



Statement on the post-anaesthesia care unit

1. Introduction

An appropriately planned, equipped, staffed and managed post-anaesthesia care unit (PACU) is essential for the safe management of patients who have recently undergone surgery or other procedures, irrespective of the type of anaesthesia or sedation used.

The spectrum of healthcare facilities in which patients may have procedures is broad, ranging from large tertiary institutions to stand-alone day procedure facilities. In addition, there is a spectrum of services including adult, obstetric and paediatric services, major surgery and minor procedures. Regardless of the size of the facility and the scope of the surgical or procedural services, it is imperative that the relevant needs of individual patients are met whilst they are being managed during this potentially vulnerable phase. Facility design and resources, including staff and equipment, should align with the procedure, proposed anaesthesia or sedation and patient complexity (including age and co-morbidities) as well as the post procedure destination of the patient.

2. Purpose

The purpose of this document is:

- 2.1 To assist healthcare facilities to provide PACUs that are designed, equipped, and staffed to deliver safe patient care.
- 2.2 To inform clinicians of ANZCA's expectations for PACUs.

3. Scope

This document is intended to apply to all healthcare facilities in which anaesthesia and/or sedation for diagnostic or interventional medical, dental or surgical procedures are provided, and to all registered healthcare practitioners providing anaesthesia or sedation.

Terms used:

Anaesthesia refers to general anaesthesia, sedation, neuraxial, regional and local anaesthesia, or any combination of these forms of anaesthesia.

Anaesthetist. This document covers the full spectrum of anaesthesia services as defined above. While procedural sedation may be provided by practitioners who are not specialist anaesthetists, for the purposes of this Statement, the term anaesthetist includes all providers of anaesthesia services working within their scope of clinical practice.

Sedationist refers to any registered healthcare practitioner providing sedation and working within their clinical scope of practice.

Healthcare facility refers to hospitals, clinics and office-based facilities where procedures are performed under general anaesthesia, intravenous sedation, or major regional blocks. The delivery of anaesthesia services at such facilities must comply with the regulatory licensing authority standards.

Recovery from anaesthesia is the immediate post-anaesthesia/sedation period following completion of a diagnostic or therapeutic procedure until relevant PACU discharge criteria are met.

Post-Anaesthesia Care Units (PACU) may also be referred to as Recovery Units. They may be further classified into “first stage” recovery units where initial higher acuity care is provided and “second stage” recovery areas provided for observation of ambulant patients prior to discharge from the healthcare facility (see also *PS15 Guidelines for the Perioperative Care of Patients Selected for Day Care Surgery*).

4. General principles

- 4.1 Recovery from anaesthesia should take place under direct supervision in an area designated for the purpose.
- 4.2 Patient dignity and privacy should be respected at all times but the patient’s safety must always be the primary concern. Patients must not be left alone in curtained areas where they are not able to be constantly observed.
- 4.3 The PACU should be close to the operating or procedure room. Where patients need to be transported to PACU from remote locations such as interventional radiology, cardiovascular procedure rooms and electroconvulsive therapy, the transfer should observe standards as outlined in *PS52 Guidelines for Transport of Critically Ill Patients*. Oxygen for patient transfer must be available for transfer of patients from the operating/procedure room to the PACU.
- 4.4 There must be formal handover of patients by the responsible anaesthetist to the PACU nurse (see *PS53 Statement on the Handover Responsibilities of the Anaesthetist*). This includes identification of the patient as well as details of the procedure and anaesthesia management. This handover process is only completed once the PACU nurse has indicated that they are comfortable to continue the ongoing management of the patient without the responsible anaesthetist being physically present (see 8.1.5).
- 4.5 It is expected that staff working in PACU are trained for their role, and that junior staff are under the direct supervision of an experienced PACU nurse. Please see PS04 background paper references on Australian College of PeriAnaesthesia Nurses (ACPAN) statements. The skills of nurses attending patients must be commensurate with the acuity of their patient.

For paediatric patients, at least one nurse present must be experienced and competent in the management of post anaesthesia care complications in paediatric patients of the relevant age.

- 4.6 All patients must be observed on a one-to-one basis by an anaesthetist or trained PACU nurse until they have regained control of their airway, have stable observations within acceptable limits, and are awake and able to communicate purposefully.

