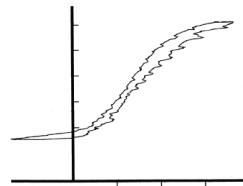
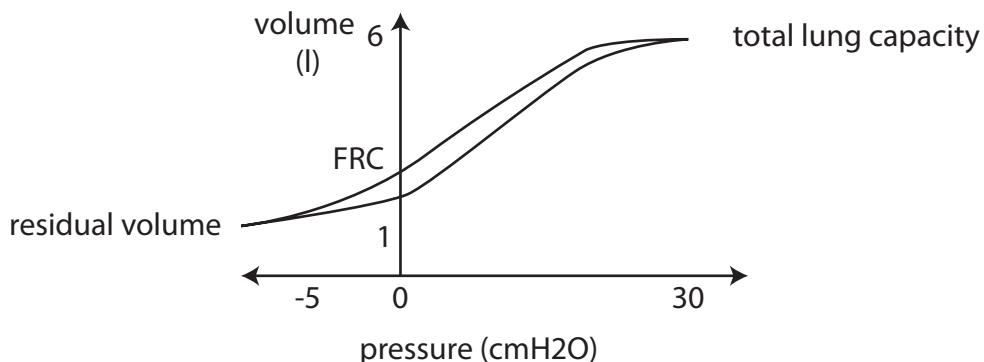


Can you identify this curve and label the axes?



Candidates were tested on their knowledge of pulmonary compliance, its measurement, factors that influence it, surfactant and interpretation of common ventilator waveforms.

**This is a pressure volume loop for an air filled lung**



**“What is compliance”**

compliance is the change in volume/change in pressure

it is the inverse of elastance

in the lungs it is roughly 200ml/cmH<sub>2</sub>O

the chest is also roughly 200ml/cmH<sub>2</sub>O

therefore total lung compliance is equal to around 100ml/cmH<sub>2</sub>O

dynamic compliance is measured inbetween inhalation and exhalation

static compliance is measured after a pause (removes the additive effect of tissue/airways resistance)

specific compliance is compliance/FRC

**“how is it measured?”**

it can be measured using a pressure volume loop where it is the slope

it can be measured by using manouvres on a ventilator

it lung compliance can be measured in isolation using an oesophageal balloon and a spirometer

**“What factors do you know of that affect compliance”**

Surfactant is the most important factor with respect to compliance

formed by type II alveolar cells, mostly phospholipid DPPC

decreases surface tension, contrary to Laplace, presumably by packing closer together

result is an increase in compliance, prevention of small alveolar collapsing

Lung volumes

as per equation, a greater change in volume = increased compliance

at the base of the lung there is greater expansion therefore increased compliance

larger lungs also have increased compliance

Extremes of expansion

compliance is decreased at full inspiration and expiration

compliance is highest at FRC

Effects of blood volume

compliance is reduced when vasculature is engorged (eg APO)

Pathological changes

unventilated lungs have reduced compliance

emphysema increases compliance

fibrosis decreases compliance