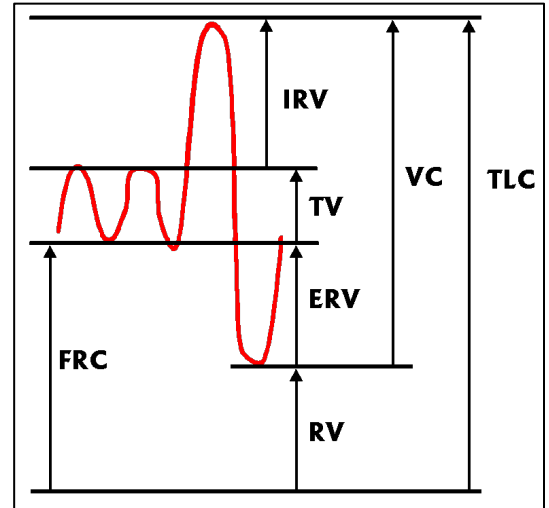


# Severe COPD - Anesthetic Implications

## Anesthetic Pearls: Anesthetic Implications and Management of COPD

### Pre-Op Evaluation:

1. The severe COPD patient may have a barrel chest, distant breath sounds, and use accessory muscles for breathing. They also have dyspnea (at rest & with exertion) and poor exercise tolerance.  
--Incidence of complications after thoracotomy double (53%) in those: 1) unable to walk more than 100 yards on level ground without a rest, or 2) breathless on talking, dressing, or unable to leave the house because of breathlessness; compared to those with no abnormal dyspnea.
2. Onset or worsening of wheezing: Is it bronchitis or now pulmonary infection? If a pulmonary infection, treat with antibiotics and delay the surgical procedure until treatment.
3. Carbon Dioxide retention occurs when the ratio of  $FEV_1/FVC$  is  $< 0.35$ .
4.  $PaCO_2 > 50$  mmHg increases the risk of postoperative respiratory failure.
5. PFT and ABG should be repeated after antibiotic and bronchodilator treatment.
6. Patient should stop smoking cigarettes.



### Management of Anesthesia:

1. **Regional anesthesia** is most suited for operations that do not invade the peritoneum or surgical procedures performed on the extremities. These patients are extremely sensitive to the ventilatory depressant effects of sedative drugs. Cautious titration of IV sedatives. In the awake spontaneously breathing patient, avoid regional block above the T6 level, as the expiratory reserve volume will be decreased.
2. General anesthesia is the usual choice for upper abdominal and intrathoracic operations. Humidification of inspired gases.  
**Volatile agents cause beneficial bronchodilation.**
3. In a patient with pulmonary bullae, the use of nitrous oxide may cause the bullae to enlarge and rupture, resulting in a tension pneumothorax.
4. Controlled mechanical ventilation: Use large tidal volumes (10 to 15 ml/kg) combined with a slow inspiratory flow rate to minimize the likelihood of turbulent airflow through airways. Slow breathing rate (6 -10 breaths per minute) to allow for sufficient time for venous return (preload) to the heart and also avoids undesirable hyperventilation. Provide adequate time for exhalation phase of respiration (increase "E" time) to minimize air trapping.

### Post-Op Care:

1. Minimize the incidence and severity of pulmonary complications. These patients are at increased risk of the development of acute respiratory failure.
2. Ventilation problems: **Decreased lung volumes** (vital capacity, FRC) interfere with the generation of an effective cough and clearance of secretions as well as contributing to the collapse of alveoli. **Atelectasis** may lead to the development of pneumonia and decreases in the  $PaO_2$ .
3. Patients may require postoperative mechanical ventilation.
4. Relief of postoperative pain using cautious opioid administration.
5. Chest physiotherapy, postural drainage, and voluntary deep breathing exercises.
6. Incentive spirometry. Sustained inflation is important for expanding collapsed alveoli.

