Measurement of Intrapleural Pressures and Pleural Elastance can be used to identify pleural pathologies such as trapped lung and entrapped lung and to predict successful pleurodesis. It may also reduce the risk of re-expansion pulmonary edema.

**Elastance**

\[ \text{Elastance} = \frac{1}{\text{Compliance}} = \frac{\Delta P}{\Delta V} \]

- Normally Pleural Elastance is ≤ 14 cmH2O/L.
- Pleural elastance > 14.5 cmH2O/L suggests trapped lung.
- Pleural elastance < 18 cmH2O/L predicts successful pleurodesis

**Interpretation:**

1. Connect a **MANOMETER** (water column, pressure transducer, or digital manometer) behind a 3-way stopcock
2. Withdraw fluid using a **SYRINGE** and **COLLECTING BAG** as you would normally
3. Measure the **INTRAPLEURAL PRESSURE** at end-expiration intermittently (e.g. every 250cc) as fluid is removed by thoracentesis and calculate **PLEURAL ELASTANCE**

**Differentiate** Entrapped Lung (partially inflatable) and Trapped Lung (un-inflatable)

Pleural elastance < 18 cmH2O/L (after 500 mL withdrawn) implies that the visceral and parietal pleura are opposed, and suggesting a successful response to pleurodesis in malignant effusions.

Avoid excessive negative pressure (<-20 cmH2O) during thoracentesis, as this can cause re-expansion pulmonary edema. However, the utility of pleural manometry to predict re-expansion pulmonary edema is controversial.

**Entrapped Lung** is an active inflammatory process. There is typically partial lung re-expansion

**Fluid**

Exudative

Bimodal pressure change (initially slow pressure change, then rapid drop)

**Normal or increased elastance**

Treat the cause; drain the effusion dry if possible

**Trapped Lung** is a resolved inflammatory process with residual pleural fibrosis, which will prevent lung re-expansion

**Transudatative** (usually)

Linear pressure change (rapid drop in pressure)

**Increased elastance** (>14.5 cmH2O/L)

Remove the rind preventing lung expansion (decortication)