

# Today

- **Q & A General**
  - **Luncheon- clinical- Schedule**  
**rest of semester...**
- **Review test 2**
- **Review/finish last PPT**
- **Practice test 3**

# Test Dates

- **Test 1-Oxygen Therapy Equipment and Physiology:**
  - done
- **Test 2- Humidity & Aerosol Therapy:**
  - done
- **Test 3- SMI therapy:**
  - May 23<sup>rd</sup> 2006
- **Final – Comprehensive: 06/06/07**

# SMI BREATHING Rx

IPPB, INCENTIVE SPIROMETRY  
DEEP BREATHING, ETC.

# PRESSURES

Ambient

Intrapulmonary

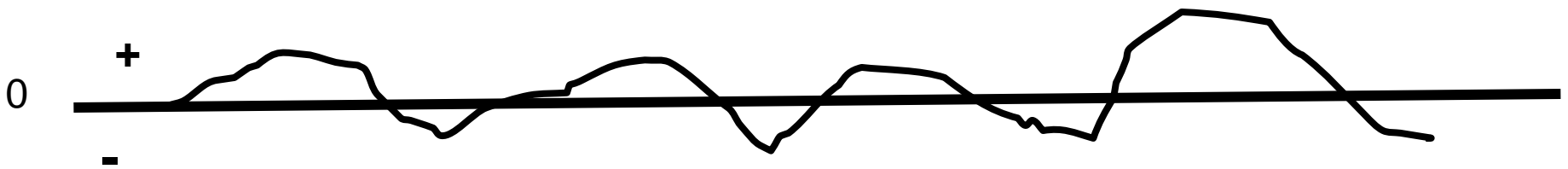
Mean Airway Pressure

Intraplural

Transpulmonary

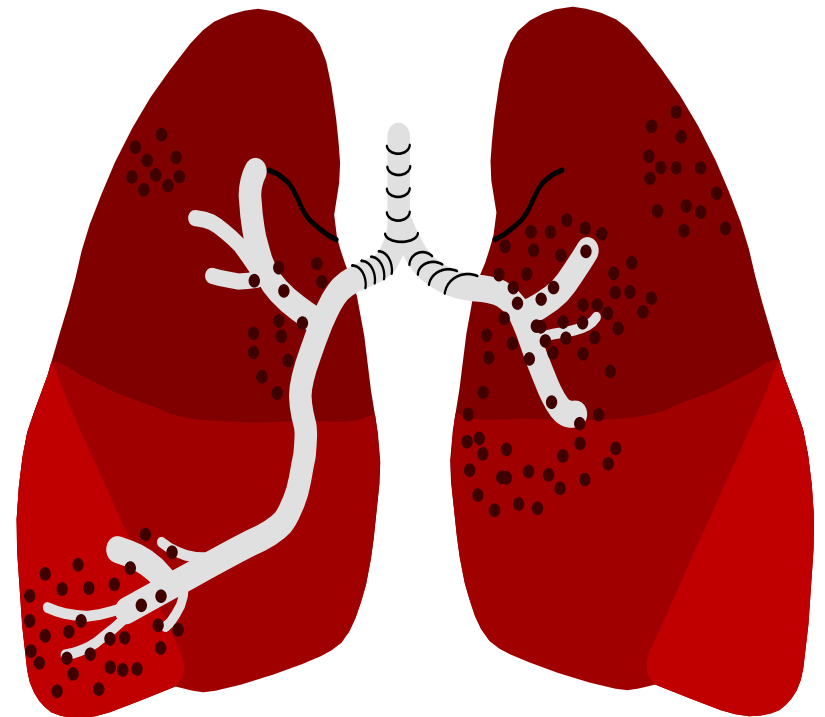
Mean IntraThoracic Pressure

# *Spontaneous Breathing*

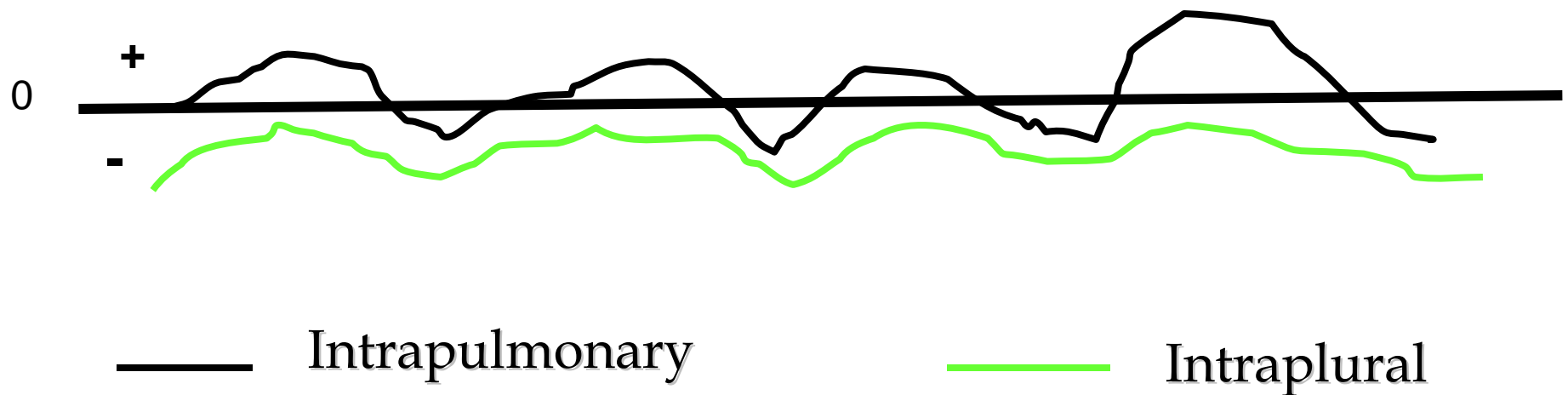


