



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE
TECHNOLOGY

COURSE NAME: Introduction to Surgery

TOPIC : Postoperative Care After CABG

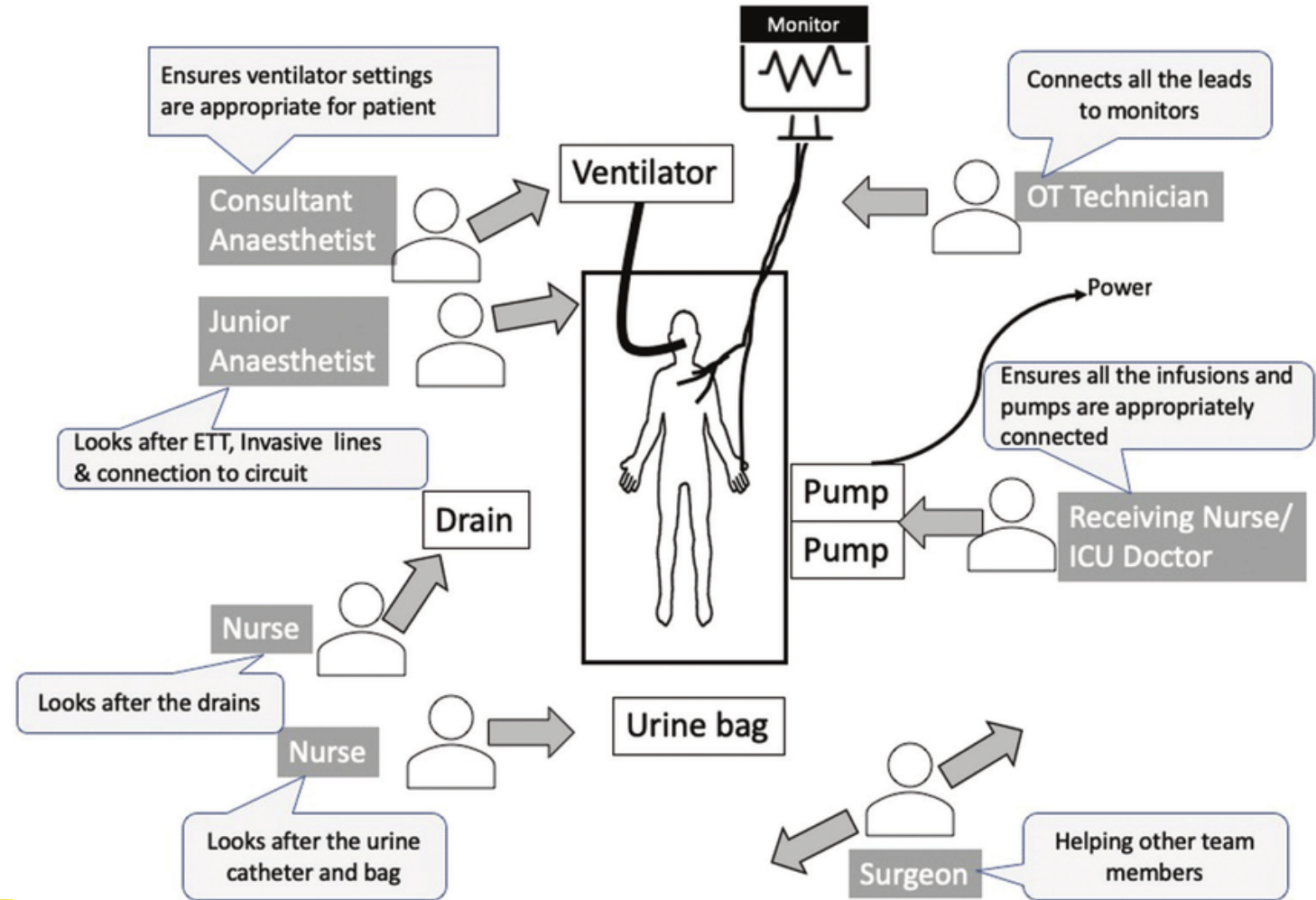


PATIENT HANDOVER



Proper handover → **Ensuring continuity of care**

- The ICU management of the cardiac surgical patient commences with handover from the anesthetic-surgical team.





