



## UK National Core Competencies for Post-anaesthesia Care 2013

Immediate Post-anaesthesia Recovery 2013 supplement

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## GLOSSARY OF TERMS

AAGBI	Association of Anaesthetists of Great Britain and Ireland
AIMS	Anaesthetic Incident Monitoring Study
AVPU	Alert, Verbal, Pain Unresponsive scoring system for conscious level
BARNA	British Anaesthetic and Recovery Nurses Association
BVM	Bag, valve, mask ventilation
CODP	College of Operating Department Practitioners
CPAP	Continuous positive airway pressure
CPD	Continuing professional development
DVT	Deep vein thrombosis
ECG	Electrocardiogram
GCS	Glasgow Coma Scale
HDU	High dependency unit
HPC	Health Professionals Council
ICU	Intensive care unit
LMA	Laryngeal mask airway
MH	Malignant hyperpyrexia
NCEPOD	National Confidential Enquiry into Patient Outcome and Death
NES	NHS Education Scotland
NIBP	Non-invasive blood pressure
NMC	Nursing and Midwifery Council
NPSA	National Patient Safety Agency
ODP	Operating department practitioner
PACU	Post-anaesthesia care unit

PCA	Patient controlled analgesia
pCO <sub>2</sub>	Partial pressure of carbon dioxide
PDP	Personal development plan
PONV	Postoperative nausea and vomiting
PPE	Personal protective equipment
QIS	NHS Quality Improvement Scotland
RAE	Ring/Adair/Elwyn endotracheal tubes
RCN	Royal College of Nursing
RCS	Royal College of Surgeons
SaO <sub>2</sub>	Oxygen saturation
SPSP	Scottish Patient Safety Programme
ETT	Tracheal tube

## INTRODUCTION

The provision of safe care during recovery from anaesthesia and surgery relies heavily on investment in the education and training of post-anaesthesia care unit (PACU) staff. Maintenance of standards requires continual update such as resuscitation skills, application of new techniques and advances in pain management. PACU staff are specialists and often play a key role in the education of others, including other theatre staff, ward-based nurses, midwives and trainee doctors. All PACU staff should receive training, tailored to meet the needs of the individual and the local service but meet the national standards defined in this document.

The concept of recovery rooms was first discussed and documented in the late 19<sup>th</sup> century as anaesthesia was evolving. The importance of specialist nursing care for postoperative patients was recognised [1]. A study during the 1940s in the United States recommended the continuing development of the recovery room as being an essential part of the post-anaesthesia care pathway. This study highlighted, amongst other factors, airway obstruction as a key factor contributing to potentially preventable postoperative deaths [2].

Dramatic advances in anaesthesia and surgery over the last 150 years have contributed significantly to the fall in morbidity and mortality. Nonetheless deaths still occur during the recovery phase of postoperative care. The National Confidential Enquiry into Peri-operative Outcome and Death (NCEPOD) addressed this issue in its 2001 report *Changing the way we operate* [3] and stated *“Immediately after surgery all patients not returning to a special care area (e.g. ICU or HDU) need to be nursed by those trained and practised in the postoperative recovery area. If there are separate arrangements for staffing the operating theatre out of hours, these must include the provision of specialised recovery staff.”*

A review of recovery room critical incidents was published by the Anaesthetic Incident Monitoring Study in 2002 [4] that detailed the proportion and type of incidents encountered in recovery rooms in Australia and the United States and called for ongoing education and quality assurance programmes to be developed to reduce these events.

A report released by NHS Quality Improvement Scotland (2003) demonstrated that not all staff who recover patients postoperatively are fully trained to the required standard and that much of the recovery training was on an ad hoc and informal basis raising particular concerns in remote locations such as remotely located operating theatres and the radiology departments [5].

Basic training for PACU starts with achievement of entry-level competence during nursing or operating department practitioner (ODP) training programmes of learning. This individual requires supervision and mentoring until he/she has acquired the competencies to care safely and successfully for a patient in the PACU. Thereafter they are expected to maintain, develop and enhance their practice through practical experience, further learning and continuing professional development. They will be expected to populate and maintain a lifelong portfolio of experience during their training and working life. Registered practitioners with current experience of working in the PACU are able to have prior qualifications and experience recognised.

The competencies required by PACU staff are both professional and clinical. The professional components are:

- Communication
- Professional development
- Clinical leadership
- Clinical governance

The clinical components are:

- Assessment and management of the airway
- Assessment and management of breathing
- Assessment and management of the circulation
- Assessment of consciousness
- Monitoring during the immediate postoperative phase
- Intravenous access and fluid balance
- Applied knowledge of pharmacology in peri-operative care
- Management of postoperative pain,
- Management of postoperative nausea and vomiting (PONV)
- Management of surgical and anaesthetic emergencies

In specialised areas of surgery, such as paediatrics and obstetrics, additional specific competencies are required.

