it may be important where factors other than those related to the process of care determine the likelihood of the patient returning to hospital dying. Certainly the size of the hospital catchment area, the number of patients admitted, and the size of the hospital had little impact and, disappointingly for enthusiasts of the UK Government's star rating system, there was no immediate relationship between outcomes such as mortality and readmission and the stars attributed to the particular secondary care trust. What is abundantly clear is that care varied widely between hospitals—as did the outcome of hospitalisation—and this is unacceptable.

Over one third of the patients admitted with COPD were 75 years or older. Their care was less equitable than that of the younger patients. They were less likely to have their blood gases documented, their lung function tested, or to be given corticosteroids which are known to reduce inpatient hospital stay.²⁵ As anticipated, age was an important determinant of future mortality with a 3.25-fold increase in inpatient mortality in patients who were over 85 compared with those aged 65 or

less. This appeared to be true irrespective of who cared for the patient and was unrelated to the identified deficiencies in inpatient care. Age was an important determinant of the length of stay but did not influence the subsequent likelihood of admission.

These data emphasise the serious nature of COPD admissions, particularly in elderly patients, and the substantial burden that patients put on the health-care system once they have been hospitalised. The high early readmission rate, which occurred irrespective of the length of inpatient stay, is a major challenge. Studies like this have limitations, with a potential risk of selection bias despite the efforts made to avoid this. Details of co-morbidities were obtained but their role in determining the different outcome in the elderly subjects was not elucidated, and this is an area for future study. The worrying differences between units in their outcomes, even allowing for differences in the case mix of patients admitted, suggest that much can be done by standardising the availability of facilities between hospitals and raising awareness of the benefits of this standardised COPD care. The use of a simple scale to judge how well an individual is coping with their illness appears to be a powerful predictor and its relationship to other known prognostic markers like the BODE index²⁶ would be a useful future research topic. Targeting patients with a poor functional status for additional support may be a more cost effective way of improving COPD care in those with severe disease than general nurse led interventions have proved to be.²⁷

With the burden of COPD continuing to rise, the number of individuals presenting to hospital—particularly those in the eighth decade and beyond—will remain a major healthcare problem. Optimising management in stable disease has clear benefits for the individual and may prevent admission to hospital with COPD. However, ensuring a high standard of delivery of care and identifying

patients at greatest risk of readmission may prove to be just as important in improving COPD management and reducing its costs.

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Correspondence to: Professor P M A Calverley, Division of Infection and Immunity, Clinical Sciences Centre, University Hospital Aintree, Liverpool L9 7AL, UK; pmacal@liverpool.ac.uk

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