PATIENT HANDOVER



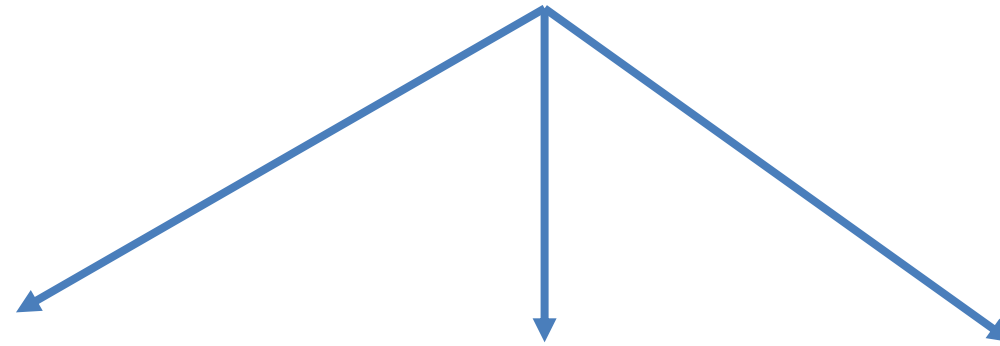
During this period of time

- Vital information about events over the previous several hours in the operating room needs to be communicated without error or omission of important details.
- Secure and reassure right position of the patient's tracheal tube, ventilator settings and ventilator tubing.
- Settings of any temporary epicardial pacing if it is used
- Pleural/ mediastinal drains, and urinary catheter have to be safely transported from the operating room to the ICU.



HANDOVER PROTOCOL

HANDOVER PROTOCOL



Equipment and technology handover

Information handover

Discussion and plan

<p>On arrival, the patient ventilation Monitoring and support devices are connected to the ICU Systems</p>	<p>The surgeon, anesthetist and receiving team discuss the case as a group to the receiving physician</p>	<p>Manages the discussions, identifies anticipated problems, and anticipated recovery is discussed</p>
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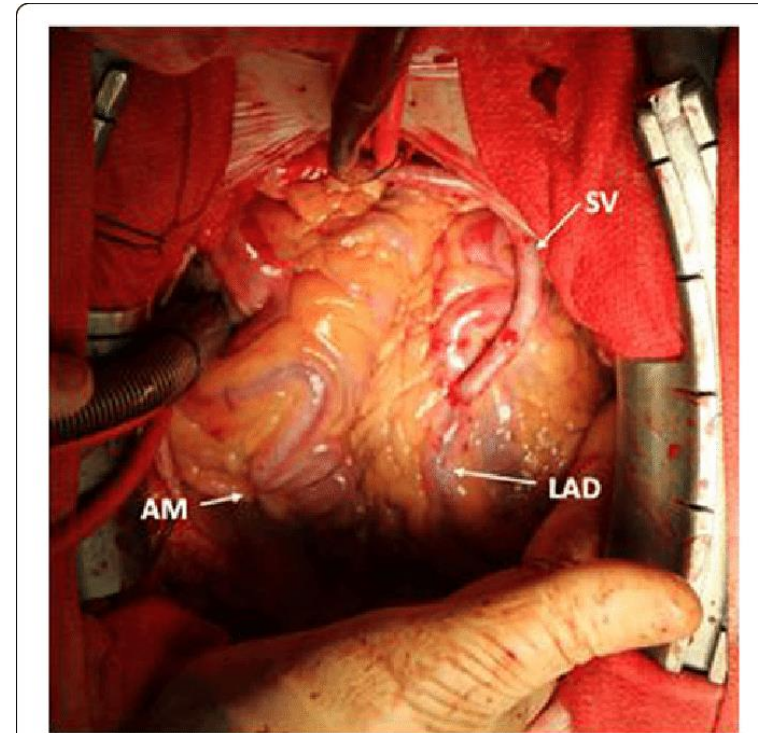
GENERAL CONSIDERATIONS