# NORMAL BREATHING

- **INTRAPULMONARY PRESSURES.**
- **INTRAPLURAL PRESSURES.**
- **RELATIONSHIP TO AMBIENT PRESSURES.**

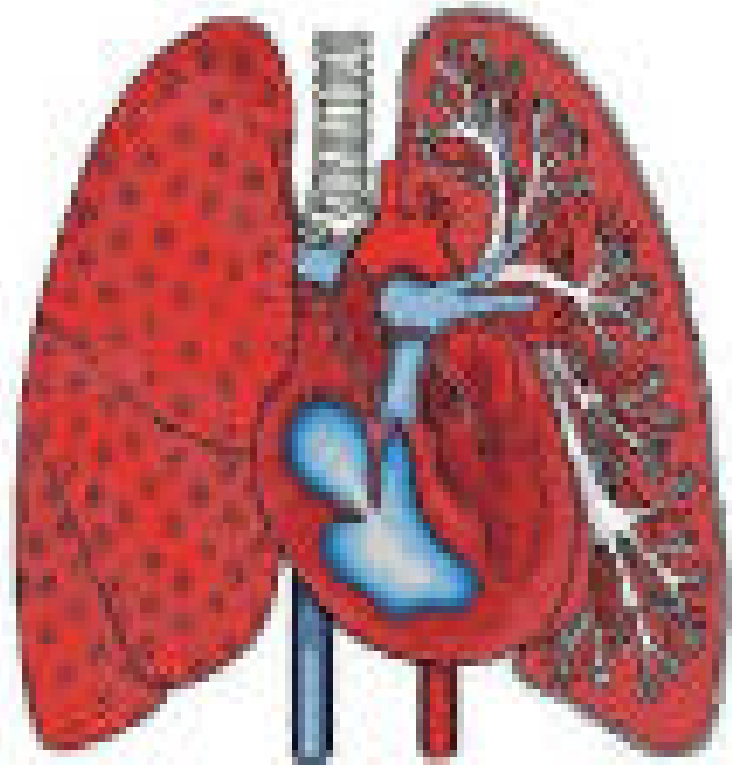


# *Spontaneous Breathing*



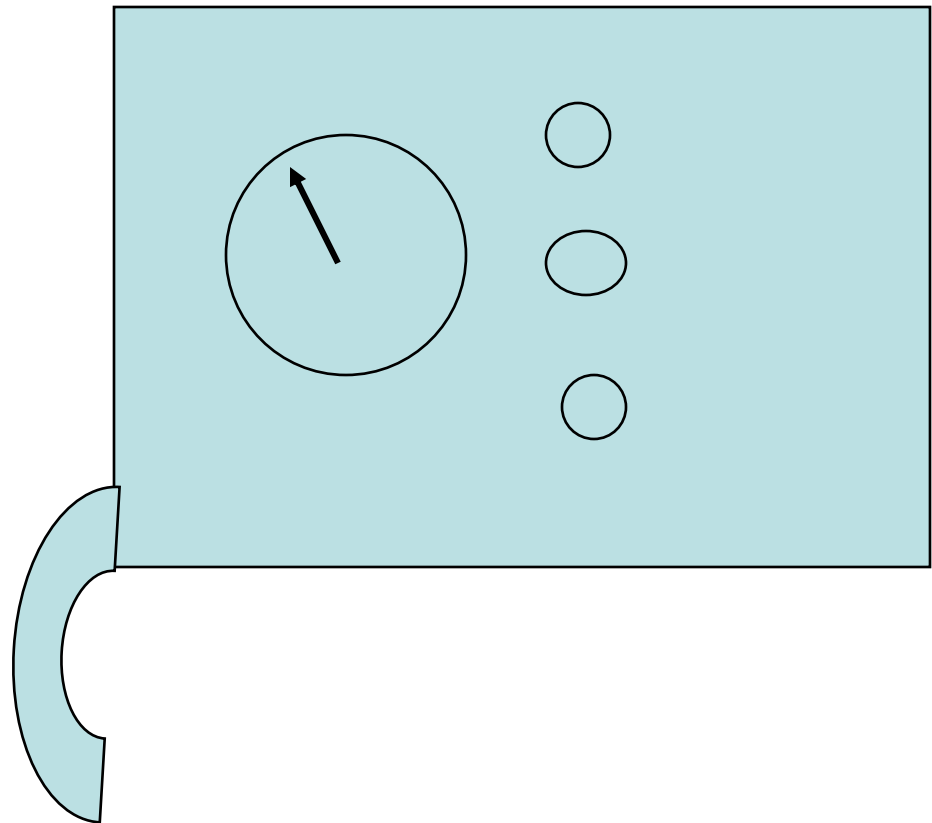
# HEMODYNAMICS

- VENOUS RETURN
- MITP
- NORMAL vs IPPB
- IC AND OTHER SMI TECHNIQUES
  - PRESSURES
  - HEMODYNAMICS

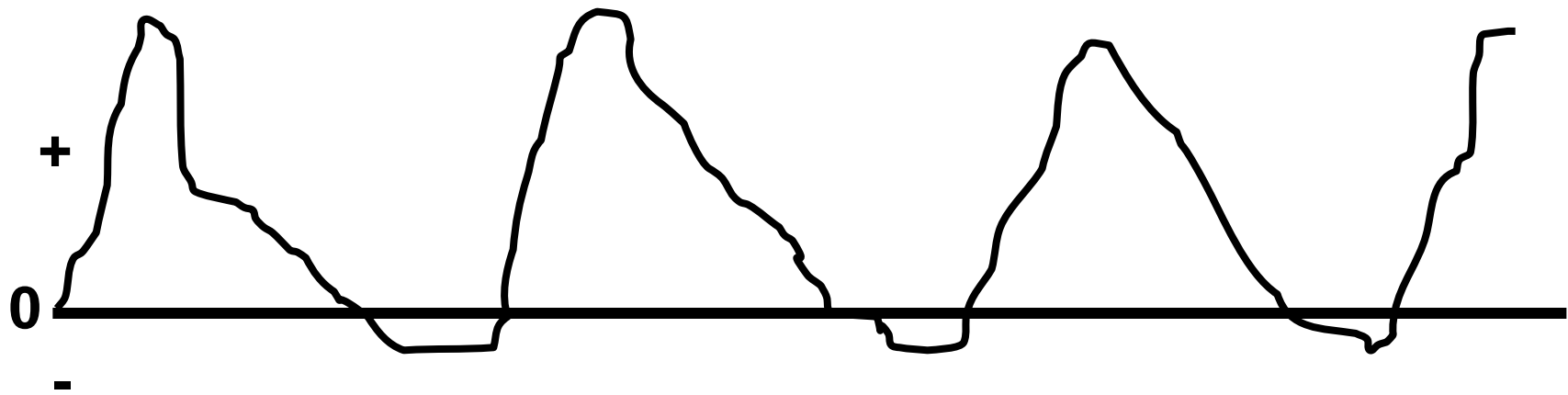