This document uses work previously published by Quality Assuring Continuing Professional Development and by NHS Education Scotland. The three relevant documents are *A Route to Enhanced Competence in Perioperative Practice for Operating Department Practitioners and Nurses*. (NHS Education for Scotland. *A Route to Enhanced Competence in Perioperative Practice for Operating Department Practitioners and Nurses*. Edinburgh: NES, 2002.)

*Core Competencies for Anaesthetic Assistants* 2011 [http://www.nes.scot.nhs.uk/media/4239/anaesthetic\\_core\\_competencies\\_2011.pdf](http://www.nes.scot.nhs.uk/media/4239/anaesthetic_core_competencies_2011.pdf) and *Portfolio of Core Competencies for Anaesthetic Assistants* 2012 [http://www.nes.scot.nhs.uk/media/1410332/nesd0050\\_smaad\\_portfolio\\_2012.pdf](http://www.nes.scot.nhs.uk/media/1410332/nesd0050_smaad_portfolio_2012.pdf)

This document has been modified following consultation with other stakeholders across Great Britain and Ireland (see appendix 1). All standards and recommendations described in this document should be applied to all recovery areas where anaesthesia is administered including obstetric, cardiology, radiology, dental and mental health units as well as community hospitals.

#### References

1. Radford M. Recovery nursing services: An evolution. *British Journal of Perioperative Nursing* 2003; **13**:155-8,160-1.
2. Hatfield A, Tronson M. *The Complete Recovery Room Book*, 4<sup>th</sup> edition. New York: Oxford University Press, 2009.
3. NCEPOD. Changing the Way we Operate. [www.ncepod.org.uk/pdf/2001/01full.pdf](http://www.ncepod.org.uk/pdf/2001/01full.pdf) (accessed 18/10/12).
4. Kluger MT, Bullock MFM. Recovery room incidents: a review of 419 reports from the Anaesthetic Incident Monitoring Study (AIMS). *Anaesthesia* 2002; **57**: 1060-66.
5. Healthcare Improvement Scotland. National Overview September 2005, Anaesthesia – Care Before, During and After Anaesthesia. <http://www.healthcareimprovementscotland.org/idoc.ashx?docid=b19010c9-13fc-4f4a-be49-916919990246&version=-1> (accessed 18/10/12).
6. Association of Great Britain and Ireland. Immediate Post-anaesthesia Recovery 2013. *Anaesthesia* 2013; **68**: 288-97.

## COMPETENCY 1: COMMUNICATION

Competency 1	Knowledge and skills	Suggested indicators
1.1 Apply effective communication skills in order to promote clinically effective patient care.	Understands and applies principles of good communication with patients, carers and peri-operative team members.	Assess, plan, implement and evaluate individualised care using a recognised nursing framework in collaboration with all members of the multidisciplinary team.
	<p>Provides accurate, concise and relevant verbal and written information related to peri-operative patient care.</p> <p>Alerts appropriate members of the multidisciplinary team to changes in patient's condition.</p> <p>Acquires knowledge of <i>Guidelines for records and record keeping</i> (Nursing and Midwifery Council (NMC), 2004) and <i>Standards of conduct, performance and ethics</i> (Health Professionals Council (HPC), 2003).</p>	<p>Interpret an anaesthetic chart that includes pre-operative assessment and intraoperative observations of vital signs and documentation of fluids and drugs administered.</p> <p>Communicate changes in patient's observations appropriately.</p>
	Demonstrates use of information technology including computers and data management skills.	
1.2 Establish and maintain effective, professional relationships with patients, carers and staff in all disciplines.	Uses appropriate listening and responding skills to develop relationships with patients, carers and staff.	<p>Treat patients in a non-judgmental manner, maintaining their dignity at all times.</p> <p>Demonstrate concern and respect for patients and carers.</p>

	Articulates role within peri-operative team Demonstrates knowledge of teamwork strategies related to the peri-operative environment.	Use effective communication strategies with patients, anaesthetists and surgeons.
1.3 Apply the principles of good communication to promote trust and confidence.	Educates and informs patients and carers attending the PACU.	Recognise patient's feelings of vulnerability. Provide reassurance, comfort and appropriate physical and psychological support.
	Complies with local and national policies and protocols regarding record keeping. Keeps accurate and comprehensive records.	Maintain patient records completely and accurately.
1.4 Admission of patient to PACU.	Understands admission protocol for PACU. Describes preparation of PACU for receiving a patient into the unit. Identifies patients not suitable for admission to PACU.	Safely admit patient to PACU including mandatory documentation. Start discharge planning of patient to appropriate area.
1.5 Discharge of patient from PACU.	Understands discharge criteria for the unit. Explains significance of each criterion for patients well being. Understands the process for discharge from PACU to trained staff accepting the patient into their care.	Identify patient fit for discharge and meeting agreed discharge criteria. Ensure completion of relevant documentation. Handover care to appropriately trained staff maintaining patient dignity including full documentation of the process.



