



SPIROMETRY INTERPRETATION in ADULTS

A. Evaluate for quality test

1. Performed by technician trained with American Thoracic Society standards
2. Patient seated properly; use of nose clips
3. Forced expiratory time (FET) of 6 seconds
 - a. If < 6 seconds, may overestimate restriction, underestimate obstruction
4. Good flow-volume loops (both expiratory and inspiratory limbs)
 - a. No cough
 - b. Maximal effort
5. Reproducible (minimum of 3 adequate efforts)
 - a. 2 of 3 FVC within 150mL, 2 of 3 FEV₁ within 150mL

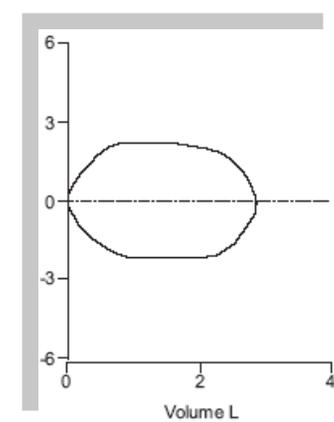
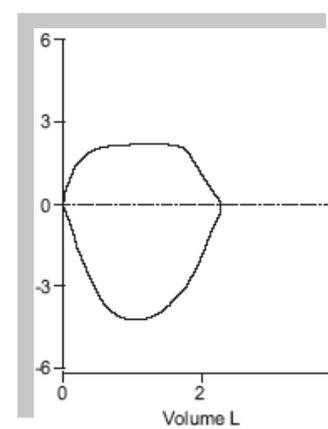
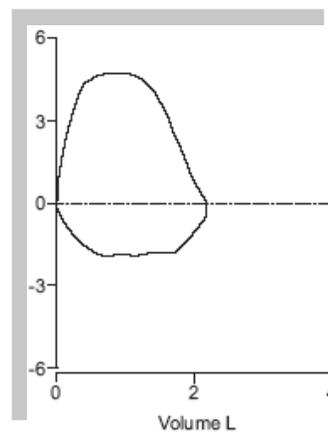
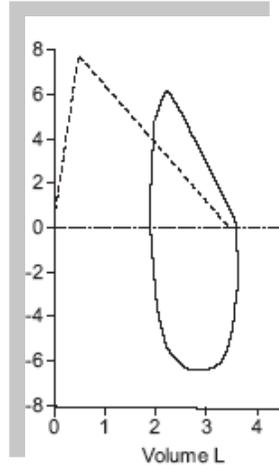
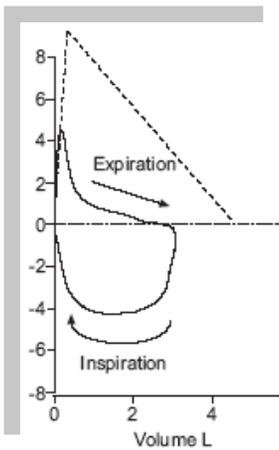
DEFINITIONS:

FVC	Forced Vital Capacity	Volume expired by a forced maximal expiration after maximal inhalation
FEV₁	Forced Expiratory Volume in 1 second	Volume of air forcefully expired in the first 1 second
FEF₂₅₋₇₅	Forced Expiratory Flow 25-75% of exhalation	Average air flow rate during the middle half of the FVC maneuver; reflects flow through the small airways
FEV₁/FVC	ratio	The ratio of FEV ₁ to FVC (expressed as a percent)
(PEFR)	Peak Expiratory flow rate	

A reduction in FEV₂₅₋₇₅ may be indicative of early disease process particularly in patients who smoke. This information can augment tobacco cessation counseling.

B. Examine flow-volume loops

1. Evidence of obstruction, restriction on expiratory limb?
2. Evidence of variable or fixed obstruction?
 - a. Variable extrathoracic – flattened inspiratory limb
 - b. Variable intrathoracic – flattened expiratory limb
 - c. Fixed obstruction – both limbs flattened (“box shaped”)

