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Can the Melbourne Scoring Scale be used to assess postoperative pulmonary complications in high-risk patients following lung resection?

Barbara C Brocki1 • Elisabeth Westerdahl2,3 • Jane Andreasen1,4 • Jan J Andreasen5,6

1Department of Occupational Therapy and Physiotherapy, Aalborg University Hospital, Aalborg, Denmark
2Department of Physiotherapy, Faculty of Health and Social Sciences, Örebro University, Örebro, Sweden
3Department of Medical Sciences, Uppsala University, Uppsala, Sweden
4Public Health and Epidemiology Group, Department of Health, Science and Technology, Aalborg University, Aalborg, Denmark
5Department of Cardiothoracic Surgery, Aalborg University Hospital, Aalborg, Denmark
6Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

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Objectives
Postoperative pulmonary complications (PPC) are common following lung resections, but there is no consensus in the literature on the definition of a clinically relevant PPC. This study aimed to use the Melbourne Scoring Scale (MGS) to determine the frequency and predictors of PPC in patients scheduled for lung resection on suspicion of or due to cancer.

Methods
In a prospective observational design, we assessed 87 consecutive patients following lung resections in Aalborg University Hospital, Denmark. Patients were preoperatively classified as being at high PPC-risk (n= 68) or low PPC-risk (n=19), based on the presence of one or more of the items: FEV1 or carbon monoxide diffusion capacity (DLCO) ≤70%, age ≥70 years or scheduled pneumonectomy. Data on PPC was collected daily during hospital stay and re-evaluated on room air, 2 consec days under the ROC curve of 0.851), 95% CI 2.2-56.6 and 1.1-36.8 for FEV1 and DLCO, respectively, when compared to the predefined cut-off value of ≤70% (Figure 1).

Results
Table 1 shows demographics and surgical data. The actual frequency of PPC according to the MGS was 11% (n=10), all cases within the predefined high-risk group suggesting that the MGS is feasible to use. Pneumonia was diagnosed in nine patients (Table 2). In a multivariate regression analysis we found that a cut-off value for FEV1 and DLCO ≤ 60% was a better predictor for higher PPC risk (area under the ROC curve 0.851), 95% CI 2.2-56.6 and 1.1-36.8 for FEV1 and DLCO, respectively, when compared to the predefined cut-off value of ≤70% (Figure 1).

Conclusions
The MGS can be used to identify patients at high risk of postoperative and clinically relevant PPC after lung resections. Patients with preoperative values of FEV1 ≤ 60% or DLCO ≤60% are in particular at high PPC-risk. Research is needed to evaluate the effects of preventable interventions targeting patients at high-risk of developing PPC.