

OXYGEN THERAPY



OVERVIEW

- Introduction
- Indications
- Oxygen delivery systems
- Complications of oxygen therapy

Goal of oxygen therapy



To maintain adequate tissue oxygenation while minimizing cardiopulmonary work

O₂ Therapy : CLINICAL OBJECTIVES

1. Correct documented or suspected hypoxemia
2. Decrease the symptoms associated with chronic hypoxemia
3. Decrease the workload hypoxemia imposes on the cardiopulmonary system

O₂ Therapy : Indications

- Documented hypoxemia as evidenced by
 - ▣ PaO₂ < 60 mmHg or SaO₂ < 90% on room air
 - ▣ PaO₂ or SaO₂ below desirable range for a specific clinical situation
- Acute care situations in which hypoxemia is suspected
- Severe trauma
- Acute myocardial infarction
- Short term therapy (Post anaesthesia recovery)

ASSESSMENT

- The need for oxygen therapy should be assessed by
 1. monitoring of ABG - PaO₂, SpO₂
 2. clinical assessment findings.



PaO₂ as an indicator for Oxygen therapy

- PaO₂ : 80 – 100 mm Hg : Normal
- 60 – 80 mm Hg : cold, clammy extremities
- < 60 mm Hg : cyanosis
- < 40 mm Hg : mental deficiency
memory loss
- < 30 mm Hg : bradycardia
cardiac arrest



PaO₂ < 60 mm Hg is a strong indicator for oxygen therapy

Clinical assessment of hypoxia

	mild to moderate	severe
CNS :	restlessness disorientation lassitude headache	somnolence, confusion impaired judgement loss of coordination obtunded mental status
Cardiac :	tachycardia mild hypertension peripheral vasoconst.	bradycardia, arrhythmia hypotension
Respiratory:	dyspnea tachypnea shallow & laboured breathing	increasing dyspnoea, tachypnoea, possible bradypnoea
Skin :	paleness, cold, clammy	cyanosis

MONITORING

- Physical examination for C/F of hypoxemia
- Pulse oximetry
- ABG analysis
 - pH
 - pO₂
 - pCO₂
- Mixed venous blood oxygenation

O₂ Delivery systems

O₂ Delivery devices

- Low flow (Variable performance devices)
 - Nasal cannula
 - Nasal catheter
 - Transtracheal catheter
- Reservoir system (Variable performance device)
 - Reservoir cannula
 - Simple face mask
 - Partial rebreathing mask
 - Non rebreathing mask
 - Tracheostomy mask
- High flow (Fixed performance devices)
 - Ventimask (HAFOE)
 - Aerosol mask and T-piece with nebulisers

Complications of Oxygen therapy

Complications of Oxygen therapy

1. Oxygen toxicity
2. Depression of ventilation
3. Retinopathy of Prematurity
4. Absorption atelectasis
5. Fire hazard

1. O₂ Toxicity

- Primarily affects lung and CNS.
- 2 factors: PaO₂ & exposure time
- CNS O₂ toxicity (Paul Bert effect)
 - ▣ occurs on breathing O₂ at pressure > 1 atm
 - ▣ tremors, twitching, convulsions

How much O₂ is safe?

100% - not more than 12hrs

80% - not more than 24hrs

60% - not more than 36hrs

Goal should be to use lowest possible FiO₂
compatible with adequate tissue oxygenation

Indications for 70% - 100% oxygen therapy

1. Resuscitation
2. Periods of acute cardiopulmonary instability
3. Patient transport



Oxygen is a drug.

When appropriately used, it is extremely beneficial

When misused or abused, it is potentially harmful

THANK YOU....

