CLINICAL GUIDELINE FOR THEATRE PRACTICE STANDARDS - ANAESTHETICS

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1. **Aim/Purpose of this Guideline**

1.1. All healthcare professionals have a duty to set a standard by which to practice. With a focus on clinical effectiveness and evidence based care theatre staff must be able to demonstrate the ability to audit care and theatre practice. The care that is delivered and improvements in practice must be based on evidence and best practice guidance.

1.2. The aim of this policy is to outline the standards of care that must be delivered to each individual patient to ensure a high quality of care is provided to patients entering all Trust Operating Theatres.

1.3. **Objectives**

- To ensure that a standard of care is delivered to each individual that is equitable and fair.

- To identify the standards of care to be delivered to patients through all the areas within the operating theatres i.e. anaesthetic room, Operating Theatres and the Post Anaesthetic Care Unit.

- To enable auditing of theatre practice and patient care throughout all areas.

- To ensure all staff are aware of standards of care to be delivered to patients whilst in the Operating Department.

- To provide information to all staff of the departments expectation of the standards of care to be delivered to all patients.

1.4. **Scope**

1.5. These standards of care will apply to all Operating Theatres across Royal Cornwall Hospital Trust sites.

1.6. All new members of staff will receive an electronic copy of the standards applicable to the area they will work in. All staff will be able to access the care standards via desktops in operating departments.

2. **The Guidance**

The guidance is contained in the following sections as detailed in the table of contents.

3. **Monitoring compliance and effectiveness**

3.1. Practice against the set standards will be reviewed monthly for all theatre suites and reported at the Clinical Matron meeting.

3.2. Overall performance against the standards will be included in the interdivisional Performance Assurance Framework with overview and exceptions tabled at monthly Divisional Governance Management Meeting.
<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>Practice compliance against all practice standards will be monitored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Theatre Manager / Deputy Managers</td>
</tr>
<tr>
<td>Tool</td>
<td>The revised theatre safety audit tool will be used to monitor compliance monthly. Each senior auditor will assess practice observed at each audit. Attach the tool to the policy or no one will know what you are monitoring.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Each member of the theatre senior team will audit 10 observations of practice each month. The observations will be submitted to the Divisional Nurse by the 2nd of the following month for collation and reporting at Theatre Management Group. Compliance with the WHO SSC standard 16 will be reported monthly to TMG and TMCG.</td>
</tr>
<tr>
<td>Reporting arrangements</td>
<td>DGMM monthly, TMG monthly, TMCG monthly. Responses and actions agreed will be recorded in meeting minutes.</td>
</tr>
<tr>
<td>Acting on recommendations and Lead(s)</td>
<td>It will be the responsibility of the Divisional Nurse to action any recommendations from the report and report back to DGMM, TMG on outcomes.</td>
</tr>
<tr>
<td>Change in practice and lessons to be shared</td>
<td>This document consolidates and defines current practice, no changes to current practice are required. The documentation implementation will be led by the theatre managers in each area. All staff will have discussions on the local practice standards at yearly IPR. Any shortfalls by individuals identified will be dealt with by the appropriate manager in line with trust policy. Lessons learned will be shared with all stakeholders at theatre safety briefings and theatre managers meeting.</td>
</tr>
</tbody>
</table>

4. **Equality and Diversity**
   4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ‘Equality, Diversity & Human Rights Policy’ or the Equality and Diversity website.

4.2. **Equality Impact Assessment**
The Initial Equality Impact Assessment Screening Form is at Appendix 2.

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Anaesthetic Theatre Standards

Anaesthetic Theatre Standards Contents: All anaesthetic practitioners will be competent in and deliver care to the following standards

- Appropriately receive patients for clinical procedures
- Safely prepare and transfer patients for clinical procedures
- Safely position patients for clinical procedures
- Appropriately prepare the anaesthetic room and operating theatre ready for adult/paediatric anaesthesia dependent on theatre operating list
- The anaesthetic assistant is competent in the location and use of all emergency equipment required within their working environment
- The patient’s temperature is maintained at the optimum level appropriate to surgery
- Safely and competently prepare materials and equipment for intravenous infusion and transfusion
- Patients physiological parameters are adequately monitored during the induction of anaesthesia
- The patient is safely transferred to the operating table from the bed or trolley
- All staff to attend mandatory training
- Faulty equipment is dealt with promptly and in the correct manner
- The anaesthetic care plan/perioperative document / Galaxy is accurately completed according to the patients individual needs and received care
- The anaesthetic assistant appropriately assists the anaesthetist during the reversal of anaesthesia
- Safely prepare and monitor anaesthetic materials and equipment
- Safely monitor and maintain medical gas supplies within the operating department
- Ensure the patient is adequately prepared for clinical procedures
- Safely assist in venous and arterial cannulation during clinical procedures for both adult and paediatric patients
- Assist in the establishment and maintenance of the patients airway both adult and paediatric
- Accurately monitor the physiological parameters and fluid balance of patients undergoing clinical procedures
- Competently identify and respond to clinical emergencies
- Competently assist the clinician in treating patients during clinical emergencies
- Identify the need for and perform immediate life support
Anaesthetic Theatre Standard No 1 - Anaesthetic room and operating theatre preparation

Standard Statement: The anaesthetic room and operating theatre is appropriately prepared ready for adult/paediatric anaesthesia dependent on theatre list and the anaesthetists requirements

Method:

- All anaesthetic staff will have the required training, skills and knowledge, and will have been assessed as competent
- The anaesthetic machine in the anaesthetic room and the anaesthetic machine in the operating theatre should be checked following the manufacturers guidelines, i.e.
  - cylinders and pipeline gases, vaporisers, breathing circuits, suction, ventilator, alarms, oxygen analyser, capnograph, airway manometer, spirometer and anaesthetic gas analyser (please refer to the royal college of anaesthetists guidelines for checking all anaesthetic machines)
- All patient breathing circuits should be changed at the start of each week, all patients must have a single patient use breathing filter used between the catheter mount and breathing circuit. Lines that are visibly soiled must be replaced before use.
- Full monitoring should be available and ready for use, i.e. ECG, pulse oximeter, capnograph, non-invasive blood pressure, invasive blood pressure, spirometer, nerve stimulator and temperature monitor
- The following equipment should be available at all times including during local anaesthetic procedures

Airway management trolley:

- Laryngoscopes (McCoy, Polio, Standard Mcintosh & long blade)
- Selection of cuffed endotracheal tubes for adults and uncuffed endotracheal tubes for paediatrics appropriate to the type of surgical or anaesthetic procedure
- Appropriate oral & nasal airways
- Bougie introducer and stylets
- Suction
- McGill forceps
- Selection of securing tapes
- Invasive/spinal/epidural trolley
- Specialised needles
- Basic packs
- Specialised dressings
- Local anaesthetic
- Sodium chloride
- Selection of needles and syringes
- Arterial and central venous equipment
• The anaesthetic room should be checked to ensure adequate stock levels of all items that may be required appropriate to that speciality

• Specific paediatric equipment should be prepared appropriately for the patients weight and size, please see paediatric standards

• The temperature in the anaesthetic room/operating theatre will be adjusted accordingly dependent on the patients individual needs

• The anaesthetic room and all equipment should be clean after each patient and kept tidy at all times

• Emergency equipment should be available, in good working order, within the department in the designated areas at all times, and when in use documented on the appropriate information boards

• Equipment found to be faulty should be sent to the appropriate department for repair and a replacement obtained if necessary

• Any missing equipment should be traced and returned

• Play equipment should be readily available and used if appropriate (advice from the play specialist in the children’s unit can be sought)

Compliance: 100%

Exceptions: None

Reference:

AfPP/HPC Standards

Royal College of Anaesthetist’s Guidelines (RCAGBI)
**Anaesthetic Theatre Standard No 2 - Anaesthetic materials and equipment**

**Standard Statement:** All anaesthetic materials and equipment are safely prepared and monitored in preparation of the list and continuously throughout.

**Method:**

- All staff must undertake the appropriate training and deemed competent in the use of materials & equipment prior to use.
- Ensure the correct materials and equipment are selected and prepared according to the clinical speciality, the type of anaesthesia to be given, the requirements of the operating list, and patients individual needs.
- Ensure all materials and equipment are prepared in the appropriate manner and time, according to the patients clinical status (i.e. elective or emergency).
- Ensure all equipment is checked and confirmed as safe, ready for use & functioning correctly.
- Ensure all equipment is set up & calibrated correctly in line with the manufacturer’s instructions, and to meet the needs of the overall operating list and the patient’s plan of care.
- Where equipment is found to be faulty or unsafe during preparation, the appropriate action is taken to remedy or report the fault (Refer to anaesthetic standards for faulty equipment).
- Ensure all materials and equipment are positioned in a way which facilitates their access and use, according to the sequence of procedures on the operating list.
- Ensure all materials and equipment are handled and moved safely, correctly & hygienically, in accordance with manufacturer’s guidelines & infection control.
- Anaesthetic machine checks should be carried out using the royal college of anaesthetists guidelines.

**Materials & Equipment for both Adult & Paediatric**

- Anaesthetic machines, Ventilators, Vaporisers, Breathing systems
- Vascular access/epidural/spinal procedure packs
- Specialised needles
- Suction apparatus
- Fluid warmer and forced air blower
- Airway management trolley
- Invasive/spinal/epidural trolleys
- Laryngoscopes, Intubation aids, Endotracheal tubes (cuffed, uncuffed, preformed, endobronchial, laser, ILMA)
- Airways both oral & nasal
- HME’s
- Laryngeal mask airways
- Proseals
- ECG
- Pulse oximeter
- NIBP/IBP
- Invasive blood pressure monitors and transducers
- Capnogragh
- Spirometer
- Disconnection alarms
- Nerve stimulator
- Temperature monitoring probes and equipment
- Intravenous fluids
- Syringes and Drugs

Compliance 100%

Exceptions None

Reference:
AfPP/HPC Guidelines
Royal College of Anaesthetist’s Guidelines (RCAGBI)
**Anaesthetic Theatre Standard No 3 - Arterial Cannulation**

**Standard Statement:** Safely assist in arterial cannulation during clinical procedures for both adult and paediatric patients

**Method:**

- Ensure the patient is offered appropriate information, support and reassurance in a sensitive manner
- Ensure the care provided to the patient is consistent with their individual needs, plan of care & expressed personal beliefs, & preferences, within the constraints of the setting and the clinical procedure
- Ensure that the required materials & equipment are made available & ready for use before the arterial cannulation procedure is started
- Ensure the specified cannulation site is prepared & cleaned effectively, and in a way which optimises the patients comfort, dignity & safety and that the site is prepared to provide optimal conditions to facilitate cannulation
- Ensure the cannula/line is secured adequately & safely, to facilitate access and minimise patient discomfort
- Ensure the transducer line is clearly labelled and identifiable as an arterial line
- Ensure universal precautions for infection control are applied correctly and that waste & sharps are disposed of safely in the correct manner.

