

# The Post-Anaesthesia Care Unit (PACU): *Concept and Design*



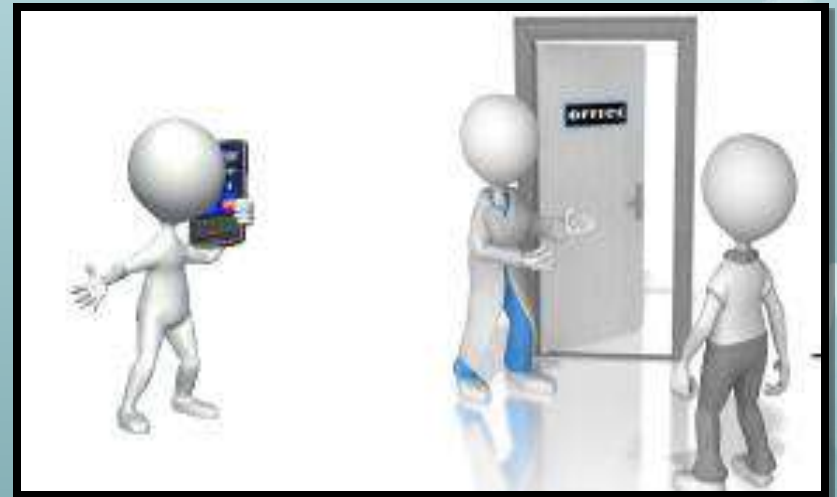
# POST ANAESTHESIA CARE UNIT

- A unit located *as close* to operating theatres as possible,
- staffed and equipped for serving for *treatment and care* of patients during their immediate postanesthesia or post surgery period,
- regardless of the type of interventions,
- before they are scheduled to be admitted to general wards or other units of the hospital or<sup>2</sup> discharged home.

# PACU is:

- Specially designated
- Specially designed
- Specially located
- Specially staffed
- Specially equipped  
for specific purpose!

## AREA OF HOSPITAL





- **Recovery from anaesthesia can range from completely uncomplicated to life threatening complications.**
- **Emergence from general anaesthesia and surgery may be accompanied by a number of physiologic disturbances that affect multiple organ systems.**



- **Must be managed by skilled medical and nursing personnel; in a well planned and protocol based fashion.**
- **Anaesthesiologist plays a key role in optimizing safe recovery from anaesthesia and also its complications.**

# PURPOSE OF PACU

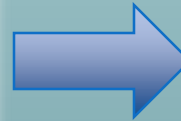
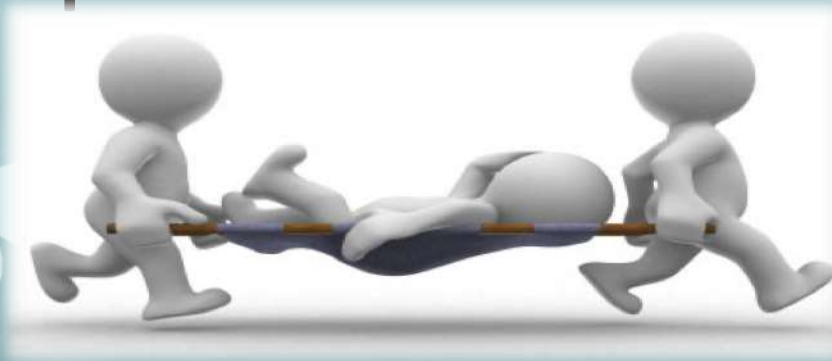
- To enable a successful and faster recovery of the patient post operatively.
- To reduce post operative mortality rate.
- To reduce the length of hospital stay.
- To provide quality care service.
- To reduce hospital and patient cost during post operative period.





# PACU LOCATION

- Should be located close to the operating room.
- As it ensures that the patient can be rushed back to surgery if needed or members of the operating room staff can quickly attend the patients.