Goal: Achieving and maintaining hemodynamic stability and recovery from general anesthesia

Surgical:

- Nature of surgery—elective, urgent or emergent
- Revascularization strategy employed +/-valvular interventions
- Any intraoperative surgical complications and how they were overcome
- Location of mediastinal/pleural drains and epicardial pacing wires





GENERAL CONSIDERATIONS



Anesthesia:

- **Airway management** issues, adjuncts used and any complications encountered
- **Ventilator settings**
- **Allergies**
- **Hemodynamic stability** intraoperatively and post-bypass and trends over time
- **Echocardiography:** Baseline ventricular and valvular performance, intraoperative findings and any postprocedural changes
- **Transfusions** and other medications administered
- **Coagulation status** perioperatively (including post-protamine ACT and drain outputs since insertion)
- Current infusions



GENERAL GUIDELINES



Ventilation
and
respiratory
management

Analgesia
/
Sedation

Temperature
management

Metabolic
management

Fluid
management/
Glucose
control

Feeding/
chest
drains/
pacing

Secondary
prophylaxis
after



VENTILATION AND RESPIRATORY MANAGEMENT



- Frequently monitor the functions of mechanical ventilator
- Adjust the rate, tidal volume and O₂ level of ventilator
- Check the ventilator alarms are ON and Functioning
- Check ET Tube placement
- Observe for Dyspnea or airway obstructions
- Auscultate chest for breath sounds
- Promote coughing and deep breathing exercises
- Suction on tracheobronchial secretions carefully
- The median duration of mechanical ventilation following cardiac surgery with fast track anesthesia is 6 hours





CHECK BEFORE PATIENT IS EXTUBATED



- Observe for respiratory distress.
- Check rate, depth, & character of respiration.
- Note person's color & vital signs.
- ABG to determine whether patient is breathing adequately

Blood Gas Values			
↓ pH	7.250		[7.350 - 7.450]
pCO ₂	35.3	mmHg	[35.0 - 45.0]
pO ₂	77.7	mmHg	[75.0 - 105]
Acid Base Status			
↓ cHCO ₃ ⁻ (P) _C	14.9	mmol/L	[22.0 - 28.0]
‡ cBase(B) _C	-11.1	mmol/L	[-3.0 - 3.0]
‡ cBase(Ecf) _C	-10.9	mmol/L	[-3.0 - 3.0]
Electrolyte Values			
cK ⁺	4.6	mmol/L	[3.7 - 4.7]
cNa ⁺	140	mmol/L	[136 - 146]
↓ cCa ²⁺	1.11	mmol/L	[1.15 - 1.30]
cCa ²⁺ (7.4) _C	1.03	mmol/L	
cCl ⁻	107	mmol/L	[101 - 110]
Metabolite Values			
↑ cGlu	6.5	mmol/L	[3.5 - 5.4]
‡ cLac	11.5	mmol/L	[0.0 - 2.0]
Oxygen Status			
ctHb	122	g/L	[120 - 150]
↓ sO ₂	92.4	%	[95.0 - 99.0]
p50 _C	32.86	mmHg	
pO ₂ (a/A) _E	36.7	%	
FMetHb	0.9	%	[0.4 - 1.2]
FCOHb	0.3	%	[0.3 - 1.8]
p50(st) _C	28.88	mmHg	
FShunt _E	23.4	%	
FO ₂ Hb	91.3	%	[90.0 - 98.0]
Hct _C	0.375		