Compliance – 100%

Exceptions – None

**Reference:**

Manufacturer’s guidelines for setting up transducers

AfPP/HPC Guidelines
Anaesthetic Theatre Standard No 4 - Airway maintenance and establishment

Standard Statement: Assist in the establishment and maintenance of the patients airway both adult and paediatric

Method:

- All staff assisting in the establishment and maintenance of a patients airway will have undergone the appropriate training and deemed competent
- Ensure liaison with the lead anaesthetic clinician and surgical clinician where appropriate
- Ensure the required airway establishment & maintenance materials and equipment are selected, according to the patient and the procedure, confirmed as fit for use, and prepared correctly at the appropriate time
- Ensure the patient is offered the relevant information, reassurance & support in a manner which is sensitive to their needs & concerns
- Appropriate action is taken to optimise the comfort & dignity of the patient throughout & to minimise pain & trauma
- Ensure the patient is appropriately positioned for the procedure (rapid sequence induction, oral/nasal intubation, tracheostomy, awake fibre optic intubation)
- Ensure all materials & equipment are handled correctly & safely throughout, in line with manufacturer's instructions
- Ensure patients physiological parameters are monitored throughout the procedure
- Ensure all devices used to maintain the patients airway are secured appropriately
- Apply universal precautions for infection control at all times
- Ensure that any signs of the patients airway being compromised is recognised promptly and the appropriate action is taken immediately

Compliance 100%

Exception None

Reference:

AfPP/HPC Guidelines
Anaesthetic Theatre Standard No 5 - Clinical emergencies

Standard Statement: All staff to competently identify and respond to clinical emergencies

Method:

- Ensure observation and monitoring of the patient’s condition is sufficient to identify clinical emergencies as soon as they occur
- Ensure any signs or symptoms of an actual, or potential, clinical emergency is identified correctly and reported to the appropriate clinician
- Ensure the priorities for the patients care are identified promptly and accurately and appropriate action is taken immediately
- Ensure the patients vital functions are maintained pending attendance of medical staff and during interventions
- Ensure the relevant items of equipment are obtained promptly, prepared correctly for use and made available to the appropriate clinician

Compliance – 100%

Exceptions – None

Reference:

AfPP/HPC Guidelines

RCHT Resuscitation Policy
Anaesthetic Theatre Standard No 6 - Clinical emergencies

Standard Statement: All staff to competently assist the clinician in treating patients during clinical emergencies

Method:

- Ensure the patient’s condition, and the clinicians actions, are monitored closely to determine what assistance is needed during the clinical emergency
- Ensure delegated activities are carried out promptly and correctly
- Ensure the required materials and equipment are made ready and available for use by the appropriate clinician
- Ensure the required drugs and diluents are obtained promptly as requested by the clinician
- Ensure the patient is given appropriate support and reassurance throughout
- Universal precautions for infection control are applied correctly
- Ensure all relevant information is clearly and accurately recorded in the appropriate documentation

Compliance – 100%
Exceptions – None

Reference:
AfPP/HPC Guidelines
RCH ILS information pack
**Anaesthetic Theatre Standard No 7 - Documentation is completed accurately and legibly for all patients**

**Standard Statement:** The anaesthetic care plan/perioperative document is accurately completed according to the patients individual needs and received care

**Method:**

- All staff to complete documentation update
- All documentation to be legibly written, signed, and dated
- Pre-operative care plan is checked for accuracy
- All patient intervention is documented in full on Galaxy
- Items are recorded on the care plan, Tray labels, LMA labels etc. for traceability purposes
- The care plan is evaluated for accuracy throughout the peri-operative period and changes to care documented
- Where student ODPs / nurses complete documentation this must be countersigned by the registered practitioner present.

Compliance 100%

Exceptions: Patient admitted to theatre unconscious, direct from A&E or ITU to theatre in a life threatening situation

**Reference:**

Generic Theatre Standard 01 – Operating Theatre Record Keeping & Documentation at RCHT

AfPP/HPC Guidelines

NMC / HPC Professional Standards
Anaesthetic Theatre Standard No 8 - Emergency equipment location and use of

Standard Statement: The anaesthetic assistant is competent in the location and use of all emergency equipment required within their working environment

Method:

- All theatre practitioners working within anaesthetics will have undertaken the necessary training to gain the knowledge and skills required, they will have been assessed as competent
- The anaesthetic assistant will know the whereabouts of all emergency equipment/materials
- All should undertake the mandatory ILS/BLS course and be deemed competent
- Competence in location and use of:
  - Airway management trolley
  - Paediatric airway management trolley
  - Difficult intubation trolley (including fibre-optic bronchoscope)
  - Cook exchange catheters
  - Tracheostomy (minitrach/manujet)
  - Portable monitoring, ventilator and suction
  - Emergency drugs/Cardiac arrest drugs
  - Ambu-bag
  - Defibrillator

Compliance: 100%

Exceptions: None

Reference:

AfPP/HPC Guidelines
**Anaesthetic Theatre Standard No 9 - Management of faulty equipment**

**Standard Statement:** Faulty equipment is dealt with promptly and in the correct manner in conjunction with the manufacturers guidelines

**Method:**

- When fault is identified, equipment is made safe, withdrawn from use and clearly labelled **DO NOT USE**
- Staff to be aware of the appropriate repair requisition forms, the process in which to liaise with the appropriate department and arrange for repair
- The appropriate member of senior staff are informed of any faults or breakages
- Records are kept of equipment sent for repair
- Equipment is decontaminated before sending for repair
- Manufacturer's instructions are available and followed

**Compliance:** 100%

**Exceptions:** None

**Reference:**

AfPP/HPC Guidelines

RCHT Medical Device and Equipment Management Policy

http://intra.cornwall.nhs.uk/DocumentsLibrary/RoyalCornwallHospitalsTrust/Clinical/MedicalPhysics/MedicalDeviceAndEquipmentManagementPolicy.pdf
Anaesthetic Theatre Standard No 10 - Preparation of and connection of intravenous infusions, delivery lines and transfusion

Standard Statement: Staff will safely and competently prepare materials and equipment for intravenous infusion, delivery lines and transfusion after liaison with the lead anaesthetic clinician

Method:

- All staff have undertaken the appropriate training and assessed as competent with the necessary knowledge regarding fluid/drug incompatibilities and route of delivery
- The appropriate cannula, administration sets and infusion equipment are prepared in the appropriate manner and time
- All patient delivery lines and infusions to be labelled appropriately along the whole length of the line intermittently paying particular attention to the distal ends with either a label with IVI (Intra Venous Infusion) written on it or the appropriate coloured DRUG label (i.e. METERAMINOL /EPHEDRINE/EPIDURAL)
- All delivery lines and infusions to be labelled correctly with the date and time of preparation and the name of the practitioner setting up the infusion
- The fluid, rate and volume are to given as prescribed and recorded correctly on to the fluid chart, anaesthetic chart or observation chart
- Two trained practitioners to confirm the solution required and the correct connection site prior to connection, and prior to the commencement of the solution
- ANTT and standard precautions are to be maintained throughout
- The cannula site is secured and supported, observed regularly and any irregularities reported and documented
- All cannula sites used are fully documented on the cannula care plan.
- Appropriate connectors are used for multiple infusions, and filters used where necessary
- Trust policy is adhered to regarding the checking and administration process by the competent practitioners
- Pressure bags, hotlines and level 1 rapid infusers are used where required and along with manufacturers guidelines

Compliance: 100%

Exceptions: None

Reference:

RCHT Infection Control Guidelines / ANTT
Anaesthetic Theatre Standard No 11 - Care of the patient undergoing anaesthetic

Standard Statement: The anaesthetic assistant appropriately assists the anaesthetist during the safe induction and maintenance of anaesthesia

Method:

Patients undergoing Anaesthetic Procedures

Personnel Issues

- Anaesthetic ‘assistance’ is provided at RCHT by Operating Department Practitioners or Registered Nurses with Anaesthetic qualifications.

- Operating Department Practitioners (ODPs): have completed a nationally-recognised programme leading to a Diploma or Degree in Operating Department Practice and are Registered the Health Professions Council (HPC) as an Allied Healthcare Professional.

- Anaesthetic Nurse Practitioners: have completed a three year nurse training, are registered with the Nursing and Midwifery Council (NMC) and have undertaken a nationally recognised post-registered Anaesthetic Course.

  o Anaesthesia Team 3 AAGBI (2010)
  o Anaesthesia Team 3 (May 2010) - Supplementary Statement (2010)

- Registered practitioners in the RCHT theatres are expected to keep up to date with current professional knowledge and be able to evaluate its use in patient care.

  o Including Continuing Professional Development required to maintain registration.

  o Including maintaining the Perioperative Quality Care Passport

Patient Care

- Parents or legal guardians should be allowed to escort children to the anaesthetic room and remain with them until induction.

- Where relatives attend the anaesthetic room an additional member of staff must be available to escort the relative or legal guardian out of the department.

- Anaesthetic staff should be aware of management of confused patients or patients with incapacity and protect them from any undue stress.

- Thromboprophylaxis guidelines, includes: Patient Group; Assessment; Pharmacological Prophylaxis; Mechanical Prophylaxis: Thrombosis Prevention and Anticoagulation Policy

- The temperature of the anaesthetic room should be comfortable for the patient.
• There should be a minimum of two members of staff present in the anaesthetic room at induction, the anesthetist and an ODP/registered anaesthetic nurse.

**Preparation and maintenance of anaesthetic equipment**

• All routine safety check on anaesthetic equipment must be carried out in accordance with the AAGBI’s checklist for Anaesthesia.

• **Checking Anaesthetic Equipment 2012 Association of Anaesthetists of Great Britain and Ireland**

• A copy of this checklist must be attached to each anaesthetic machine and used as a basis for all checks: Checklist for Anaesthetic Equipment 2012 A4 sheet

• **Safety Management of Anaesthetic Related Equipment 2009 Association of Anaesthetists of Great Britain and Ireland**

• All anaesthetic equipment must be checked, prepared and demonstrated as functional before induction of anaesthesia is commenced including checking the patency of single use filters, angle pieces and catheter mounts.

• A record must be kept with the anaesthetic machine as evidence that this check has been undertaken. The record must include the name of the practitioner and anaesthetist, and the date and time when the check was undertaken. These should be included in the patient’s anaesthetic record and as part of the WHO Surgical Safety Checklist.

• All anaesthetic equipment must undergo regular maintenance checks by medical engineers. The first user check after servicing is especially important and must be recorded.

• The anaesthetist is responsible for the checking of the anaesthetic machine and must be satisfied that it has been carried out correctly. The anaesthetist may delegate this responsibility to a nominated individual who is competent to perform this role.

• Additional specific checks should be undertaken for each new patient during an operating session, or for any alteration or addition to the breathing system, monitoring or accessories.

• The anaesthetist is responsible for these checks and must be satisfied that they have been carried out correctly. The anaesthetist may delegate this responsibility to a nominated individual who is competent to perform this role.

• Any device marked as single use must be used for one patient only and not reused.

• Qualified anaesthetic practitioners must be aware of the relative costs of the anaesthetic equipment and the need for reasonable economy in its preparation, use and maintenance.
Monitoring

- Monitoring devices must be attached before induction of anaesthesia and their use continued until the patient has recovered from the effects of anaesthesia.

- Information provided by monitoring devices should be recorded in the patient’s notes and/or electronically, if the recording system is electronic e.g. eMaxims

- The anaesthetist or nominated staff member must check monitoring equipment before used and ensure alarm limits are set accordingly.

- The following monitoring devices are essential to the safe conduct of general anaesthesia: -
  - Pulse Oximeter
  - Non-invasive blood pressure monitor
  - Electrocardiograph
  - Capnograph
  - Vapour analyser
  - Nerve stimulator (when muscle relaxant used)
  - Temperature monitoring
  - Inspiration Monitor

- The following monitoring devices are essential to the safe conduct of regional anaesthesia and the sedated patient: -
  - Pulse Oximeter
  - Non-invasive blood pressure monitor
  - Electrocardiograph

- A capnograph and inspiration monitor must be available in all settings where anaesthesia is provided.


- Standards of Monitoring - Addendum regarding non-invasive blood pressure monitors published April 2011.

- Standards of monitoring - addendum regarding the use of capnography outside the operating theatre published May 2011.

Infection control/clinical practice

- In order to ensure control of infection, it is essential to maintain a high standard of asepsis in the anaesthetic room at all times. Staff must apply and maintain this.