# IPPB

- INTRAPULMONARY  
– PRESSURES
- INTRAPLURAL  
– PRESSURES
- COMPARED TO  
NORMAL  
– PRESSURES

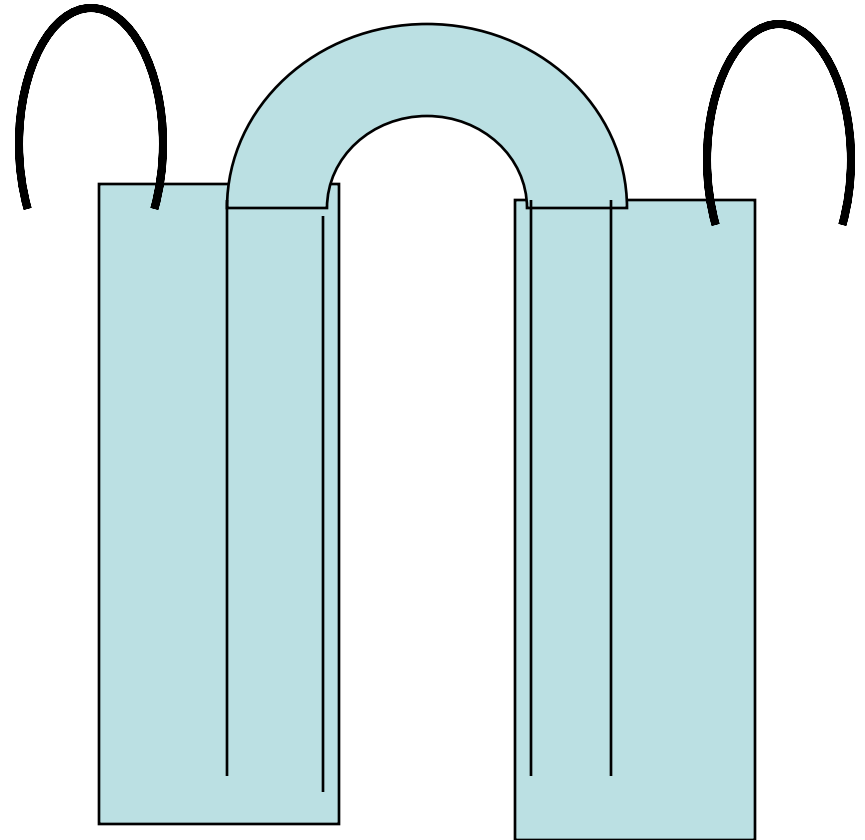


# ***Intermittent Positive Pressure Breathing***

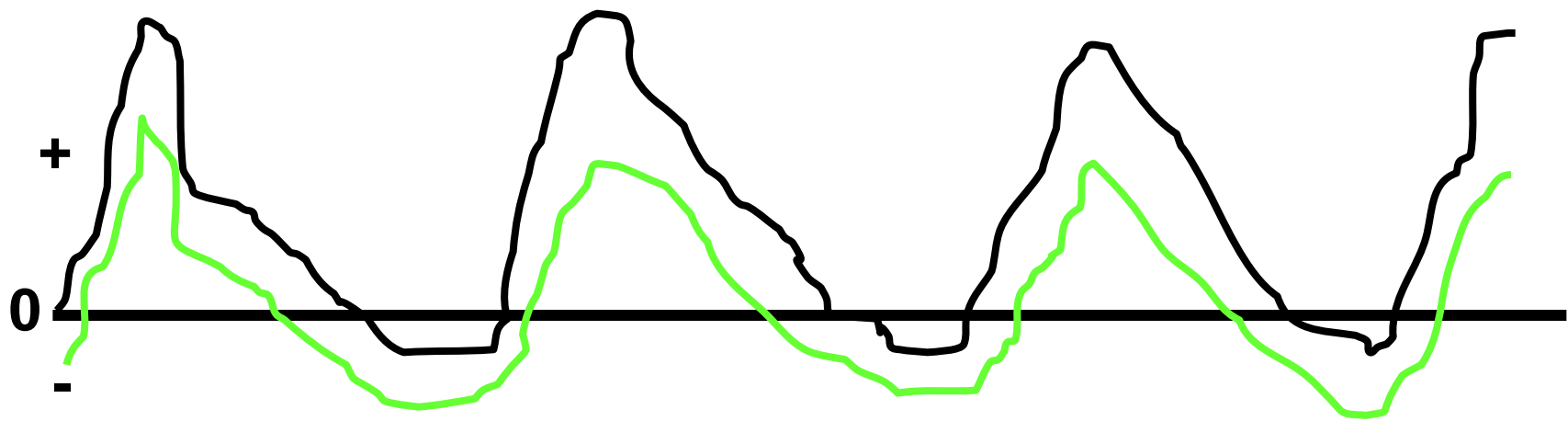


# BLOW BOTTLES

- INTRAPULMONARY  
– PRESSURES
- INTRAPLURAL  
– PRESSURES
- PHYSIOLOGICAL  
EFFECTS ON  
AIRWAYS, LUNGS &  
HEMODYNAMICS



