Post Anaesthetic Care Unit

<u>Wellington Regional Hospital</u> <u>Nga Puna Waiora</u> <u>2020</u>



<u>Orientation guide</u> <u>For</u> <u>Year 2 or 3 Student nurses</u> <u>(3-4 weeks)</u>

This book belongs to:

PACU Orientation Guide for Year 3 Student Nurses 2019

Nau mai

Welcome.

We would like to take this opportunity to welcome you to the Perioperative Unit where you have been allocated a 3 week PACU placement. This orientation manual has been designed to build on your learning and development. The responsibility and accountability of completing your orientation manual is shared between yourself, your clinical liaison nurse and the nurse educator. There will be many opportunities for you to experience throughout your placement so please let us know how we can further support and facilitate your educational and development requirements. I hope you enjoy your 3 week placement with PACU and do not hesitate to come and talk to any member of staff if you need to discuss something.

Nga manaakitanga

Contacts

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Orientation roster and objectives						
	Monday	Tuesday	Wednesday	Thursday	Friday	
Week 1						
Week 2						
Week 3						
Every s	Every shift, you will need to identify an objective that you wish to complete. These can be discussed and arranged by your preceptor.					

We are a DEU

<u>Our Philosophy</u>

The Dedicated Education Unit (DEU) model of clinical teaching and learning in Wellington and is a partnership between organisations, the education provider Massey University (Massey) and Whitireia New Zealand (Whitireia) and the Capital and Coast District Health Board. Collaboration allows practice areas to provide a more supportive clinical learning and teaching environment for students. DEU's are dedicated to supporting nursing students on clinical placement encouraging incidental and intentional learning modes, and peer teaching. The DEU is based on an Australian model and offers an alternative to the Preceptorship model to focus on student learning and curriculum integration. The following principles underpin the partnership between Massey and Whitireia School of Nursing and a DEU practice area.

Our underpinning principles encourage us to create a strong learning partnership between education and our nursing practice. We aim to provide care in a cooperative manner, enabling collaboration between our nursing colleagues, student nurses and our patients. We will build goals together to ensure we have a common vision towards our collective accomplishments.

In our DEU you will be supported by our Clinical Liaison Nurses, Izzy and Shaun.

Izzy – I am currently in my third year of nursing and am working towards my post-graduate diploma in nursing studies! I am a recent add to the PACU team but prior to this I worked just across the way in the operating theatre, specifically in urology theatre.

Shaun – I am currently in my thirteenth year of nursing and have worked in a variety of areas within CCDHB. My passion is nursing education and I enjoy working with nursing students and new staff.

You will additionally have the support of your day-to-day preceptors, our wonderful nursing team here in PACU and the perioperative multidisciplinary teams.

Perioperative Services

Post Anaesthesia Care Unit

The Post Anaesthesia Care Unit provides a safe environment for patients to receive and recover from anaesthesia and surgery. Certain PACU staff also support other hospital teams, including the Acute Pain management Service (APMS), the national simulation suite and the Peripheral Inserted Central Catheter service (PICC). PACU is a fast paced and high acuity unit in which in a typical week, over 200 patients pass through its base. These will include patients needing cardiology, cardiothoracic, dental, ENT, neurosurgical, ophthalmic, orthopaedic paediatric, renal, and vascular interventions.

Pre Anaesthesia Assessment Clinic

The Pre Anaesthesia Assessment Clinic coordinates pre-admission activities for all elective patients. This department ensures optimal preparation and management of the inherent risks of surgery and anaesthesia. Patient assessments are carried out by specialist nursing staff, which provides the patients with information and resources to assist them in gaining the best possible outcome from their planned procedures.

Surgical Admissions

Surgical Admissions provides comprehensive services for ambulatory patients undergoing elective procedures.

Second Stage Recovery

Second Stage Recovery (SSR) accommodates all surgical patients post PACU who are expected to stay less than 24 hours post operation. On average, 90 patients a week will utilise the 23 ambulatory bays and beds, and many are discharged home from SSR within 4-6 hours of their operation. They can also accommodate those who require an overnight stay.

Day 1 – PACU CLN

Goal Setting

Always think and look for opportunities that you wish to participate in or achieve. We will discuss these further with your preceptor and, where possible, accommodate into the workload.