- A new bacterial/viral filter should be used for every patient.

- Manufacturing instructions must be adhered to for the reuse of breathing circuits.
• Disposable receptacles for anaesthetic equipment are recommended for each individual patient. Where non-disposable receptacles are used, it is essential that these can be autoclaved and processed accordingly for each patient.

• CV Catheters (CVC) Guidelines

• Epidural Insertion Guidelines

• Syringes and needles are sterile single use items. After entry or connection to a patient’s vascular system or attached infusion, a syringe should be considered contaminated and used only for that patient.

• A syringe should not be used for multiple patients even if the needle is changed.

• If syringes are prepared in advance of the procedure, they must be labeled, stored in a clean container, covered and ends protected e.g. sterile bungs or sterile needles. They must not be left exposed on work preparation surfaces.

• It is recommended that anaesthetic masks are for single patient use or are sterilised between patient use.

• Oral, naso-pharyngeal, tracheal tubes, bougies catheter mounts and laryngeal masks are for single patient use.

• Reusable laryngoscope blades should be decontaminated by the Sterile Services Department after patient use.

• Flexible laryngoscopes must be decontaminated by an automated system in accordance with manufacturer’s instructions and Medical Devices Agency guidelines (MHRA 2006).

• Standard precautions should be adopted as necessary for all procedures undertaken in the anaesthetic room.

• Infection Control in Anaesthesia 2009 AAGBI

Patient safeguards

• Qualified anaesthetic staff must be aware of potential hazards to patients and take all necessary precautions to prevent any untoward incidents related to environmental safety. Registered anaesthetic staff must be competent in identifying and minimising potential hazards to unconscious and sedated patients.

• Careful identification and checking procedures must be carried out with regard to each individual patient, the accompanying documentation and sites of operation. The checks must be conducted according to the Safe Surgery Saves Lives: WHO Checklist and Verification for Correct Site Surgery: -
  o When sending for the patient from the ward.
  o When the patient arrives in the operating department.
  o In the anaesthetic room prior to induction.
  o In the theatre prior to surgery.
• Patients must be supported at all times by a nominated staff member when awaiting induction of anaesthesia.

• The anaesthetist must be present throughout the conduct of an anaesthetic.

• Standard procedures for the identification, storage, security and administration of drugs, intravenous fluids and blood products must be rigorously applied at all times by qualified anaesthetic staff, in line with local policies and procedures.
  o The Medicines Policy, Chapter 5: Standards of Practice: PREPARATION & ADMINISTRATION
  o Injectable Medicines Policy
  o Blood Transfusion

• The anaesthetist is responsible for the drugs he/she administers. Drugs may only be drawn up by the person administering the medicine. Drugs should be placed in a disposable receptacle and remain with the patient throughout the surgery prior to disposal at the end of the procedure. The use of ANTT is recommended.

• During an emergency situation, qualified anaesthetic support staff may be required to administer medicines for intravenous use. This should be done only under the direct supervision of a qualified medical practitioner.

• In situations where a critical incident occurs such as an unexpected death, all anaesthetic equipment, drug syringes and ampoules should be kept, and moved to a secure room for investigation. An accurate record should be made of all checks undertaken including time and date of inspection. All disposable equipment including syringes and ampoules, airway devices should be kept in a secure box as further investigation may be required by a medical equipment maintenance personnel, manufacturers and toxicologists.

Compliance: 100%

Exceptions: None

Reference:

AfPP/HPC Guidelines
**Anaesthetic Theatre Standard No 12 - Immediate life support**

**Standard Statement:** All staff able to identify the need for and perform Immediate Life Support

**Method:**

- Ensure all relevant staff attend the ILS course
- Ensure the need for immediate life support is identified correctly
- Ensure medical assistance is summoned immediately
- Ensure the patients airway is established and maintained
- Ensure the patient is placed in a position which facilitates Immediate Life Support
- Ensure external cardiac compression and ventilation of the lungs are performed correctly
- Ensure the patients physiological parameters are monitored appropriately and any variations or abnormalities are reported immediately to the clinician
- Ensure a detailed log of events are recorded accurately in the patient’s medical and nursing notes
- Universal precautions for infection control are applied correctly

**Compliance:** 100%

**Exceptions:** None

**Reference:**

AfPP/HPC Guidelines

Royal College of Anaesthetists

RCHT Resuscitation Policy
Anaesthetic Theatre Standard No 13 - Position patients safely for clinical procedures

Standard Statement: Theatre staff will ensure that all patients are positioned safely in accordance with the proposed surgical procedure and clinicians requirements

1. Preoperative assessment of individual patient needs

- The clinical history of each patient should be known before any positioning takes place thus allowing individual considerations to be given to:
  - The physical condition of the patient, including age, height and weight, skin condition and integrity, nutritional status, pre-existing conditions, physical mobility impairments (prosthesis, implants, range of motion) and pressure ulcer risk score.
  - Patient tolerance to the planned position, including the type of anaesthesia and the length of the surgery.
  - The nature of surgical intervention.

- A risk assessment for all positioning should be undertaken and understood by all members of the multidisciplinary team.

- Careful consideration is required when positioning patients with physical abnormalities.

- It is essential that sufficient members of staff are made available to ensure the safe positioning of individual patients. An inadequate number of personnel can result in patient injury and also may put the employee at risk of injury.

2. Patient Safeguards

- Prior to transfer the surgeon, anesthetist and anaesthetic assistant should be familiar with the operating table and should be happy that it is set up correctly.

- It is recommended that patients are anaesthetised prior to positioning to facilitate airway management.

- The team leader or scrub practitioner should check with the operating surgeon about the position and positioning equipment required.

- The patient’s correct body alignment must be maintained and their extremities and joints supported, when being moved, in order to minimise the risk of patient injury. Transfer on to the operating table should be coordinated, ensuring that no attachments such as catheters or intravenous drip tubing are caught up. Urinary catheters should be secured and positioned out of the way of the surgical field but available to the anaesthetist to monitor urine output. Urinary catheter bags must not be allowed to rest on the floor.
• There must be one person in charge of the transfer, usually the anaesthetist. Transfer should begin on a pre-agreed count or by saying ‘ready, steady, move’.

• Care must be taken at all times during the positioning procedure to avoid friction burns, damage to soft tissues, damage to the eyes from extra-ocular pressure and corneal abrasions, pressure on the ears and nerve damage.

• The required equipment should be in the operating theatre prior to the commencement of patient positioning.

• Transfer devices such as the Hover Mat, Pat Slide, Easy Slides should be used in order to reduce the load for theatre team members.

• The operating table and accessories must be used in accordance with manufacturer’s instructions.

• Anaesthetised patients must only be moved with the anaesthetist’s permission.

• The patient must be carefully positioned over the operating table ‘breaks’ prior to the adjustment of the table.

• The patient must not come into contact with any metal part of the operating table in order to reduce the risk of diathermy burns.

• Correct and appropriate padding must be used to protect the patient’s blood vessels, nerves and bony prominences from pressure. Local pressure on the globe of the eye must be avoided at all times as raised pressure or globe injury can result in retinal ischaemia or blindness.

• Corneas must be protected by keeping the eyelids closed, whilst continuously ensuring that there is no inadvertent pressure being applied to the eye, via the anaesthetist’s selected method. The practice of using tape is not recommended, with the exception of securing an eye pad, or suitable alternative.

• Patient’s limbs, joints and spinal lordoses must be supported with appropriate equipment in order to reduce the risk of perioperative damage.

• At all times the patient’s anatomical position must be maintained in order to prevent injury from hyperextension of joints.

• Preventative measures must be taken to reduce the risk of venostasis.

• The patient should not be unduly exposed during positioning, to avoid heat loss and to maintain patient dignity.

• Members of the scrub team must avoid leaning against the patient’s body or limbs at all times in order to prevent injury to the patient.
• The surgeon should be comfortable during the surgery. The operating table should be at the correct height for the surgeon when standing or low enough if operating sitting down.

• Procedures longer than two or three hours significantly increase the risk for pressure ulcer formation.

• A DVT risk assessment must be undertaken to reduce the risk of thromboembolism, ischaemia or compartment syndrome must be taken for each individual patient. In such situations it may be recommended that mechanical DVT prophylaxis is employed e.g. Flotron Boots. Particularly applicable to patient’s with their legs raised or compressed by the surgical position such as Lloyd-Davies stirrups.

• Compression stockings or pneumatic compression pumps must be used as per the protocol for VTE, thromboembolic prophylaxis.

• The condition of the patient’s skin should also be checked following surgery and any changes in condition documented and action taken as required.

• The operating table must be adjusted gradually to allow the anaesthetist to monitor the patient’s blood pressure throughout the manoeuvre.

3. **Specific considerations for individual positions**

Dorsal recumbent

• Positioned in the supine position.

• Arms should be positioned by their side and tucked in carefully to ensure they are not under any pressure. One arm may be abducted but adequately supported to improve venous access.

• Elbows should be protected with pressure relieving devices to prevent ulnar nerve injury.

• Ankles should be adequately supported.

Lithotomy position

• End of the table is removed.

• Patient is moved to the lower end of the table with the legs supported by an assistant.

• Anterior superior iliac spine should be positioned at the level of the break of the table. Care should be taken to avoid overhanging buttocks at the end of the operating table. The lower back should be supported to maintain normal lumbar lordosis.

• Flexion of the knees and hips to more than 90 degrees should be avoided to protect the sciatic, femoral and obturator nerves.

• Legs are held before being placed in the stirrups.
• The legs are placed outside of the lithotomy poles to avoid pressure on the common peroneal nerve.

• The patient’s hands should be comfortably protected to avoid injury when the operating table is adjusted. Arms should be kept away from the chest to facilitate respiration.

• Arms should be positioned on armboards at less than 90 degrees or over the abdomen.

• Stirrups should be placed at an even height.

• Lateral or posterior knees and ankles should be padded to prevent pressure and contact with a metal surface.

• At the beginning and end of surgery the patient’s legs must be moved simultaneously and with care to prevent pelvic injury and sudden hypotension.

• Pedal pulses should be checked and calves massaged.

**Lloyd-Davies position:**

• Special precautions are required to adequately support the calves in order to protect the common peroneal nerve in the lower leg.

• The patient’s hands should be adequately protected by padding and tucked in carefully into the body so as not to be touching any table attachments.

**Prone position:**

• Cervical neck alignment must be maintained.

• A reinforced tracheal tube is recommended and should be well secured.

• A Montreal Mattress and armboards must be used to support the torso and arms.

• Staffing of the theatre should be appropriate to allow for the patient to be rolled safely.

• Manual handling equipment must be sourced to facilitate the manoeuvre, e.g. slide sheet/hover mattress.

• The position of the tube should be checked after turning the patient.

• The forehead, eyes and chin must be adequately protected. The neck should be protected from hyperextension and excessive rotation. The face should be protected evenly on a cushioned horseshoe support and appropriate single use support, taking care to avoid pressure on the eyes.

• Breasts and male genitalia must be free from torsion or excessive pressure.

• Legs should be padded with a pillow, from the knees to the feet.

• Spinal alignment must be maintained during turning.

• The arm should be moved simultaneously and symmetrically. Abduction or flexion to more than 90 degrees should be avoided.
Jack Knife position:
- Staffing of the operating theatre should be appropriate to allow for the patient to be rolled. It is recommended that at least four people are used to perform the transfer in addition to the anaesthetist (Servant and Purkiss 2002).
- Manual handling equipment must be sourced to facilitate the manoeuvre, e.g. slide sheet.
- Pillows should be used to support the body and reduce pressure on the pelvis, spine, neck and abdomen.
- The head should be turned to one side to ensure access to the airway.
- The hands and arms should be supported by arm boards, to keep the patient in the required surgical position and to avoid slipping, operating table restraints should be used.

