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Author's response: 'risk disclosure prior to bronchoscopy'—Bianchi et al

We are grateful to Dr Bianchi and colleagues for their interest in our study.[1] They argue that 'knowledge of local and even personal bronchoscopic practice and performance' is necessary to determine the level of risk to the patient from the procedure and hence the degree of information that must be provided.[2] This is certainly true if there is reason to believe that the risks in an institution or for an individual differ significantly from the norm—in either direction.

A database, such as that used in the Sheffield Teaching Hospitals, for recording complications following bronchoscopy is a valuable resource for auditing outcomes and quality assurance. However, one must be cautious when interpreting the absence of a serious complication in any given series. Hanley and Lippman-Hand, in a now-classic paper, described the 'rule of three' for such series: if none of n patients showed the event of interest, we can be 95% confident that the chance of this event is at most 3/n.[3] For example, the Sheffield data showing no death with 1261 fibreoptic bronchoscopies translate into a 95% confidence limit ranging from zero to an upper limit of 1 death in 420 procedures (Clinicians may find the other implication of using CI—that occurrence of an uncommon complication is not of itself an evidence of poor performance—more comforting). The absence of an uncommon complication in a personal or an institutional series will not of itself help the clinician strike the difficult balance between providing too much and too little risk information.

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Factors that predict failure in home management of an acute exacerbation of COPD

There is increasing interest in managing patients with non-severe acute exacerbation of chronic obstructive pulmonary disease (AECOPD) in the community. Hospital at Home and COPD Outreach programmes facilitate discharge of patients that would otherwise require hospital admission and have been shown to reduce hospital stay,[1] readmission[2] and healthcare costs without compromising patient care and satisfaction.[3] Despite the human and health-related benefits associated with home services, ~30% of patients relapse within 8 weeks, requiring hospital readmission.[2]

In an effort to better understand the factors that predict relapse in these patients, we prospectively studied consecutive admissions with AECOPD discharged to a COPD Outreach programme. Patients with an AECOPD who met specific criteria[4] were enrolled within 24 h of presentation to hospital. At presentation demographics, number of hospitalisations in the previous year, oxygen use, vaccination status (pneumococcal and influenza) and smoking history were assessed. Breathlessness and quality of life scores were recorded and oxygen saturations and spirometry were measured. Rehospitalisation data were collected at day 14, 6 weeks and 3 months following discharge. Readmission for AECOPD was defined as hospitalisation for >24 h and was assessed using hospital records.

Patient variables were analysed for their association with readmission by day 14, 6 weeks and 3 months using χ^2 or the Fischer exact test. Multivariate analyses to evaluate for independent risk factors were performed using logistic regression with readmission as the categorical dependent variable. Admissions for reasons other than COPD were not included in the analyses.

In total, 349 admissions with AECOPD were enrolled in the study. There were 46 readmissions (13%) for AECOPD to hospital by day 14, 81 (23%) by 6 weeks and 106 (30%) by 3 months. The study had approximately equal numbers of males (49%) and females (51%), with a mean age of 69.2 years. Median FEV_1 (forced expiratory volume in 1 s) % predicted was 46.43%.

Univariate analysis is shown in table 1. We found no association between readmission and age, gender, spirometry, quality of life score or length of index admission.

Multivariate analysis identified that hospitalisation in the previous year (p=0.03, OR 2.26, CI 1.1 to 4.8) and a Borg score ≥3 (p=0.04, OR 2.15, CI 1.0 to 4.6) predicted readmission by day 14 in 75% of cases. Long-term oxygen therapy (p=0.001, OR 3.28, CI 1.6 to 6.5), pack-year history ≥50 (p=0.008, OR 3.13, CI 1.4 to 7.3) and Borg score ≥3 (p=0.001, OR 3.31, CI 1.6 to 6.8) predicted 6 week admission in 68.9%.

Our study identifies independent risk factors that are easy to assess, reproducible and can be carried out as early as arrival to hospital, allowing these patients to be identified early in their admission. A significant factor associated with early readmission was the level of dyspnoea reported by patients at the time of enrolment. This reflects the importance of the subjective symptom of breathlessness as a factor that drives patients to seek medical attention.

