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**Title:** Physician's mistakes in the interpretation of spirometry

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**Body:** Background. The most recent ATS/ERS recommendations on lung function testing include a definition of airflow obstruction based on lower limit of normal (LLN) of FEV1/FVC and suggest to measure total lung capacity (TLC) in suspected cases of "pseudo-restriction" (normal FEV1/FVC ratio because of concomitant reductions in FEV1 and FVC), that can conceal airflow obstruction if the subject does not exhale long enough. Aims. To evaluate the skill of physicians in the interpretation of spirometry. Methods. A questionnaire focusing on the interpretation of five spirograms was administered to 127 physicians (aged 25-67yrs; 39% pulmonologists, 20% geriatrics). Correlates of spirometric misinterpretation were assessed by logistic regression. Results. Overall, 31% of physicians made at least one mistake in the interpretation of the spirograms administered. The percentage decreases to 15% among pulmonologists (OR=3.7; p=0.005). One quarter of physicians wrongly diagnosed airflow obstruction in a 75yrs old subject with FEV1/FVC<70% but FEV1 and FEV1/FVC>LLN. About 1 out of 5 physicians did not recognize a mixed ventilatory defect (obstruction + restriction), while less than 15% (45% of pulmonologists) highlighted the need to measure TLC in suspected pseudo-restriction. Factors significantly associated with a lower amount of mistakes included higher n° of test performed, scientific articles read, respiratory congress attended, COPD and asthma patients visited in the last year. Conclusions. Inappropriate spirometric interpretation is not rare among physicians and airway obstruction is still frequently overdiagnosed among elderly. Diagnosis by pulmonologists and scientific update of physicians allow to reduce spirometric interpretative errors.