Medical record review of a 70-year-old man for $750,000 revealed a history of smoking, progressive shortness of breath, and dyspnea on exertion. He has stopped smoking.

Pulmonary function tests showed severe airway obstruction with reduced forced vital capacity, FEV₁ of 0.64 L (19% of predicted), and residual volume of 5.02 L (200% of predicted). The flow loop shows the characteristic dog-leg curve seen with emphysema.

Flow loops are visual representations of spirometry results and reveal information that is not readily apparent in the raw numbers. An example of this is the characteristic dog-leg appearance of the flow loop with emphysema in the Figure. After the peak flow, there is a sharp decrease, which is followed by a leveling of the loop to forced vital capacity (FVC).

The lung pathology of emphysema is destruction of lung parenchyma, and the resulting loss of architecture causes the lung to be "floppy." Inhalation is not impaired, but on exhalation, the loss of lung architecture al-

**Pulmonary Flow Loop**

*J. Mambretti, MD, FCCP*

Pulmonary flow loops display characteristic patterns and give clues to the underlying pathology of airway or parenchymal lung disease.
lows the airways to close early in the expi-
ratory phase, causing obstruction before the
FVC is completed. The dog-leg shape of the
curve represents this early obstruction.

Poor or incomplete patient effort can influ-
ence flow loop appearance, as in a falsely
small loop, but only airway obstruction will
cause the dog-leg curve.