Initiative and eagerness

Get involved in as many learning opportunities as possible, but remember to stay focused on your key learning objectives.

Punctuality

We expect you to be on time for your shift and to call in if you will be late or absent. Informing only your institution's support person is not enough. The student roster is based on MECA requirements, associated with the institutions' guidelines. Leaving early is not acceptable except due to emergency or sickness. Students who frequently ask to leave early will have their placement performance discussed with their Clinical Liaison Nurse (CLN) and their Academic Liaison Nurse (ALN). Students are expected to follow the roster strictly; any requests for change of roster with must be arranged with the CLN or preceptor at least 24 hours in advance. *If you are sick, please ring or text the PACU Shift Coordinator phone.*

Communication

Communication is a key part of getting a positive experience from your placement in PACU. We realise at times you may feel overwhelmed, scared and uncomfortable. Please voice any concerns you may have. We also expect students to communicate honestly and openly. Any performance mistakes should be reported immediately. Any communication issues will be addressed during the weekly placement review with your clinical tutor.



Introductions	Completed
Charge Nurse Manager and office Associate Charge Nurse Manager and office Clinical Nurse Educator and office Preceptors Clinical Liaison nurses Team members	······
Obtain	
Departmental tour Name badge Orientation manual Swipe card	······
Discuss	
Admission and discharge process Bedspace check Competencies Contact details for PACU Daily checks and routine Dos and don'ts Emergency and evacuation procedure ISBAR Objectives for University Objectives for PACU Orientation expectations and opportunities Patient assessment Roster Safer Sleep Sick leave	
Complete	
Bedspace check Skills station Resuscitation trolley check	

PACU Tour Day 1

Find the locations for the following	Completed
ABG analysis machine	
Airvo devices	
APMS forms	
Bair Hugger	
Bladder scanner	
Blood fridge	
Blood and bodily fluid management kit	
Brachytherapy unit	
CPAP machines	
Cytotoxic equipment and guidelines	
Defibrillator	
Delivery suite	
PPH trolley	
Pyxis	
Duress button	
ECG machine	
Emergency call bells	
Emergency exits	
Emergency procedure guidelines	
Fire alarm	
Fire hydrant	
Fire extinguisher	
Glucometer	
Haemocue	
Holding bays	
HoverMat	
Intensive care unit	
Keys button	
Malignant Hyperthermia trolley	
Orderly bay	
Resuscitation trolley	
Tea Room	
Second stage recovery	
Sluice room	
Surgical admissions reception	
Theatres	

Learning opportunities During your PACU placement, you will spend time with the following:

- Simulation mannekins to learn airway management and participate in scenarios
- Brachytherapy to learn about high dose radiation therapy
- Surgical Admissions Unit (SAU) / Second Stage Recovery (SSR) area
- Theatre experience to observe the anaesthetic induction and operation

PACU is an environment full of learning opportunities. Students often find this area overwhelming with its unpredictability. Therefore, while you are here exploring your learning opportunities, it is important to listen to your preceptor and to stay focused on fundamental skills development.

What do you wish to learn and experience?

Complete the abbreviations

The following are commonly used abbreviations that we see. Complete the table.

Abbreviation	Full definition
ABG	
ABs	
Angio	
A.S.A	
AVPU	
Bronch	
CAD	
CBI	
CHF	
COPD	
CWMS	
D/C	
DVT	
ERCP	
EUA	
FHx	
HNPU / HPU	
HTN	
Hx	
ICP	
IHD	
IOL	
IOP	
IVAB	
IVF	
MH	
MI	
MUA	
NKDA	
NWB	
ORIF	
PCA	
PE	
Phaco	
Obs	
PVD	
TIA	
TIVA	
TEDs	
TROC	
TVT	
TWB	
Тх	

Patient Assessment

Assessment is the first part of the nursing process and utilised to highlight aspects that need to be addressed. Genuineness and trusting relationships are instrumental in building a positive relationship with the patient to further facilitate the completion of the nursing process in PACU. The following assessments are integral for the PACU nurse.

<u>Airway</u>

- Do you have an artificial airway?
- Is it safe to remove?
- Is your airway patent afterwards?
- Is your patient talking in their normal way?

