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Title: Meta analysis of asthma exacerbation rates in adult and pediatric asthmatics managed using fractional exhaled nitric oxide versus standard clinical parameters alone

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Body: Introduction: A Meta-analysis of fractional exhaled nitric oxide (FeNO) versus standard management was published in 2012 (Petsky et al). The primary endpoint was the number of subjects with asthma exacerbations. However, the rate of asthma exacerbations is considered to be a more appropriate endpoint as it takes into account subjects who have multiple exacerbations. The data from the these studies was thus reanalyzed to include all 6 adult and pediatric studies. Objective: Meta-analysis of asthma exacerbation rates in adult and pediatric studies during asthma managed using FeNO versus standard clinical parameters alone. Methods: All 5 available adult and pediatric studies from the original Cochrane data set were included. The Powell et al study (2011) in adults was also included. Results: There were a total of 209/393 adult/pediatric subjects in the FeNO groups and 209/389 adult/pediatric subjects in the control groups. Analysis of exacerbation rates indicates that exacerbation rates were significantly reduced in favor of the FeNO-based asthma management for the combined adult and pediatric population (mean treatment difference = -0.11; 95% CI [-0.21, -0.02]). The exacerbation rate was also significantly reduced in favor of the FeNO-based asthma management in both the adult (mean treatment difference = -0.27; 95% CI [-0.42, -0.12]) and pediatric (mean treatment difference = -0.11; 95% CI [-0.21, -0.02]) populations. Conclusions: The analysis indicates that in adult and pediatric subjects with asthma, FeNO guided asthma management is a more effective strategy for managing asthma than the use of clinical parameters alone.