## COMPETENCY 2: PROFESSIONAL DEVELOPMENT

Competency 2	Knowledge and skills	Suggested indicators
2.1 Demonstrate personal continuing professional development (CPD) in recovery skills.	Keeps a professional portfolio of learning and experience gained. Recognises own limitations, identifies professional development needs and develops a personal development plan (PDP).	Maintain a personal portfolio. Undertake appraisal and document evidence of achievements.
	Uses appropriate resources and reflective practice to enhance knowledge and skills.	
	Demonstrates personal accountability for ensuring own clinical competence.	
2.2 Contribute to the continuing professional development needs of the multidisciplinary team.	Contributes to peri-operative teaching programmes by promoting clinically effective practice. Supports and assesses learners. Offers clinical supervision to others as appropriate.	
2.3 Contribute and promote an environment that encourages CPD.	Participates in performance appraisal programmes.	
	Develops and delivers teaching appropriate to the PACU environment.	
	Demonstrates ability to develop and access learning resources.	

### COMPETENCY 3: CLINICAL LEADERSHIP

Competency 3	Knowledge and skills	Suggested indicators
3.1 Demonstrate leadership skills in order to enhance patient care.	Develops autonomy in own role within the recovery room.	
	Makes effective clinical decisions and manages resources.	
3.2 Support and promote clinical effectiveness by developing an evidence-based approach to postoperative care.	Shows evidence of research awareness.	
	Adapts clinical practice in light of current research. Motivates and supports others in developing evidence-based practice.	

## COMPETENCY 4: CLINICAL GOVERNANCE

Competency 4	Knowledge and skills	Suggested indicators
4.1 Identify and manage risks and hazards.	Understands the principles, issues and factors relating to risk management. Uses knowledge appropriately to eliminate or reduce these risks.	Apply manual handling techniques appropriately using available aids. Attend regular updates. Demonstrate safe management of clinical waste, sharps, drugs and chemicals. Use personal protective equipment (PPE) and be aware of infection control principles. Comply with national and local guidance on single-use items and medical device decontamination.
4.2 Understand how to recognise a critical incident or near miss and follow local and national reporting mechanisms.	Understands critical incidents, their definition, actions required including a worked example. Aware of local and national critical incident reporting policies.	Report and feedback on critical incidents. Complete local critical incident forms satisfactorily. Critical incidents that may occur include: Acute or sub-acute airway obstruction Cardiopulmonary arrest Need for cardiovascular support (inotropes, vasoconstrictors, anti-arrhythmics) Inadequate reversal of neuromuscular blocking drugs Need for urgent review of patient by anaesthetist. Need for ventilatory support (CPAP, tracheal intubation, lung ventilation) Severe pain that is difficult to control Unduly prolonged stay in PACU (>2 h) Significant hypothermia (<35 °Celsius) Return to the operating theatre instead of onward discharge Death in the PACU. Also see Recovery Emergencies Competency 13.
4.3 Participate and contribute to a quality assurance strategy.	Uses knowledge of national and local measures of quality assurance to develop and participate in high quality peer review audit.	Implement National Patient Safety Agency (NPSA) and Scottish Patient Safety Programme (SPSP) indicators. Implement local policies for deep venous thrombosis (DVT) prophylaxis, temperature control and management of diabetes.

<p>4.4 Demonstrate and promote the delivery of recovery care within a professional, ethical and legal framework.</p>	<p>Discusses and applies the principles of ethical, legal and professional issues affecting patient care, ensuring appropriate documentation that follows national and local directives. Understands the importance of confidentiality.</p>	<p>Awareness of concept of: informed consent in adults and children  legal issues relating to patients with learning disabilities or mental health difficulties  patient groups including Jehovah's Witnesses and advance patient directives.  Adhere to the NMC and HPC codes of conduct.  <a href="http://www.aagbi.org/sites/default/files/Jehovah%27s%20Witnesses_0.pdf">http://www.aagbi.org/sites/default/files/Jehovah%27s%20Witnesses_0.pdf</a></p>
<p>4.5 Demonstrate personal and professional accountability in relation to the role of recovery of the postoperative patient.</p>	<p>Applies the principles of accountability to the care of the patient following surgery. Practises within the limitations of personal scope of practice and, where appropriate seeks guidance and support from colleagues when exposed to new or unfamiliar procedures or situations.</p>	<p>Take on appropriate responsibility.  Show recognition of own limitations with reflection on performance.</p>

