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Centre of Excellence for Clinical Management of COVID 19
All India Institute of Medical Sciences, Bhopal

HIGH FLOW NASAL OXYGEN



HIGH FLOW NASAL CANNULA

Oxygen Delivery

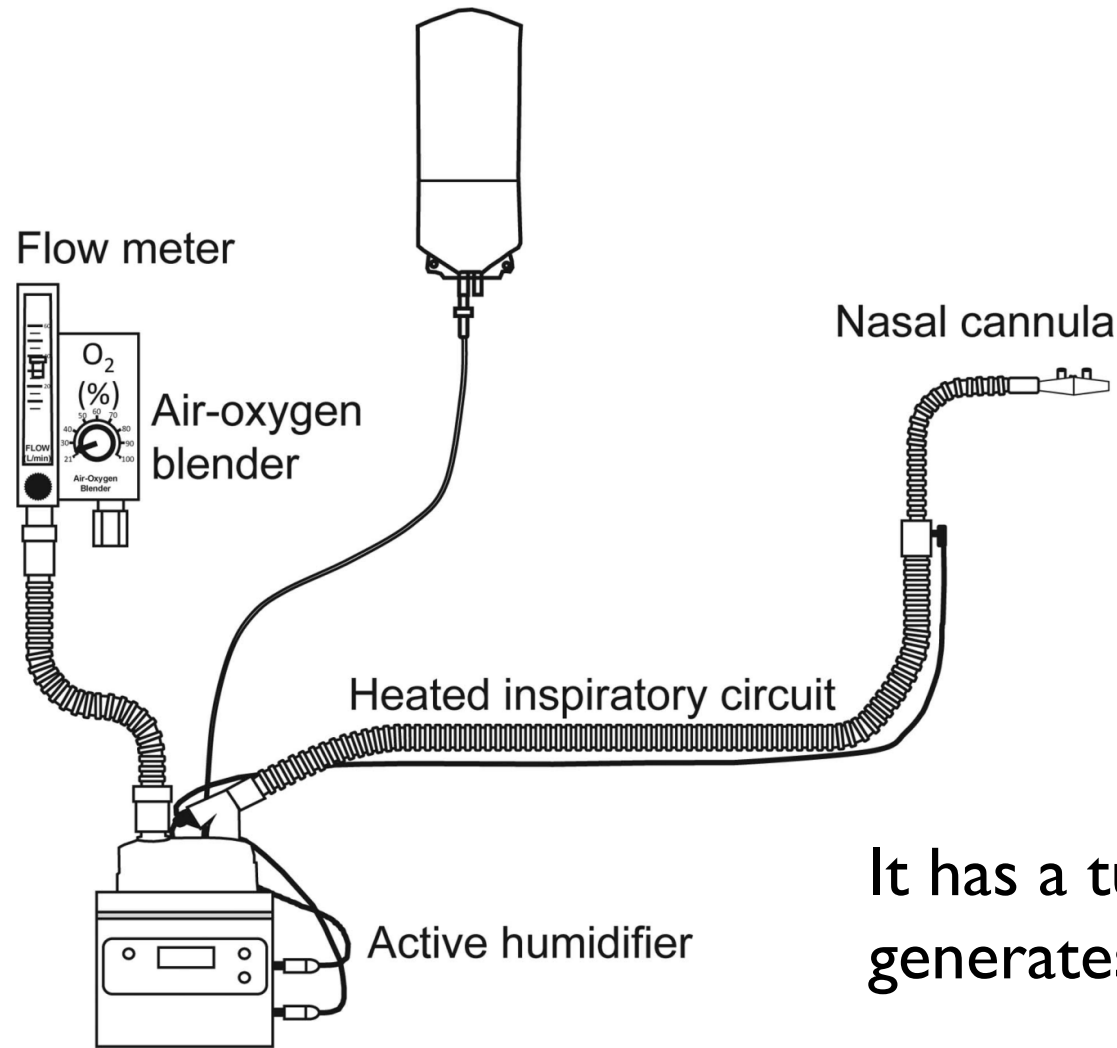
- It is basically the delivery of heated, humidified mixture of air & oxygen through nasal cannula at high flows.

Why high flow?

- Normal inspiratory flow for a healthy person at rest $\approx 30\text{L/min}$ and higher during distress.
- As the maximum flow that can be given safely through nasal cannula (4 L/min), face mask (15 L/min), there will be entrainment of atmospheric air (0.21 Fio_2) resulting in dilution of inspired oxygen concentration.
- HFNC provides an inspiratory flow of upto 60L/min to match the patients need.

Why heated & humidified air?

- Dry/cool gas from hospital supply(to prevent water trapping and rusting of pipeline) can cause
 - I. Drying & crusting of nasal mucosa/tracheo-bronchial secretions--- blocking --- increased airway resistance--- increased work of breathing.
 - II. Can cause patient discomfort & bronchospasm in asthmatic patients,
 - III. Increased heat loss from the body,
 - IV. Decreased muco-cilliary clearance.



It has a turbine based blender that generates a flow up to 60L/min

Parameters set;

1. Flow rate(upto 60L/min)
2. Fio2(upto 100%)
3. Temperature (ambient temperature)
4. A specialized flow meter, that can deliver 30-60 L of oxygen.

Precautions;

- Check for power source,
- Oxygen supply
- Sterile water for humidification
- Proper temp/flow/fio2 settings,

❖ While using HFNC, always watch for patient's compliance with the device and clinical status of the patient.

Indications;

- Hypoxic/ hypercapnic respiratory failure
- Pre intubation
- Post extubation
- Acute heart failure
- OSA

High Flow Nasal Cannula	Conventional Nasal Prongs
1. Flow upto 60 L/min can be used	1. Flow beyond 4L/min requires humidification.
2. Heated & humidified air is delivered.	2. Dry air is delivered
3. PEEP is provided	3. No PEEP
4. High flows help in CO ₂ washout, so useful in hypercarbic Resp failure	4. NA
5. Higher and more predictable Fio ₂ can be delivered	5. Maximum fio ₂ 0.44 (depending on patients inspiratory flows)
6. Separate equipment required	6. Can be delivered through hospital supply flow meters

Advantages:

- Being non-invasive, simple & easy means of oxygen delivery,
- It maintains thoraco-abdominal synchrony better than with facemask
- Awake proning and patients feeding can be accomplished without interruption,

Disadvantages:

- Need separate equipment
- Requires a conscious & oriented patient.
- Condensation of water vapour in the circuit
- Controlled ventilation cannot be given
- Can cause abdominal distension, aspiration, venous thromboembolism, Pneumothorax and Pneumomediastinum (rare)etc.

Contraindications

- Abnormalities/surgeries of face, nose or airway that preclude an appropriate-fitting nasal cannula.



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Thank You