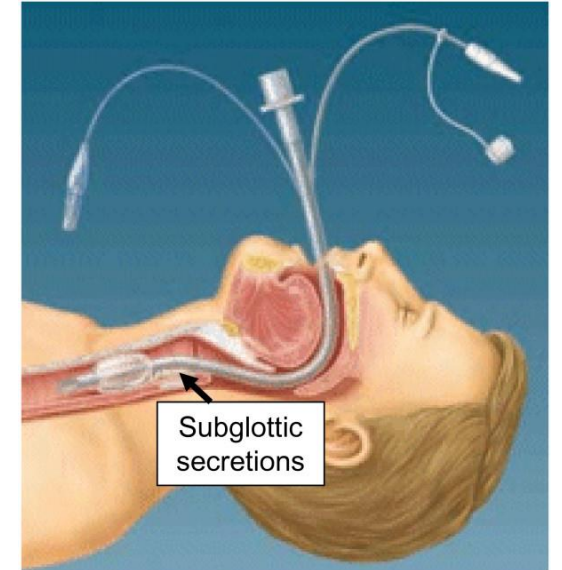
PREVENTION OF PULMONARY COMPLICATIONS



- Frequent turning & **suctioning** the intubated patient
- Help non-intubated patient to turn, take **deep breaths & cough** every two hours.
- **Chest physiotherapy** to rid the lungs of secretions.
- Report any abnormality from chest tubes.
- **Measure drainage** by collecting in calibrated cylinders

Abnormal findings include:

- Greater than 2 ml/kg. Body Weight/ hr.
- Sustained hemorrhage for more than 2 minutes.
- Sudden cessation of chest drainage accompanied by increased cvp, dyspnea and oliguria
- Prophylactic antibiotics.
- Daily portable chest X-ray until lung is expanded.





ANALGESIA/ SEDATION



- **Acute pain** following cardiac surgery is common and multifactorial in origin.
- **Nociceptive inputs** may arise from the tissue trauma caused by sternotomy, from sternal retraction, from chest drains or other irritation of the parietal pleura or pericardium.
- Pain is typically worst on the first postoperative day at the site of sternotomy, and is amplified by coughing or movement.
- significant pain can continue for up to a **week after surgery**
- **Adequate analgesia** helps to achieve excellent clinical outcomes
- Analgesia reduce complications associated with poor pain control such as **respiratory failure, cardiac ischemia, arrhythmias, and increased wound infection rates**





ANALGESIA/ SEDATION



Regional analgesia techniques	Thoracic epidural analgesia; Thoracic paravertebral block; Lumbar epidural analgesia; Intrathecal opioid analgesia; Intercostal nerve block; Intrapleural analgesia Phrenic nerve infiltration
Systemic analgesia	Opioids Non-opioid (paracetamol, NSAIDs, coxibs, tramadol, gabapentin, ketamine)
Non-pharmacological	Transcutaneous electrical nerve stimulation Cryoanalgesia



DRUG MANAGEMENT



- Maintaining proper **analgesics**
- Use of **Antiarrhythmic or Antihypertensive** drugs if needed
- Use of **Antiplatelet therapy**
 - **Aspirin** is administered as prophylaxis after MI and post operative period
 - The Use of aspirin is to reduce the incidence of blockage of the vein graft after CABG





TEMPERATURE MANAGEMENT



Postoperative hyperthermia is associated with worsened cognitive dysfunction at six weeks following surgery and needs to be avoided

Conversely, ongoing hypothermia may contribute to bleeding and coagulopathy and may also lead to problems with temporary epicardial pacing.

Following cardiopulmonary bypass (CPB), there is an after-drop in temperature.

Goal is to maintain normal body temperature





METABOLIC MANAGEMENT



Etiology of metabolic derangements:

- **Preoperative medications**
- Underlying medical conditions such as **chronic renal impairment**
- Metabolic response to cardiac surgery and CPB includes hyperglycemia, hyperlactatemia, and hypokalemia, with an increase in **pro-inflammatory cytokine production.**
- The most common electrolyte disturbance is hypokalemia but hypo and hypernatremia, hypomagnesaemia, hyperkaliemia, and hypophosphatasemia can occur.
- **Hypocalcemia** may affect cardiac performance and increase risk of bleeding.



