**Heliox**

**Card design by**

**NRB/centers.**

**Disclaimer:** This card is intended to be educational in nature and is not a substitute for clinical decision

**Initial Settings:**

1. **PEEP.** PS of “5 over 5” is the increased transpulmonary pressure gradient; caution if RHF risk or unable to protect airway (or if can’t remove mask themselves); PEEP

**ARDS, upper airway obstruction) by**

**FiO2:**

**Pros:**

(less rebreathing); heated/humidified; Possible improved outcomes

**Cons:**

1.0

>90% FiO2 (variability with MV, mouth breathing)

2

 Possibly decrease density = better ventilation

Able to achieve high FiO2 even w/ high MV; washout CO2

Gastric insufflation (if PIP>20

Requires special device; Caution w/ 80/20 mix in severe

Bad if high MV; difficult to estimate severity of hypoxemia

Oxygen & Delivery Devices

4% /LPM; variable (mouth breathing, high minute ventilation)

**Hypoxia**

**Alveolar Gas Equations (A):**

\[
\text{PAO}_2 = \text{ FiO}_2 \times (\text{PA}_\text{O}_2 - \text{P}_{\text{a}}\text{CO}_2) \times \frac{1}{0.21} - \text{P}_{\text{a}}\text{CO}_2
\]

- PaCO2

Small vessel gas exchange (alveoli) where PaO2 and PaCO2 are equal

**Causus of Hypoxemia (PaO2)**

- Low FiO2, low PaO2, low or high, too much CO2 (hypercapnia),

**Passive Diffusion defect, V/Q mismatch, rest.

Respiratory Therapy Pocket Reference**

Card design by: ZIECKERMANN SAN FRANCISCO GENERAL Hospital and Trauma Center

**Oxygen & Delivery Devices**

**Pros:**

- Pressure support

ARDS, upper airway obstruction)

**Cons:**

- Pressure support

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ARDS, upper airway obstruction)
Normal zone I), pulmonary hypotension, PE, Volume Capnography Method. Bohr's equation uses A = alveolar; Enghoff uses PaCO\(_2\); E = mixed expired (Dx = low compliance; airway obstruction (bronchospasm); circuit problem, ETT kink/occlusion/biting, Dx = co2 problem (Mixed expired CO2) - PIP.

**Obstructive Lung Disease**

**Goals**

- **Etiology:** Obstructive airway disease and extrathoracic airway narrowing.
- **Increase:** SpO2, hemoglobinosis, or other causes for heterogeneous consequences of higher PIPs.

**Setting PEEP**

- **Reasons:**
  - Hyperinflation.
  - Increased work of breathing.
  - Lowered oxygenation.
- **Zones:**
  - Zone II: PEEP ≤ 12cmH\(_2\)O.
  - Zone III: PEEP > 15cmH\(_2\)O.

**Deadspace Calculation**

- **Methods:**
  - **Guedel Method:** V\(_{T}\) = 3.85 x (Wt in kg) + 40 mL. If tidal volume is estimated between 10% to 30% of predicted tidal volume, it can be used to estimate plateau pressures.

**Ventilation**

- **Normal:** PIP = 50cmH\(_2\)O, IT = 600ms, PEEP = 5cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **High:** PIP = 80cmH\(_2\)O, IT = 600ms, PEEP = 10cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **Low:** PIP = 1cmH\(_2\)O, IT = 600ms, PEEP = 0cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.

**PAP**

- **Normal:** PIP = 5cmH\(_2\)O, IT = 600ms, PEEP = 0cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **High:** PIP = 80cmH\(_2\)O, IT = 600ms, PEEP = 10cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **Low:** PIP = 1cmH\(_2\)O, IT = 600ms, PEEP = 0cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.

**Volume**

- **Normal:** V\(_T\) = 600ml.
- **High:** V\(_T\) = 1200ml.
- **Low:** V\(_T\) = 300ml.

**Pressure**

- **Normal:** PIP = 50cmH\(_2\)O, IT = 600ms, PEEP = 5cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **High:** PIP = 80cmH\(_2\)O, IT = 600ms, PEEP = 10cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **Low:** PIP = 1cmH\(_2\)O, IT = 600ms, PEEP = 0cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.

**Caveats**

- **High:** PIP = 80cmH\(_2\)O, IT = 600ms, PEEP = 10cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.
- **Low:** PIP = 1cmH\(_2\)O, IT = 600ms, PEEP = 0cmH\(_2\)O, I:E = 1:2, SpO2 > 95%.