Breathing

- What are the saturations?
- What is the respiratory rate?
- Is fogging present?
- Is the chest moving?
- What is their pallor like?
- Do you need to auscultate the chest?
- Is oxygen or high flow required?

Circulation

- What is the blood pressure and heart rate?
- Do these observations replicate the patient's baseline observations?
- Is blood pressure support indicated?
- If so what and why?
- Do I need to commence ECG monitoring?
- What is the fluid balance?
- Does the peripheral assessment indicate anything?

Disability

- AVPU assessment
- Pupils are they equal and reactive to light?
- GCS
- Is blood sugar within normal range?

Environment

- Temperature: what is their peripheral temperature?
- · Wound assessments & skin assessments including drains and dressings

<u>Other</u>

Pain

- How do you assess pain?
- What are your pain assessment findings?
- Are any interventions indicated?

Nausea

- Is it present?
- How would you manage it?

Have you identified any other nursing aspects that are required to fulfil holistic car and maintain cultural safety?

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Student activity

	Complete an assessment and discuss your findings
A)	
В)	
C)	
D)	
E)	
Other)	

Airway Management

Anatomy



Jaw support

(jaw thrust manoeuvre)

Jaw support prevents the tongue obstructing the upper airways. The index finger and middle fingers physically pushes the posterior aspects of the mandible upward, whilst simultaneously the thumbs are pushing on the chin to open it. The displacement of the mandible pulls the tongue forward preventing obstruction.



Laryngeal mask airway(LMA)

The LMA is a frequently used airway adjunct and PACU nurses are responsible for their removal. Stimulating with an LMA is actively discouraged as it can lead to an an early extubation and resulting in an unsupported airway and hypoventilation.



There are both disposable and non-disposable LMA tubes used so please familiarise yourself and ask if in doubt. The non-disposable has a blue rubber attachment whereas the disposable has a gauge.





disposable

Once the patient has obtained their swallow and is awake the nurse can remove the LMA. The following instructions are given to the patient;

Open your mouth Poke out your tongue.

Oxygen is given via a Hudson mask and continued as per prescription and targeted saturation range. The LMA does not protect the patient from aspiration and if vomiting is evident then the adjunct must be removed and the airway reassessed and managed as indicated.

Oropharyngeal Airway (OPA)

(Guerdel airways)

The insertion of this airway adjunct prevents the tongue covering the epiglottis and only used in unconscious patients due to the gag reflex stimulation. To obtain the correct size, an OPA is placed between the base of the earlobe and the corner of the mouth. In adults, the OPA is inserted upside down and rotated 180 degrees. For paediatrics, a tongue depressor is used and the OPA inserted the correct way immediately. When the patient is awake, the OPA is removed.



Nasopharyngeal airway (NPA)

This adjunct can maintain a patient's airway and used to suction airway upper airway secretions. It is sized by measuring from the patient's nostril to the meatus of the ear and placed with the concave side facing away from the nasal septum. It is advanced along the septum horizontally and rotated 90 degrees to lie in the nasopharynx. The purpose of the flared end is to prevent the device from becoming lost inside the patient's nose and usually safety pins are placed just behind the flared end as another precaution.



Breathing

Anatomy



Assessment

Look

What is the respiratory rate and pattern?

Listen

What can you hear?



Anterior

Posterior

How do we breathe?

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Oxygen Delivery

Oxygen is administered to **relieve hypoxaemia** and maintain adequate oxygenation of tissues and vital organs, as assessed by SpO₂ /SaO₂ monitoring and clinical signs.

Device	Litres per minute		
Nasal prongs			
Adult	1-4		
Paediatric	0.125-2		
	use low flow if less than 1 L/min		
Hudson mask			
Adult	5-10		
Paediatric	2-6		
High flow nasal prongs			
Adult	30-60		
Paediatrics	2 litres per kilogram		
Non rebreather/emergency	Maximum to inflate the reservoir bag		

The C&C DHB policies instruct that oxygen is delivered in the above way.

Discussion point

Not all patients have a post-operative oxygen requirement.

Does your patient need oxygen or flow?

If so why?

Does this fit with their expected post-operative outcome?

Remember to get the oxygen prescribed with the target saturations highlighted.