## COMPETENCY 5: ASSESSMENT AND MANAGEMENT OF THE AIRWAY

Competency 5	Knowledge and skills	Suggested indicators
5.1 Apply knowledge of the anatomy and physiology of the upper airway to management of the airway in the PACU.	Understands those aspects of the anatomy of the upper airway which are relevant to airway management including physiological changes to the airway postoperatively as a consequence of anaesthesia and surgery.	Describe the anatomy and physiology of the upper airway. Discuss the physiological changes caused by anaesthesia and surgery. Discuss oxygen requirements in the immediate postoperative period.
5.2 Can maintain an airway during emergence from anaesthesia.	Can recognise signs of upper airway obstruction or compromised airway using the 'look, listen and feel' approach. Can perform simple manoeuvres to establish a clear airway: effective head tilt chin lift jaw-thrust oropharyngeal suction insertion of an appropriate oropharyngeal or nasopharyngeal airway.	Describe signs of partial and complete airway obstruction. Demonstrate manoeuvres to clear the airway on a patient or manikin as described in immediate life support (ILS) course curriculum.
5.2a Assist in maintaining an airway during bag and mask ventilation.	Can hold a face mask in position, ensuring a gas-tight seal, or perform manual intermittent positive pressure ventilation (IPPV). Can identify suitable breathing systems. Can describe features of self-inflating bag and demonstrate its use.	Demonstrate ability to perform either role in two-person bag and mask ventilation as described in the immediate life support (ILS) course curriculum. Demonstrate bag-valve-mask (BVM) technique for ventilatory support using an Ambu self-inflating bag or similar. Explain need of proficiency in this skill in the theatre suite, PACU and during intra-hospital patient transfer.

<p>5.3 Understands features of oxygen delivery equipment.</p>	<p>Demonstrates familiarity with and use of face masks: (types, design features, including fixed and variable performance designs).</p> <p>nasal cannulae nebulisers breathing circuits including T-pieces piped gases and oxygen flowmeters oxygen cylinders.</p>	<p>Choose an oxygen delivery system appropriate for a particular patient. Explain rationale behind choice.</p>
<p>5.4 Can set up and assist the anaesthetist with emergency intubation of the trachea.</p>	<p>Sets up intubation equipment tray / trolley. Able to test the equipment.</p> <p>Can select appropriate tracheal tube (TT). Positions the patient appropriately and assists the anaesthetist with routine intubation of the trachea.</p>	<p>Assist in elective intubation of patient or manikin.</p> <p>Calculate TT size (diameters and lengths) using standard formulae. Explain morbidity associated with use of incorrect tube size.</p>
<p>5.5 Ability to select appropriate airway equipment for use in an emergency.</p>	<p>Demonstrates detailed knowledge of emergency airway equipment, including salient features of each and their use.</p> <p>Demonstrates detailed knowledge of laryngeal mask airway (LMA), TT and other methods of securing the airway.</p>	<p>Describe indications for use of straight and curved bladed laryngoscopes, specialised laryngoscopes, forceps, bougies and introducers.</p> <p>Describe indications for the use of LMA intubating LMA TT (including double lumen, RAE and microlaryngeal tubes) cricothyroidotomy and tracheostomy.</p>

<p>5.6 Demonstrate ability to place a LMA in an adult patient.</p>	<p>Demonstrates LMA placement in an adult patient equating to ILS course standard. (PACU staff need to be proficient in using an LMA in an emergency).</p>	<p>Site an LMA in a manikin.</p>
<p>5.7 Awareness of risks and complications of removing an airway. Ability to assess when it is safe to do so.</p>	<p>Objectively assesses patient's neuromuscular function. Prepares and positions patient for removal of airway devices. Appropriate airway management following removal.</p>	<p>Demonstrate appropriate management for removal of airway devices.</p>
<p>5.8 Ability to prepare and check appropriate suction equipment.</p>	<p>Demonstrates knowledge of types of suction catheters and their appropriate use.</p>	<p>Describe the range of suction equipment available. Demonstrate the assembly and use of appropriate equipment.</p>
<p>5.9 Ability to prepare and check appropriate airway equipment.</p>	<p>Demonstrates knowledge of oxygen administration devices and masks.</p>	<p>Describe the range of airway equipment available. Demonstrate the assembly and correct use of appropriate devices.</p>

## COMPETENCY 6: ASSESSMENT AND MANAGEMENT OF BREATHING

Competency 6	Knowledge and skills	Suggested indicators
6.1 Can apply knowledge of the anatomy and physiology of the respiratory system to assessing the adequacy of breathing in patients in the PACU.	<p>Understands those aspects of the anatomy and physiology of the respiratory system in controlling breathing.</p> <p>Understands effects of anaesthesia and surgery on respiration.</p>	<p>Describe the anatomy and physiology of the respiratory system.</p> <p>Discuss the physiological changes caused by anaesthesia and surgery and the changes in oxygen requirements in the immediate postoperative period.</p>
6.2 Can apply knowledge of effects of pharmacology of anaesthetic agents and of surgery upon the respiratory system.	Understands the effects of anaesthesia and surgery on respiratory function.	Describe the signs and symptoms of inadequate reversal of neuromuscular blockade and central respiratory depression. See competency 11.
6.3 Can assess respiration.	<p>Describes postoperative patterns of respiration.</p> <p>Describe the signs of obstructed breathing.</p> <p>Can describe, identify and use equipment used for assessing the respiratory system.</p>	<p>Describe the mechanism of inspiration and expiration and factors controlling respiration. Assess the airway, chest movement, respiratory rate, rhythm and colour. Accurately measure respiratory rate.</p> <p>Can identify use of accessory muscles and presence of tracheal tug.</p> <p>Demonstrate safe use of pulse oximeters and stethoscopes.</p>
6.4 Can identify patients with pre-existing respiratory disease.	Recognises patients with pre-existing respiratory disease and the effects of surgery and anaesthesia.	Identify and demonstrate appropriate management of patients with respiratory insufficiency.
6.5 Can identify patients at risk of postoperative hypoxia and manage appropriately.	<p>Can identify signs and symptoms of hypoxia, respiratory depression and impending respiratory failure.</p> <p>Understands the use of appropriate monitoring equipment.</p>	Describe hypoxia and cyanosis. Uses pulse oximetry and capnography appropriately.