Lateral position:
- Spinal alignment must be maintained during turning.
- A padded restraint should be placed around the operating table and pelvis to secure the patient.

Supine position:
- The hips and spinal column must be in alignment, with legs parallel and ankles uncrossed.
- The head should be positioned in a neutral position.
- Arm boards should be placed at less than 90 degrees. Abduction of the arm above 90 degrees can result in brachial plexus injury and ulna nerve palsy.
- Pregnant patients may become hypotensive in the supine position as a result of pressure on the inferior vena cava from the pregnant uterus. A 20 degree left sided tilt will help to relieve the pressure.
- Traction tables may pose specific problems to patient positioning. Counter traction may be provided by a perineal post. The post should be well padded and should rest against the pubic rami on the operative side. It should not press against the external genitalia or the pudendal nerve.

Trendelenberg (head down) position:
- A non-slip mattress should be used to prevent the patient from moving.
- Most head down positions are limited to a maximum of 20 degrees.
- In patients with a head injury the head down tilt must be limited to the absolute minimum.

Reverse Trendelenberg (head up) position:
- A tilt of 15-20 degrees is usually sufficient.
- The patient must be normo-volaemic and well-secured.
4. **Individual Positions**

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<td>Jack-knife</td>
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<td>Lateral</td>
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<td>Trendelenberg (head down)</td>
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<tr>
<td>Reverse Trendelenberg (head up)</td>
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</tbody>
</table>
5. **Equipment and Safeguards**

- The operating table and its accessories must be used in accordance with manufacturer’s instructions.
- The operating table and all related equipment should be checked for effective function, size and cleanliness before use.
- All controls, brakes and accessories on operating tables must be checked daily prior to use, in order to ensure that they are clean, in good repair and in working order. All accessories must be correctly and appropriately padded to prevent injury to the patient.
- Table mattresses must be clean and inspected regularly for any damage.
- Any equipment which is damaged will compromise patient safety and infection control. It must therefore be immediately taken out of use and labelled for repair.
- Patient positioning devices should be available for each surgical position; the choice of the appropriate device should take into account cross infection and tissue viability issues.
- A record of regular servicing of the operating table under the planned preventative maintenance programme must be kept by the manager and made available for audit, in order to ensure optimal patient safety during surgical interventions.

6. **Documentation**

- Preop assessment of the patient’s positioning risk assessment and specific requirements should be recorded in the patient’s notes and communicated to the perioperative team at handover and briefing.
- The following information should been recorded in the patient’s notes/documentation record:
  - position
  - the type and location of positioning
  - pressure relieving devices used
  - the patient’s skin integrity before and after the procedure
  - the names of and designation of staff members positioning the patient
  - postoperative outcome

**Compliance:** 100%

**Exceptions:** None

**Reference:**

AfPP/HPC Guidelines

AAGBI
Anaesthetic Theatre Standard No 14 - Patient preparation prior to clinical procedures

Standard Statement: All staff ensure that the patient is adequately prepared for clinical procedures

Method:

- Ensure the patient is offered the appropriate information, support and reassurance in a sensitive manner
- Ensure the operative site (draping, skin preparation & hair removal) is prepared correctly and safety in a manner which optimises the patients dignity, comfort and safety
- Ensure that information is given to the patient in a way that facilitates their understanding and promotes confidence in the care team
- Ensure that all questions and concerns from the patient are answered clearly and appropriately by the relevant member of the team
- Ensure that all care provided to the patient take due account of their individual needs, expressed personal beliefs and views within the constraints of the setting and the planned procedure.
- Ensure that the patients operative site is identified correctly, marked and any uncertainties are clarified with the appropriate member of the theatre team prior to starting preparation
- Ensure all equipment and materials are selected and used correctly in a manner which minimises risk to all.
- Ensure that the patient is prepared in accordance with the requirements of the procedure, clinician and the assessed needs of the patient.
- Ensure all waste is disposed of correctly in accordance with the waste management policy

Compliance: 100%

Exceptions: None

Reference:

Trust Policy
AFPP / HPC Guidelines
Anaesthetic Theatre Standard No 15 - Handling of Patients with Body Piercing

Standard Statement: All staff ensure that patients with body piercings receive safe appropriate care

Method:

1. General considerations

   - Pieces of jewelry are often different in construction and content. Each patient must therefore be assessed accordingly with reference to the type of anaesthetic to be administered and the type of surgery to be performed.

   - Piercings are a form of self-expression and it is the responsibility of all perioperative staff not to criticise or pass judgment on this issue.

   - If it cannot be removed, then the jewelry must be taped, especially if the piercing is at risk of being caught or ripped out by ECG leads, surgical drapes, surgical instruments or towel clips.

   - The jewelry must be removed, or covered and secured with tape, if the piercing causes any risk of pressure. For example, chin or lip piercing may cause damage to soft tissue from the pressure of an anaesthetic mask, or nipple piercing may cause pressure if the patient is to lie prone.

   - The piercing must be removed if it is in close proximity to the surgical site or any other associated procedures (Faulkner, 1999).

   - If part of the piercing remains within the body tissue, antiseptic cover cannot be guaranteed, and the patient should be aware of this, through informed consent.

2. Tongue and lip piercing

   - All tongue and lip jewelry should be removed before general anaesthetic. Tongue barbells may cause an obstruction of the airway during induction and maintenance of general anaesthesia. Tongue labrets can contain a gemstone, which is at risk of falling out and entering the airway, as gemstones are only glued in. If the patient refuses to remove the piercing this should be documented in the patients notes. Informed consent needs to take place and should be checked prior to surgery.

   - **Tongue Barbells**: A barbell is used for body piercing and can come in a variety of sizes and shapes. It can also be made of different materials, although surgical stainless steel is the most common. A barbell is a rod with a ball on each end - one ball is permanently attached and the other screws on and off

   - **Tongue Labrets**: Usually has stud jewelry with a flat back. The flat part goes inside the mouth. A labret piercing can have the stud jewellery or a captive bead ring.
3. **Other body areas**

- Other areas of the body where jewelry and piercing must be removed include the nasal septum, nose or ear piercing for ENT surgery.

- Navel piercing should be removed for laparoscopic surgery. This can be achieved by pushing the ball out to remove the ring.

- Genital piercing does not have to be removed if the surgical procedure is elsewhere on the body.

- Male genital piercing: Penile piercing can be pulled to one side if the patient requires a urinary catheter and therefore does not need to be removed.

- Female genital piercing: The site of the piercing should be assessed for surgical access and removed if it is likely to hinder the type of surgery to be performed.

- If there are signs of infected inflammation around the piercing site the jewelry should be removed as it is a focus for infection and may require appropriate treatment before surgery takes place.

4. **Security**

- If a body piercing is removed while in the operating theatre it must be placed in a cash and valuables bag and held in a secure place as per local policy. The cash and valuables bag should be checked and witnessed by two practitioners and given to the General Office or if out of hours, the cash and valuables bag should be placed in the local safe as per Patients property policy.

- Jewelry must not be taped to the patient’s clothing or kept within the department when the patient has returned to the ward area.

5. **Body Piercing Remaining in situ**

- The site and type of body piercing should be documented on the perioperative checklist by the ward staff and on the theatre perioperative care plan by the theatre practitioner checking the patient into theatre as part of the WHO Surgical Safety Checklist.

- Depending on the location of the piercing, a check must be made postoperatively to ensure that the body piercing is still in situ and is documented as such on the anaesthetic chart and the theatre care plan.

- The electrical conductivity of jewellery poses no significant increase in alternative site burns (i.e.: those away from the return electrode in monopolar electrosurgery). The patient’s rights must therefore be taken into consideration if they do not wish to remove the body piercing.

**Compliance:** 100%

**Exceptions:** None

**Reference:**

AfPP/HPC Guidelines

Royal College of Anaesthetists
Anaesthetic Theatre Standard No 17 – Collecting and Receiving patients for Clinical Procedures

Standard Statement: Appropriately receive patients for clinical procedures, maintaining patient safety, dignity and confidentiality

Method:

Ward to theatre transfer.

Overriding principles

- All patients will receive care in a safe environment, be treated with dignity, respect and in a way that makes them feel valued at all times.
- The patient will be treated courteously and helpfully at all times
- The patient will be kept informed and reassured at all times
- The patient should have sufficient covers available to prevent undue loss of body heat.
- Trolley/bedrails should be elevated and secured safely during transportation, taking care to contain IV lines and necessary equipment.

Collecting the Patient

- The staff member collecting/escorting the patient to the theatre should be competent to do so. The ward team leader is responsible for the appropriateness of such delegation and must be sure that the patient’s underlying condition, including level of consciousness, has been adequately assessed.
- If the ward team leader does not have a suitable person to escort the patient, the theatre coordinator should be contacted as soon as possible in order for an appropriate member of the theatre team to collect the patient from the ward area.

Preparing to Collect

- Verbally confirms with the person sending, the name of the next patient and the type of bed/trolley required for surgery.
- Selects correct sending slip and cross-references with operating list.
- Bed status confirmed for patient.
- Checks the correct trolley, to receive the patient, is in the anaesthetic room.

Leaving Theatre

- Informs Recovery staff the next patient is being sent for and therefore the last patient is nearing end of surgery.
- Informs Receptionist which patient they are collecting.
- Time entered on Galaxy +10 minutes expected time.
• **Arrival on Ward**
  o Presents self to the nurse looking after the patient and identify if the patient is ready to come to theatre and if not, inform theatre team of the reason for delay.

• **With Ward Nurse**
  o Goes with the nurse to the patient, and wait while they perform their final checks.
  o Receives a formal handover of the patient from the nurse which should include but is not limited to:
    ❖ Patient name, with patients identifying themselves, checked against an identity band.
    ❖ Correct documentation of weight
    ❖ Allergies
    ❖ Procedure, and site or side if appropriate
    ❖ Site marking if relevant
    ❖ Fasting status
    ❖ Relevant clinical features, e.g. blood sugar for diabetic patients
    ❖ An appropriate patient record.
    ❖ A properly completed consent form.

• **Leaving Ward**
  o Ensure patient only brings slippers, dressing gown and a labelled ‘hospital property’ bag. Also a pillow.

• **Arriving in Theatre**
  o Arriving at reception leave two patient stickers with Receptionist (only if bed is required for recovery)
  o Take the patient straight to the anaesthetic room, (or recovery trolley if 1st patient)

• **Arriving in Anaesthetic Room**
  o Enter time on Galaxy
  o Stay with the patient and apply vital signs monitoring (if competent to do so)

**Transfer**
• The staff person moving the transportation device should be positioned at the patient’s head in order to look forward for potential hazards. This also allows immediate access to the patient’s airway in case of respiratory distress or vomiting.
• The patient should never be left unattended during the transportation process for safety purposes and to lessen their anxiety.
• During transportation, the patient should be monitored for signs of physical or emotional distress.

• The trolley/bed should be pushed feet first to prevent disorientation of the patient.

• If using a lift the head end of the trolley/bed should enter first to avoid having the patient’s head too close to the opening and closing of the lift doors.

• On entering and leaving the lift, the doors should be ‘held open’ by the push button, to prevent inadvertent closure on the trolley/bed.

Arrival to Theatre Suite
• The person responsible for the holding area will greet the patient and introduce themselves, explaining what will happen next.

• A check will take place to ensure:
  o ‘Positive identification’ of the patient
  o The correct patient according to Galaxy/theatre has arrived

• The anaesthetic practitioner will be informed the patient has arrived, will either collect the patient, or ask for the patient be transferred to the anaesthetic room.

• The Anaesthetic Practitioner is responsible for entering the patient’s details into Galaxy and the Theatre Register.