METABOLIC MANAGEMENT & GLUCOSE CONTROL



- Prescribed **IV fluids, blood and plasma expanders.**
- Obtain hemoglobin level, prothrombin time and blood gasses daily .
- Sips of water every 4 hourly after extubating if person is fully responsive & not nauseated.
- Given the high percentage of cardiac patients who are diabetic, the need to control **glucose** postoperatively is now common and treatment should be titrated to achieve a blood sugar less than **180 mg/dL**
- Clear liquid first followed gradually by solid food.
- Watch for signs of abdominal distension and paralytic ileus.
- Daily electrolyte studies to determine blood levels of sodium, potassium and chloride





INTENSIVE CARE UNIT



- Check & secure all connections for lines & tubes.
- Connect **endo-tracheal tube to ventilator**
- **ECG to monitoring system.** >Patient kept flat until systolic BP is 100mmHg--- Raised gradually & his response noted
- Promote **CVS Care** by assisting BP, Pulse Pressure & Central Venous Pressure



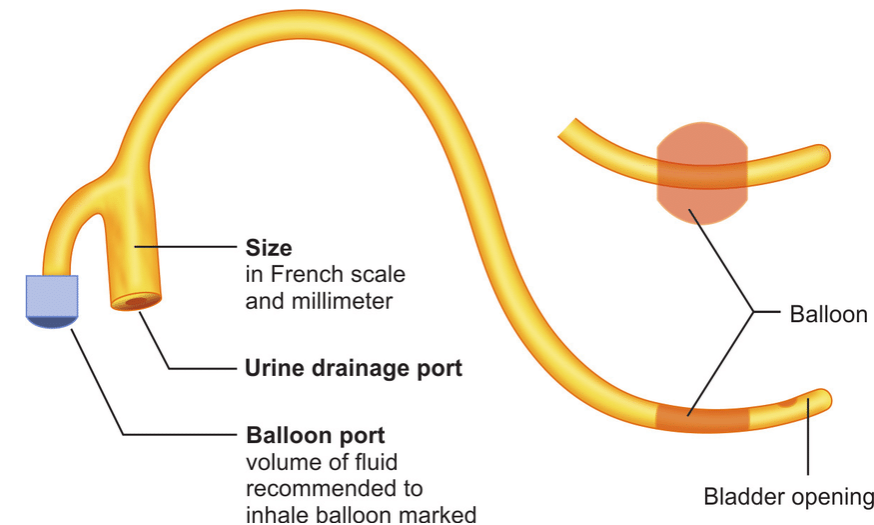
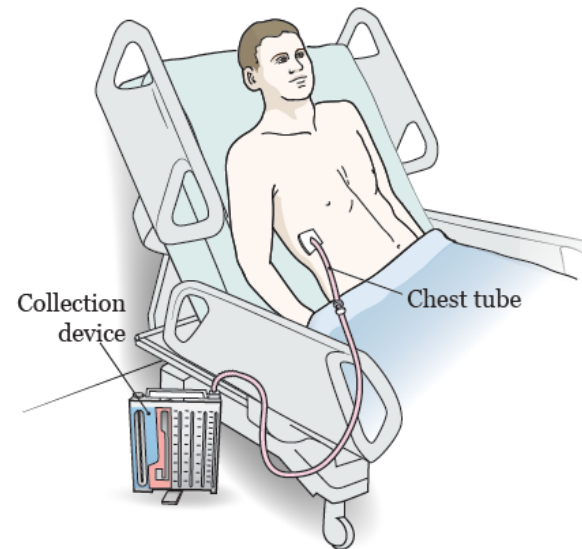


ASSIST FOR INFECTION



- Assist for infection in lungs or urinary system due to indwelling catheter placement.
- Catheters placed are **intravascular catheter, Foley's catheter, Thoracic catheter for drainage.**
- Check for the **incision site** for any oozing or infection
- Follow **aseptic techniques** while dressing and other procedure

- Using proper **hand washing** technique
- Meticulous care to be taken to **prevent contamination** at the sites of catheter and tube insertion
- **Care of the graft donor site.**





EARLY MOVEMENT & EXERCISING



Turning & Exercising

- Side to side at intervals for back care - Passive exercises and leg flexion every 2 hours.