## COMPETENCY 7: ASSESSMENT AND MANAGEMENT OF THE CIRCULATION

Competency 7	Knowledge and skills	Suggested indicators
7.1 Can apply knowledge of the anatomy and physiology of the cardiovascular system to manage cardiopulmonary circulation in the PACU.	Understands those aspects of the anatomical and physiological changes to the cardiovascular system postoperatively as a consequence of anaesthesia and surgery.	Describe the anatomy and physiology of the cardiovascular system. Discuss the physiological changes caused by anaesthesia and surgery. Describe common circulatory problems encountered in the immediate postoperative period.
7.2 Can measure arterial pressure in postoperative patients and recognise deviations from the norm.	Measures arterial pressure and assess peripheral perfusion. Understands the importance of autoregulation and factors that affect it.	Demonstrate ability to measure and interpret arterial pressure in the postoperative period and communicate with relevant staff. Demonstrate appropriate management to optimise circulation.
	Describes signs of circulatory abnormalities. Can perform manoeuvres to support circulation appropriately.	Demonstrate manoeuvres to correct circulation such as elevation of legs, Trendelenberg and reverse Trendelenberg.
7.3 Understand use of intravenous fluids to support the circulation.	Demonstrates knowledge about: intravenous infusion sets fluid bags pressure bags and infusors fluid warmers.	Explain use of appropriate fluids for different patient groups. Explain rationale of choice of fluids. Demonstrate appropriate management of patients requiring fluid resuscitation.  See competency 10.
7.4 Understands the use of vasoactive drugs to treat heart rate and arterial pressure in the PACU.	Knows where the drugs are located. Understands methods of administration of: atropine glycopyrronium metaraminol ephedrine adrenaline GTN.	Identify and describes preparation and indication for each drug according to local drug protocols.

## COMPETENCY 8: ASSESSMENT OF LEVEL OF CONSCIOUSNESS

Competency 8	Knowledge and skills	Suggested indicators
8.1 Can assess conscious level in the postoperative patient and take appropriate action.	Understands the effects of anaesthesia and surgery on the level of consciousness.	Describe the relevant physiology of the central nervous system. Discuss the changes caused to the levels of consciousness by anaesthesia and surgery and describe common problems encountered in the immediate postoperative period.
Can use appropriate assessment tools.	Understands locally and nationally used assessment tools for conscious level e.g. the Glasgow Coma Scale (GCS) and Alert, Verbal, Pain, Unresponsive (AVPU) scores.	Uses appropriate assessment tools to measure, record and interpret return to consciousness of the postoperative patient.

## COMPETENCY 9: MONITORING DURING RECOVERY

Competency 9	Knowledge and skills	Suggested indicators
9.1 Can undertake full patient assessment on admission to the PACU and in the immediate postoperative period.	Understands physiological consequences of surgery and anaesthesia.	Demonstrate ability to assess airway, breathing, circulation, conscious level, drug therapy, dressings, drains and fluid balance.
<p>9.2 Demonstrate knowledge of monitoring equipment used in PACU including normal parameters and need for interventions when outside these parameters.</p> <p>9.2a Can establish routine monitoring.</p>	<p>Able to use and identify abnormalities using:</p> <p>Pulse oximeters including indications for arterial blood gas sampling.</p> <p>Capnographs including significance of end-tidal CO<sub>2</sub> values.</p> <p>Invasive arterial pressure lines including recognition and management of hyper- and hypotension.</p> <p>ECG including basic interpretation of rate, rhythm and ischaemia. Understands indications for performing a 12 lead ECG.</p> <p>Temperature probes and warming devices.</p> <p>Recognises signs and symptoms of adequate neuromuscular function.</p> <p>Urine output as an indicator of renal function.</p> <p>Able to assess wound drainage and surgical procedure.</p>	<p>Set up routine monitoring of SpO<sub>2</sub>, NIBP, ECG and temperature.</p> <p>Demonstrate ability to establish capnography measurement, use nerve stimulator and urimeter appropriately.</p> <p>Perform 12-lead ECG and document accurately.</p> <p>Measure temperature using appropriate equipment and take appropriate action to maintain normothermia.</p> <p>Use a urimeter.</p> <p>Record wound drainage accurately. Change drain bottles. Troubleshoot and manage wound drainage systems.</p>