Arrival Anaesthetic Room
• The anaesthetic staff will introduce themselves to the patient and explain the next part of the process.

• The receiving practitioner will check:
  o The patients identity by verifying with the patient verbally and against the patient’s identity band.
  o The pre-op checklist medical notes, essential nursing notes including tissue viability assessment and prescription chart, consent form, patient labels are available. This should include relevant imaging studies, ECGs and blood results, have arrived.
  o Go through and check/confirm the information on the pre-op checklist is accurate and complete, including documentation of weight and fasting status. Where feasible, the patient (and/or parent, guardian, carer or birth partner) should be included.
  o Check if the patient has an allergy by medical notes and verbally if possible.
- Inspect and check that the intended site for surgery has been marked with an arrow using an indelible pen and corresponds with the patients supporting documentation.

- Ensure the consent form has been completed correctly, has been signed by the patient and that the patient is aware of the procedure to be carried out.

- If there are any omissions, discrepancies or uncertainties identified, these must be resolved before the next stage of the patient pathway, i.e. ‘Sign In’. On rare occasions, the immediate urgency of a procedure may mean that the handover may have to be completed without full resolution of any omissions, discrepancies or uncertainties.

- The patient must not be left unattended at any time.

- The WHO Surgical Safety Checklist ‘Sign In’ can be undertaken next.

**Additional recommendations for patients with other needs**

- If the patient has items that they wish to wear up until the point of anaesthesia, a check must be made to confirm they are present and have appropriate accompanying, labelled storage for return to the patient following surgery e.g. dentures/denture pot, hearing aid/hearing aid box or glasses/glasses box.

- **Interpretation and Translations services at RCHT** Valid From: 28/07/2010 - To: 01/11/2013

- Provision for patients with special requirements (eg special needs patients, disabled patients, and patients who have hearing or visual impairment.
  
  - Not available

- Provision for children on transfer from ward to theatre
  
  - Not available

Compliance: 100%

Exceptions: None

**Reference:**

AfPP/HPC Guidelines

Royal College of Anaesthetists
Anaesthetic Theatre Standard No 18 – Care of patients with Malignant Hyperpyrexia

Standard Statement: Anaesthetic assistants will provide competent and appropriate support to anaesthetists when managing this condition.

Method:

- At RCHT the Dantrolene is kept in a big PINK box in Recovery areas
- If MH is suspected the anaesthetic team should follow the AAGBI guidelines (next page)
- Malignant Hyperthermia Crisis Task Allocations 2011 AAGBI
- Malignant Hyperthermia Crisis Laminate 2011 AAGBI
- Recommended Contents of Malignant Hyperthermia Management Kit 2011 AAGBI
# Malignant Hyperthermia Crisis

**AAGBI Safety Guideline**

Successful management of malignant hyperthermia depends upon early diagnosis and treatment; onset can be within minutes of induction or may be insidious. The standard operating procedure below is intended to ease the burden of managing this rare but life threatening emergency.

## 1. Recognition
- Unexplained increase in ETCO₂ AND
- Unexplained tachycardia AND
- Unexplained increase in oxygen requirement
  (Previous uneventful anaesthesia does not rule out MH)
- Temperature changes are a late sign

## 2. Immediate management
- STOP all trigger agents
- CALL FOR HELP, Allocate specific tasks (action plan in MH kit)
- Install clean breathing system and HYPERVENTILATE with 100% O₂ high flow
- Maintain anaesthesia with intravenous agent
- ABANDON/FINISH surgery as soon as possible
- Muscle relaxation with non-depolarising neuromuscular blocking drug

## 3. Monitoring & treatment

**Give dantrolene**

**Initiate active cooling** avoiding vasconstriction

**TREAT:**
- **Hyperkalaemia:** calcium chloride, glucose/insulin, NaHCO₃
- **Arrhythmias:** magnesium/amiodarone/metoprolol
  AVOID calcium channel blockers - interaction with dantrolene
- **Metabolic acidosis:** hyperventilate, NaHCO₃
- **Myoglobinuria:** forced alkaline diuresis (mannitol/furosemide + NaHCO₃);
  may require renal replacement therapy later
- **DIC:** FFP, cryoprecipitate, platelets
- **Check plasma CK as soon as able**

### DANTROLENE
- 2.5mg/kg immediate iv bolus.
- Repeat 1mg/kg boluses as required to max 10mg/kg

**For a 70kg adult**
- **Initial bolus:** 9 vials dantrolene 20mg (each vial mixed with 60ml sterile water)
- Further boluses of 4 vials dantrolene 20mg repeated up to 7 times.

**Continuous monitoring**
- Core & peripheral temperature
- ETCO₂
- SpO₂
- ECG
- Invasive blood pressure
- CVP
- Repeated bloods
  - ABG
  - U&Es (potassium)
  - FBC (haematocrit/platelets)
- Coagulation

## 4. Follow-up
- Continue monitoring on ICU, repeat dantrolene as necessary
- Monitor for acute kidney injury and compartment syndrome
- Repeat CK
- Consider alternative diagnoses (sepsis, phaeochromocytoma, thyroid storm, myopathy)
- Counsel patient & family members
- Refer to MH unit (see contact details below)

The UK MH Investigation Unit, Academic Unit of Anaesthesia, Clinical Sciences Building, Leeds Teaching Hospitals NHS Trust, Leeds LS9 7TF. Direct line: 0113 206 5270. Fax: 0113 206 4140. Emergency Hotline: 07967 609601 (usually available outside office hours). Alternatively, contact Prof P Hopkins, Dr E Watkins or Dr P Gupta through hospital switchboard: 0113 243 3144.

**Your nearest MH is stored**

This guideline is not a standard of medical care. The ultimate judgement with regard to a particular clinical procedure or treatment plan must be made by the clinician in the light of the clinical data presented and the diagnostic and treatment options available.

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Theatre Practice Standards - Anaesthetics

Malignant Hyperthermia Crisis Task Allocations

AAGBI Safety Guideline

The successful management of a malignant hyperthermia crisis requires multiple simultaneous treatment actions. This is made far easier through effective teamwork and specific task allocation.

1st anaesthetist - commence immediate management (on guideline sheet)
The anaesthetist diagnosing MH or the most senior anaesthetist responding should assume the role of clinical leader once immediate management actions have been undertaken and avoid becoming focused on a single task.

2nd anaesthetist - resuscitation
- Ensure dantrolene is given in correct dose (2.5mg/kg initially then 1mg/kg every 10-15min)
- Commence TIVA
- Management of hyperkalaemia
- Management of arrhythmias
- Management of acidosis
- Renal protection (forced alkaline diuresis)

1st anaesthetic nurse/ODP
- Collect MH kit
- Collect cold saline & insulin
- Set up lines (arterial/CVC)
- Runner for resuscitation drugs/equipment

2nd anaesthetic nurse/ODP (ideally two people)
- Draw up dantrolene as requested by anaesthetist in charge of resuscitation

3rd anaesthetist - lines/investigations
- Site arterial line
- Send bloods for
  - ABG – repeated (approx every 30 min initially)
  - U&Es
  - CK
  - F&G
  - Coagulation screen
  - Cross match
- Central venous access
- Urinary myoglobin
- Monitor core and peripheral temperatures

Surgical team
- Catheterise
- Complete/abandon surgery as soon as feasible
- Undertake cooling manoeuvres

Adapted from the Malignant Hyperthermia Australia and New Zealand (MHANZ) MH Resource Kit with permission
### Drug Reactions

#### MH Trigger Agents
- Depolarising muscle relaxants
- Volatile anaesthetic agents (e.g. halothane, isoflurane, enflurane, desflurane, sevoflurane)

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</table>

- If the patient is deemed susceptible to MH, a regional anaesthetic should be considered with close monitoring of vital signs. If general anaesthetic is essential, clear guidelines should be followed:
  - Obtain and use the ‘vapour free’ anaesthetic machine that has been provided expressly for this purpose.
  - If this anaesthetic machine is unavailable, it is recommended to change the soda lime and breathing circuit, drain and inactivate the vaporisers and flush the machine with 10 litres of air or oxygen for 10 minutes, before using the machine.
  - The patient should be first on the operating list and all necessary departments informed.
  - A crash trolley, Dantrolene and MH management guidelines should be immediately accessible
  - An anaesthetist should check creatine kinase and do a full blood count preoperatively
  - Post operatively, the anaesthetist should check Arterial Blood Gasses and Renal Function and monitor the patient in Recovery
Anaesthetic Theatre Standard No 19 - Temperature maintenance

Standard Statement: The patient’s temperature is maintained at the optimum level appropriate to the surgical and anaesthetic requirements

Method:

1. Maintaining Perioperative Normothermia
   - Every patient must be assessed for their risk on inadvertent perioperative hypothermia and potential adverse consequences before transfer to the operating theatre.
   - Patients should be managed as higher risk if any two of the following apply:
     - ASA grade II to V (the higher the grade, the greater the risk)
     - Preoperative temperature below 36.0°C (and preoperative warming is not possible because of clinical urgency)
     - Undergoing combined general and regional anaesthesia
     - Undergoing major or intermediate surgery at risk of cardiovascular complications
   - For total operative times less than 30 minutes, only higher risk patients should be actively warmed (RCA, 2006).
   - Patient temperature must be measured and recorded within the hour before transfer from the ward to the theatre.
   - Whilst waiting for surgery the patient should be encouraged to keep active (where appropriate considering their individual needs).
   - Where appropriate patients will walk to theatre, an activity that will assist in maintaining normothermia.
   - Patients must be adequately covered on the ward and during transfer to the operating theatres. This includes dressing gown and suitable footwear e.g. slippers.

2. Anaesthetic Care
   - The anaesthetic room must be kept warm during induction of anaesthesia and the patient should be kept free from draughts.
   - Patients must have their temperature measured and recorded before the administration of anaesthesia. This should be a tympanic measurement as skin temperature monitoring has limitations (NICE 2008).
   - Patients with a temperature below 36°C must be actively warmed and their temperature should be recorded every 15 minutes until normothermia has been established. Induction of anaesthesia must not begin unless the patient’s temperature is 36°C.
   - Intravenous fluids (500ml or more) and blood products must be warmed to 37°C using a fluid warming device fit for the purpose and used in accordance with manufacturer’s instructions.
Use of active warming on the operating table is recommended and should be considered for all surgical procedures involving general or regional anaesthesia with expected duration greater than 30 minutes (NICE 2008). They must be used in accordance with manufacturer’s instructions.

During procedures involving extensive body cavity exposure, consideration should be given to the use of under, upper, and lower body forced air-warming devices.

Time between prepping of the wound site and draping the patient must be limited.

3. **Intraoperative**

- Surgical drapes should be prevented from getting wet.
- The operating theatre ambient temperature must be maintained at 21 °C during the prepping and draping of the patient and at the end of the case. After the patient is draped and warming devices applied, the room temperature may be decreased for the comfort of the surgical team.
- The peritoneal cavity can be lavaged with warm fluids. Surgical irrigation fluids used for arthroscopy, cystoscopy and hysteroscopy should be warmed. Urology patients especially those undergoing transurethral resection of the prostate are at risk high of hypothermia and its consequences.
- All irrigation fluids must be warmed in a thermostatically controlled cabinet between 38 - 40°C.
- The patient must be suitably covered at all times in order to reduce exposure.
- Humidified moisture exchangers should be used for the administration of all volatile gases.

