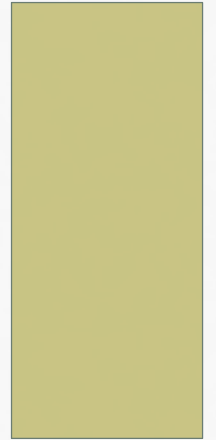


NON INVASIVE VENTILATION.

DR RAMESH.



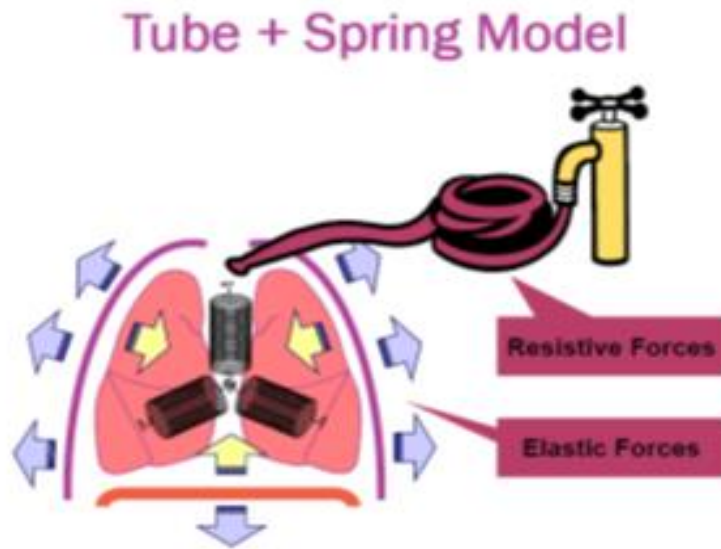
OBJECTIVES.

- Definitions.
- Advantage and disadvantage.
- Indications.
- Contraindications.
- Modes.

INTRODUCTION.

- NIV is the delivery of mechanical ventilation to the lungs using techniques that does not need endotracheal intubation.
- Initially used for treatment of hypoventilation secondary to neuromuscular disease.
- Now accepted in the treatment of respiratory failure.

PHYSIOLOGY.



PHYSIOLOGY.

- Inspiration needs energy.
- Expiration is passive.
- Energy is needed to overcome resistance and elastic forces for the flow of gas.
- Respiratory failure occurs when resistance or elastic forces increases.

BENEFICIAL EFFECTS OF NIV.

- Increases the FRC.
- Moves the fluid out of the lungs.
- Avoids lung collapse.
- Increases the alveolar ventilation.
- Decreases the work of breathing.
- Improves the V/Q mismatch.
- Improves shunt.
- This leads to better oxygenation, CO₂ clearance and Reduces WOB.

ADVANTAGES.

- Non invasive.
- Comfortable.
- No need of sedation.
- Oral patency maintained.
- Avoids complications of ETT.
- Reduced cost and LOS.