<p>9.3 Perform charting of physiological data and describes patient's clinical status appropriately to the anaesthetist and other staff members. Understand the significance of trends.</p>	<p>Able to chart monitor values using standard symbols. Recognises adverse trends which indicate risk. Identifies common artefacts. Describes patient's clinical status to the anaesthetist. Able to alert staff to adverse monitoring trends pre-empting development of life-threatening emergencies.</p>	<p>Accurately monitor and record physiological parameters. Describe the appropriate course of action for abnormal trends and adverse events. Able to use Situation, Background, Assessment, Recommendation (SBAR) methodology to communicate with appropriate professional colleagues.</p>
<p>9.4 Uses available near-patient testing as a monitoring tool. Can measure haemoglobin (Hb) and blood glucose concentrations and describe risks associated with abnormal values.</p>	<p>Able to use near-patient testing for Hb and blood glucose and describe risks associated with abnormal values. Shows knowledge of normal parameters and actions to be taken when values are abnormal. Understands relevance in paediatric patients. Can calibrate near-patient testing machines (using manufacturers' guidelines).</p>	<p>Attain certification of competency for all near-patient testing equipment in use.</p>
<p>9.5 Can assist during establishment of central venous and invasive arterial pressure monitoring.</p>	<p>Able to prepare the necessary equipment. Assists in positioning and supporting the patient, skin preparation and helping to prevent accidental movement during the procedure. Shows knowledge of complications and risk factors. Able to recognise complications and act appropriately.</p>	<p>Describe the process and discuss the principle risks.</p>
<p>9.6 Able to record and interpret data from invasive central venous and arterial monitors, identifying values outside normal parameters. Can set up a pressure transducer and take blood samples from central venous and arterial lines.</p>	<p>Understands indications for invasive monitoring. Able to set up, attach and calibrate pressure transducers and maintain patency of lines. Able to take blood samples from these lines.</p>	<p>Monitor and record physiological data accurately. Describe appropriate course of action for adverse readings or abnormal trends.</p>

## COMPETENCY 10: INTRAVENOUS ACCESS AND FLUID BALANCE

Competency 10	Knowledge and skills	Suggested indicators
10.1. Can set up intravenous infusion equipment.	Able to set up intravenous infusions, including fluid-warming devices, pressure bags, volumetric infusers and volumetric pumps.	Undertake training on equipment used locally.
10.2 Understand basic principles and participates in postoperative fluid management.	Understands postoperative fluid maintenance Demonstrates ability to accurately record fluid balance including fluid intake and losses.	Accurately monitor and record fluid balance. Recommend appropriate measures in the event of adverse readings and trends.
10.3 Knowledge of equipment associated with transfusion of blood and blood products.	Understands use of equipment for administration and warming of blood and blood products.	Ensure acquisition of current Better Blood Transfusion competency.
10.4 Understands the principles involved in safe administration of crystalloids, colloids, blood and blood products.	Understands clinical aspects of blood and blood products administration including safety checks and documentation. Able to recognise and manage an adverse reaction to transfusions.	Familiar with indications for transfusion of Crystalloids Colloids concentrated red cells platelets fresh frozen plasma cryoprecipitate salvaged red cells.
See competency 7.3.	Aware of local protocols regarding safe administration of blood products. Understands the rationale of use of salvaged blood and the workings of cell-savers.	<a href="http://www.aagbi.org/sites/default/files/red_cell_08.pdf">http://www.aagbi.org/sites/default/files/red_cell_08.pdf</a> <a href="http://www.aagbi.org/sites/default/files/cell%20salvage_2009_amended.pdf">http://www.aagbi.org/sites/default/files/cell%20salvage_2009_amended.pdf</a>
10.5 Knowledge of safe placement and use of nasogastric tubes.	Understands the indications for the use of nasogastric tubes and checks for accurate placement.	Demonstrates appropriate management of nasogastric tubes and confirmation of accurate placement.

## COMPETENCY 11: APPLIED KNOWLEDGE OF PHARMACOLOGY IN PERIOPERATIVE CARE

Competency 11	Knowledge and skills	Suggested indicators
<p>11.1 Can calculate appropriate doses and concentrations in clinical use.</p>	<p>Able to calculate doses and concentrations in clinical use (as per local policy).</p> <p>Prepares drugs for administration during emergencies.</p> <p>Familiar with safe practice and local policies.</p>	<p>Attain local course certification.</p> <p>Describe local intravenous drug administration policies.</p>
<p>11.2 Understands the clinical indications, location, preparation, and labelling of drugs relevant to the PACU.</p>	<p>Aware of clinical indications, complications, side effects and clinical preparation of following drugs as well as their labelling and storage location within the PACU including local Standard Operating Procedures for Controlled Drugs:</p> <ul style="list-style-type: none"> <li>antacids</li> <li>inotropes</li> <li>pressor agents</li> <li>vasodilators</li> <li>antiarrhythmics</li> <li>anticoagulants</li> <li>bronchodilators</li> <li>steroids</li> <li>antibiotics</li> <li>antiemetics</li> <li>intravenous induction agents</li> <li>anticholinergics</li> <li>sedatives and their antagonists</li> <li>non-steroidal analgesics</li> <li>opioids and their antagonists</li> <li>suxamethonium</li> <li>non-depolarising neuromuscular blocking agents and reversal agents</li> <li>respiratory stimulants</li> <li>local anaesthetic agents</li> </ul>	

