Stress & Strain during Mechanical Ventilation:

Clinical Application in ARDS

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- Stress = Transpulmonary pressure(Tp)
  = Pplat – pleural pressure
- Strain = ∆lung volume/FRC = TV/FRC
- Stress = K x strain เมื่อ K = specific lung elastance (E_{Lspec})
- Tp = E_{Lspec} x TV/FRC

Strain & TV

- Strain = ∆lung volume/FRC = TV/FRC
- Heterogenous consolidation or atelectasis in ARDS: TV from each breath is dilivered to the open alveoli.
- Alveoli
  - Open: low FRC; low TV
  - Recruitable: PEEP
  - Closed

Baby lung: alveolar overdistension

Cyclic atelectasis: collapse alveoli cause overdistension of adjacent alveoli