Typical ambulation Schedule

- **Day after surgery:** dangles leg over the side of bed
- **2nd Day:** sits on bed/ chair for short period.
- **3rd to 5th Day :** Begins to ambulate in room
- **8th to 10th day:** Fully ambulatory.

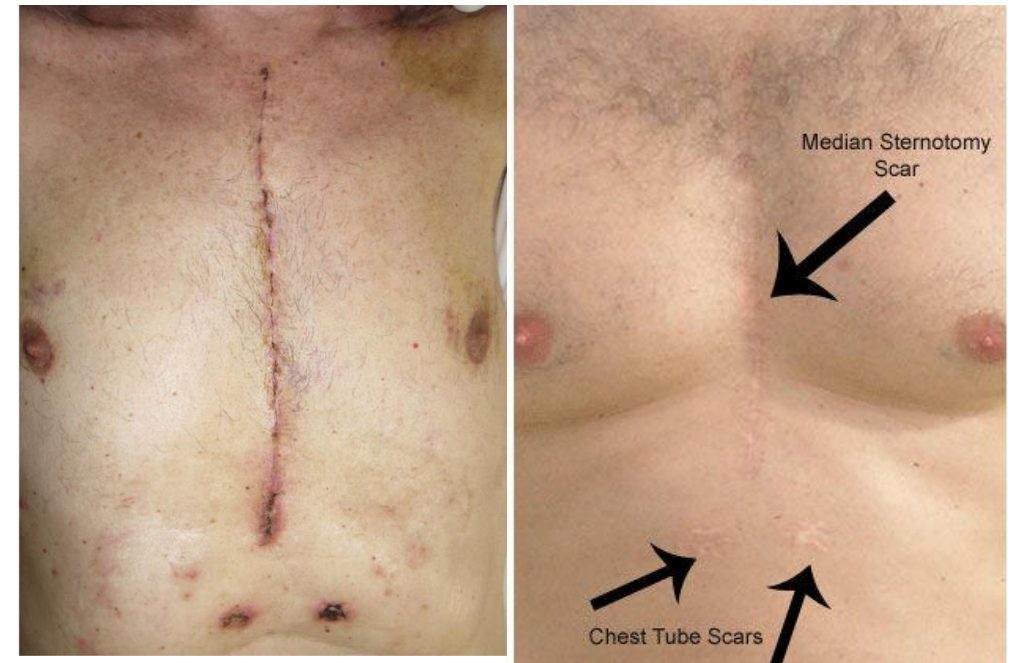




EDUCATION WHILE DISCHARGE



- **Remember:** 6 to 8 weeks for sternotomy to heal.
- Lift nothing during this period.
- Not to drive for 6-8 weeks.
- Individual's arm not to bear weight while getting out of bed or chair.
- **Diet:** Low salt & Low cholesterol.
- Teach person or significant others to check pulse for regularity & rate.
- Report to physician for a resting heart rate rise of more than 20 beats/min.
- Teach person to inspect incision daily. (**Betadine swab**).





EDUCATION WHILE DISCHARGE



- Label all **medications**.
- Explain purposes & side effects Pt with **prosthetic valve will continue warfarin**.
- Avoid use of aspirin interferes with warfarin
- Activities increased gradually within limits.
- Avoid strenuous exercise until exercise stress testing.
- Increase walking time and distance each day.

Elements of Cardiac Rehabilitation After Heart Bypass Surgery



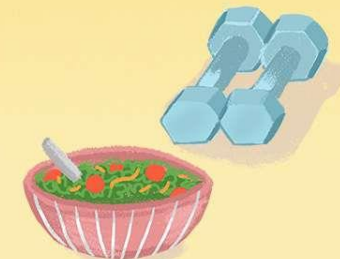
Structured, medically supervised exercise program



Heart-healthy diet and education



Professional support system



Adherence to long-term lifestyle changes



THANK YOU



- <https://www.slideshare.net/kamal199155/care-of-cabg-patientppt>
- <https://www.slideshare.net/kamal199155/care-of-cabg-patientppt>
- <https://www.uptodate.com/contents/postoperative-care-after-cardiac-surgery>
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