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**Title:** Classification of clinical spirometry data using global lung initiative (GLI) and national health and nutrition examination survey (NHANES-III) models

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**Body:** RATIONALE: Pulmonary Function Testing is central to distinguishing normal from abnormal patients in Cardiac, Pulmonary, and other branches of Medicine. The National Health and Nutrition Examination Survey-III (NHANES-III) equations provide predicted normal values (Pred) and lower limits of normal (LLN) from 8 to 80 years of age. The recent Global Lung Initiative (GLI-12) equations provide values from 3 to 95 years of age. We compare clinical data classification using the NHANESIII and GLI prediction equations. METHODS: We used clinical data from Intermountain Medical Center and LDS Hospital patients (Salt Lake City, Utah) from 2001-2012. We analyzed data from 10-80 year old Caucasian patients. We used the NHANESIII and the GLI-12 prediction equations to calculate the Pred and LLN for FEV1, FVC, and FEV1/FVC. We compared categorizations using both approaches. RESULTS: We studied 17,107 spirograms from Caucasian patients (8,143 males, mean age 54.5, SD 16.1 and 8,964 females, mean 54.4, SD 15.5). Pred and LLN values were similar for both NHANES-III and GLI-12, but differences existed. These differences appear gender and height dependent. We observed small differences in normal/abnormal patient categorizations for FEV1, FVC, and FEV1/FVC when comparing NHANES-III and GLI-12 equations. CONCLUSION: We observed small differences between NHANES-III and GLI-12 categorization for both men and women. Differences are greatest for FVC. The GLI-12 equations categorize more PFT laboratory patients as normal than those for NHANESIII.