

Static Compliance & PEEP

Dynamic & Static
Compliance
Measurements during
PAV their use.



Terms you need to know...

- Lung Compliance = Δ pressure/ Δ volume
 - Liters/cmH₂O
 - Normal Lung in chest = .1liter/cmH₂O
 - Patient on Ventilator = .01 - .05 liters/cmH₂O
- Static = no air movement
- Dynamic = during active inspiration(air movement)
- Airway Resistance = Liters/cmH₂O/sec
 - During PAV the difference between the PIP pressure and the Plateau pressure.

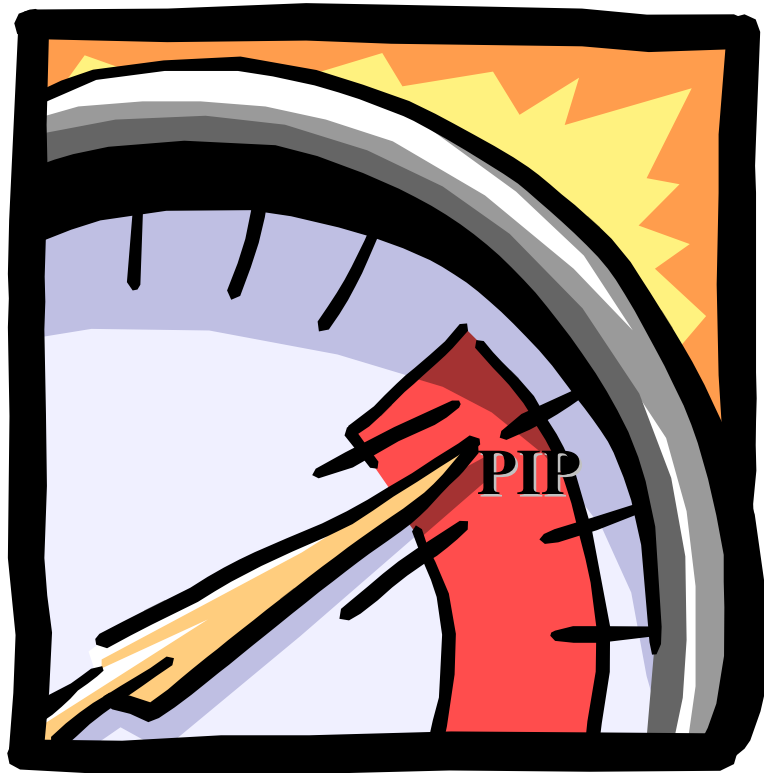
Terms continued...

- Resistance to ventilation = all pressure it takes to overcome airway resistance & lung compliance during PAV. Reflected by PIP.
- Elastic Resistance = pressure required to overcome the expansion or elastic forces resisting lung expansion. Difference between Static pressure and exhalation pressure.

Terms continued...

- Static Compliance = Pressure it takes to overcome the elastic resistance to ventilation.
- Optimal PEEP pressure = the PEEP that recruits the most alveoli without adversely affecting overall oxygen delivery to the tissues.
- Compliance Curves = PIP and Plateau pressures plotted to yield curves for interpretation.

PIP during PAV



- PIP indicates the overall pressure it took to overcome all the forces resisting inflation of the lungs during the dynamic phase (gas flow) of inspiration.

Plateau Pressure



- Plateau Pressure indicates the overall pressure it took to overcome the elastic forces resisting inflation of the lungs during the static phase (no gas flow) of inspiration.

PIP minus Plateau



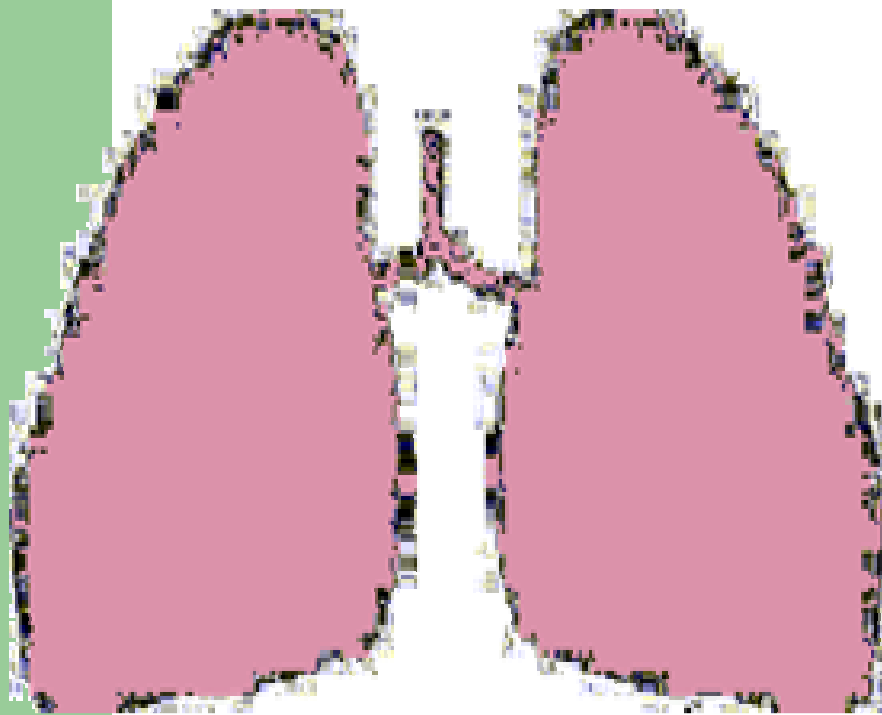
- The difference between the PIP and Plateau pressure is the pressure required to overcome the inelastic forces that resist ventilation, i.e. airway resistance.

Plateau minus EEP



- The difference between the plateau pressure and the end expiratory pressure (EEP), (may be zero or higher if there is PEEP), is the pressure it took to overcome the elastic forces opposing lung inflation, i.e. lung compliance.

Relationship of PEEP pressure to Static Lung Compliance Measurement



- Purpose of PEEP
 - Reverse Atelectasis
- Atelectasis and Static Lung Compliance
 - Boyle's law
 - Volume ▲ / pressure ▲
- Calculating Best PEEP
 - Maximum O₂ delivery
 - Correlations with CO, etc.
 - Best Static Compliance

Exercise 1

● PEEP	0	7	12	15
● PaO ₂	50	75	86	105
● PIP	13	20	25	30
● Plateau	10	14	10	14

– What is the optimal PEEP Pressure?

Exercise 2

● PEEP	0	7	12	15
● PaO ₂	50	75	86	105
● PIP	23	30	35	40
● Plateau	10	24	30	44

– What is the optimal PEEP Pressure?

Exercise 3

● PEEP	0	5	7	10
● PaO ₂	50	75	86	105
● PIP	13	20	25	30
● Plateau	10	14	10	14

– What is the optimal PEEP Pressure?