# ***Intermittent Positive Pressure Breathing***

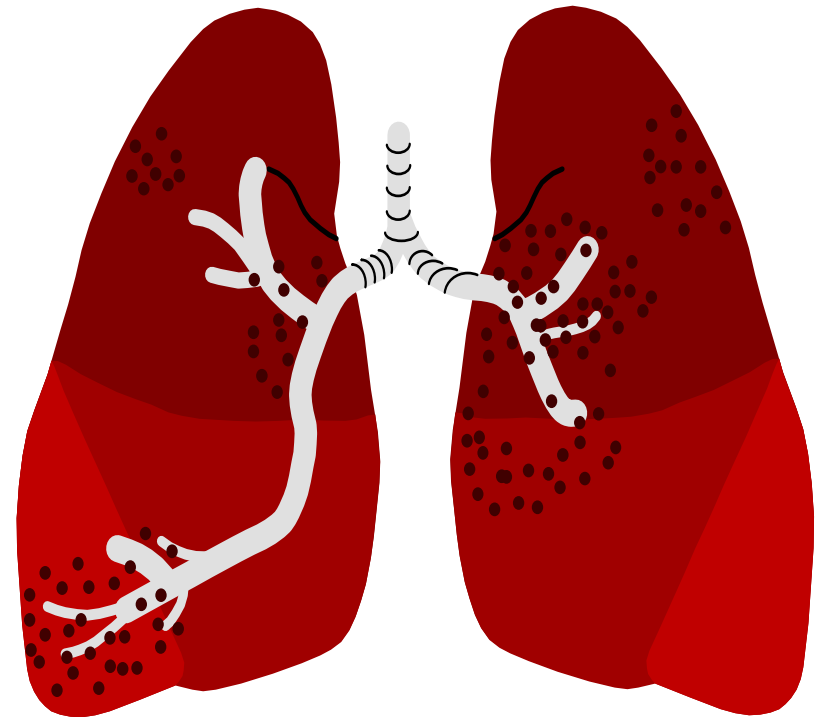


— Intrapulmonary

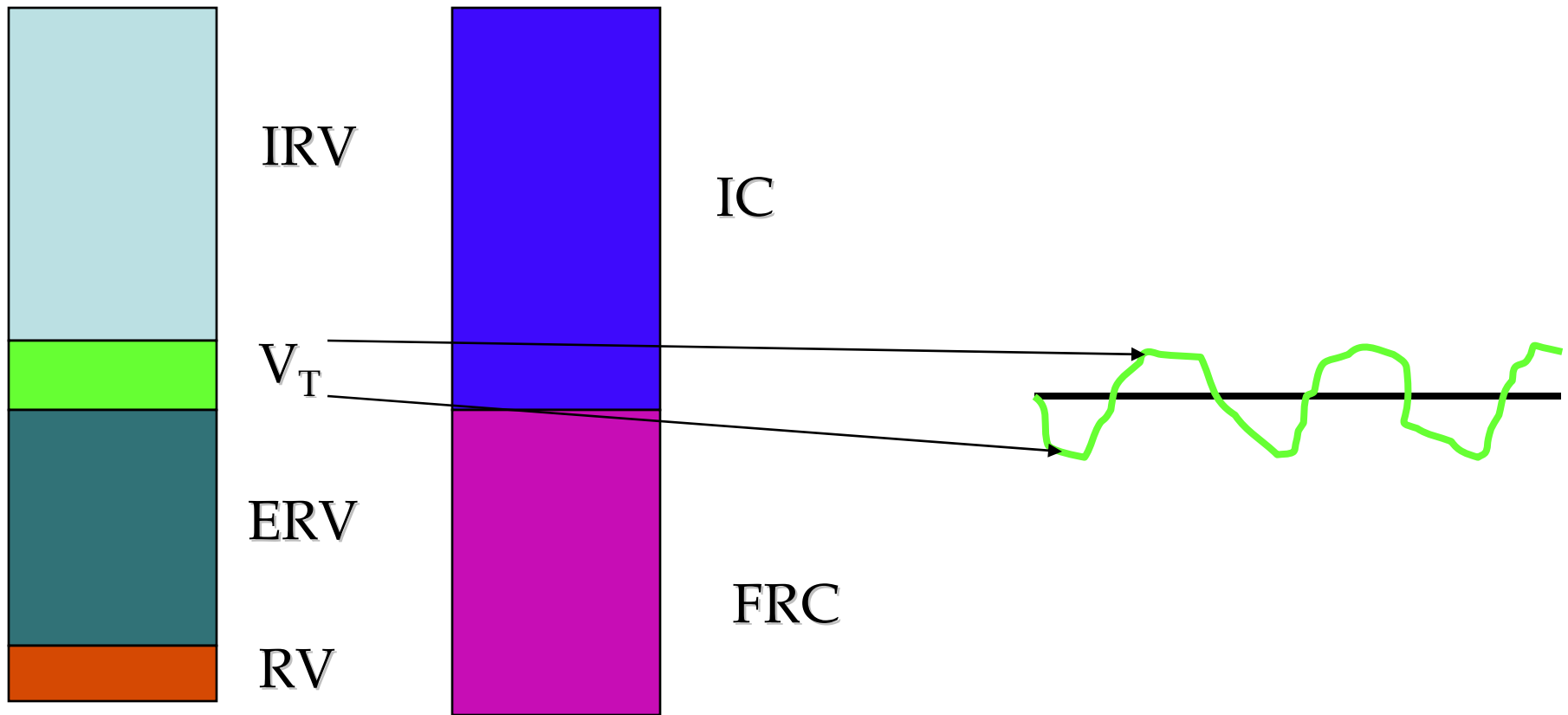
— Intraplural

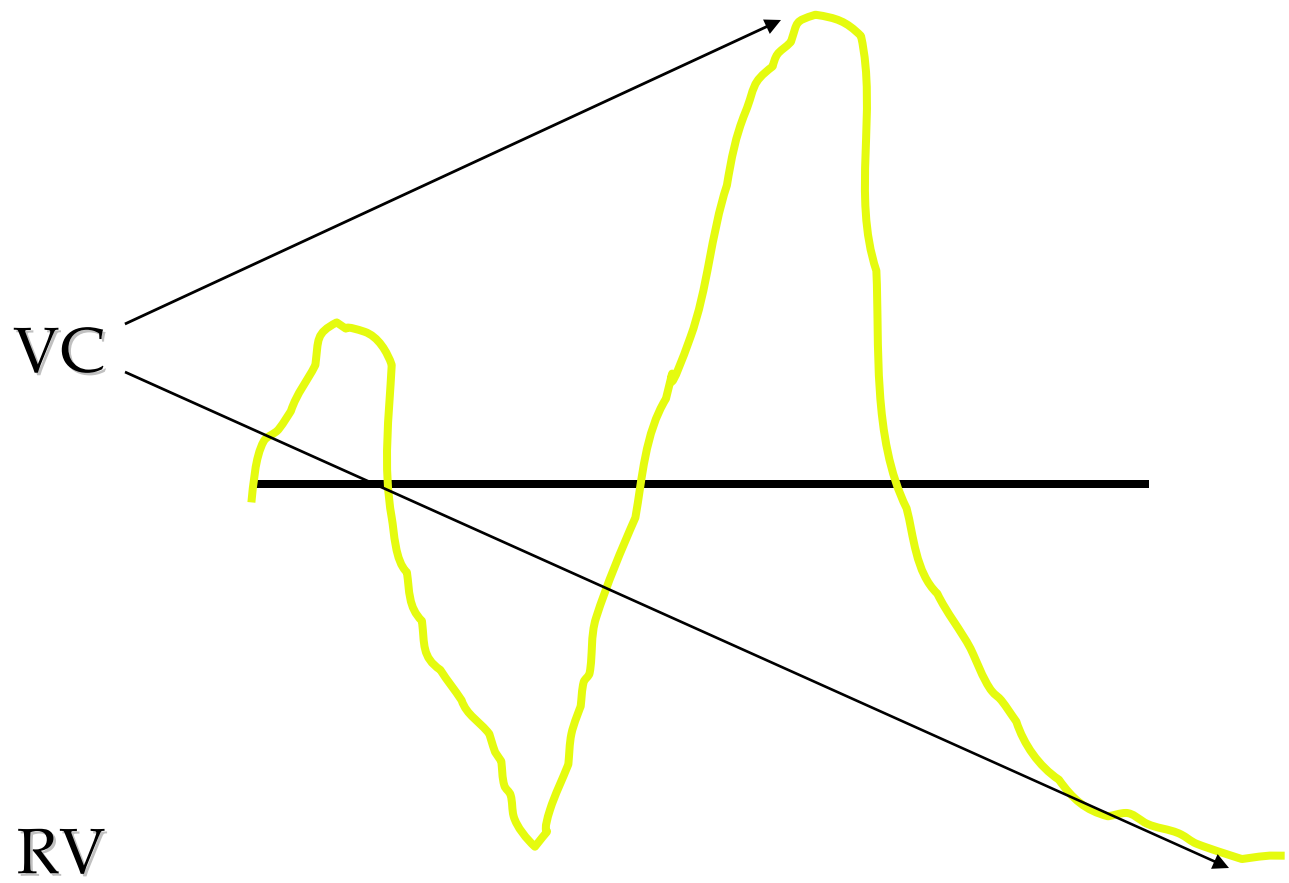
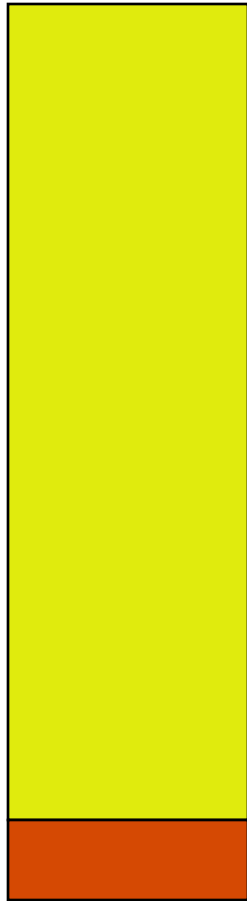
# DEEP BREATHING

- **VOLUMES DURING INSPIRATION 2 TO 3 TIMES NORMAL TIDAL VOLUME, BASED ON IBW.**
- **IS THE PATIENT ABLE, COMFORTABLE, DOING THE DEEP BREATHING.**
- **PAIN, SPLINTING.**



