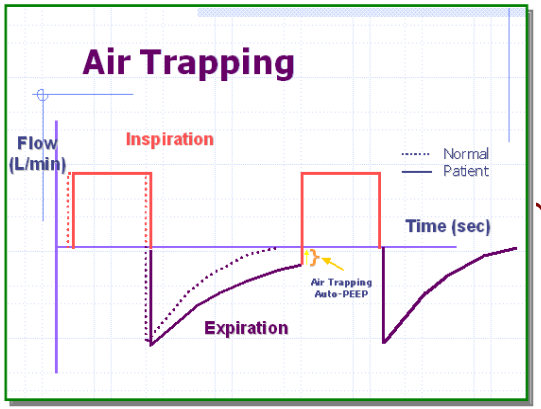
abnormal ventilator waveforms

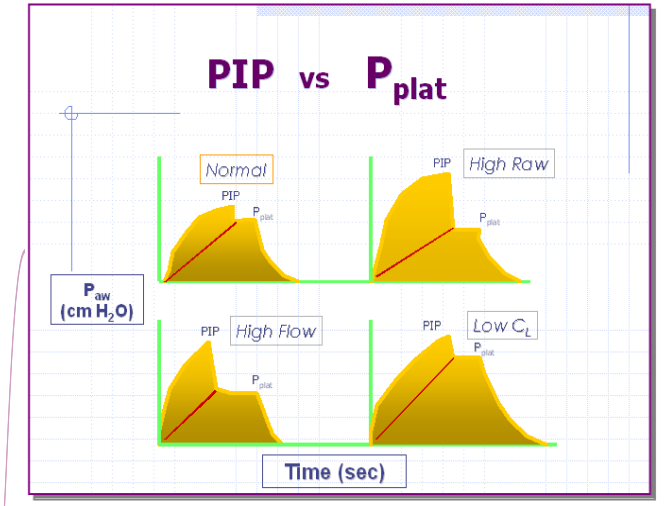
auto-PEEP



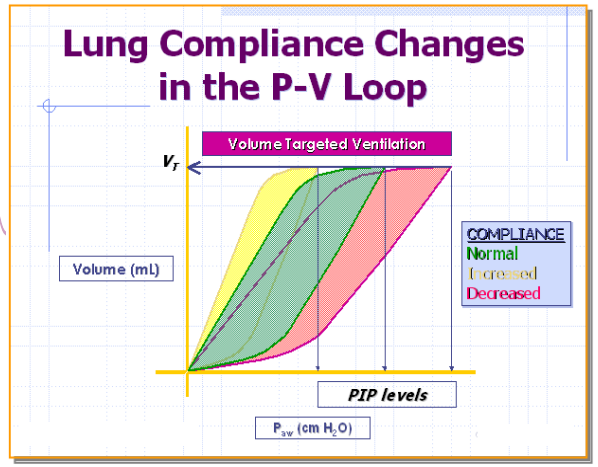
Normally, expiratory flow returns to the baseline prior to the next breath. In the event that the expiratory flow does not return to the zero line and the subsequent inspiration begins below the baseline, auto-PEEP or air trapping is present.

The presence of auto-PEEP or air trapping may result from:
a. Inadequate expiratory time
b. Too high a respiratory rate
c. Long Inspiratory Time
d. Prolonged exhalation due to bronchoconstriction.

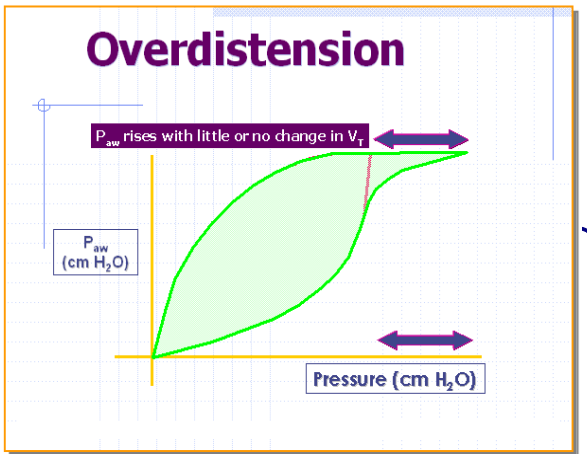
increased airway resistance & decreased lung compliance



Normal curve:
- demonstrates normal PIP , Pplat , PTA (transairway pressure), and Ti (inspiratory time).
High Raw:
- A significant increase in the PTA is associated with increased in airway resistance.
High Flow:
- the inspiratory time is shorter than normal, indicating a higher inspiratory gas flow rate.
Decreased Lung Compliance:
- An increase in the plateau pressure and a corresponding increase in the PIP is consistent with decreased lung compliance.



alveolar overdistension



- The classic sign, known as "Beak Effect" or "Duckbill" shows an increase in airway pressure without any appreciable increase in volume.

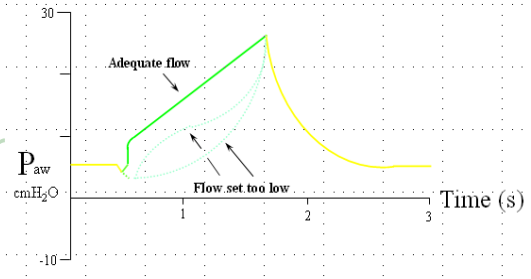
cardiac oscillations

baseline of the pressure-time waveform shows slight up and down movements with heartbeat; these may initiate triggering of synchronised breaths

circuit leaks

there is less volume expired than inspired
baseline of the pressure time waveform drifts downwards

inadequate inspiratory flow



- inadequate inspiratory flow rate on the pressure time waveform leads to a 'scooped out' appearance to the synchronised breaths