

SAMPLE Procedure

Performing Pulmonary Function Testing in the Clinic Setting

PURPOSE: To ensure OSHA, NIOSH, Worker's Compensation, and manufacturers' guidelines are adhered to by all technicians performing occupational health spirometry testing. The test is used to screen workers for early health effects due to exposure to occupational respiratory hazards.

DEFINITIONS:

Technician - RN, LPN, or clinic technician who has completed a NIOSH-approved Spirometry Technician Course or who has demonstrated competency in instrument operation and testing protocol.

OSHA - Occupational Safety & Health Administration

NIOSH - National Institute of Occupational Health and Safety

Pulmonary

Function Test - Screening test to measure how much air a person can expire and how fast they can expire it.

Calibration - Test performed to ensure spirometer is functioning properly and in accordance with established guidelines.

PROCEDURE: MultiSpiro Spirometry

Step 1.

A volume calibration must be performed every day that testing is performed—***prior to the first test***, every 4 hours, every 10 patients, or every time the flow sensor element is changed.

- A. Routine for calibration of the pulmonary function test computer
 1. Turn computer on.
 2. At PC Index menu, type in the number "3".
 3. Press F7 (setup).
 4. Press "C" (calibration sensor), then press the Enter key.
 5. Press "Y" if the room temperature and the temperature on the screen are the same. If the temps are different, press "N" and enter the actual temp (in Fahrenheit).
 6. At Syringe Volume, (Is syringe volume 3 LT), press "Y".

7. Connect the 3-liter syringe to the flow sensor, secure tightly and follow the instructions as listed on the screen.
8. Press any key to zero the sensor.
9. Press any key to start the test.
10. Follow the screen instructions...press plunger smoothly and slowly until you hear a beep.
11. Pull the plunger back when the screen reads, "Pull back plunger now."
12. Accept the calibration test by pressing "Y" at the end of the question, "Was the calibration done correctly?". If you press "N", the calibration will have to be repeated.
13. Verification – you will be asked to press any key to zero sensor.
14. Press any key to start test, push plunger in smoothly and listen for the beep.
15. At the beep, pull back the plunger. **Acceptability**---- $\pm 3\%$ of syringe volume. *The tolerance range should be from 2.91 liters to 3.09 liters.*
16. Press "Y" to save Cal Report.
17. Press "Y" to print report.

Step 2.

1. Have patient complete a respiratory history form (See OSHA Respiratory Program Questionnaire).
2. Ask patient the following questions. *All yes responses should be reported to the medical director for clearance before proceeding with testing.*

Have you:

- Used a bronchodilator within the last hour?
- Smoked within the last hour?
- Had a heavy meal in the last hour?
- Had recent respiratory illness/infection (severe cold, flu, pneumonia, or bronchitis)?
- Had an injury or surgery in the last 6 weeks involving the eye, ear, chest, or abdomen?
- Ever gotten dizzy or light-headed when taking a spirometry test?

Do you:

- Have on any tight or restrictive clothing?
- Wear dentures? Are they loose?
- Have bronchitis or emphysema?
- Have blood pressure or heart problems? Are you under a physician's care for them?

3. Instruct the patient on testing method
 - Assume correct posture (sitting or standing)
 - Take a deep breath
 - Place mouthpiece between teeth and on top of tongue, closing lips around the

mouthpiece.

- Exhale forcefully and maximally as soon as lips are sealed around the mouthpiece for at least 6 seconds without interruption
- Repeat 3 or up to 8 trials, coaching vigorously
- Review curve for acceptability and reproducibility before the next trial. As a goal, 3 trials should be within $\pm 5\%$ of each.

4. To perform a test using the Multispiro Sensor

- **Special Note: Must perform 3 good tests that are within 5% of each other.**

- Press F1: Patient Menu

- Press E: Enter new patient information

Enter patient information. After each field entry, press Enter to move to the next field.

At **Comments**, enter any comments that may have an effect on the respiratory system.

- Press ESC if no comments or to exit patient information screen.

- Press "Y" to "Save Changes (Y/N)".

- Press F2: TEST menu.

- Select FVC TEST, then Enter.

- Respond to each flashing message:

PRESS ANY KEY TO ZERO THE SENSOR

PRESS ANY KEY TO START THE TEST

- Proceed with Patient Instructions in number 3.

- PRESS ANY KEY TO STOP THE TEST

- If expired time is within 6 seconds, and patient effort was good, press "Y" to accept the test.

- Press ESC to exit back to blank screen.

- **Repeat above sequence until 3 good maneuvers have been performed that are within 5% of each.**