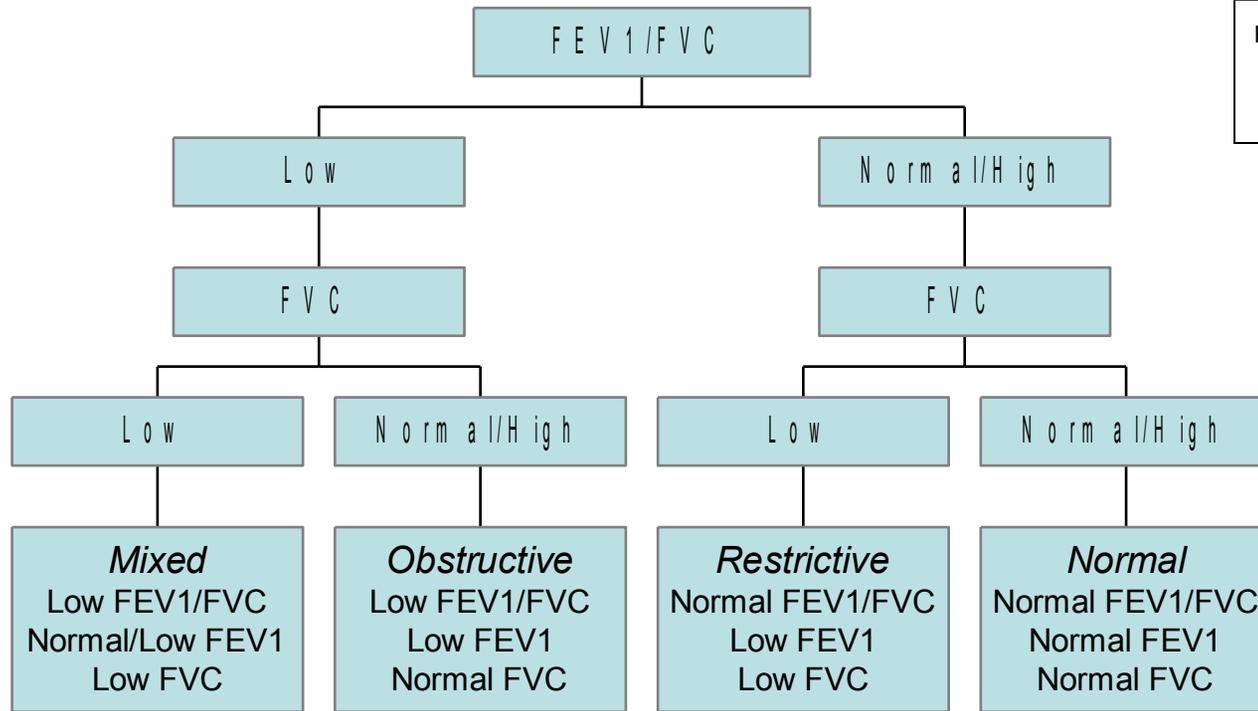


C. Evaluate spirometry and response to bronchodilator:

Reference value should be NHANES III

Abnormal values are highlighted in red and surrounded by ()

Software does race adjustment for African American, Hispanic persons



FEV1/FVC is expressed as a ratio rather than % predicted.

Normal Ratio by Age:

5-19 yr = 85 % ; 20-39 yr = 80%; 40-59 yr = 75%; 60-80 yr = 70%

Bronchodilator Response:

Change in FEV1 Degree of Improvement

Change

0-5%
6-11%
12-24%
> 24%

Not improved
Not clearly improved
Improved
Markedly improved

FEV1 should show an increase of ≥ 200 mL to be significant

OBSTRUCTION/MIXED

Degree of Severity	FEV1 (% Pred)
Mild obstruction	70-100
Moderate obstruction	50-69
Severe obstruction	35-49
Very severe	<35

RESTRICTION

Degree of Severity	FVC (% Pred)
Mild restrictive	>70
Moderate restrictive	50-69
Severe restrictive	<50

DO NOT diagnose restriction based on spirometry alone – need lung volumes

Spirometry Coding Reference

In the A/P, select a diagnosis supporting spirometry. Includes but not limited to:

Asthma- 493-493.91
Shortness of breath - 786.05
Cough - 786.2
Bronchitis - 491-491.9
Wheezing - 786.09

For tobacco-related spirometry, select the ICD-9 code according to current status and place in secondary position (after primary diagnosis):

CURRENT smoker - 305.1
PREVIOUS smoker - V15.82

Enter the following CPT code for flow volume loops, with forced inspiratory loop (94375) or (94060) for pre/post bronchodilator spirometry, making sure it is associated with the appropriate diagnosis. In the Plan/Comments dialogue box, type in your interpretation of the spirometry.

What do I type?

For restrictive patterns: "possible____(mild/mod/severe) restrictive pattern present on screening spirometry requiring additional testing that includes full lung volumes (+/- DLCO)"

For obstruction: _____(mild/mod/severe/very severe) obstruction on screening spirometry requiring additional testing that includes pre/post bronchodilator testing (+/- FeNO)"

For mixed patterns: "Mixed restrictive and obstructive pattern on screening spirometry requiring additional testing that includes pre/post bronchodilator testing and full lung volumes (+/- DLCO)"