

Humidity

Ray Hernandez

All gasses exert pressure

☀ O₂

☀ N₂

☀ vapor

Dalton's Law

- The total pressure (P_B) exerted by a mixed gas must be equal to the sum of the partial pressures of all component gases.
 - $F_{iO_2} = \%$
 - $P_{xO_2} \text{Torr} / \text{mmHg}$

Humidity Therapy

We are:

- 60% water
 - 2/3 inside the cell (intracellular)
 - 1/3 outside the cell (extracellular)
- Insensible Water Loss
 - Approx. 250 ml from respiration alone
 - Will increase with:
 - Hyperventilation
 - Dry inspired gas
 - fever

Humidity Therapy

- Humidity
 - Water that is present in a gas mixture as a vapor
- Water Vapor Pressure (PH₂O)
 - That pressure that is exerted by water vapor molecules
- Dew Point
 - The temperature at which a gas mixture becomes fully saturated with water vapor

Humidity Therapy

- Absolute Humidity (mg/L)
 - Actual mass of water present in a given volume of gas
- Relative Humidity (%)
 - Actual amount of water present in a gas divided by the capacity of the gas to hold water at a given temperature
- Absolute Humidity BTPS
 - 44gm/L @ 37° C
- % Body Humidity (%BH)
 - Actual amount of water present in a gas divided by the Absolute Humidity BTPS

% Body Humidity

Nare

- T = 22 C
- RH = 50%
- AH = 10mg/L

Hypopharynx

- T = 30 C
- RH = 95%
- AH = 30 mg/L

Isothermic Saturation Boundary

- T = 37 C
- RH = 100%
- AH = 43.9 mg/L