4. **Post-anaesthetic care**

- Blankets should be applied to the patient after the sterile drapes are removed.
- All patients should have a temperature measurement performed on arrival in the recovery unit.
- Forced air warming blankets should be used in the recovery unit, as these have been associated with increased patient comfort, better perfusion, and decreased incidence of shivering (Ciufio et al, 1995).
- If the patient’s core temperature is below 36 °C, apply forced air warming blankets.
- If the patient’s core temperature is below 35 °C, apply forced air warming blankets and monitor their ECG continuously.
- Transfer to the ward should not take place until the patient’s core temperature reaches 36°C.
- If the core body temperature remains below 35°C for longer than an hour the anaesthetist should be informed. Hypothermic patients should have hourly temperature measurements.
**Anaesthetic Theatre Standard No 20 - Patient transfer from bed to operating table**

**Standard Statement:** The patient is safely transferred to the operating table from bed or trolley under the instruction of the person at the head of the patient

**Method:**

- All members of staff had undertaken the mandatory manual handling training
- The operating table is correctly positioned with the brakes on, brakes also engaged on the bed/trolley
- Table attachments for positioning are available
- Appropriate moving aids are available and correctly used
- An appropriate number of staff are readily available for moving of patient, maximum load per person – 25kg, i.e. 75kg patient – 3 people, 80kg – 4 people
- The member of staff at the head of the patients must co-ordinate the movement
- The patient is supported in all areas during transfer
- Patients limbs are secured and protected from injury
- All monitoring equipment, iv infusion, catheters etc, are safeguarded
- A qualified member of staff must be present at all times
- Pressure care is given as appropriate
- The patients dignity is maintained throughout manoeuvre

**Compliance:** 100%

**Exceptions:** Patients size and injuries may dictate safe alternative movement and procedure

**Reference:**

AfPP/HPC Guidelines
Anaesthetic Theatre Standard No 21 - Transfer of patients from the operating theatre to the post anaesthetic care unit (PACU)

Standard Statement: Staff will ensure the safety and dignity of the patient during the transfer from theatre to PACU post operatively, and ensure full handover takes place

Method:

1. **Patient handover from theatre to the Post-Anaesthetic Care Unit / Recovery area**
   - Before transfer, the anaesthetist should be satisfied that the PACU/recovery area staff are competent and able to take responsibility for the patient.
   - Recovery practitioners must be competent in assessing the patient’s condition including: vital signs, advanced life support (AAGBI 2010), intravenous medicines administration, assessment of homeostasis, patient-controlled analgesia, epidural anaesthesia, sedation and the effective management of pain.
   - A member of the perioperative team should escort the patient with the anaesthetist.
   - Handovers should be both verbal and written and should be documented.
   - Surgeons/operators must participate in handovers in which the patient’s pathway has deviated from that planned and when patients are handed over to critical care teams after procedures.
   - Participation of the patient and / or representative (parent, guardian, carer or birth partner) should be encouraged when feasible.
   - During handovers only one person should speak at a time, and the conversation during the handover should relate only to the patient. Non-handover activities should cease during the handover. Each team member should be given the opportunity to ask questions and clarify information.

2. **Anaesthetist Handover to PACU Staff**
   - Patient's name and date of birth checked against identity band, and theatre they are being transferred from.
   - The ward the patient is scheduled to return to.
   - Planned and actual procedure(s) that was carried out with site and side if relevant, and surgical course including surgical complications and interventions to correct these.
   - The type of anaesthesia used, or combination of anaesthesia such as general anaesthetic, regional block, analgesia, anti-emetics.
   - The duration of anaesthetic and any complications, if appropriate and interventions to correct these.
   - Details of any local infiltration to the wound, including local anaesthetic agent, strength and dose administered.
   - Release times for analgesic filtration devices.
   - Release times for autologous blood collection devices (in particular where local anaesthetic infiltration has also occurred).
   - Post-operative plan of care for rectus sheath catheter boluses.
- Site and type of local block, drug used and total amount used, time of administration and anticipated duration of action, inspection of the insertion site.
- Patency of intravenous access
- Intraoperative temperature and any warming devices used
- Postoperative oxygen requirements in percentage and litre values and mode of delivery with appropriate drug prescription completed.
- Patient prescription documents.
- The Anaesthetic Chart.
- Intravenous fluid documents including blood products given with estimated losses, if appropriate.
- Intravenous pain relief given.
- Type of dressing, wound closure and drain (including the method used to secure and position) and any further information or instructions in relation to drains e.g. suction or not.
- Presence of stoma / urinary catheter.
- Any intentionally retained objects and plans for removal, if relevant.
- Confirmation that any throat pack has been removed.
- Any allergies.
- Whether there is a need for an interpreter, carer or parent to assist in patient care and the arrangements that are in place for contacting such individuals. Ideally this should be organised prior to the patient entering PACU.
- Whether the patient has any personal items such as dentures, spectacles or hearing aids that must accompany the patient on transfer.
- Any item of clothing that may have been removed, and details of whether the patient was told in advance that this would happen.
- Relevant medical history (e.g. the presence of a pacemaker).
- Any communication difficulties (e.g. hearing loss, or partially sighted).
- Skin condition and integrity or pressure areas.
- Position of diathermy plate, if relevant.
- Care plans e.g. urinary catheter, cannula, CVP etc.
- Any other information that is specific to the patient, including any patient safety incidents.
- Any specific security needs, such as a patient who is serving a custodial sentence.
- Release times for analgesic filtration devices.
- Release times for autologous blood collection devices (in particular where local anaesthetic infiltration has also occurred).
- Post-operative plan of care for rectus sheath catheter boluses.
• Site and type of local block, drug used and amount, time of administration and anticipated duration of action

• Intraoperative temperature and any warming devices used

• Postoperative oxygen requirements in percentage and litre values and mode of delivery with appropriate drug prescription completed.

• Recommendations for Standards for Monitoring during Anaesthesia and Recovery 2007 AAGBI
Anaesthetic Theatre Standards No 22 - Transfer of patients from theatre to ITU/HDU

Standard Statement: All patients requiring ITU/HDU postoperatively will be transferred safely and rapidly

Method:

- Once it is identified that the patient will require an ITU/HDU bed, the anaesthetist will ascertain its availability, and inform the ITU anaesthetist and staff of patients requirements
- The transfer will be discussed with the anaesthetist to allow accurate preparation
- The anaesthetic practitioner will liaise with ITU on the collection of the ITU bed, full monitoring unit and Oxygen cylinder, and organise the collection with a theatre orderly
- The anaesthetic practitioner will ensure the orderly returns the ward bed back to the correct ward, and that the ward is notified of the patients projected destination
- The anaesthetic Practitioner will ensure that the following accompany the patient to ITU
  - Ambu-bag
  - Emergency drugs
  - Additional intravenous fluid
  - Oxygen cylinder applicable to ambu-bag connection
  - Patient notes, x-rays and theatre document
- The anaesthetic practitioner and scrub practitioner will accompany the lead anaesthetist and the patient during the transfer to ITU
- A member of the theatre team will phone ITU/HDU to advise that transfer and arrival of the patient is imminent
- An orderly will be directed to call for and hold a lift to facilitate as rapid a transfer as possible
- The patients physiological parameters will be monitored closely during the transfer and any deviation remedied immediately
- On arrival to ITU the ITU staff will ascertain which entrance is the most appropriate for the available bed space and direct the transfer team accordingly
- Once the anaesthetic handover has been completed and the patient is settled, the accompanying theatre members will ensure all relevant patient care details are handed over, and the theatre care plan is signed
- Confirmation from the ITU practitioner is essential prior to leaving
- The anaesthetic practitioner and theatre team member will ensure that all theatre equipment used during the transfer is returned to the operating department

Compliance – 100%
Exceptions – None

References:
Southampton University Hospital ODP level 3 Standards
Transfer patients to PACU Standard No 22
Patient dignity and safety Standard
AODP/HPC Guidelines
Anaesthetic Theatre Standard No 23 - Venous & central venous cannulation

Standard Statement: Safely assist in venous and central venous cannulation during clinical procedures for both adult and paediatric patients

Method:

- Ensure the patient is offered appropriate information, support and reassurance in a sensitive manner
- Ensure the care provided to the patient is consistent with their individual needs, plan of care & expressed personal beliefs, & preferences, within the constraints of the setting and the clinical procedure
- Ensure that the required materials & equipment are made available & ready for use before the venous and CVP cannulation procedure is started
- Ensure the specified cannulation site is prepared & cleaned effectively, and in a way which optimises the patients comfort, dignity & safety and that the site is prepared to provide optimal conditions to facilitate cannulation
- Ensure the cannula/line is secured adequately & safely, to facilitate access and minimise patient discomfort
- Ensure the transducer line is clearly labelled and identifiable as an venous and central venous line
- Ensure universal precautions for infection control are applied correctly and that waste & sharps are disposed of safely in the correct manner

Compliance – 100%

Exceptions – None

Reference:

Southampton University Hospital ODP level 3 Standards
Paediatric Standards (PACU)
Manufacturer’s guidelines for setting up transducers
AODP/HPC Guidelines
Anaesthetic Theatre Standard No 24 - Maintenance of medical gas supplies within theatres

Standards Statement: All staff will safely monitor & maintain medical gas supplies within the operating department

Method:

- All staff dealing with medical gases must have undergone the appropriate training and be competent in their use
- Ensure cylinders both on anaesthetic machines and for transporting patients to recovery are correctly identified & confirmed as being at the correct temperature before use
- Ensure cylinders are handled correctly & safely with minimum risk to self, others & cylinders
- Ensure gas supply connectors are attached safely and correctly to anaesthetic machines
- Ensure that cylinders are stored safely in the designated racks and ensure that full & empty cylinders are stored separately from each other & are clearly identifiable
- Ensure the pipeline, valves and connectors are checked to be in good condition
- Ensure that the integrity and pressures of the pipeline system and cylinders are monitored effectively and the appropriate action taken if faults occur (refer to policy)

Compliance 100%

Exceptions None

Reference:

Southampton University Hospital ODP level 3 Standards

AODP/HPC Guidelines
Anaesthetic Theatre Standards No 25 - Intraoperative Cell Salvage (ICS) - Quality Assurance

Standard Statement: All staff to be competency trained in the preparation and use of the Trust’s ICS Machines, ensuring ICS is used in a safe and effective manner. While supporting Quality Control sampling of the reinfused end product.

Method:

- All staff involved in the use of ICS e.g. anaesthetic, recovery, will have completed the required training on the preparation and use of the ICS machine, and deemed competent by the ICS trainer
- ICS training will delivered by the PBM team
- The use of the Cell Saver will be highlighted to the anaesthetic manager in advance of the following weeks booked surgery by the Patient Blood Management (PBM) team. In the emergency situation ICS will be offered in consultation with the lead anaesthetic/operating clinician.
- Staff must ensure that the patient’s rights, choices and wishes are maintained throughout the use of the Cell Saver Machine
- Use of the Cell Saver must be in conjunction with the written standards
- The required equipment and materials will be collected from the designated storage area in each theatre suite.
- Universal precautions will be applied throughout

This anaesthetic theatre standard for the preparation and use of the ICS machine is intended to aid in its use, and is not in place of approved training sessions that must be completed before using ICS.

Intraoperative Cell Salvage Set Up

Consumables required for ICS Collection

- Cell saver machine
- Hard shell reservoir
- Anticoagulation and Aspiration set
- Prepare anticoagulant fluid – 30,000 i.u. Heparin in 1000 mls of 0.9% Normal Saline
- Suction tubing to connect to the suction unit and reservoir

Consumables required for ICS processing

- High speed processing bowl (appropriate bowl size)
- Sodium chloride 0.9% 1000 mls x 2

Preparing the ICS collection system

- Seat the hard shell reservoir into the appropriate holder on cell saver machine
- Close the clamp
• Hang the anticoagulant fluid on the IV pole
• Attach the suction tubing to the suction port on the reservoir, while ensuring the other end is attached to the suction apparatus
• Set the suction level at 80 – 120 mmHg
• The scrub nurse will have the aspiration and anticoagulation line as part of her case set up
• Ask the scrub practitioner to pass out the double end aspiration and anticoagulation line, from the sterile field, attach the aspiration set to the hard shell, turn the roller clamp off and aseptically spike the anticoagulant bag
• Turn the suction on
• Open the roller clamp to prime the line and fill reservoir with 100 – 150 ml of the anticoagulant ensuring the filter in the reservoir is soaked through
• Adjust the roller clamp on the anticoagulation line to an approx. rate of 1 drip per second (this may be increased at times of high blood loss)

**When to Process?**

There is no hard and fast rule that says when to process the salvaged blood, the decision to process is normally born out of experience.

