Lung Recruitment

Assess for any auto-PEEP and make adjustments to correct before continuing
Using Pressure Control use the following settings

- Adjust high pressure alarm to 60 cm H_2O
- Pressure Control (above PEEP): 15-20 cm H_2O
- PEEP: 20-25 cm H_2O (attempt 25 cm H_2O
    - **Target PIP of 40 cm H_2O**
- iTime: 1 – 2 seconds
- Respiratory rate: needed by the patient, must have full exhalation (expired flow of zero)
- FiO2 1.0
- Ventilate for 1-2 minutes (readjust alarm limits when the procedure is complete)

Note:

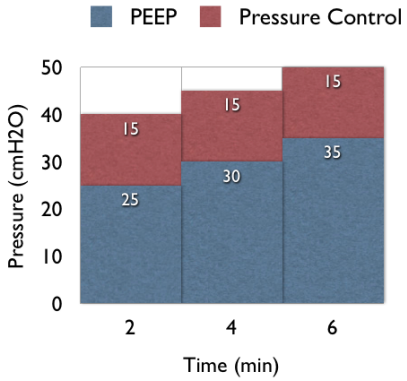
- If the patient does not tolerate the PEEP of 25 cm H_2O use PEEP of 20 cm H_2O and PC of 20 cm H_2O (PIP of 40 cm H_2O)
- If the patient tolerates the maneuver but you do not achieve an increase in oxygenation increase PEEP by 5 cm H_2O for a **PIP of 45 cm H_2O**
- If the patient tolerates the maneuver but you do not achieve an increase in oxygenation increase PEEP by 5 cm H_2O for a **PIP of 50 cm H_2O**
- **If the patient had a PIP of ≥ 40 cm H_2O prior to the RM consider a target PIP of 45 or 50 cm H_2O**

Contraindication to a RM

- Mean arterial pressure < 60 mm Hg
- Active air leak (bubbling) through a chest tube
- Pneumothorax, or subcutaneous or mediastinal emphysema, where a chest tube has not been inserted

Early termination of a RM

- Mean arterial pressure < 60, or a fall of > 20 mm Hg
- SpO2 drop by 4%
- Heart rate > 140 or < 60 per minute
- New arrhythmia, excluding isolated supraventricular extrasystoles
- New air leak through a chest tube



Reference: Am J Respir Crit Care Med (2006) vol. 174 (3) pp. 268-78

Decremental PEEP

To be done immediately following a recruitment maneuver
(If there is auto-PEEP present it will affect your compliance measurements)

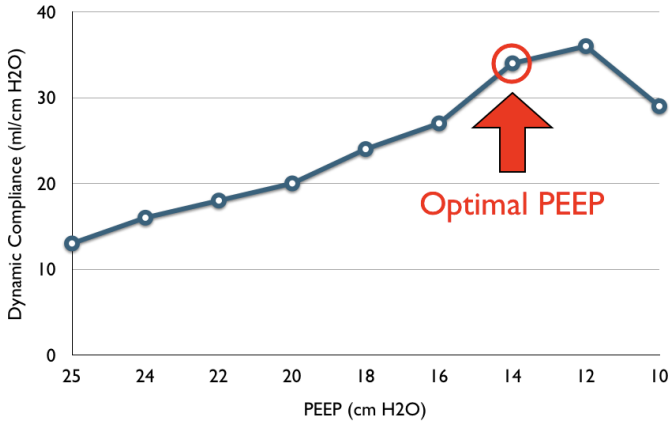
Place patient on a PEEP level of 20-25 cm H_2O and switch the patient to **Volume Control** ventilation with the following settings:

- Tidal volume set 4 – 6 ml/kg
- iTime 1 – 2 seconds (on the Avea ventilator adjust the flow to achieve an iTime of 1 – 2 seconds)
- Respiratory rate: needed by the patient, must have full exhalation (expired flow of zero)
- FiO2 1.0

Note: Volume Control is only used for this titration procedure. Once optimal PEEP is determined you may switch the patient back to a preferred mode.

- Document dynamic compliance
- Decrease PEEP by 2 cm H_2O (you may start with PEEP of 24 cm H_2O)
- Monitor the dynamic compliance until it has stabilized for 1 minute (lung units should stabilize within 2-5 minutes as long as the patient is not making any respiratory efforts)
- Record the dynamic compliance
- Continue to drop the PEEP by 2 cm H_2O and monitor dynamic compliance.
- As you drop the PEEP the dynamic compliance should improve.
- Continue until the dynamic compliance begins to drop.
- The level before the drop in compliance is considered the optimal PEEP.
- Re-recruit the lung and set the PEEP level 2 cm H_2O above the optimal PEEP determined by compliance.

Note: The reason for setting the PEEP 2 cm H_2O above is that when compared to best oxygenation in a decremental PEEP trial, dynamic compliance differs by approximately 2 cm H_2O. If you do not see the following pattern, you may need to use higher PEEP and should only be guided by esophageal balloon



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