**Title:** Emphysema and respiratory bronchiolitis (RB) on high resolution computed tomography of the thorax (HRCT) in smokers with normal spirometry

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**Body:** Introduction: diagnosis of COPD is usually late. It is known that smokers can have pulmonary emphysema with normal spirometry, and later develop COPD. Patients with emphysema have more lung cancer and increased rate of FEV1 decline. Also a significant predictor for smoking cessation is a CT abnormality detected on a screening examination. Most of these studies have been done in lung cancer screening with low dose CT, many in men, and in non Hispanic population. Objective: to describe the prevalence of emphysema and other smoking related pathologies in a population of asymptomatic Hispanic smokers, women and men, with normal spirometry, studied with HRCT. Methods: our institution has been offering a pulmonary check-up for smokers since January 2008. We designed a standard protocol to study this cohort. Smokers have pre and post bronchodilator spirometry, DLCO (ATS standards), HRCT (Siemens Sensation 64 channels), Modified Medical Research Council (MMRC) and a visit to a pulmonary physician. Results: 337 smokers, 184 (54.6%) females, age 59.3 ± 9.2 (mean and standard deviation) years old, 32.2 ± 18.8 packs a year, 247 (73.3)% current smokers. From 283 (83.9%) smokers with normal spirometry, 122 (43.1%) have emphysema, 71 (25%) have RB, and 10 (3.5%) have interstitial lung disease, 198 (69.9%) have MMRC=0. From 122 with emphysema and normal spirometry, 46 (59.7%) have low DLCO. Conclusion: a large number of asymptomatic smokers studied with HRCT have emphysema and RB with normal spirometry. DLCO could be an early marker of emphysema in this population.