Cardiovascular

An expected outcome for the patient is to be discharged from PACU with a stable blood pressure. Fluids and vasopressors may be indicated at times to help support the patient in PACU. If this is indicated a full patient assessment should be conducted.

Crystalloid Fluids

Crystalloid fluids are volume expanders that provide volume for the circulatory system to maintain hydration and blood pressure. The electrolyte formulation varies for each solution but all are very similar to our physiological plasma electrolyte concentrations, osmolality and pH. These are the main ones used in PACU.

- Plasmalyte (P148)
- Normal Saline 0.9%
- Dextrose 5% Saline

Vasopressors

Vasoconstrictors are medicines used to raise blood pressure via the vasoconstriction of the blood vessels. Hypotension can be caused by a multitude of reasons, which can be discussed with your mentor. The main vasopressors are phenylephrine and metaraminol.

Phenylephrine

Phenylephrine Hydrochloride is an alpha-1 adrenergic receptor agonist indicated for increasing blood pressure in adults with clinically important hypotension resulting primarily from vasodilation, in such settings as septic shock or anaesthesia.

Metaraminol

Metaraminol is a sympathomimetic drug that directly and indirectly stimulates the alpha receptors in the sympathetic nervous system. Alpha stimulation causes vasoconstriction resulting in an increase in both the systolic and diastolic pressure.

Anaesthesia – an overview

There are various types of anaesthesia and they may be used individually or combined. The aim of anaesthesia is to facilitate the balance between hypnosis, analgesia and muscle relaxation. There are 4 types:

- 1. Local
- 2. Regional
- 3. Sedation
- 4. General

Local anaesthesia (LA)

LA involves the administration of a specific medication into the tissues near the surgical site. It produces a reversible blockade of neural transmission in autonomic, sensory and motor nerve fibres, depending upon the concentration of the medication given. It is active peripherally and at the CNS. The medication binds to sodium channels in the axon membrane from within preventing sodium entry during depolarisation. The threshold potential is thus not reached and the action potential of the nerve is not propagated.

Regional Anaesthesia

Regional anaesthetic uses LA around major nerve bundles which produce transient loss of sensory motor and autonomic function in a discrete portion of the body and is commonly referred to as "*block*". Spinal block involves infiltration into the subarachnoid space, and epidural blockade involved infiltration of the epidural space. Nerve plexus or nerve blocks involve injection of anaesthetic agents around a nerve plexus (brachial plexus) or single nerve trunk (femoral or ulnar). Local anaesthetics may also be given directly into affected tissues. In some cases, intravenous regional (IVRA, Bier's block) administration may be used, where the injection is made into a limb whose circulation is occluded by a tourniquet.

Sedation

Sedation is used to reduce the level of consciousness with the level depending on the amount of medication used. As long as the patient is maintaining their own airway, it could be considered sedation even if they are barely rousable. Sedation is used in combination with another technique such as a block or local anaesthetic. Premedication is a type of sedation.

General Anaesthesia

General anaesthesia is a drug induced reversible state of unconsciousness, with the abolition of some or all perceptions. No general anaesthetic is the same. A variety of drugs can be used and these can be broadly grouped into premedications, induction agents, and maintenance and reversal drugs.

Medications and induction agents A-Z

<u>Analgesia</u>

There are many types of pain relief used within PACU which range from mild non-steroidal to opiates.

<u>Alfentanil</u>

Alfentanil is a potent and short acting opioid analgesic and can be used for sedation purposes when combined with other medications for general anaesthesia. It is more potent than Remifentanil and can cause longer respiratory depression.

<u>Atracurium</u>

Atracurium besylate is a non-depolarising neuromuscular blocking agent used adjunctively to facilitate endotracheal intubation and provide skeletal muscle relaxation during surgery or mechanical ventilation. This can sometimes lead to a histamine release which may explain a hypotensive, tachycardic or cutaneous flush response.

Depolarizing agents have rapid onset of 40-60 seconds to achieve profound relaxation. The duration of these agents is typically 4-6 minutes which allows time for tracheal intubation to be performed. It is then broken down by an enzyme with return of normal neuromuscular activity (it should be noted that there are preconditions which may impede this!) Suxamethonium is a common example.