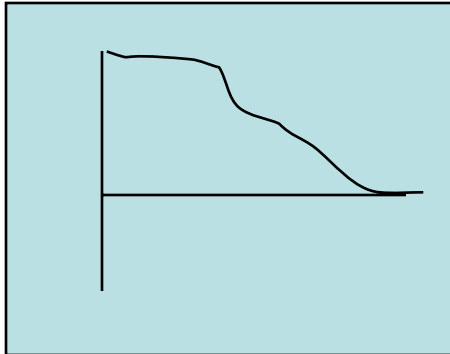
# Volumes & Capacities



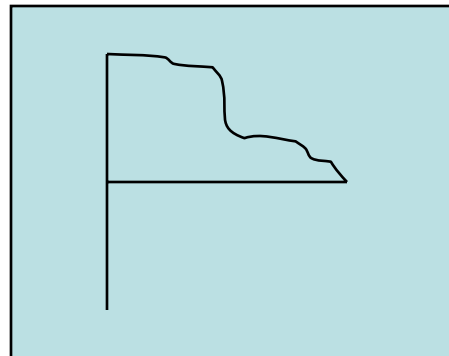


# VOLUME-ORIENTED IPPB

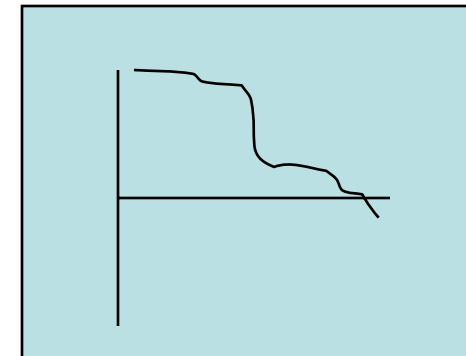
10cmH<sub>2</sub>O



15cmH<sub>2</sub>O



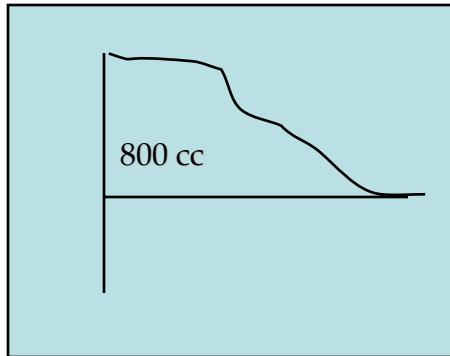
20cmH<sub>2</sub>O



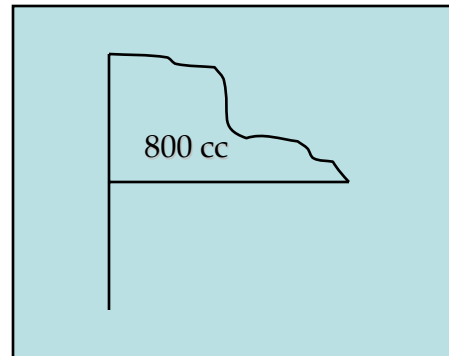
- FOCUS IS VOLUME NOT PRESSURE
- MATCH TO GOAL OF 2 TO 3 x NORMAL TIDAL VOLUME
- EXPIRED VOLUME AFTER EACH BREATH.
- SHOULD NOT INCREASE THE WOB.

# VOLUME-ORIENTED IPPB

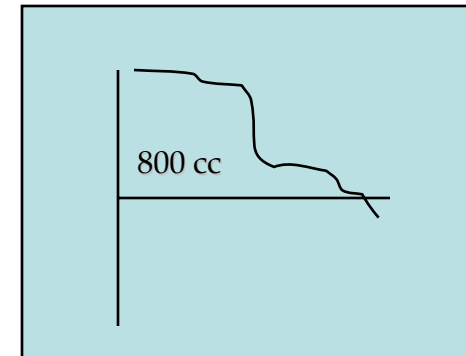
10cmH<sub>2</sub>O



15cmH<sub>2</sub>O



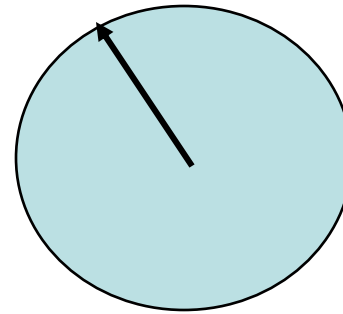
20cmH<sub>2</sub>O



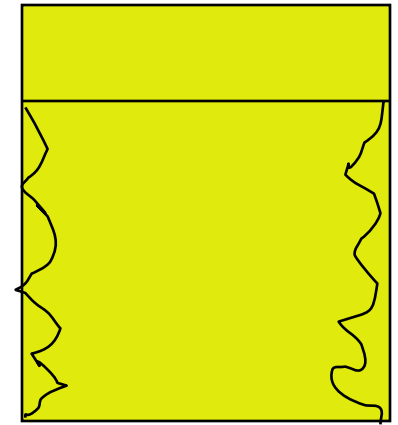
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- MATCH TO GOAL OF 2 TO 3 x NORMAL TIDAL VOLUME
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# VOLUME-ORIENTED IPPB

- FOCUS IS VOLUME  
NOT PRESSURE
- MATCH TO GOAL  
OF 2 TO 3 x  
NORMAL TIDAL  
VOLUME
- EXPIRED VOLUME  
AFTER EACH  
BREATH.