<p>11.3 Can set up patient-controlled analgesia (PCA) equipment and other infusion devices.</p>	<p>Understands the principles of PCA including knowledge of PCA pumps and safety features. Demonstrates knowledge of opioid pharmacology. Understands local protocols, standard operating procedures and monitoring.</p>	<p>Set up a PCA pump according to local protocols. Monitor patient appropriately. Attain certificate of competency in use of locally provided PCA pumps.</p>
	<p>Understands the principles of epidural administration of local anaesthetics and opioids. Demonstrates knowledge of pharmacology of local anaesthetics and opioids (see competency 11.2). Demonstrates knowledge of pumps used for continuous epidural analgesia infusions in line with local protocols and monitoring.</p>	<p>Set up an epidural infusion according to local protocols. Monitor patients appropriately. Attain certification of competency in use of epidural pumps in local use.</p>
<p>11.4 Can set up equipment to deliver nebulised drugs.</p>	<p>Understands the principles of nebulised drug administration. Demonstrates knowledge of pharmacology of nebulised drugs. Understands local protocols and monitoring of patients on nebulised drugs.</p>	<p>Set up a nebuliser to deliver drugs.</p>

## COMPETENCY 12: MANAGEMENT OF POSTOPERATIVE PAIN, NAUSEA AND VOMITING

Competency 12	Knowledge and skills	Suggested indicators
12.1 Assess and manage postoperative pain.	Can describe pain pathways including physiology of pain transmission.	Use pain scoring tool and knowledge of pain physiology to select appropriate techniques for pain management.
12.2 Can match prescribed analgesia to patient's pain score.	Understands how the following analgesic techniques can modify transmission of pain sensation: opioids paracetamol nonsteroidal analgesics local anaesthetics.	Select and deliver appropriate prescription to achieve adequate analgesia before discharge from the PACU.
12.3 Management of side effects of analgesics.	Understands side effects and complications of the following analgesic techniques: opioids paracetamol nonsteroidal analgesics local anaesthetics.	Recognise side effects and complications associated with administration of analgesics. Act promptly and appropriately to minimise morbidity. Administer naloxone according to local protocols. Explain dermatome chart and the significance of levels of neuraxial block. Explain local protocols for management of local anaesthetic toxicity (see competency 13.9).



<p>12.4 Can manage patients with central neuraxial and peripheral nerve block.</p>	<p>Understands indications, side effects, complications and rationale for:          spinal anaesthesia          epidural analgesia          regional nerve blockade.          Is aware of specialist nursing care needed for patients in these groups.</p>	<p>Explain structure and function of the spinal column.          Explain signs and symptoms of:          dural puncture headache          high spinal block          migration of epidural catheter.          Measure sensory and motor blockade and record extent of block using a dermatome chart.          Administers epidural top-ups in accordance with local protocols.</p>
<p>12.5 Can assess PONV.</p>	<p>Demonstrates knowledge of the physiology and pathophysiology of PONV Including knowledge of risk factors.</p>	<p>Assess and manage PONV using local protocols and multi-modal therapy.</p>

### COMPETENCY 13: RECOVERY EMERGENCIES

Competency 13	Knowledge and skills	Suggested indicators
13.1 Knows how to contact anaesthetic, surgical and other appropriate staff for assistance.	Is aware of the importance of calling for urgent help when needed. Well versed with local communication protocols for contacting appropriate clinicians.	Explain mechanisms in place to contact appropriate members of staff for assistance.
13.2 Can perform ILS.	Demonstrates knowledge of ILS. Understands local protocols for access and use of defibrillators and support.	Attain current certification of attendance of locally approved ILS course – Ref: ILS Resuscitation Council (UK).
13.3 Recognises significant cardiac dysrhythmias.	Understands the aetiology, relevance, and management of significant cardiac dysrhythmias.	
13.4 Understands principles of managing the shocked patient.  13.4a Recognises and understands principles of managing anaphylaxis.	Understands types and grades of shock, their significance, and principles of management.  Demonstrate knowledge of anaphylactic shock management guidelines published by the AAGBI.	<a href="http://www.aagbi.org/sites/default/files/anaphylaxis_2009_0.pdf">http://www.aagbi.org/sites/default/files/anaphylaxis_2009_0.pdf</a> <a href="http://www.aagbi.org/sites/default/files/ana_web_laminate_final.pdf">http://www.aagbi.org/sites/default/files/ana_web_laminate_final.pdf</a>

