Royal Berkshire NHS
NHS Foundation Trust

A comparison of spirometry and transfer factor data obtained from mobile and laboratory equipment.

Farrow, J and Unstead, M. Department of Respiratory Medicine, Royal Berkshire Hospital NHS Foundation Trust

Introduction: Research has investigated the accuracy and intra-subject variability of TLCO on the EasyOne Pro, ndd[1] however, there is a lack of research on the comparison of Spirometry and TLCO between EasyOne and Carefusion Jaeger MS-PFT in clinical patients.

Method: Patients (*n*=72) with both obstructive and restrictive lung conditions (FEV_1:0.71-4.41L, FVC:1.25-6.17L,TLCO:1.28-12.48mmol/min/kPa, KCO:0.51-2.02mmol/min/kPa/L)performed Spirometry and TLCO measurement on EasyOne and MS-PFT. The patients also performed lung volumes via helium dilution on MS-PFT. Standard deviation (*SD*) and Mean (*M*) difference were calculated for Spirometry and TLCO variables. Bland-Altman plots were used to analyse the comparison between EasyOne and MS-PFT.

Results: ***Table 1. Mean Difference, Standard Deviation Difference, of EasyOne compared with MS-PFT.***

	FEV_1	FVC	PEF	MEF_{75}	MEF_{50}	MEF_{25}	TLCO	KCO	VA	VA and TLC
M	-0.03	-0.08	0.23	0.12	0.15	0.07	-0.22	-0.09	0.14	-0.39
SD	0.16	0.17	0.85	0.98	0.61	0.24	0.50	0.10	0.34	0.65

Abbreviations: FEV_1: Forced expiratory volume in one second. FVC: Forced vital capacity. PEF: Peak expiratory flow. MEF_{75}: Maximal expiratory flow when 75% of the FVC remains within the lungs. MEF_{50}: Maximal expiratory flow when 50% of the FVC remains within the lungs. MEF_{25}: Maximal expiratory flow when 25% of the FVC remains within the lungs. TLCO: Transfer factor for CO. KCO: Transfer coefficient of the lung. VA: Alveolar volume. TLC: Total lung capacity.

This audit was supported by the RBHFT Respiratory Medicine charitable fund.

Figure 1.
Bland-Altman: TLCO EasyOne Vs MS-PFT

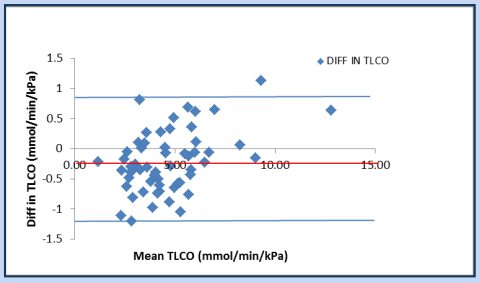
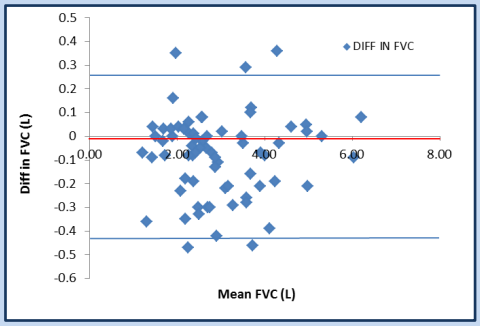


Figure 2.
Bland-Altman: FVC EasyOne Vs MS-PFT



Conclusion: Clinically consistent Spirometry and TLCO results were obtained from the EasyOne and MS-PFT. Small non-significant differences in PEF and TLCO between equipment are most likely caused by principles of measurement. Therefore when portability is required for service provision, mobile transfer factor equipment is an accurate and cost effective alternative to laboratory systems. This enables diagnostic testing to be available in satellite clinics, therefore increasing accessibility for patients.

References: 1. Jenson, R. *et al.* European Respiratory Journal 2015*;* 46(59).