<u>Fentanyl</u>

Fentanyl is synthetic opioid analgesia with approximately 80-100 times more potent than morphine. It has a rapid onset and rapid recovery.

<u>Glycopyrate and Atropine</u> are used in conjunction with Neostigmine to **reverse NBA**, to correct the inevitable bradycardia and excessive secretion production associated with the drug.

<u>Halothane</u>

Halothane is an inhalation anaesthetic and is preferred over diethyl ether or cyclopropane due to its great potency, ease of use, non irritability and non inflammability. It has rapid induction and recovery but has been linked to halothane related hepatitis.

Isoflurane

Isoflurane is an inhalation anaesthetic agent which has a rapid onset and recovery period. This is 9 times more expensive than halothane.

<u>Ketamine</u>

Ketamine is an IV anaesthetic agent which produces a state of dissociative anaesthesia which is intense analgesia with light sleep. Elimination half-life is about 3 hours and metabolised by the liver to weakly active metabolites and excreted in the urine.

<u>Midazolam</u>

Midazolam is a benzodiazepine used for sedation. It is used as a premedication and induction agent. It is antagonised by flumazenil.

Morphine

Morphine is an opioid which acts directly on the central nervous system to decrease the sensation of pain. Its peak analgesic effect is 20minutes and can cause respiratory depression within 3 to 7 minutes of administration. Morphine is excreted in the urine so check the patient's renal function

Muscle relaxation

Muscle relaxation is measured by way of DC current passed through voluntary muscle tissue, usually the wrist or facial muscles using as nerve stimulator. Muscle tone must return before a patient can be safely extubated, this is usually measured by response to a Train of Four DC shocks (TOF.) A visual muscle contraction to all four currents represents full return of muscle tone. Absence of contraction or fading contractions indicates residual NBA.

Neuromuscular blocking agents

In situations where intubation is required or complete paralysis is necessary to allow surgery, a neuromuscular blocking agent is administered. These agents act by interfering with the action of acetylcholine blocking the receptors on the post synaptic muscle membrane: Neuromuscular signals from the motor nerves are prevented reaching voluntary muscle tissue. There are two types of NBA: non depolarizing and depolarising.

Nitrous oxide

Nitrous oxide is an inhaled anaesthetic agent which produces a rapid onset of induction and recovery. This agent can increase ICP and cerebral blood flow and has been linked to increasing the size of a pneumothorax and an air embolism.

Non depolarizing agents

Non depolarising agents act by preventing the absorption acetylcholine to cholinergic receptors and prevent changes to the end plate which causes muscular tone and contraction. They are administered intravenously and have a slower peak onset of 1.5-3 minutes depending on the drug and dose, and a longer, variable half life. Non depolarizing muscle relaxants either wear off by the end of the procedure or the patient is given a reversal agent (Neostigmine). It is important to remember that Neostigmine has a shorter half life than most non depolarizing agents

Parecoxib (Dynastat)

Parecoxib is a Selective COX-2 inhibitors are a type of non-steroidal anti-inflammatory drug (NSAID) that directly targets cyclooxygenase-2, COX-2, an enzyme responsible for inflammation and pain.

Pethidine

Pethidine is a narcotic analgesic and has similarities to morphine. It exerts agonist activity at the opioid receptors located in the central and peripheral nervous system. Its main effects are on the central nervous system resulting in analgesia, sedation, euphoria and respiratory depression. Pethidine also increases smooth muscle tone, causing spasm. Clinically pethidine is used for the relief of moderate to severe pain (including the pain of labour) and in other dosage forms as a pre-operative medication and as an adjunct to anaesthesia. It analgesic affect is shorter than morphine, usually 2 to 4 hours.

Propofol

Propofol is an IV anaesthetic agent which presents in a 1% or 2% concentration and is administered undiluted by bolus or infusion. Distribution and elimination half lives are 1-2 minutes and 1-5 hours respectively, with hepatic and renal elimination. Recovery is rapid with minimal residual effects. Prolonged administration is not recommended due to the risks of developing Propofol infusion syndrome.

Rocuronium

Rocuronium bromide is an aminosteroid non depolarising neuromuscular blocking agent. It is reversed by sugammadex.