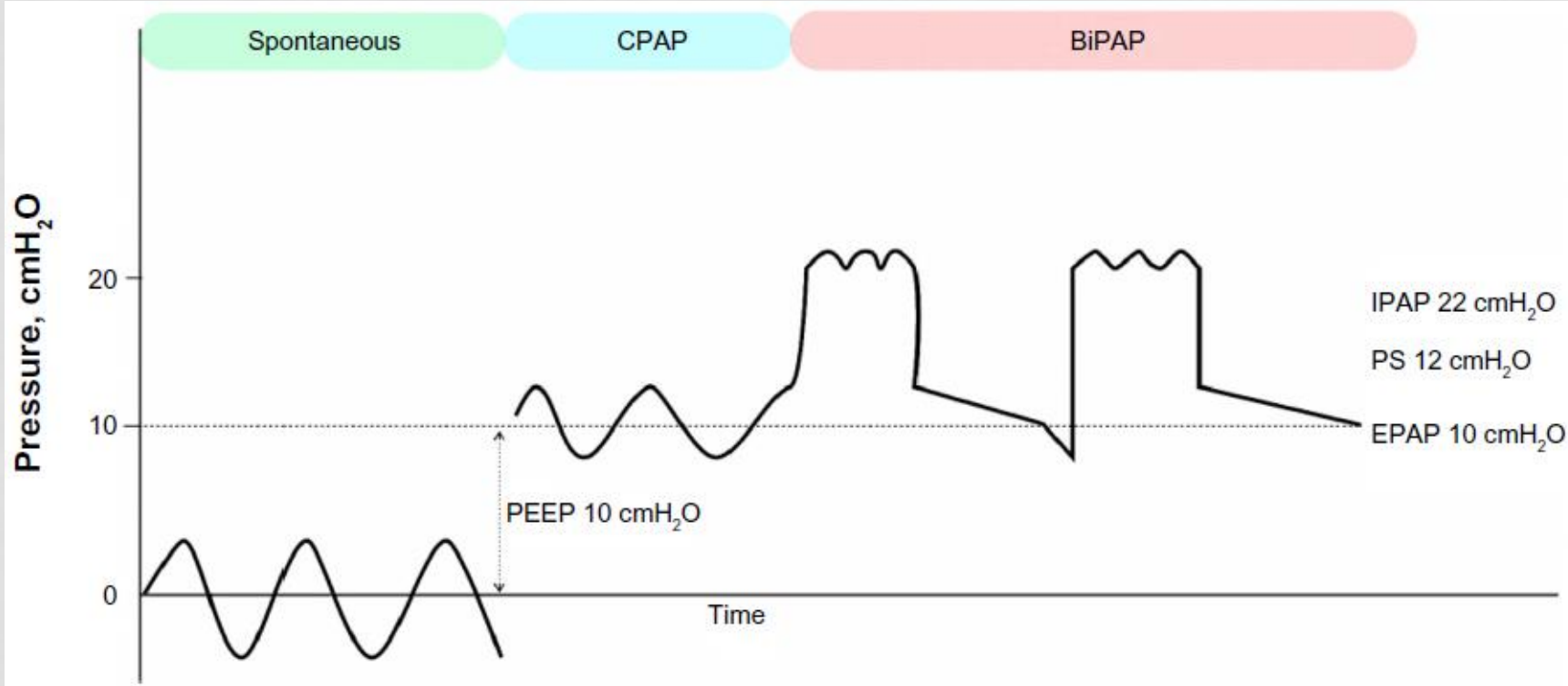
DISADVANTAGES.

- Slow correction.
- Mask problems- leak, eye irritation and skin injury.
- Lack of airway access- suction, aspiration.
- Claustrophobic.
- Workload and supervision.

TYPES OF RESPIRATORY FAILURE AND TYPE OF NIV.

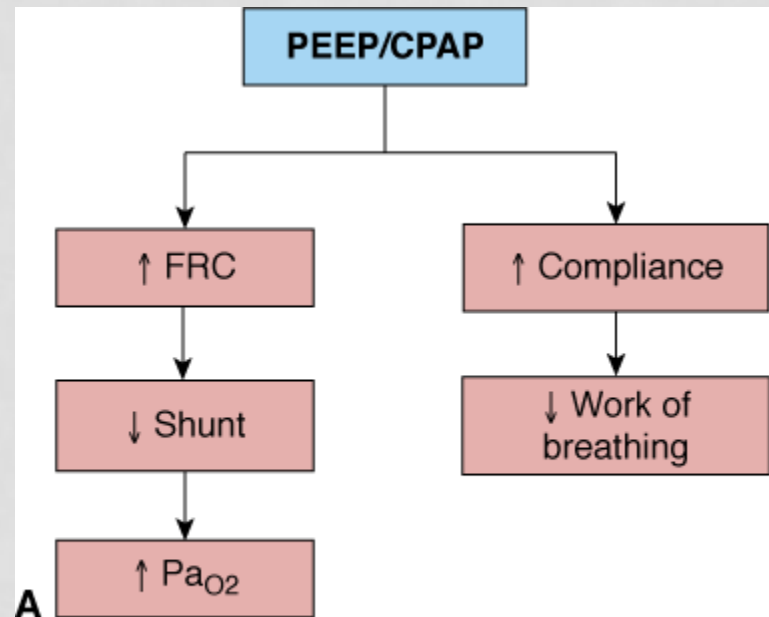
- Type 1 or hypoxemic failure.
- Type 2 or hyper carbic failure.

- Type 1- CPAP.
- Type 2- BiPAP.



CPAP.

- Improves oxygenation.



Source: Tobin MJ: *Principles and Practice of Mechanical Ventilation, 3rd Edition*: www.accessanesthesiology.com
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BIPAP.

- **EPAP**

- Provides PEEP
- Increases FRC
- Reduces FiO₂

- **IPAP**

- Decrease WOB and oxygen demand
- Increase TV
- Decrease RR

WHEN TO USE NIV

- Indication
- Contraindication
- Assessment- sick but not moribund, can protect airway, cooperative and stable hemodynamics.
- Ceiling of therapy

CONTRAINDICATIONS

- Agitated
- Unable to protect airway
- Excessive vomiting
- Unstable CVS
- Untreated pneumothorax
- Bowel obstruction
- Facial trauma, burns, surgery
- Fixed airway obstruction

COMPLICATIONS

- Failure
- Hypoxia
- Aspiration
- Low BP
- Pressure ulcers
- Gastric distension
- Barotrauma

LVF.