An indication to process or not may be if the patient has bled more than 500 mls, but again is subject to factors, but may support your decision to process or not.

**Setting up the ICS Processing Kit**

**Note**

All ICS consumables are sterile and therefore good aseptic technique must be employed at all times when setting up and disposing of the consumables

**Finger marks on the consumables and sensors can affect how the machine behaves, therefore gloves are advised when setting up the system.**

• Plug in the cell saver machine, turn the power on & wait for the self-test to be completed
• Chose the appropriately sized processing bowl
• Seat the processing bowl into the chuck (try to avoid finger marks on the bowl), and seat the relevant tubes into the manifold
• Hang waste bag onto the front of the machine and ensure the drain port is closed
• Hang the 0.9 Normal Saline 1000 mls x2 on the IV pole
• Hang the reinfusion bag on IV pole (closing the outlet clamps on the reinfusion bag)
• **Ensure the blood bag for re-infusion is labelled correctly, legibly and accurately, detailing the patients name, hospital number, date of collection time of collection and expiry time (labels supplied with disposable kit)**
Attach the appropriate tube to the reservoir, ensuring the clamp is open

Spike the two sodium chloride bags with the double ended line, unclamp lines

**Inspect & Finish**

- Inspect all parts of the disposable for twists, kinks or flat spots and check that all appropriate clamps and covers are closed
- Press start once the system is properly loaded & checked
- The system will then enter standby mode and be ready to start processing

**Reinfusing of Salvaged Blood**

- Blood for reinfusion should be reinfused within 6 hours from the time of initial collection
- Do not use a pressure bag or level one pressure device with the cell saver, as this increases the risk of air infusion
- With the salvaged blood being depleted of clotting factors, FFP & platelets may be required. Therefore consultation with the lead anaesthetic clinician is essential procedures
- The use of blood from the cell saver **may** be contraindicated in the cases listed below, however you may be asked to run the cell saver in situations where it is contradicted, reinfusion of the product will be down to the anaesthetist or operating surgeon and the decision to reinfuse will be made by them and clearly documented in the patient notes.
  - Sepsis, Malignancy & Tumour cells (unless the leukocyte depletion filter set is used during re-infusion, liaise with lead clinician)
  - Amniotic fluid (unless the leukocyte depletion filter set is used during re-infusion, liaise with lead clinician)
  - Antibiotics not licensed for parenteral use
  - Betadine, hydrogen peroxide, sterile water & alcohol
  - Clotting adjuncts (microfibrillar collagen agent, topical thrombin)
  - Faecal contamination & Gastric fluids
  - Fibrin glue
  - Methylmethacrylate

**Monitoring Forms**

Whenever ICS is employed (collection or processing) then the appropriate, form **MUST** be completed by the user.

**Quality Control**

As part of a Quality Assurance program, testing of the salvaged product confirming the quality of the end reinfused product will form part of these standards once ratified.

Please make sure you keep yourself up to date with ICS training. Please contact the PBM team on ext 8079 for any issues regarding ICS.
Anaesthetic Theatre Standard No 26 - Care of children requiring an anaesthetic

Standard Statement: The anaesthetic room and operating theatre is appropriately prepared with all required equipment and materials, necessary to carry out the proposed anaesthetic techniques, there will be close liaison with the lead anaesthetic clinician, on the proposed plan of care

Method:

- All anaesthetic staff will have the required training, skills and knowledge, and will have been deemed competent in paediatric anaesthetic care
- All staff to have completed Safeguarding Children Level 2 training.
- Ensure that children where possible are scheduled into dedicated paediatric theatre lists. Where this is not possible they should be scheduled first onto adult operating list thus decreasing the amount of anxiety, hunger and fasting time and any risks of delay or cancellation

Prior to receiving a child into the anaesthetic room

- All routine anaesthetic equipment will be checked following written anaesthetic standards
- Ensure the correct materials and equipment are selected and prepared according to the clinical speciality, the type of anaesthesia given, the requirements of the operating list, and the child’s weight (a weight can be obtained by contacting the children’s ward prior to sending)
- Ensure that the ward staff have applied a local anaesthetic cream to the child’s dorsum of hands and ante-cubital fossa at least half an hour before coming to theatre
- Ensure that the necessary volatile agents and anaesthetic drugs, to perform either drug or gas inductions, are easily accessible
- Ensure that the operating theatre temperature is adjusted accordingly, ensure that a bear hugger & fluid warmer is available for the child during surgery, always cover the child’s head where possible
- Ensure all materials and equipment are prepared in the appropriate manner and time, according to the patients clinical status (elective and emergency)
- Ensure all equipment is checked and confirmed as safe, ready for use & is functioning correctly

Ensure the location and availability of the following

- Emergency Paediatric Airway Management Trolley
- Defibrillator and paediatric paddles
- Paediatric drugs and doses handbook
- Paediatric emergency drug box
- Intravenous fluids and paediatric giving sets ( burette)
- Penlon ventilator
- Paediatric circuits, reservoirs and spirometers, including an paediatric ambu-bag
- Paediatric oropharyngeal airways
• Ensure that the environment is as child friendly as possible prior to the child’s arrival, including the availability of distraction therapy books and toys, and that all excessive equipment has been removed

• One carer accompanied by the ward nurse may remain in the anaesthetic room until such a time when the child’s anaesthetic begins, as soon as the child becomes unconscious the ward nurse and accompanying carer must leave the anaesthetic room without delay, and exit the theatre department immediately via the quickest route

• The anaesthetic room and surrounding areas must remain quiet and calm, all staff in the immediate surrounding must be informed that a child & carer are present in the department

• Ensure a full introduction of the anaesthetic team to both child and carer are completed

• Ensure identification of any language or learning difficulties that the child may have

• Ensure the developmental age of the child is taken into consideration, ensuring as far as possible that the child fully understands what will happen to them during their stay

• The child’s details must be checked, following the written standards ensuring that the correct consent form is signed by the appropriate legal guardian

• Entry through the anaesthetic room during the induction of anaesthesia must be kept to a minimum

• Ensure that a chair is available for the carer in the anaesthetic room, to make the child’s hand more accessible for the insertion a cannula

• Ensure that both child and carer are offered the appropriate information, support and reassurance in a sensitive manner throughout

• Ensure that the care provided to the child is consistent with their individual needs, plan of care, expressed personal beliefs & preferences within the constraints of the setting and the clinical procedure

• Ensure that the child is never left alone whether awake or anaesthetised at any time

• Ensure that any electrosurgical return plates are of the appropriate size and applied correctly

Compliance 100%
Exceptions None

Reference:
AfPP/HPC Standards
AAGBI
Anaesthetic Standard No 27 - Tourniquet application.

**Standard Statement:** All staff will ensure that tourniquets are applied safely and securely without risk of injury or damage to the patient or staff.

**Method:**

- All staff required to apply and monitor tourniquets will be trained appropriately and assessed as competent before carrying out this task unsupported.
- All staff applying tourniquets must be conversant with the equipment and the manufacturers guidelines regarding maintenance and checking of the equipment.
  - All pipes, tourniquets and connectors must be in good working order.
  - There should be 2 x 12” cuffs, 2 x 24” cuffs and 2 x 34” cuffs.
  - The connection of the machine to the compressed air outlet should be checked.
  - The controls should be set to 150mmHg, and each cuff connected and inflated to check for leaks. Ensure the cuff is tightly wrapped prior to inflating.
  - The Rhys-Davies exsanguinator should measure 18” in diameter, if not inflate or deflate appropriately.
  - Any damaged or leaking equipment must be removed from service, reported to the Theatre Manager and sent for repair.
- It remains a surgical decision whether to use a tourniquet, always ask, never assume.
- All tourniquets must be applied as far up the limb as possible, checking for pre-existing skin damage in the area.
- The upper part of the limb must be wrapped with sufficient padding to prevent skin damage.
- The appropriate sized tourniquet should be selected allowing sufficient overlap when wrapped around the limb.
- The tourniquet must be wrapped firmly over the padding ensuring no skin folds or genitalia are trapped.
- The pressure on the control box should be set to 100mmHg above the patient’s systolic blood pressure for arm tourniquets and 150mmHg above for leg tourniquets. Always check the inflation pressure with the surgeon prior to inflation, and confirm the pressure achieved once inflation has taken place.
- Always ask the surgeon regarding pressures if tourniquets are to be used on children.
- Check that the surgeon is ready to start before inflating the tourniquet in order to minimise the time the tourniquet remains inflated.
- A clean plastic bag should be placed over the limb to be exsanguinated.

**Exsanguination may be by use of the Rhys Davies exsanguinator or elevation.**

- To use the Rhys Davies exsanguinator, roll the exanguinator up your own arm first and grasp the patient’s foot or hand, ensuring all the patient’s digits are lying flat in your palm. Then roll the exanguinator down your arm and over the patients limb in one movement. Holding the Rhys Davies
Exsanguinator as far up the limb as possible, turn on the tourniquet machine, wait until the required pressure is achieved before releasing the exsanguinator.

When elevating a limb to exsanguinate, the limb should be held upwards as vertically as possible to aid blood return. Gentle massage may also be used to assist exsanguinations, in the direction of the heart, depending on the skin condition. Elevation should continue for a minimum of 5 minutes before the cuff is elevated.

* Once the tourniquet has been inflated, the time must be noted and recorded in the theatre register and on the theatre database. The stop clock in theatre may be used as a secondary reminder, if there is no counter on the tourniquet machine, and the inflation time should also be clearly recorded on the dry-wipe board in theatre.

* The surgeon must be informed of the duration of the tourniquet at regular intervals, the first reminder at 60 minutes, then at 90 minutes, then every 15 minutes thereafter.

* It is the surgeon’s decision how long the cuff may remain inflated. If required a cuff may be re-inflated providing at least 10mins has elapsed to allow sufficient perfusion of the limb.

* The anaesthetist must always be informed prior to the tourniquet being deflated as there may be a drop in blood pressure as perfusion of the limb occurs. Also waste products such as CO2 and lactic acid build up in the tourniqued limb, which are then released into the circulatory system.

* If bi-lateral cuffs are used, each cuff must be deflated separately allowing sufficient time for the blood pressure to stabilise before deflating the second.

* After deflation the tourniquet and padding must be removed immediately to prevent venous congestion and arterial stasis.

* The skin condition must be assessed following removal and the limb assessed for full perfusion prior to the patient being transferred to PACU. Any doubt about the quality of capillary return in the digits must be reported immediately to the surgeon.

* The method of exsanguination, inflation, deflation and total tourniquet times must be recorded on the perioperative theatre database, and in the theatre register.

* Caution must be exercised in the use of tourniquets in patients with the following conditions;
  
  o Blood diseases e.g. sickle cell anaemia
  o Localised infection of the limb
  o Regional infections e.g. cellulitis
  o Peripheral vascular disease
  o Severe bone trauma
  o Soiled tourniquets must be washed with warm water and detergent and dried thoroughly.