Remifentanil

Remifentanil is a potent and short acting opioid analgesic and can be used for sedation purposes when combined with other medications for general anaesthesia.

Sevoflurane

Sevoflurane is an inhaled anaesthetic which produces a rapid onset of induction and recovery. This is regarded as the preferred agent to use for paediatrics.

Sodium Pentothal

Sodium pentothal is an IV anaesthetic agent which has a rapid onset and is short acting barbiturate.

Suxamethonium

Suxamethonium or succinylcholine is a depolarising neuromuscular blocking agent which induces short term paralysis usually to facilitate endotracheal intubation. This has the fastest onset and shortest duration of action of all the muscle relaxants and is the preferred choice for rapid sequence induction (RSI). This is incompatible with thiopentone.

Thiopentone

Thiopentone is an ultrashort acting depressant of the central nervous system which induces hypnosis and anaesthesia, but not analgesia. Induction occurs within one armbrain circulation time, which is the time taken for a substance injected into an arm to reach the brain which is usually 10 – 20 seconds and recovery occurs within 5 – 10 minutes after a single administered dose. Repeated intravenous doses leads to a prolonged anaesthesia because fatty tissues act as a reservoir. It is also used in the treatment of status epilepticus and intracranial hypertension. This is a Section 29 medicine when administered IV.

Tramadol

Tramadol is a centrally acting synthetic analgesic of the aminocyclohexanol group with opioid like effects. It works by binding to μ opioid receptors and inhibition of re-uptake of noradrenaline and serotonin.

Common Surgeries

At Wellington Hospital we have 15 operating theatres on level 3, 1 caesarean theatre on level 4, brachytherapy on level 2, angio suite, MRI, CT scanning, radiology, lithotripsy bus and the PACU procedure room. We cover the post-operative care for all of these areas.

As a tertiary level hospital we cover all specialties including cardiothoracics, eyes, urology, general, orthopaedics, vascular, ENT, gynaecology, neurosurgery and obstetrics. We cover these 24/7.

The most common post-operative patients you will see during your time includes:

- Caesarean sections
- Thoracotomy
- Vitrectomy
- TURP & TURBT
- Laparotomy
- I & D of an abscess
- ORIF
- Thrombectomy
- Adenoids, Tonsils and Grommets
- Hysteroscopy
- D&C
- Burr holes
- Craniotomy

It would be good for you to gain a basic understanding of these surgeries. There are great resources online and (*if you aren't too squeamish*) check out some videos of the surgeries on YouTube! During your time here you will also spend a day in theatre so you may get to see some of these in action.

Aspiration

Foreign bodies inhaled into the trachea and lower airways. These can be vomit, gastric contents, blood, secretion, pharyngeal or laryngeal oedema, a piece of tooth, a throat pack, a fragment of adenoid tissue.

Signs and Symptoms

- Strider
- Evidence of vomit or foreign body in mouth / nose
- Cyanosed low SpO2 that is not relieved by high flow oxygen

At Risk Patients

- Emergency surgery
- Obesity
- Hiatus hernia
- Pregnancy
- Bowel Obstruction
- Trauma surgery
- Not fasted
- Diabetes (where there are automatic or other neuropathies)
- Abnormal pharyngeal, laryngeal, or upper airway anatomy
- Neuromuscular disease
- Scleroderma
- Unprotected airway
- Patient positioned on back post extubation

Treatment

- Immediate
- Get help
- Clear airway (Suction)
- Give high flow oxygen (consider CPAP)
- Monitor ECG, SpO2, BP, Blood Gasses, Chest x-ray

Prevention

- Anaesthetic assessment (loose teeth, nil by mouth, or last time had oral intake)
- H2 receptor antagonist pre-operative (ranitidine)
- Patients recovered on left lateral position

Bronchospasm

Bronchospasm results due to an increase in bronchial smooth muscle tone with closure or significant narrowing of the small airways. Airway oedema develops causing secretions to build up.

