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Title: Asthma control test/Questionnaire for assessing asthma control: Systematic review and meta-analysis

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Body: Background: Currently the cornerstone of asthma management is to achieve and maintain asthma optimal control, but the diagnostic performance of Asthma control test (ACT) and Asthma Control Questionnaire (ACQ) has not systematically been evaluated. Objective: We explored the diagnostic performance and its comparison between ACT and ACQ. Methods: Studies concerned with the accuracy of ACT and/or ACQ for assessing asthma control were searched from Pubmed, CENTRAL, Web of Science, Ovid and Embase. The summary estimates of sensitivity, specificity, and diagnostic odds ratios (DORs) at different levels of asthma control were performed by using bivariate random effects model and hierarchical summary receiver operator characteristic (HSROC) model. Results: Twenty-two studies with 12909 subjects in ACT and 4447 in ACQ were identified. The summary estimates in ACT for assessing controlled, not-well controlled, and uncontrolled asthma were sensitivity (0.81, 0.77 and 0.79), specificity (0.79, 0.78 and 0.73), and DORs (15.56, 12.42 and 10.46), respectively, and those in ACQ were sensitivity (0.93, 0.72 and 0.87), specificity (0.65, 0.83 and 0.66), and DOR (24.92, 11.98 and 12.72), respectively. There were no statistical differences in assessing levels of asthma control between ACT and ACQ by using HSROC areas under the curve (all P>0.05). Subgroup and meta-regression implied that age, settings, asthma severity, and the race could influence the diagnostic accuracy. Conclusion: The diagnostic performance between ACT and ACQ is not different, but clinicians need to consider the impact of the potential factors when establishing asthma control levels to promote therapies in a real-world setting.