- **Immediate access to x-ray, blood bank, blood gas and clinical labs & on same floor.**
- **Central nursing station must be present.**





# PACU STAFFING

- **One registered nurse to one patient for the first 15 minutes of recovery. (1:1)**
- **Then one nurse for every two patients. (1:2)**
- **The PACU should be staffed only by nurses specifically trained in the care of patients emerging from anaesthesia.**





## The PACU nurse *basic training requirements*

- Airway management
- Basic life support
- Advanced cardiac life support (Morgan et al., 2006)
- Caring for acute surgical wounds
- Caring for a variety of drainage catheters

The PACU should be under the medical direction of an **anaesthesiologist**, who must immediately respond to urgent conditions

- **A physician assigned full-time to the PACU is desirable, in busy centers but is not mandatory in smaller centers.**
- **The anaesthesiologist manages the analgesia as well as airway, cardiac, pulmonary, and metabolic problems whereas the surgeon manages any problems directly related to the surgical procedure itself**





○ The management of the patient in the PACU should not differ from management in the operating room and should reflect a coordinated effort among the anesthesiologist, surgeon, nurses, respiratory therapists and appropriate consultant.



# PACU EQUIPMENTS

- Automated NIBP
- Pulse Oximetry
- Thermometer
- EtCO<sub>2</sub>
- ECG
- Intravenous supports
- Defibrillator



Located at each bed.



# CRITERIA FOR SHIFTING FROM OR TO PACU

- **Conscious, awake, responds to simple commands**
- **Haemodynamic stable.**
- **Complete recovery from NM blockade.**
- **Maintenance of Oxygen Saturation.**
- **Normothermia**

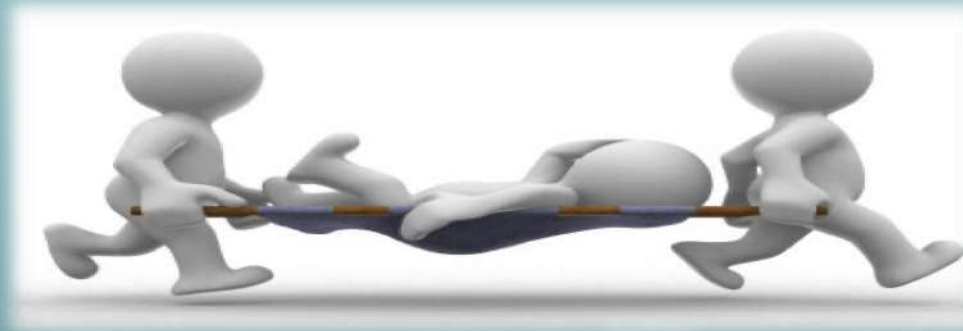


# TRANSPORT TO THE PACU

- **Steps should be taken to protect the patient during transfer mainly from:**
  - **Traumatic injury,**
  - **Hypoxia,**
  - **Hypothermia,**
  - **Airway,**
  - **Accidental disconnections or removal of drains, lines, and catheters**

# TRANSPORT TO THE PACU

- **Upper airway patency and effectiveness of respiratory efforts of the patient must be monitored when transporting the patient from operating room to the PACU.**



- **Adequate ventilation can be confirmed by watching the appropriate rise and fall of the chest with inspiration & expiration, listening to breath sounds, or simply feeling for exhaled breath with palm of one's hand over the patient's nose and mouth.**



- All patients should be taken to the PACU on a bed and can be nursed in either head-up position or leg-up position or in lateral position [eg. following tonsillectomy].



- The transfer of critically ill patients on elevators or through long corridors can jeopardize their care, because emergencies may arise along the way.