Signs and Symptoms

- Wheezing
- Dyspnea
- Use of accessory muscles
- Tachypnea

At Risk Patients

Patients with pre-existing pulmonary disease (emphysema, asthma, CORD) May result from

- Aspiration
- Intubation
- Suctioning of trachea or pharynx
- Allergic response

Treatment

Immediate removal of precipitating cause Pharmacological intervention with the aim of decreasing airway irritability (anti-allergy) Promote Dilatation drugs used include –

- Salbutamol (neb)
- Aminophylline
- Adrenaline (neb)
- Atropine
- Glycopyrate (neb)
- Steroids



Laryngospasm

Laryngospasm is a contraction of the laryngeal muscle tissue. This may be complete with complete closure of the vocal cords or incomplete where the vocal cords are partially closed.

Signs and Symptoms

- Patients are awake and agitated
- Feels they are suffocating
- Unable to get 'air' in
- Dyspnoea
- Hypoxia
- Hypoventilation
- Paradoxical rocking motion of the chest wall
- Incomplete may present as a crowing sound or strider

At Risk Patients

• Secretions on larynx e.g. from tonsillectomy.

Can be initiated by:

- Pre-op: Asthma, COPD, Smoking
- Intra-op: Endotracheal tube, multiple attempts at intubations
- Post-op: Coughing, bucking on ET tube, repeated suctioning

Treatment

- Immediate
- Jaw support
- Positive pressure ventilation with mask, ambubag and oxygen
- If above is ineffective then intubation is considered

Prevention

- The use of muscle relaxants intra-op can prevent intermittent laryngospasm
- Extubate very deep or very light



Malignant Hyperthermia

Malignant Hyperthermia is a rare but extremely dangerous muscular genetic abnormality, usually with the ryanodine receptor 1 gene, that prevents the re-uptake of calcium ions from the neuromuscular pathway. The triggering agents are Suxamethonium and volatile anaesthetic gases. The muscle cells have an abnormal protein on their surfaces and when the calcium stored in muscle cells is released, life threatening events develop. Symptoms usually present within the first hour but can delayed for 12 hours.



ryanodine receptor 1

Signs and symptoms

- Breathlessness
- Brown coloured urine due to rhabdomyolysis
- Confusion
- Diaphoresis
- Flushed skin
- Hypercapnia
- Hyperthermia
- Hypotension
- Hypoxia
- Muscle contraction and rigidity
- Pain especially in the jaw
- Tachycardia
- Tachypnoea



At risk patients

• Genetic link – autosomal dominant pattern

Treatment

- Dantrolene
- Cooling
- Symptom management
- Malignant hypertension trolley and guidelines



MH trolley in PACU



Dantrolene IV

The primary medication used for the treatment and prevention of MH is Dantrolene sodium. It is a postsynaptic <u>muscle relaxant</u> that lessens <u>excitation-contraction coupling</u> in <u>muscle cells</u>. It achieves this by inhibiting <u>Ca²⁺ ions</u> release from <u>sarcoplasmic reticulum</u> stores by antagonizing <u>ryanodine receptors</u>.

Dantrolene is a hydantoin derivative that directly interferes with muscle contraction by inhibiting calcium ion release from the sarcoplasmic reticulum, possibly by binding to ryanodine receptor type 1 (RYR-1)

Obstruction

Airway obstruction can be either complete or partial after a general anaesthetic. It can happen anywhere between the lips or nose, and the alveoli.

Signs and Symptoms

- Noise with breathing if partial obstructed (can be like snoring)
- Quiet if completely obstructed
- See-sawing abdomen or rocking (the diaphragm is still moving up and down)

At risk patients

- Short or fat bull necks
- Stiff necks
- Previous cervical spinal surgery or injury
- Prominent protuberant upper teeth
- Under slung jaws or receding chin
- Down's syndrome
- Patients who cannot open their mouth widely

Treatment

- Immediate
- Inspect patient's mouth and nose
- Suction out secretions or foreign bodies
- Give 100% oxygen by mask
- Give jaw support
- Insert an oral airway
- Sometimes a well lubricated nasal pharyngeal airway can be useful to maintain a difficult airway



Obstruction caused by the tongue



jaw support applied to open airway

Local Anaesthetic Toxicity

Local anaesthetics act on the nerve cells at toxic levels and on the central nervous system and cardio vascular system. Toxicity can occur as a result of inadvertent overdoses or accidental intravenous injection. It can occur with accumulation of the drug over a period of time. The central nervous system is the first affected with symptoms progressing from oral numbness and tingling to convulsions, coma - cardiovascular toxicity may ensue leading to arrhythmias or asystole.

