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Title: Influence of different spirometry interpretation algorithms (SIA) on decision making among primary care physicians

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Body: Background: Typically, the only spirometric data required for clinical decision making are the Forced Expiratory Volume in one second (FEV1) and the Forced Vital Capacity (FVC). Limitations of SIA promoted for adoption in primary care have been described (Can Fam Physician October 2011 57: 1148-1152, 1153-1156). Aims and Objectives: This study examines how different SIA may influence decision making among primary care physicians. Method: Thirty seven primary care physicians were asked to interpret nine spirograms presented twice in random sequence using two different SIA (as stand alone aids) and touch pad technology (remote audience response devices) for anonymous data capture and recording. Results: We observed important differences in the interpretation of the same spirograms using two different SIA. When the pre-bronchodilator FEV1/FVC ratio was greater than 0.70 one algorithm lead to a normal interpretation; the second SIA prompted a bronchodilator challenge revealing changes in FEV1 that were consistent with asthma. The reliance of changes in FEV1 after bronchodilator challenge to distinguish asthma from COPD in one SIA led to consideration of asthma despite the presence of data that was also consistent with COPD; the latter SIA did not include a logic string leading to a post-bronchodilator FEV1/FVC so a definitive consideration of COPD could not be made. The absence of a post-bronchodilator FEV1/FVC decision node in one algorithm prompted referral for evaluation of low FVC. Conclusions: This pilot study suggests that different SIA may influence decision making and lead clinicians to interpret the same spirometry data differently.