- **Patients who undergo general anaesthesia should receive supplemental oxygen during their transport to the PACU.**



- **In an observational study of 502 patients admitted to the PACU, breathing air during transport was the single most significant factor to correlate with hypoxemia ( $O_2$  sat < 90%) on arrival.**

- **Although the majority of otherwise healthy patients undergoing ambulatory surgery can be transported safely on room air, the decision to do so must be made on a case-by-case basis.**
- **In the ambulatory setting, age (>60 years) and weight (>100 kg) identifies, who are at increased risk for oxygen desaturation when breathing room air on transport to the PACU.**

# PACU STANDARDS

▪ **All patients who have received general anaesthesia, regional anaesthesia, or monitored anaesthesia care should receive post-anaesthesia management.**

**The patient should be transported to the PACU by a member of the anaesthesia care team that is knowledgeable about the patient's condition.**

- **Upon arrival in the PACU, the patient should be re-evaluated**
- **A verbal and a written report should be provided to the nurse.**
- **The patient shall be evaluated continuously in the PACU.**
- **Anaesthesiologist, concerned is responsible for discharge of the patient.**

# Responsibilities of PACU staff

- Protect Airway
- Maintaining IV Stability
- Assessment of surgical site
- Keep the patient warm
- Relieving pain and anxiety



# MANAGEMENT OF COMPLICATIONS

- **PONV**
- **Pain**
- **Hypoxia**
- **Hyperthermia/Hypothermia**
- **Shivering**
- **Agitation & Delirium**
- **Cardiovascular or Respiratory**

# LENGTH OF STAY IN PACU



- **VARIABLES.** Depends upon several factors
  - Type of surgery
  - Patients response to surgery and anaesthesia
  - Medical history
- **Average length of stay is 1-3 hrs**
- **Longer stays may be necessary to meet discharge criteria.**

# DISCHARGE CRITERIA FROM PACU

- **Neither an arbitrary time limit nor a discharge score can be used to define a medically appropriate length stay in the PACU accurately.**
- **All patients must be evaluated by anesthesiologist/trained staff prior to discharge from PACU.**

# DISCHARGE CRITERIA FROM PACU

- **Criteria for discharge developed by the Anesthesia department.**
- **Criteria depends on where the patient is sent –ward, ICU, home.**
- **Modified Aldretes score and PADS score.**

## Aldrete's criteria

- Developed In **1970**, by **Aldrete and Kroulik**.
- The original Aldrete score assigned a **number of 0, 1, or 2 to five variables**: activity, respiration, circulation, consciousness, and color, A score of 9 out of 10 was considered adequate for discharge from the PACU.
- In 1995, pulse oximetry replaced visual assessment of oxygenation.



<b>ORIGINAL CRITERIA</b>	<b>MODIFIED CRITERIA</b>	<b>POINT VALUE</b>
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<b>Color</b>	<b>Oxygenation</b>	
<b>Pink</b>	spO2 > 92% on room air	<b>2</b>
<b>Pale or dusky</b>	spO2 > 90% on oxygen	<b>1</b>
<b>Cyanotic</b>	spO2 < 90% on oxygen	<b>0</b>
<b>Respiration</b>		
<b>Can breathe deeply and cough</b>	Breathes deeply and coughs freely	<b>2</b>
<b>Shallow but adequate exchange</b>	Dyspneic, shallow or limited breathing	<b>1</b>
<b>Apnea or obstruction</b>	Apnea	<b>0</b>
<b>Circulation</b>		
<b>BP within 20% of normal</b>	BP± 20 mm Hg of normal	<b>2</b>

<b>ORIGINAL CRITERIA</b>	<b>MODIFIED CRITERIA</b>	<b>POINT VALUE</b>
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<b>Consciousness</b>		
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<b>Awake, alert and oriented</b>	<b>Fully awake</b>	<b>2</b>
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<b>Arousable but readily drifts back to sleep</b>	<b>Arousable on calling</b>	<b>1</b>
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<b>No response</b>	<b>Not responsive</b>	<b>0</b>
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<b>Activity</b>		
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<b>Moves all extremities</b>	<b>Same</b>	<b>2</b>
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<b>Moves two extremities</b>	<b>Same</b>	<b>1</b>
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<b>No movement</b>	<b>Same</b>	<b>0</b>
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# **Postanesthesia Discharge Scoring System (PADS)**

## **○ Postanesthesia Discharge Scoring System (PADS)?**

- 1. Vital signs**
- 2. Activity level**
- 3. Nausea and vomiting**
- 4. Pain**
- 5. Surgical bleeding**

