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| **Lung volumes, gas transfer, and oscillometry following preterm birth** |
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| **Introduction & Aims:** Preterm birth is now recognised as a key risk factor for increasing airway obstruction and chronic obstructive pulmonary disease (COPD). Despite this, there are no specific guidelines about monitoring lung function in this group. Small airway and lung parenchyma abnormalities, often referred to as “the silent zone” of the lung, are known complications of preterm birth and are observed in early onset COPD; however, are often overlooked by spirometry. Static lung volumes, gas transfer, and oscillometry are measures of lung function which better characterise these sequelae. We hypothesised that differences in static lung volumes, gas transfer, and oscillometry exist between preterm and term born individuals and aimed to systematically review the literature to identify these disparities.**Methods:** We searched 6 databases for study cohorts measuring static lung volumes by plethysmography or inert gas washout, gas transfer factor for carbon monoxide, or oscillometry in subjects born preterm with a term control group. Data was analysed using the R meta and metafor packages.**Results:** 10,549 titles were identified with 1,071 articles screened. Results from random-effects meta-analyses expressed as standardised mean difference with 95% confidence intervals comparing preterm and term born individuals demonstrate that people born preterm have: no difference in TLC (-0.06, -0.15 to 0.04); elevated RV/TLC (0.46, 0.26 to 0.66) suggesting gas trapping; impaired gas transfer with reduced DLCO (-0.51, -0.67 to -0.36); and increased airway resistance at 5/6Hz (0.44, 0.13 to 0.76) measured by oscillometry.**Conclusion:** Our findings underscore the importance of alternative methods to spirometry for monitoring lung function following preterm birth to identify individuals at risk of persistent respiratory disease.**Grant Support:** CAHS Research Scholarship, Child and Adolescent Health Service, Department of Health Western Australia (2023)PhD RTP Scholarship from Curtin University, Western Australia (2021-2022)Registrar Research Fellowship, Department of Health Western Australia (2020) |