Compliance: 100%

Exceptions: None

References:
AfPP Principles of Safe Practice in the Perioperative Environment 2012
Anaesthetic Theatre Standard No 28 - Use of Electro surgical Equipment.

Standard: Staff will ensure that all patients whose surgery requires the use of electro-surgical equipment, will be protected from the risk of burns.

Method:

- All personnel using diathermy equipment will receive the appropriate training and have been assessed as competent. They must be fully conversant with the safe use of the equipment and understand the principles of electro surgery.

- Diathermy machines will be checked prior to the start of every list, in accordance with the manufacturers guidelines.

- Yearly maintenance and testing of equipment must take place by EBMS to ensure its correct function, any faulty or damaged items must be removed from use immediately and reported for repair.

- Application of diathermy grounding plates is only done by competent practitioners in accordance with the manufacturer’s instructions, ie. Applied to a clean, dry, hair free, muscular area, as close to the operation site as possible, away from any pre-existing metal work in the patient.

- Diathermy return electrodes (grounding plates) must be kept clean and dry, and preventative measures taken to ensure the plate does not become soiled with skin preparation solutions or body fluids.

- The scrub practitioner must visually check diathermy forceps and leads prior to use, to confirm intact insulation and good connections between components.

- The scrub practitioner must keep the diathermy forceps/ blade etc. within a suitable insulated receptacle during surgery, to prevent accidental burns to the patient or members of the surgical team.

- All staff must be aware of any patient contraindication to the use of monopolar diathermy e.g. pacemaker, prior to commencement of surgery.

- Staff will be educated regarding the use of visor masks to prevent inhalation and eye contamination with diathermy plume.

- The diathermy machine must be switched off or set to standby before connecting or disconnecting live electrodes, and the surgeon informed of the power settings before commencing use.

- Single use return electrodes (grounding plates) must never be reused.

- The return electrode must be in direct and complete contact with the patient throughout their surgery. If the patient position is changed after application of the plate, the site must be rechecked.

- Patient skin condition must always be checked after removal of the grounding plate, and the site and skin condition recorded on the perioperative documentation.

- The patient must be shielded from metal objects to prevent a short circuit bypass of the grounding plate.
Compliance: 100%
Exceptions: None

Reference:
AfPP Principles of Safe Practice in the Perioperative Environment 2012
Anaesthetic Theatre Standard No 29 - Monitor, identify and report fluid and blood loss during the intra-operative period, to the lead anaesthetic clinician, to reduce the risks of hypo-volemic shock

Standard Statement: All staff to understand the importance of fluid balance, monitoring and identifying fluid and blood loss, and the necessary action to be taken when blood losses occur

Method:

- All staff to understand the importance of monitoring, identifying and reporting fluid and blood loss during surgery, in an overall aim in reducing the risks of hypovolemic shock
- All staff to ensure that there is consultation with the lead anaesthetic and surgical clinician regarding whether they require the swabs to be weighed throughout the procedure
- Ensure all staff are aware of average blood volumes and that blood losses of approximately one-fifth or more of the normal blood volume produces hypo-volemic shock, if left untreated or unreported
  - Average Blood Volumes
    - Age Blood Volume
      - Premature Neonates 95ml/kg
      - Full Term Neonates 85ml/kg
      - Infants 80ml/kg
      - Adult Men 75ml/kg
      - Adult Women 65ml/kg
- Example 1: ABV of a 75kg Adult Male
  - 75ml x 75kg = 5625ml ABV
  - Allowable blood loss = 5625ml/5 = 1125ml ABL
- Example 2: ABV of a 25kg infant
  - 80ml x 25kg = 2000ml ABV
  - Allowable blood loss = 2000ml/5 = 400ml ABL
- All staff to ensure that blood loss is monitored and reported immediately intraoperatively.
- It is the scrub nurses responsibility to ensure that blood soaked swabs are discarded into the non-sterile area for weighing as soon as five of the same size swab becomes available
• Swabs must be weighed in clear bags of five of the same size (e.g. 5 x SR, 5 x LR, 5 x Abdo packs) on designated scales, the weight of the dry swabs is then subtracted from the total weight, leaving an estimated blood loss from the swabs, the swabs should be weighed before they dry, because of the inaccuracies due to evaporation

• Suction must be carefully measured throughout the procedure

• An accurate record of the wash in mls that has been used must also be recorded to ensure an accurate measure of blood loss can be calculated

• All losses must be reported to the lead anaesthetic clinician continuously to ensure losses can be corrected immediately

• All losses must be documented accurately on the following:
  o The white board for all staff to view throughout the procedure (to be updated by the person weighing swabs and monitoring the suction)
  o On an estimated blood loss form
  o On the anaesthetic chart
  o Verbally to the lead clinicians as appropriate

Compliance: 100%

Exceptions: None

Reference:

Theatre standards
BMJ Advanced Paediatric Life Support 2nd Edition
NATN Guidelines
AODP/HPC Guidelines
Anaesthetic Theatre Standard No 30 - The use of surgical diathermy in patients with implantable pacemakers or implantable cardioverter defibrillators.

Standard Statement: All staff will be aware of the perioperative management of patients with an implantable pacemaker or implantable cardioverter defibrillator, where the use of surgical diathermy is anticipated.

Method

- When a patient is identified with an implantable pacemaker or implantable cardioverter defibrillator, it is the lead anaesthetist and surgeon’s responsibility to clearly document this in the patient’s notes and bring it to the attention of staff. They should contact the cardiologists to check the condition of the patient’s pacemaker or implantable cardioverter defibrillator.

- Manufacturers of implantable pacemakers or implantable cardioverter defibrillators either contra indicate the use of surgical diathermy or give strong warnings against its use. However if surgical diathermy is deemed essential, the use of bipolar surgical diathermy should be first considered, bearing in mind that this can also cause interference with pacemakers and implantable cardioverter defibrillators.

- If the lead anaesthetist and surgeon decide that the use of monopolar diathermy is unavoidable, they must clearly document this in the patient’s notes.

- During surgery, cardio pulmonary resuscitation, temporary external pacing and external defibrillation equipment must be available.

- The patients physiological parameters must be monitored before the induction of anaesthesia and throughout surgery using an ECG monitor and pulse oximeter. An arterial line may also be required as an alternative method of detecting the patients pulse.

- Where a problem is identified with a pacemaker during surgery, the surgeon should be informed immediately and diathermy use must be discontinued or used intermittently.

- Where the use of monopolar diathermy is unavoidable:
  - The return electrode (diathermy plate) should be placed so that the current pathway between the diathermy electrode and return electrode is as far away from the patient’s pacemaker or implantable cardioverter defibrillator and leads as possible.
  - Its use should be limited to short bursts.
  - Whether monopolar or bipolar diathermy is used it is important that all cables attached to the diathermy machine are kept as far away as possible from the pacemaker or implantable cardioverter defibrillator site.
  - If patients have an implantable cardioverter defibrillator, the lead anaesthetist may decide to position a clinical magnet over the implant site to prevent inappropriate shock delivery, this may be secured to the patient for the duration of surgery using Micropore tape.
Compliance 100%
Exceptions None

References:
MHRA Perioperative management of patients with implantable pacemakers or implantable cardioverter defibrillators, where the use of surgical diathermy/electrocautery is anticipated (March 2006)

Supporting Anaesthetic Areas

Preassessment

Pre-Operative Assessment Guidelines
Clinical Guideline For Pre Op Assessment Clinics
Pre-operative Assessment and Patient Preparation - The role of the Anaesthetist

Preoperative Fasting

Pre-operative fasting guidelines for elective surgery
A Policy for Fasting Patients Who Require Anaesthesia or Intravenous Sedation
## Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Theatre Practice Standards - Anaesthetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>24 Feb 14</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>01 May 2017</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>01 May 2020</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Sue Preston, Senior Matron, Theatres</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 258188</td>
</tr>
<tr>
<td>Brief summary of contents</td>
<td>Defined clinical practice standards for anaesthetic practitioners</td>
</tr>
<tr>
<td>Suggested Keywords:</td>
<td>Anaesthetics Practice standards</td>
</tr>
<tr>
<td>Target Audience</td>
<td>RCHT</td>
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<tr>
<td>Executive Director responsible for Policy:</td>
<td>Medical Director</td>
</tr>
<tr>
<td>Date revised:</td>
<td>01 May 2020</td>
</tr>
<tr>
<td>This document replaces (exact title of previous version):</td>
<td></td>
</tr>
<tr>
<td>Approval route (names of committees)/consultation:</td>
<td>Divisional Governance Theatre Management Group</td>
</tr>
<tr>
<td>Divisional Manager confirming approval processes</td>
<td>Duncan Bliss</td>
</tr>
<tr>
<td>Name and Post Title of additional signatories</td>
<td>Sue Preston</td>
</tr>
<tr>
<td>Signature of Executive Director giving approval</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Publication Location (refer to Policy on Policies – Approvals and Ratification):</td>
<td>Internet &amp; Intranet ✓ Intranet Only</td>
</tr>
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<td>Clinical / Theatres</td>
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<td>Links to key external standards</td>
<td>Governance Team can advise</td>
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<td>Reference and Associated documents</td>
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<tr>
<td>Training Need Identified?</td>
<td>No – this document supersedes other practice policies and does not implement new practice</td>
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Version Control Table

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<th>Changes Made by (Name and Job Title)</th>
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<td>Initial Issue</td>
<td>Sue Preston, Senior Matron, Theatres</td>
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<tr>
<td>May 2017</td>
<td>V2</td>
<td>Compliance with Natsips</td>
<td>Cathy Edwards</td>
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This document is to be retained for 10 years from the date of expiry.

This document is only valid on the day of printing

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### Appendix 2. Initial Equality Impact Assessment Form

<table>
<thead>
<tr>
<th>Name of strategy / policy / proposal / service function to be assessed (hereafter referred to as policy) (Provide brief description): Theatre Practice Standards - Anaesthetics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directorate and service area:</strong> Clinical / Theatres</td>
</tr>
<tr>
<td>Name of individual completing assessment: Sue Preston, Senior Matron, Theatres</td>
</tr>
</tbody>
</table>

1. **Policy Aim***
   - Who is the strategy / policy / proposal / service function aimed at?
   - See para 1.

2. **Policy Objectives***
   - See para 1.4

3. **Policy – intended Outcomes***
   - Improved standards of care to all theatre patients.

4. **How will you measure the outcome?**
   - As per para 3 of this guideline.

5. **Who is intended to benefit from the policy?**
   - All patients admitted to theatre.

6a) Is consultation required with the workforce, equality groups, local interest groups etc. around this policy?
   - No

b) If yes, have these groups been consulted?

C). Please list any groups who have been consulted about this procedure.

#### 7. The Impact

Please complete the following table.

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Rationale for Assessment / Existing Evidence</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
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</table>

*Theatre Practice Standards - Anaesthetics*
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong>  (male, female, transgender / gender reassignment)</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Race / Ethnic communities / groups</strong></td>
<td>✓</td>
</tr>
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</table>
| **Disability -**  learning
disability, physical
disability, sensory impairment and mental health problems | ✓ |
| **Religion / other beliefs** | ✓ |
| **Marriage and civil partnership** | ✓ |
| **Pregnancy and maternity** | ✓ |
| **Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian** | ✓ |

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. **or**
- Major service redesign or development

8. Please indicate if a full equality analysis is recommended. [ ] Yes [ ] No ✓

9. If you are not recommending a Full Impact assessment please explain why.

---

Signature of policy developer / lead manager / director

Date of completion and submission

Names and signatures of members carrying out the Screening Assessment

1. Sue Preston
2. 

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead,
c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

A summary of the results will be published on the Trust’s web site.

Signed _______________

Date _______________

Theatre Practice Standards - Anaesthetics