



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS KALVI NAGAR, COIMBATORE-35
AFFILIATED TO Dr MGR UNIVERSITY, CHENNAI

DEPARTMENT OF OPERATION THEATRE AND
ANAESTHESIA TECHNOLOGY

3rd YEAR

SUBJECT: Principles of Anaesthesia II

TOPIC: Cardio Pulmonary Bypass



Definition:

- The function of both heart and lung can temporarily taken over by the heart lung machine.
- The heart lung machine takes blood out of the body
- Oxygenates the blood and then returns to the patient
- The perfusionist is responsible for operating the machine during cardiac surgery and monitoring the altered circulatory process closely, taking appropriate action when abnormal situation arise



Standard components of CPB:

- Oxygenator
- Cardioplegia delivery system
- Arterial filter
- Heat exchanger
- Custom pack tubing
- Aortic canula
- Venous cannula
- Connectors
- Hemo connector
- Venous reservoir
- Main Pump



Oxygenator:

- Artificial lung
- Membrane oxygenator
- It is made up of microporous polypropylene membrane
- Compared with natural lung, artificial lung have similar surface area
- Gas transfer across the oxygenator is by diffusion

Pump:

- Roller pump
- Centrifugal pump



Monitoring:

Patient Monitoring:

- ECG
- Blood Pressure monitoring
- CVP monitoring
- Cardiac output monitoring
- Pulse oximetry
- Temperature(Rectal,Nasal)
- Renal function-urine output(1ml/hr/kg)



CPB Monitoring:

- Line pressure Monitoring: These pressure provides information about function of component in the perfusion circuit.
- Proximal to the oxygenator
- Flow Monitoring: Measurement of the blood flow from the pump head (centrifugal pump, inflow monitoring)
- Blood gas monitoring: PH, Paco₂, (Direct sampling from circuit)
- Electrolytes: Na, K, Ca, HcO₃, glucose
- Temperature monitoring: Permanent temperature probe
- Temperature of heat exchanger
- Cardioplegia flow pressure monitoring, temperature



Management of CPB:

- Maintain the PH
- Maintain MAP
- If hypotension treat with alpha adrenergic drug, phenylephrine, norephrine
- If hypertension treat with vasodilators GTN
- Anticoagulant heparin
- Act on bypass



THANK YOU