

Appendix 3

Training and certification

Post training, for certification sites were required to collect and submit 10 MBW testing sessions (5 per operator), including 4 from healthy people and 6 from people with respiratory disease (ECFS MBW Central Training and Over-Reading Centre criteria, permission granted) as soon as possible after training but no time limit was set. Operators were required to perform at least 3 tests with each subject and follow quality control steps as detailed in the SOP (<http://lab.research.sickkids.ca/ratjen/mbw-centre/>) in addition to using quality control feedback provided by the Spiroware software (appendix 3). Assessment and feedback on certification tests was provided within 2 weeks. All sites had continued access to the eLearning tool and an identified key contact (KO'N) for advice, mentoring support (verbal and written) and webinar troubleshooting throughout the study and were followed up by email or phone when submitted tests were invalid. Success required 8/10 testing sessions (4/5 per operator) to be assessed as valid (at least 2 acceptable quality tests. Sites failing to achieve this on the first submission were required to submit a further 5 tests (2 healthy and 3 disease) until 80% was achieved. Sites who had already received training and certification from the ECFS MBW Central Training and Over-Reading Centre completed an abbreviated version of certification (5 testing sessions from bronchiectasis patients).

The quality control feedback provided by the Spiroware software.

QC MESSAGE	TECHNICAL	QUALITATIVE (BREATHING PATTERN)	MISCELLANEOUS (SETUP, CALIBRATION, TROUBLESHOOTING)
At least two trials needed		✓	
BTPS Correction Flow Inspiration out of valid Range			✓
BTPS Correction Flow Expiration out of valid Range			✓
Channel Calibration skipped			✓
Flow Calibration skipped			✓
Inspiratory Flow too high		✓	
LCI Coefficient of Variation too high		✓	
LCI Target not reached	✓		
N ₂ Inspiration Mean out of valid Range		✓	
O ₂ Drift Correction out of valid Range		✓	
O ₂ End Expiration too high			✓
Sample Flow out of valid Range			✓
Standard versus CO ₂ Cet out of valid Range		✓	
Standard RQ out of valid Range Standard Deviation		✓	
Wrong DSR used			✓
X2 Transit Time Error			✓

KEY: QC – Quality control; BTPS – Barometric temperature, ambient pressure; LCI – Lung Clearance Index; RQ – Respiratory Quotient; DSR – Dead space reducer