

# COPD

## Incidence, prognosis and comorbidity with special focus on heart disease

### Akademisk avhandling

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av

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Avhandlingen baseras på följande delarbeten:

- I. Lindberg A, **Eriksson B**, Larsson L-G, Rönmark E, Sandström T, Lundbäck B. **Seven-Year Cumulative Incidence of COPD in an Age-Stratified General Population Sample.** *Chest* 2006; 129(4): 879-885.
- II. Lundbäck B, **Eriksson B**, Lindberg A, Ekerljung L, Müllerova H, Larsson L-G, Rönmark E. **A 20-Year Follow-Up of a Population Study-Based COPD Cohort-Report from the Obstructive Lung Disease in Northern Sweden.** *COPD: Journal of Chronic Obstructive Pulmonary Disease* 2009, 6:263–271.
- III. **Eriksson B**, Lindberg A, Müllerova H, Rönmark E, Lundbäck B. **Association of heart disease with COPD and restrictive lung function – Results from a population survey.** *Respiratory Medicine* 2013, 107(1):98-106.
- IV. **Eriksson B**, Backman H, Bossios, A, Bjerg A, Hedman L, Lindberg A, Rönmark E, Lundbäck B. **Only severe COPD is associated with being underweight - results from a population survey.** *European Respiratory Journal Open Research* 2016; 2: 00051-2015. E-pub
- V. **Eriksson B**, Backman H, Ekerljung L, Axelsson M, Lindberg A, Rönmark E, Lötvall J, Lundbäck B. **Impact of comorbidities on COPD in Sweden after decades of decreasing smoking burden.** *In manuscript.*



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GOTHENBURG

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### ABSTRACT

The aim of the thesis was to contribute to the knowledge on chronic obstructive pulmonary disease (COPD) with respect to incidence, risk factors, prognosis and comorbidities. With the epidemiological approach, samples from the general population in Norrbotten and in Västra Götaland were analysed. The criterion used was the fixed ratio of the expiratory volume in the first second ( $FEV_1$ ) through vital capacity (VC) of below 0.70. Incidence of COPD during 7 years was 11.0% and for more severe disease (GOLD II-IV) 4.9%. On the basis of incidence risk factors for COPD were found to be smoking and age. Prognosis of COPD was studied and we found that 46% were still alive after 20 years. Risk for death was associated with age, male sex, disease severity and comorbid heart failure and ischemic heart disease. COPD severity and low  $FEV_1$  were signs for worse prognosis as well as symptoms of chronic bronchitis. The best prognosis was found among subjects with asthma like phenotype. Heart diseases and hypertension were prevalent in COPD, and COPD common among subjects reporting heart diseases. Present heart diseases was most pronounced in more severe grades of COPD and over 50% reported heart disease, hypertension or medication for these diseases in the most severe COPD. In a population with almost halved smoking frequency 15 years later COPD prevalence was lower, but the pattern of comorbidities in COPD remained similar. More severe COPD was found to be associated with low BMI and being underweight. Obesity was not more prevalent in COPD compared to the general population.

The studies give implications for the clinic. Spirometry should be used frequently, and repeatedly, in patients exposed to risk factors and with respiratory symptoms. In patients with COPD it is of great importance to consider concomitant diseases, particularly heart diseases. Equally important is to consider presence of airflow limitation among patients with heart diseases. This should have impact on treatment of both heart disease and COPD. Although prognosis is impaired among patients with COPD, reassurance can be communicated. Reversibility on spirometry should be evaluated in order to identify patients with asthma-COPD overlap since it may influence treatment. Both underweight and obesity in COPD should be identified and attempts to intervene should be considered. Identifying impaired lung function, especially in obesity, although not fulfilling COPD criterion is imperative.

**Keywords:** COPD, epidemiology, incidence, risk factors, comorbidity, heart diseases, BMI

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