

HIERARCHY OF O₂ DELIVERY SYSTEMS

METHOD

Nasal Cannula

1 lpm = 24% 4 lpm = 36%
2 lpm = 28% 5 lpm = 40%
3 lpm = 32% 6 lpm = 44%

Simple Face Mask

5 lpm = 40% 7 lpm = 50-55%
6 lpm = 45-50% 8 lpm = 55-60%

Non-rebreather Mask

6 lpm = 60% 9 lpm = 90%
7 lpm = 70% 10 lpm = close to 100%
8 lpm = 80%

Venturi Mask

4 lpm = 24-28%
8 lpm = 35-40%
12 lpm = 50%

Trach Collar

21-70% at 10L

T-Piece

21-100% with flow rate at 2.5 times minute ventilation

CPAP

Positive airway pressure during spontaneous breaths

Bi-PAP

Positive pressure during spontaneous breaths and preset pressure to be maintained during expiration

SIMV

Preset Vt and f. Circuit remains open between mandatory breaths so pt can take additional breaths. Ventilator doesn't cycle during spontaneous breaths so Vt varies. Mandatory breaths synchronized so they do not occur during spontaneous breaths.

Bi-PAP

Preset Vt and f and inspiratory effort required to assist spontaneous breaths. Delivers control breaths. Cycles additionally if pt inspiratory effort is adequate. Same Vt delivered for spontaneous breaths.

Terms to Know:

Pressure support:

Preset inspiratory support level. When the pt initiates a breath, this positive pressure flows to assist the pts spontaneous breaths.

PEEP (positive end-expiratory pressure):

Maintenance of pressure above atmospheric at end expiration.

Auto-PEEP:

Trapping of gas in the lung caused by insufficient expiratory time (breath stacking). Increases risk of barotrauma.

PIP (peak inspiratory pressure):

Airway pressure at the peak of inspiration.

Tidal Volume (Vt):

The volume of air expired with each breath

Respiratory Rate (f):

The number of breaths per minute, may be greater than preset frequency, but not less.

Minute ventilation (Ve):

Vt X f; volume of air expired per minute.

PaCO₂ (35-45 mm Hg):

Amount of CO₂ dissolved in arterial blood. Partial pressure of arterial CO₂.

SaO₂ (95-100%):

Percentage of oxygenated hemoglobin in arterial blood. Indirectly measured via SpO₂ (pulse ox).

PaO₂ (80-100 mm Hg):

Amount of oxygen dissolved in blood plasma.