Pressure



Volume

# SMI INDICATIONS

- **NEEDED FOR PREVENTION OR REVERSAL OF ATELECTASIS**
- **ALSO HYPOSTATIC PNEUMONIA POST-OP SYNDROME**
- **ASSIST IN COUGH EFFECTIVENESS.**
- **ASSIST IN DELIVERY OF AEROSOL.**
- **REDUCE WOB**
- **GOAL-ORIENTED, BIO-FEEDBACK WILL IMPROVE COMPLIANCE.**

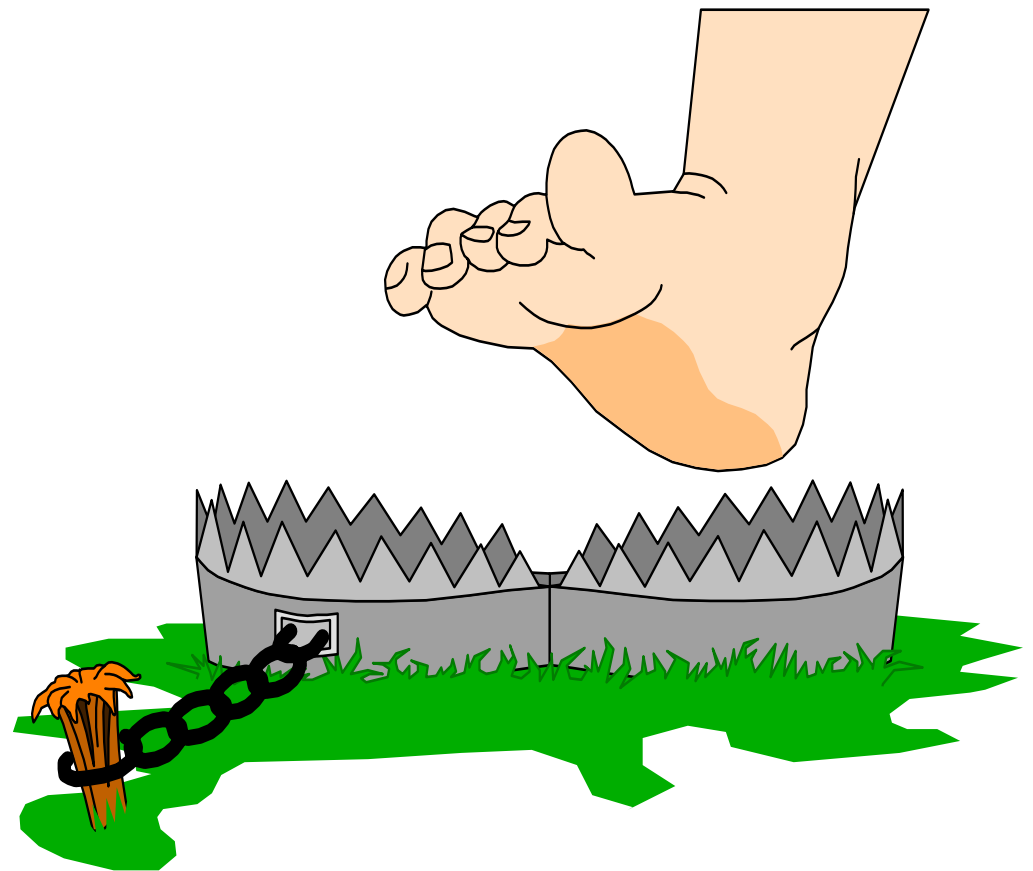
# HAZARDS

- **HYPER-VENTILATION**
- **ALKALOSIS**
- **PVCs**
- **DIZZINESS,  
LIGHTHEADED**
- **BAROTRAUMA**
- **WOB INCREASE**
- **INEFFECTIVE**
- **BRONCHOSPASM**



# CONTRAINDICATIONS

- **HYPER-VENTILATION**
- **DIZZINESS,  
LIGHTHEADED**
- **TENSION  
PNEUMOTHORAX**
- **TUBERCULOSIS**
- **INCREASED ICP**



# WHICH THERAPY?

- **SPONTANEOUS DEEP BREATHING**
- **INCENTIVE SPIROMETRY**
- **IPPB**
- **OTHER SMI THERAPIES ?**

