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Micro Plus Spirometer Operating Procedure

Purpose The purpose of the Micro Spirometer Operating Procedure is to insure the proper maintenance, tracking, and operation of the hand-held unit to provide accurate bedside pulmonary function testing.

Audience Respiratory Care Practitioners.

Scope The Micro Plus Spirometer will be utilized by trained RCS Personnel to perform bedside pulmonary functions. It is a precision instrument designed to measure Forced Expired Volume in one second, FEV₁, Forced Vital Capacity (FVC) Forced Expiratory Ratio (FER), and Peak Expiratory Flow.

Special Training Requirements

Specific training on the Micro Spirometer system is required and completion of the competency check-off is necessary prior to independent patient testing.

Physician's Order A written order for bedside pulmonary function screening by Respiratory Care Services is required unless the patient is receiving bronchodilator therapy.

Procedure

Step	Action
1	Verify Physicians order.
2	Assemble the Micro Plus spirometer with disposable mouthpiece.
3	Explain procedure to patient and demonstrate maneuver.
4	Switch the unit on by moving the switch to its first position; "BLOW" The display will now indicate "Blow" and three zeros. Instruct the patient to "Breathe in until your lungs are completely full, now seal your lips around the mouthpiece and blow out as hard and as fast as possible until you cannot push any more air out".
5	When the patient has completed this maneuver, the FEV ₁ will be indicated on the display. To read the FVC push the switch upward to the "VIEW" position and the display will indicate FVC.

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Procedure Continued

Step	Action
6	If the switch is left in this position, the measurements FEV ₁ , FVC, FER, and PEF will be displayed in rotation until the switch is moved downward by one position. The measurement currently shown will be displayed continuously.
7	Determine if maneuver was adequate. If test is inadequate delete test and repeat.
8	Perform three adequate maneuvers.
9	Once the values have been noted, repeating the procedure after switching the unit off and then back on again can carry out the next test.
10	Record pulse oximetry values and any pertinent comments in the comments section.
11	Document results in EPIC.
12	The Micro Plus Spirometer calibration is dependent only on the physical geometry of the digital volume transducer and provided that the transducer remains undamaged, will remain stable indefinitely. The unit should not therefore require recalibration.
13	To confirm correct functioning of the unit, periodical calibration should be performed.

Tracking

To be assigned each shift by the Team Leader on the assignment sheets. The therapist will return the unit to the Team Leader at the end of their shift, or pass it on to the therapist assigned to that spirometer on the next shift.

Calibration

Should not require calibration, but as a confirmation of the correct functioning of the unit, a calibration should be done every morning by day shift

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Calibration Check Use a 3Liter syringe
 Connect the MicroPlus Spirometer with a minimum number of adaptors. The syringe volume should be injected evenly. If the calibration is not correct, return the unit to the Team Leader. It will be sent to Micro Medical for repair and recalibration.

Maintenance The MicroPlus needs no routine servicing, but if the transducer requires sterilization or cleaning, remove the transducer by gently twisting the mouthpiece holder and pull the whole assembly away from the holder. Immerse the transducer in warm soapy water for routine cleaning or in a cold sterilizing solution for a period not to exceed 20 minutes. (Avoid alcohol and chlorine solutions). After cleaning/sterilizing, the transducer should be rinsed and dried.

Infection Control Patients in isolation should be given a disposable peak flow meter. Otherwise, each patient on bronchodilator therapy should be given a disposable mouthpiece with a one-way valve (Microcheck Mouthpiece #3395) with the initial therapy.
 Follow procedures as outlined Healthcare Epidemiology Policies and Procedures: #2.24 Respiratory Care Services.
<http://www.utmb.edu/policy/hcepidem/search/02-24.pdf>

References

Micro Spirometer Operating Manual

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