- CPAP- 5 to 8 to a maximum of 15.
- Titrate with saturation and ABG.
- Aim to achieve TV 7ml/kg and RR < 25.

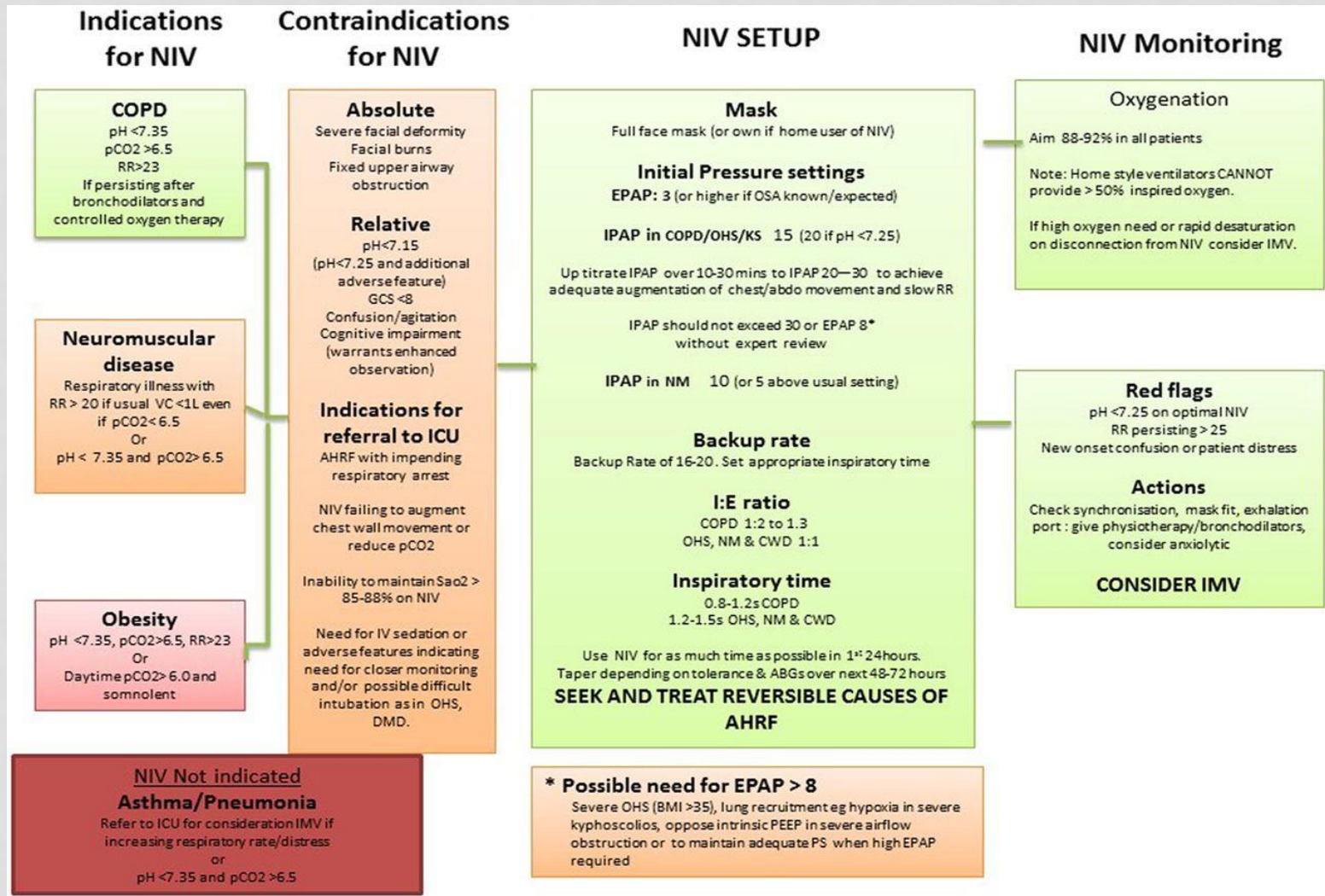
COPD.

- EPAP- 3 to 8.
- IPAP- 15 to 30.
- Trigger- maximum sensitivity.
- Back up rate 15.
- I/E ratio 1:3.
- Titrate with saturation and ABG.

SETTING UP.

- Communication and reassurance.
- Correct mask size.
- Documentation.
- Follow up and recording observations.

Summary for providing acute non-invasive ventilation.



A Craig Davidson et al. Thorax 2016;71:ii1-ii35

- Thank You.