<p>13.5 Recognises pathophysiology of malignant hyperthermia (MH) including management of patient with proven MH susceptibility.</p>	<p>Demonstrate knowledge of MH management guidelines published by the AAGBI. Can prepare dantrolene in an emergency situation.</p>	<p><a href="http://www.aagbi.org/sites/default/files/MH%20guideline%20for%20web%20v2.pdf">http://www.aagbi.org/sites/default/files/MH%20guideline%20for%20web%20v2.pdf</a>  <a href="http://www.aagbi.org/sites/default/files/MH%20task%20allocations%20for%20web.pdf">http://www.aagbi.org/sites/default/files/MH%20task%20allocations%20for%20web.pdf</a>  <a href="http://www.aagbi.org/sites/default/files/MH%20recommended%20contents%20for%20web.pdf">http://www.aagbi.org/sites/default/files/MH%20recommended%20contents%20for%20web.pdf</a>  Participate in local simulation using date-expired dantrolene.</p>
<p>13.6 Recognises and understands principles of managing suxamethonium apnoea.</p>	<p>Understands causes of suxamethonium apnoea, its significance and principles of management.</p>	
<p>13.7 Can implement local protocol for management of sudden life-threatening haemorrhage.</p>	<p>Understands local protocol for management of sudden life-threatening haemorrhage including use of rapid infusors / warmers where available.</p>	<p>Set up pressure infusors for rapid infusion of fluids. Explain major blood transfusion protocols. Explain rationale and use of tourniquets and pressure dressings to reduce blood loss.</p>
<p>13.8 Can describe detailed management of patient with latex allergy.</p>	<p>Understands pathophysiology and clinical management of latex allergy including use of local protocols.</p>	<p>Identify latex allergy patient and explain risk factors. Source and prepare equipment and environment safe for use in patients with latex allergy.</p>
<p>13.9 Can describe detailed management of patient with local anaesthetic toxicity.</p>	<p>Demonstrates knowledge of severe local anaesthetic toxicity management published by the AAGBI.  Be aware of location of Intralipid.</p>	<p><a href="http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf">http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf</a>  <a href="http://www.aagbi.org/sites/default/files/la_toxicity_notes_2010_0.pdf">http://www.aagbi.org/sites/default/files/la_toxicity_notes_2010_0.pdf</a></p>

<p>13.10 Short term management of a patient requiring unexpected ventilation in the PACU.</p>	<p>Understands the indications for short-term postoperative ventilation.</p> <p>Demonstrates knowledge of local protocols including documentation and relevant nursing interventions in these patients.</p>	<p>Prepare a recovery bay, ventilator and essential equipment for postoperative ventilation.</p> <p>Describe local protocols for the care of a ventilated patient in the PACU.</p> <p>Seek appropriate support from other clinical staff as appropriate.</p>
<p>13.11 Understand appropriate specialty specific complications, side effects and principles of management.</p>	<p>Fat embolism  Pulmonary embolism  Amniotic fluid embolism  Glycine induced hyponatraemia  Orthopaedic cement  Unstable cervical spine.</p>	<p>Explain local protocols for these complications.</p>

## COMPETENCY 14: POST SURGICAL CARE

Competency 14	Knowledge and skills	Suggested indicators
14.1 Thromboembolic prophylaxis.	Demonstrate knowledge of risk factors and current local prophylaxis regimens and understand clinical reasons for variance.	Adherence to current thromboembolic prophylaxis regimens.
14.2 Management of normothermia.	Understands importance of normothermia and indications for intra-operative hypothermia and postoperative management.	Use of available equipment to promote normothermia and hypothermia where clinically appropriate.
14.3 Management of the diabetic patient.	Understands importance of normoglycaemia and use of insulin infusion pumps. Able to determine blood glucose levels using near-testing equipment.	Maintenance of normoglycaemia in diabetic patients with appropriate intervention of clinicians to maintain normoglycaemia. Institute therapy to maintain normoglycaemia in diabetic patients using appropriate, protocols, equipment and clinical guidance.
14.4 Surgical site inspection.	Ability to assess the operative site including dressings for complications.	Communicate effectively between theatre teams and PACU staff with regard to surgical site and dressing complications. Establish parameters for surgical interventions.
14.5 Orthopaedic and other stabilising casts.	Recognises poor circulation secondary to oedema or failing circulation.	Explain clinical signs and symptoms of complications associated with the use of plasters, casts and splints.
14.6 Circulatory observations.	Observes peripheral circulation and pulses.	Explain use of ultrasound Doppler and appropriate charting to demonstrate adequate peripheral circulation and demonstrate an understanding of the limitations of Doppler assessment.

14.7 Urinary catheters and bladder irrigation systems.	Accurately documents urinary output and demonstrate understanding of bladder irrigation systems with knowledge of including issues associated with poor output.	Accurately document urine output. Use bladder irrigation systems and indicate clearly need for surgical intervention.
14.8 Wound drainage.	Accurately records wound drainage and understands the principles of reinfusion systems.  Demonstrates understanding of individual patient parameters where surgical intervention may be appropriate.	Explain factors requiring intervention while monitoring wound drains.
14.9 Specialist dressings.	Demonstrate knowledge of surgical specific dressings.	
14.10 Surgery specific care.	Demonstrate knowledge of surgical specific care required by individual patient.	

## **APPENDIX 1**

Stakeholder groups consulted were:

Association for Perioperative Practice  
British Anaesthetic and Recovery Nurses Association  
College of Operating Department Practitioners  
Royal College of Nursing  
Royal College of Surgeons



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