A one-to-one nurse-to-patient ratio is adequate for an uncomplicated, unconscious patient. A two-to-one ratio (or higher) is often needed during the initial reception phase, for example

when the patient requires airway support, assisted ventilation or is critically ill, unstable or complicated. The additional health professional may be the escorting operating room nurse or anaesthetist who must remain until the patient's condition is stable.

- 4.7 All patients with endotracheal tubes in place should be monitored in accordance with *PS18 Guidelines on Monitoring During Anaesthesia* including capnography, pulse oximetry, and electrocardiography. Extubation is the responsibility of the anaesthetist, or delegated registered medical practitioner within their scope of practice.
- 4.8 Patients admitted to PACU with a supraglottic airway device (SAD) in situ must be breathing spontaneously unless under the direct care of the responsible medical practitioner. A SAD may be managed and removed by a trained PACU staff member working within their scope of practice. However, the anaesthetist must not leave the facility if a patient for whom they are responsible has a SAD in situ, unless responsibility is delegated to another appropriately skilled medical practitioner who is immediately available.
- 4.9 PACU staff must be able to contact the responsible anaesthetist promptly when the need arises. The anaesthetist must be physically available to attend if required unless this duty is delegated, after handover, to another medical practitioner operating within scope of practice and available promptly.
- 4.10 The PACU should be resourced to monitor and manage common or expected outcomes of the given procedure and anaesthesia. It must also be resourced for the spectrum of patients managed in that facility. This should include equipment for airway management and monitoring of respiratory and cardiovascular function. Monitoring and airway equipment must be available and suitable to the size and age of paediatric patients accepted into the PACU. Medications should also be easily accessible to treat pain, post-operative nausea and vomiting as well as respiratory, neurological and cardiovascular emergencies including cardiac arrest and anaphylaxis.
- 4.11 There should be agreed, written discharge criteria that patients must meet before discharge from the PACU. Those who do not meet the standard discharge criteria may be discharged from the unit only following consultation with the treating anaesthetist who may modify the discharge parameters according to patient and surgical factors.
- 4.12 An effective emergency call system must be readily accessible in every PACU to summon immediate assistance from within the procedural suites and also potentially from other appropriate areas within the facility without compromising immediate patient care.

5 Design features for the recovery area

- 5.1 The area should be part of the operating or procedural suite with easy access for management of emergencies by medical staff from both within and outside the suite. Provision must be made for rapid evacuation of patients from the area in case of emergency.
- 5.2 Space allocated per bed/trolley must allow easy access to the patient's head, and adequate room for emergency equipment and extra personnel if required. A minimum of 9m² is recommended to accommodate these needs. PACUs providing care for higher acuity patients may require space allocation of 20m² to accommodate additional staff and equipment. Where facilities manage paediatric patients, there must be enough space to allow for parental or carer access including seating. Where relevant, there must be ability to provide privacy for breastfeeding in PACU.

- 5.3 The number of bed/trolley (“recovery”) spaces must be sufficient for expected peak loads. Allowances should be made for so-called “high volume high turnover” lists.
- 5.4 Whilst provision for privacy is desirable, the layout of bed spaces should allow staff to have a view of all patients at once, that is, “line-of-sight” nursing care.
- 5.5 Healthcare facilities that cater for both adult and paediatric patients should have a separate designated area for children, accessible by parents and carers. This should be staffed by practitioners with training in paediatric care, and healthcare facilities must provide the necessary paediatric equipment. Where healthcare facilities undertake to care for obstetric patients, staffing and equipment must meet the requirements for the care of newborn neonates after LUSCS or forceps delivery.
- 5.6 Consideration should be given to the need for separating patients for reasons of infection control or end-of-life care (with need for family/carer access).
- 5.7 Each bed space must be provided with:
 - 5.7.1 an oxygen outlet.
 - 5.7.2 medical suction complying with relevant national standards.
 - 5.7.3 at least four general power outlets.
 - 5.7.4 appropriate lighting and wall colour to allow accurate assessment of skin colour. Lights must not be dimmed.
 - 5.7.5 emergency lighting.
 - 5.7.6 facilities for mounting and operating necessary equipment and for patients’ records. In facilities that have electronic charting there must be ready access to those records for every bed space.

