Combined Effect Of Lung Function Level And Rate Of Decline Increases Morbidity And Mortality Risk

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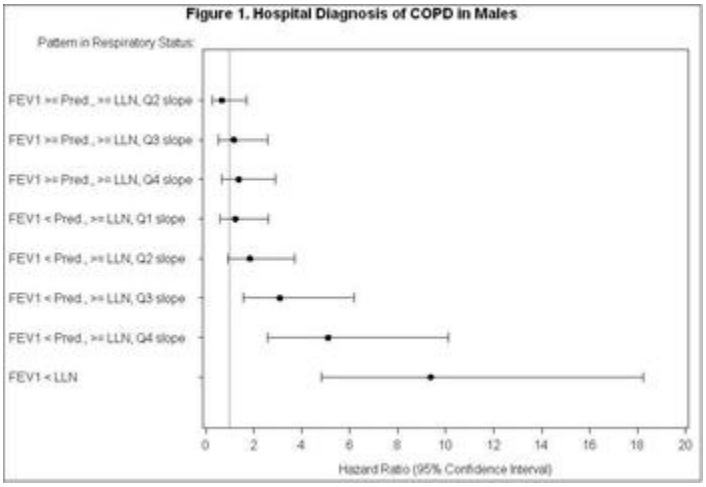
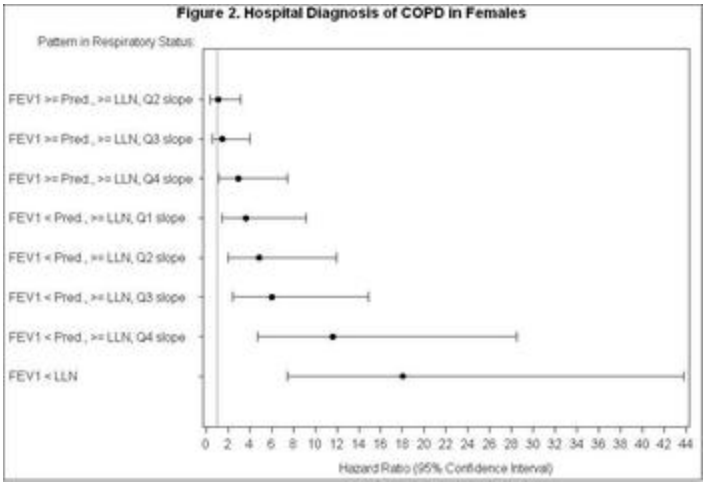
RATIONALE: Evaluation of the combined effect of the baseline level of lung function and subsequent rate of lung function decline on future morbidity and mortality helps to identify high risk groups to be targeted for prevention. **METHODS:** Risks associated with the combined effect of baseline forced expiratory volume in one second (FEV_1) and the FEV_1 slope were estimated using spirometry data from the first two examinations (1976–78 and 1981–83) of the Copenhagen City Heart Study (1976–2003) and outcomes for hospital diagnoses of chronic obstructive pulmonary disease (COPD), COPD or coronary heart disease mortality, and all-cause mortality (n=10,457). Individuals with baseline FEV_1 ≥ the lower limit of normal (LLN) were categorized into eight categories according to whether their FEV_1 value was ≥ or < the predicted value and quartiles of the FEV_1 slope. Individuals with baseline FEV_1 < LLN constituted a ninth category. Morbidity and mortality risks were evaluated for these nine categories using Cox proportional hazards models. Models were adjusted for baseline age and height. Hazard ratios (HR) and 95% confidence intervals (CI) were estimated by gender, for never smokers, and for younger and older age groups (≤ 45 and > 45 years at baseline). **RESULTS:** Significant increasing trends in the HRs were identified with increasing quartiles of the FEV_1 slope in categories with baseline FEV_1< predicted and also ≥ LLN, for all three outcomes. For COPD morbidity, HRs (95% CI) for the category of baseline FEV_1< predicted and ≥ LLN and the quartile with the steepest FEV_1 slopes reached 5.11 (2.58–10.13) for males (Figure 1), 11.63 (4.75–28.46) for females (Figure 2), and 3.09 (0.88–10.86) for never smokers. For COPD or CHD mortality and all-cause mortality, HRs (95% CI) for this category were 3.03 (1.86–4.95) and 2.01 (1.59–2.54) for males, 7.47 (3.49–16.00) and 2.40 (1.87–3.08) for females, and 4.90 (1.48–16.30) and 1.89 (1.27–2.80) for never smokers. Significant increasing trends in the HRs were also identified with increasing quartiles of the FEV_1 slope in categories with baseline FEV_1< predicted and ≥ LLN in both the younger and older age groups. **CONCLUSIONS:** While baseline FEV_1 < LLN demonstrated significantly elevated risk, combinations of baseline FEV_1 and the FEV_1 slope showed a steadily increasing trend in morbidity and mortality risk.





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