This is the first study to identify specifically the factors that are associated with rehospitalisation in exacerbations managed out of hospital. This management strategy will become increasingly important in reducing the costs associated with AECOPD

Table 1 Univariate analyses of association between independent variables and readmission

Variable	Day 14	Week 6	Month 3
Admissions in previous year	p=0.02 (OR 2.3, CI 1.1 to 4.7)	p=0.014 (OR 2.0, CI 1.2 to 3.5)	p=0.027 (OR 1.8, CI 1.0 to 3.0)
Long-term oxygen therapy	p<0.05 (OR 1.95, CI 0.9 to 3.8)	p<0.001 (OR 3.84, CI 2.2 to 6.7)	p<0.001 (OR 3.5, CI 1.9 to 6.3)
Portable oxygen	p=0.51 (OR 1.33, CI 0.6 to 2.9)	p=0.02 (OR 2.76, CI 1.5 to 5.1)	p <0.001 (OR 3.28, CI 1.7 to 6.3)
Home nebuliser	p=0.43 (OR 1.38, CI 0.6 to 3.1)	p=0.36 (OR 1.3, CI 0.71 to 2.5)	p=0.24 (OR 1.4, CI 0.8 to 2.7)
Oxygen saturation <92% on room air	p=0.28 (OR 1.51, CI 0.7 to 3.3)	p=0.005 (OR 2.17, CI 1.4 to 3.3)	p=0.02 (OR 1.7, CI 1.2 to 2.4)
Pack-year history ≥50	p=0.78 (OR 1.07, CI 0.35 to 3.3)	p=0.03 (OR 3.25, CI 1.5 to 6.9)	p=0.01 (OR 2.86, CI 1.3 to 6.2)
Borg scale ≥3	p=0.026 (OR 2.47, CI 1.2 to 5.1)	p <0.001 (OR 3.23, CI 1.7 to 6.0)	p <0.001 (OR 3.23, CI 1.7 to 6.1)
MMRC scale ≥3	p=0.02 (OR 2.56, CI 1.1 to 5.7)	p=0.01 (OR 2.0, CI 1.1 to 3.6)	p=0.01 (OR 2.0, CI 1.1 to 3.4)
Vaccination status (pneumococcal and influenza)	p=0.65 (OR 1.2, CI 0.58 to 2.4)	p=0.8 (OR 1.1, CI 0.61 to 1.9)	p=0.83 (OR 0.94, CI 0.55 to 1.6)

Pack-year history, number of packets of cigarettes smoked per day × total number of years smoking; Borg scale refers to level of dyspnoea at enrolment; MMRC (modified Medical Research Council) scale ≥3 refers to level of dyspnoea at enrolment.

but efforts need to be made to reduce readmission rates. Further investigation needs to be carried out to identify if interventions can reduce rehospitalisation in the high risk patients identified by this study and what these interventions may be.

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ARDS outcomes: a marker of critical care quality in the UK?

Finney and colleagues'[1] recent editorial discussed the results of the UK-based CESAR trial,[2] which investigated extracorporeal membrane oxygenation (ECMO) in severe hypoxic respiratory failure. The editorialists concluded that this trial provided powerful support for the centralisation of care for severe acute respiratory failure (ARF) in a limited number of hospitals, with appropriate expertise and resources, including ECMO. Whilst this may be true, we suggest that CESAR also supports the contention that the provision of critical care services for the management of severe ARF in UK intensive care units requires further detailed auditing.

The CESAR trial's pragmatic design gives an insight into the prevailing standards of care for patients with severe ARF. Although lung protective ventilation[3] is a well established, uncontroversial practice, only 30% of the patients in the control group received this modality. It is of concern that 17 of 85 patients arriving alive at the ECMO centre improved with what would be generally recognised as a standard adult respiratory distress syndrome (ARDS) treatment protocol (tidal volume 4–8 ml/kg, plateau pressure <30 cm H_2O, FiO_2 titration to SaO_2 >90%, diuresis to dry weight, packed cell volume of 40%, prone positioning and full nutrition). Significantly 14 (82%) of these individuals survived, suggesting that outcomes in severe ARF in the CESAR trial are a reflection of the quality of the critical care process that is delivered.

In this context it is not unreasonable to question why there is such a disparity in critical care provision within the UK. In Australia and New Zealand critical care medicine has been a speciality for >25 years with a faculty, fellowship and, more recently, a college. Consequently there is less variability in service provision and the delivery of care which is central to clinical governance. This may explain, in part, why outcomes for many aspects of critical care, including ARDS, are better in Australasian centres.[4] Unfortunately the UK has fallen behind this model of service delivery and critical care has only been recognised as a speciality since 2002. In the first instance establishing a faculty of critical care medicine would go a long way towards redressing the balance.

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