6 Equipment and drugs

- 6.1 Each bed space must be provided with:
 - 6.1.1 oxygen flowmeter and patient oxygen delivery systems that are capable of delivering high concentrations of inspired oxygen to the patient.
 - 6.1.2 suction equipment including a receiver, hand pieces and a range of suction catheters.
 - 6.1.3 pulse oximeter.
 - 6.1.4 equipment for blood pressure measurement, both manual and automatic including cuffs suitable for all sized patients managed in the facility.
- 6.2 Within the PACU area there must be:
 - 6.2.1 devices available in a ratio of one per two bed spaces, for manual ventilation with oxygen but with a minimum of two such devices.
 - 6.2.2 equipment and drugs for airway management including endotracheal intubation. Difficult intubation equipment must be easily accessible.
 - 6.2.3 capnography where there is any possibility that a patient may be intubated or require intubation in the PACU.
 - 6.2.4 ECG monitoring capability.
 - 6.2.5 a means of nebulising medications.

- 6.2.6 emergency and other drugs. Ideally, there should be separate trolleys/packs for specific emergencies. Such emergencies include cardio-respiratory arrest, anaphylaxis, local anaesthesia toxicity and malignant hyperthermia (if triggering agents are used). Such kits should include approved cognitive aids/management cards.
- 6.2.7 a range of intravenous equipment and fluids and a means of warming those fluids.
- 6.2.8 ready access to analgesic, anti-nausea and local anaesthetic drugs.
- 6.2.9 a range of syringes and needles.
- 6.2.10 a means of measuring body temperature.
- 6.2.11 equipment for point of care testing of blood glucose and ketones.
- 6.2.12 a stethoscope.
- 6.2.13 ready access to a defibrillator.
- 6.2.14 a handwashing basin.
- 6.2.15 a written routine for checking equipment and drugs must be established and used regularly.
- 6.3 In facilities where general anaesthesia, neuraxial or major regional anaesthesia, and body cavity or other major surgery is conducted there should be easy access to:
 - 6.3.1 12 lead electrocardiograph.
 - 6.3.2 end-tidal carbon dioxide monitor.
 - 6.3.3 neuromuscular function monitor.
 - 6.3.4 warming cupboard.
 - 6.3.5 patient warming devices.
 - 6.3.6 refrigerator for drugs and blood.
 - 6.3.7 procedure light.
 - 6.3.8 basic surgical tray.
 - 6.3.9 blood gas, haemoglobin and electrolyte measurement.
 - 6.3.10 diagnostic imaging services.
 - 6.3.11 apparatus for mechanical ventilation of the lungs and expired carbon dioxide monitoring.
 - 6.3.12 heated humidified high flow nasal oxygen.
 - 6.3.13 monitors for direct arterial and venous pressure monitoring.
 - 6.3.14 equipment for inserting a urinary catheter.
- 6.4 The recovery trolley/bed should:
 - 6.4.1 have a firm base and mattress which enables effective CPR.
 - 6.4.2 tilt from one or both ends both head up and head down at least 15 degrees.
 - 6.4.3 be easy to manoeuvre.
 - 6.4.4 have efficient and accessible brakes.
 - 6.4.5 provide for sitting the patient up.

- 6.4.6 have secure side rails which must be able to be dropped below the base or be easily removed.
- 6.4.7 have provision for maintaining intravenous infusions.

7 Staffing

- 7.1 Nurses trained in the care of patients recovering from anaesthesia must be present at all times.
- 7.2 A registered nurse certified in post-anaesthesia care nursing should be in charge of the PACU.
- 7.3 Trainee nurses and registered nurses who are less experienced in the care of patients recovering from anaesthesia should be supervised by a registered nurse certified in post-anaesthesia care nursing.

The ratio of registered nurses to patients needs to be flexible. All patients must be observed on a one-to-one basis by a competent post anaesthesia care registered nurse until they have regained control of their airway. A second nurse must be immediately available to assist with patient management if required. The first and second stage PACU areas should be staffed sufficiently to identify and promptly respond to clinical deterioration.¹

- 7.4 When anaesthetised, sedated or physically limited patients are being transferred from one trolley/bed to another, a minimum of four people must assist with transfer. Anaesthetists have primary responsibility for the patient's head, neck and airway.

