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**Title:** Comparing analysis software versions in infant multiple breath washout

Dr. Anne-Marie 15693 Ebdon A.Ebdon@rbht.nhs.uk MD <sup>1,2,3</sup>, Ms. Billy 15694 Skoric billy.skoric@mcri.edu.au <sup>2</sup>, Prof. Colin 15695 Robertson colin.robertson@rch.org.au MD <sup>1,2,3</sup> and Dr. Sarath 15696 Ranganathan sarath.ranganathan@rch.org.au MD <sup>1,2,3</sup>. <sup>1</sup> Respiratory Medicine, Royal Children's Hospital, Melbourne, Victoria, Australia, 3052 ; <sup>2</sup> Infection and Immunity, Murdoch Childrens Research Institute, Melbourne, Australia and <sup>3</sup> Department of Paediatrics, University of Melbourne, Melbourne, Australia .

**Body:** Background: An elevated functional residual capacity (FRC) measured in infants with cystic fibrosis may help identify gas-trapping, frequently identified on chest computed tomography in this population. Aims: To examine the difference in values for FRC and LCI (lung clearance index) measured by multiple breath washout, analysed using 2 different versions of a commercially available software package. Methods: Infant lung function was performed at 3 months, 1 year and 2 years of age under sedation with chloral hydrate. Both FRC and LCI were measured using 4% sulphur hexafluoride (Exhalyzer® D, Eco Medics, Switzerland). Data were acquired using Spiroware Wbreath and analysed using both versions 3.19 and 3.28 (Ndd Medizintechnik AG). Results: 34 infants of mean age 14.9 months (range 3.0-26.5 months) were tested. Using v3.19 the mean (SD) FRC was 20.9 (4.8) mls/kg, coefficient of variation (CV) 4.2%. Using v3.28 the FRC was 22.7 (4.5) mls/kg, CV 3.5%. The mean (SD) difference between the FRC measurements (v3.28-v3.19) was 1.8 (2.1) mls/kg. In most subjects agreement was within  $\pm 2$ SD but in 3/34 agreement for FRC was outside the limits of agreement ( $>2$ SD). The mean (SD) difference between the LCI measurements (v3.28-v3.19) was -0.12 (0.3) and in 2/34 subjects agreement was outside the limits of agreement ( $>2$ SD). Conclusion: Variability in FRC and LCI values arise when using different versions of the same analysis software package and requires consideration when inter-centre comparisons are made.