**PURPOSE:**
- Nasal cannula can be used to deliver supplemental O2. Conventional nasal cannula are commonly used deliver low flow rates & moderate FiO2.
- High flow nasal cannula (HFNC) delivers higher flow rates achieving higher FiO2 with greater patient comfort.
- In hypoxemia respiratory failure use of HFNC is associated with a lower rate of requiring intubation & lower ICU mortality compared to CNC or NIPPV. HFNC can prevent re-intubation after thoracic and cardiac surgeries. Extubation to HFNC is also associated with lower rates of re-intubation.

**PHYSIOLOGY OF HEATED HIGH FLOW NASAL CANNULA**
- Higher flow washes out CO2 from anatomical dead space in the nasopharynx
- Higher flow overcomes resistance against expiratory flow and creates a small positive nasopharyngeal pressure (approximately 0.7 cmH2O of PEEP for every 10 lpm of flow)
- Patients in respiratory distress generate high flows and will entrain ambient air with conventional nasal cannula. HFNC can match demand so FiO2 remains relatively constant
- Warm humidified gas preserves mucociliary function & is more comfortable for patients

**For low flow O2 delivery systems, only the flow rate is specified. The flow rate roughly determines FiO2**

1 LPM ≈ 3-4% FiO2 INCREASE

**CONVENTIONAL NASAL CANNULA (CNC)**
- Flow 1 – 6 LPM
- FiO2 ~24 – 45%

**RESERVOIR NASAL CANNULA (RNC)**
- Flow 1 – 7 LPM
- FiO2 ~30 – 55%

**HEATED HIGH FLOW NASAL CANNULA (HFNC)**
- Flow 10 – 60 LPM
- FiO2 21 – 100%

**PROVIDING APNEIC OXYGENATION WITH NASAL CANNULA**
- Continued high flow nasal oxygenation during intubation – apneic oxygenation - is associated with reduced risk of hypoxemia & increased first pass intubation success.
- With conventional cannula, use 15 lpm for apneic oxygenation.
- With HFNC, use higher rates (>20 lpm) & 100% FiO2 for apneic oxygenation