Progression of signs and symptoms of local anaesthetic toxicity.



Actions if you suspect Local Anaesthetic Toxicity:

- Stop bolus/infusion
- Contact APMS or on call Anaesthetist #6449 immediately for advice
- If emergency assistance is required, dial 777 and activate a Medical Emergency call
- Follow usual resuscitation guidelines

Intralipid therapy may be required. (Intralipid bags and specific administration guidelines are stored in PACU.



Writing Notes in PACU

Using a format is really helpful for writing comprehensive notes in PACU, so you don't forget to document anything. Your notes also need to be **concise, eligible, appropriate and accurate**.

Most RNs in PACU use the following format:

On arrival: A V P U (this is level of consciousness- and you circle the appropriate letter).

A: Airway, write your assessment of the patient's airway on arrival.

B: Breathing, write your assessment of the patients breathing on arrival

C: Cardiovascular, write your assessment of the patients cardiovascular system on arrival

D: Disability and don't forget glucose (if applicable). Write your assessment of their LOC.

E: Environment, write your assessment of their temperature, drains, dressings and other information.

After your initial assessment it is useful to write the time and your assessment of the patient, plan and actions.

Pain Assessment Tips

In PACU, one of our main jobs is managing post-operative pain. We may use different words to help patients describe their pain to us. For example, "what is your comfort level like", "could you go to sleep right now", "is your pain manageable". Using these phrases help to better understand patient's current pain level and when it starts to improve. These can be used concurrently with your normal pain assessment, however they provide a broader picture of how the patient manages pain. Your preceptors will guide you in different ways to assess pain levels.

For example:

On arrival:

AVPU.

A: Patent, Maintaining own airway, talking, nil distress

B: Regular spontaneous breaths, nil respiratory distress.

C: Warm and well perfused, radial pulse strong, regular, normotensive.

D: Alert, GCS 15, BGL 8.2mmol/L. No complaints of pain or nausea.

E: T: 36.5 tympanic. Dressing intact and dry, wound site soft. IDC draining good amounts of clear urine. IVC patent, IVF running at 100ml/hr (2nd litre from OT). Good colour, warmth, movement and sensation in all limbs. Patient moving self around bed well.

1335: Pt comfortable, no pain or nausea, sleeping on and off. Dressing remains dry. NOK called and informed patient in PACU and doing well.

1400: Pt awake, had sips of water, meets discharge criteria, ready for ward. Await ward nurse to collect.

Please complete as much of the following with your allocated nurse.	Achieved.
They can be discussed or observed to complete the competency.	
Always consider <u>why</u> you are doing the intervention.	
Cardiovascular	
Explain deep vein thrombosis and pulmonary embolism prophylaxis	
ECG interpretation – What is sinus rhythm?	
ECG – obtain a 12 lead	
Hypo/hyperglycaemia management – find the policy and discuss	
Hypotensive causes and management	
Hypertensive causes and management	
Perform a manual blood pressure	
Neuro	
Explain the components of a Glasgow Coma Scale assessment	
What is an External ventricular drain (EVD)	
Neurovascular	
What observations would you do on a fractured limb	
Explain why you elevate the fractured limb	
Pain Management	
Analgesia – name 3	
Antiemetics – name 3	
Dermatome assessment	
Pain assessment tools	
Reversal agents to opioids	
PACU	
Bedspace check	
Complete the documentation from admission to discharge	
Discuss the daily checks and why are they necessary	
Respiratory	
Jaw thrust or chin lift	
Laryngeal mask airway removal	
Management of	
Aspiration	
Atelectasis	
Laryngospasm	
Oral or nasal pharyngeal airway insertion or removal	
Oxygen application via nasal cannula or Hudson mask	
Oxygen prescription	
Other	
Prime an intravenous line	
Attend a pain team round	
Follow a patient through theatre	
What Infection, prevention and control measures are there in PACU	
Doppler pulses	

PLACEMENT EVALUATION

Please return this to the CNE on your last day of placement.

We would like to know of any ideas or suggestions you have that may help us to ensure that future students have a positive experience.

Did you feel welcomed and well supported during your placement?