8 Management of patients in PACU

- 8.1 The anaesthetist responsible for the patient's care should:
 - 8.1.1 accompany the patient until transfer and handover to PACU staff is completed.
 - 8.1.2 after patient identification, handover the patient in accordance with *PS53 Statement on Handover Responsibilities of the Anaesthetist*. Explicitly handover all significant information regarding the patient's pre-operative clinical status, anaesthesia technique including drugs and fluids administered, airway management, pain management, any significant events during the course of the anaesthesia/procedure, and any significant concerns for the recovery period.
 - 8.1.3 provide written and verbal instructions to PACU staff.
 - 8.1.4 specify the apparatus and flow rate to be used for oxygen therapy if required.
 - 8.1.5 remain in the vicinity until the patient is assessed as being stable and thus may be left in the care of PACU staff and PACU staff have explicitly accepted care of the patient. Handover or delegation of care in PACU should not proceed if airway/respiratory and cardiovascular status is not stable.
 - 8.1.6 be available for consultation during the recovery period and to authorise or delay the patient's discharge from PACU in cases where the routine discharge criteria may not be met. In some circumstances it may be necessary for the anaesthetist previously responsible for the patient to delegate these duties to a designated anaesthetist or similarly skilled medical practitioner who is contactable and able to attend in a timely fashion should a change in patient condition occur.

- 8.2 Observations should be recorded at clinically indicated intervals and should include level of consciousness, oxygen saturation, respiratory rate, pulse rate, blood pressure, comfort level, temperature, urine output, wound dressing and drain tube discharge. Assessment of sensory and motor blockade should be performed when indicated. Other procedure specific observations such as vascular observations and or neurological status may also be required.
- 8.3 PACU nurses must be supported by education, training and protocols to assess and manage unconscious patients, manage common sequelae of procedures and anaesthesia and recognise and respond to the deteriorating patient.²
- 8.4 Written protocols for management should be established. These include pain management protocols, discharge criteria, protocols for checking equipment and medications etc. The director of anaesthesia services or a nominated anaesthesia service provider should be responsible for the development and maintenance of such protocols.
- 8.5 Management of agitated, disruptive or violent patients should be supported by local protocols for medication administration, restraint and assistance of security personnel if required for safety reasons.
- 8.6 All patients should remain until they are considered safe to be discharged from the recovery area according to established criteria, and are considered to be “ward ready” for the acuity of the next stage of postoperative care.³ These include cardiovascular and respiratory stability, adequate pain control, normothermia, no active bleeding or surgical complications, minimal nausea and return of consciousness. Although the authority for discharge from PACU lies with the anaesthetist, most patients are discharged to the ward or second stage recovery once defined clinical criteria are met.
- 8.7 Routine post-anaesthesia orders for discharge to inpatient areas generally take into consideration the surgical procedure and type of anaesthesia. These orders may be altered by the anaesthetist and include increased duration and/or altered frequency of monitoring, modified ward physiological reportable parameters and requirement for apnoea monitoring in neonates.
- 8.8 “Second stage (phase 2) recovery”. Day stay or ambulatory patients require a period of supervised care in an area that offers reclining chairs, adequate staffing for patient monitoring, privacy for discussion of procedural outcomes and discharge instructions, bathroom facilities and provision of food and fluids. Discharge criteria from second stage recovery include pain and nausea control manageable with oral medications, return of cognition to pre-procedure levels, and ability to safely mobilise.
- 8.9 In some situations, when minimal sedation has been administered, patients may ambulate under supervision directly from the procedure room to a chair in second stage recovery. This is most likely to pertain to day procedures including dental procedures, under local anaesthesia and/or minimal sedation.

This document is accompanied by a background paper (PS04BP) which provides more detailed information regarding the rationale and interpretation of the Statement.

Related ANZCA documents

PS09 Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures

PS15 Guidelines for the Perioperative Care of Patients Selected for Day Care Surgery

PS18 Guidelines on Monitoring During Anaesthesia

PS52 Guidelines for Transport of Critically Ill Patients

PS53 Statement on the Handover Responsibilities of the Anaesthetist

PS59 Statement on Roles in Anaesthesia and Perioperative Care

References

1. Australian College of Perioperative Nurses. Standard Statement 5. In: Standards for Perioperative Nursing in Australia, Edition 15, South Australia, 2018. p. 377.
2. Australian Commission for Safety and Quality in Healthcare 2017, 'National consensus statement: Essential elements for recognising and responding to acute physiological deterioration', Second Edition, pp. 1- 20.
3. Foran, P 2016, 'Post-anaesthesia nursing', in L Hamlin, M Davies, M Richardson-Tench & S Sutherland-Fraser (eds), *Perioperative Nursing - an introductory text*, Elsevier Sydney, Australia.

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