# Postanesthesia Discharge Scoring System (PADSS)

Criteria	Points
<b>Vital Signs</b>	
Within 20% of baseline	2
Within 20-40% of baseline	1
>40% of baseline	0
<b>Activity Level</b>	
Steady gait, no dizziness, at preoperative level	2
Requires assistance	1
Unable to ambulate	0
<b>Nausea and vomiting</b>	
Minimal, treated with oral medication	2
Moderate, treated with parenteral medication	1
Continues after repeated medication	0

Criteria	Points
<b>Pain: minimal or none, acceptable to patient, controlled with oral medication</b>	
<b>Yes</b>	<b>2</b>
<b>No</b>	<b>1</b>
<b>Surgical Bleeding</b>	
<b>Minimal: no dressing change required</b>	<b>2</b>
<b>Moderate: up to two dressing changes</b>	<b>1</b>
<b>Severe: three or more dressing changes</b>	<b>0</b>

\* **Score  $\geq 9$  is required for discharge.**



# OTHER DISCHARGE CRITERIA FROM PACU

- **Full orientation**
- **Ability to maintain & protect airway**
- **Stable vital signs for at least 15 –30 minutes**
- **The ability to call for help if necessary**
- **No obvious surgical complication**

# Safe Guidelines For Discharging Home After Ambulatory Surgery

- Patient should be able to stand & take a few steps .
- Should be able to sip fluids
- Should be able to urinate
- Should be able to identify the escort (cognitive function)

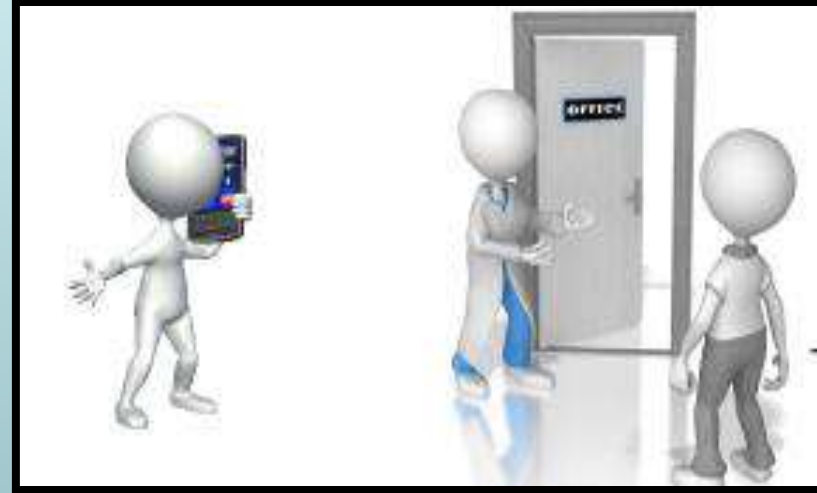
# Teaching, Patient Self Care

- **Expected out comes**
- **Written instructions like:**
  - Wound care
  - Activity and Dietary recommendations
- **Medications**
- **Follow up**



# PACU VISITATIONS

- **LIMITED due to:**
  - Safety and confidentiality of PACU patients
  - Risk of infection
  - Interruption to workflow
- **PACU nurse will call family when pt is settled**
- **One visitor for 5 min is permitted**



# INFECTION CONTROL IN PACU

- Keep both doors closed all the time except when entering or exiting the room.
- Limit visitors
- Hand hygiene plays great role in prevention of infection- A quick and easy solution Alcohol rub at each bed.





# **SPECIAL CONSIDERATIONS FOR PEDIATRIC PACU**

- **Anesthesiologist or other physician trained and experienced in pediatric perioperative care and Pediatric advanced life support certification is recommended.**
- **A range of paediatric equipment and drugs must be available.**
- **Nurse to patient ratio of 1:1 is required all the time.**

# QUALITY CONTROL

- **Annual Audit for compliance with local and National standards.**
  - Quality of recovery
  - Violation of discharge protocol,
  - Documentation of critical incidents.
- **Education and training of PACU staff.**

**THANK YOU!!**

