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**Title:** Emphysema, COPD and lung cancer screening. Update of an ongoing study

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**Body:** Recently, screening with low-dose CT (LDCT) has been shown to reduce mortality from lung cancer. We reported that emphysema on a LDCT, but not COPD (FEV1/FVC<70%), is associated with an increased risk of lung cancer. We present an update of our screening study. Data comes from a prospective cohort of an ongoing lung cancer screening study held at our center. From 2000 to 2011, current and former smokers of at least 40 years of age and at least 10 pack-years of smoking were recruited. All had annual LDCTs and most a baseline spirometry. Lung cancer incidence density and its association with risk factors were calculated with logistic regression. From a cohort of 2697 subjects, 1925 (25% females) who had LDCTs and a spirometry were analyzed. Median age and smoking history were 55 and 33 pack-yrs, respectively. Emphysema on LDCT and airway obstruction on spirometry were found in 25% and 28%, respectively. Lung cancer was diagnosed in 38 subjects, 26 on the baseline LDCT and 12 in annual follow-ups. The most frequent histologic types were adenocarcinoma (53%) and squamous cell carcinoma (21%). There were 4 (11%) small cell carcinomas (all in stages IIIB or IV). The majority of NSCLC were identified in stage I (79%). The incidence density for lung cancer in subjects with emphysema, COPD, or with none was 36.1, 24.7 and 2.5 per 1000 person-yrs, respectively. Adjusting for age, sex and smoking, emphysema (OR 4.76; IC95% 2.32-9.77) and airway obstruction (OR 2.65; IC 95% 1.26-5.57) were independent risk factors for lung cancer. In a cohort of individuals participating in a lung cancer screening study, emphysema and airway obstruction are significantly associated with a greater risk of lung cancer.