Care of the surgical patient: At a glance (part 1)

This article will:

- Provide structured clinical guidance on the care of a patient undergoing an elective surgical procedure.
- Discuss the pre-operative care and the preparation of the patient for surgery.
- Provide an awareness of the complications associated with perioperative care.
- Through the use of a patient case study, demonstrate the care required across the full perioperative journey from diagnosis to discharge.

Glossary of terms

Day Surgery: terms used to define the admission of patients to hospital for a planned surgical procedure when they returning home on the same day, usually in less than 24 hours.

Inpatient: a person who stays one or more nights in the hospital and receives treatment, lodging, and food.

Intraoperative: the period of care during the operation and ancillary to that operation.

Perioperative: the period around surgery including before, during and after.

Postoperative: the period of care when the patient is returned from the operating department to the ward.

Preoperative: a period classified from the time the surgery is scheduled until the time the patient is transported from the ward to the theatre operating table.

Introduction

Surgery is an inevitable and important part of healthcare, that can offer individuals life-changing interventions for a range of medical conditions (Wicker, 2015). With increased developments in surgical techniques, such as, laparoscopic approaches and innovative strategies delivering better outcomes for surgical patients, surgeries which were once deemed as high risk are now considered routine across a wider range of surgical specialities (Deong & Earnshaw, 2015). As a consequence, the number of surgeries being performed has risen by approximately 27% from previous decades and it is now estimated that over eight million surgical procedures are carried out in the UK every year (National Patient Safety Agency, 2008; Health and Social Care Information Centre, 2015).

This article aims to provide the reader with clinical guidance for the care of a surgical patient from diagnosis to discharge. It will also examine some of the complications that can occur within the perioperative care continuum and explore the management strategies that may be utilised. As hernia repair has been identified as one of the most common procedures carried out in the UK, with over 100,000 of these procedures carried out every year (Royal College of Surgeons (RCOS), 2013) a case study (see figure 1) has also been included within this article to help illustrate the care required across the patient journey.

Preoperative care

Initial investigation or contact: Preoperative care starts at the point of diagnosis and referral and is the first opportunity for healthcare professionals to ensure that comprehensive preparation for the surgery begins. This should be from both a physical and psychological perspective as patients should be provided with the opportunity to ask questions about the surgery and aftercare to help reduce any fears and anxieties that they may have (Wicker & O'Neill, 2013). Consequently, primary care staff

including General Practitioners' (GP) and Practice Nurses' have a major role to play in the preparation of individuals for surgery which can positively impact on postoperative outcomes such as perceived levels of pain and behavioural recovery (Powell *et al.,* 2016). GPs are also responsible for making the initial referral to a surgical speciality and ensuring that comprehensive background information (i.e. medical history and specific details of the condition) are communicated to the surgical team so that an outpatient consultation clinic appointment can be arranged (Royal College of General Practitioners, 2018).

Outpatient Consultation: Delivering a high-quality clinic requires a holistic approach and the most effective and appropriate way to deliver this is to remain focused on the quality of service and ensure that the patient is treated as an individual with values, concerns and wishes (RCOS, 2019). The surgeon may decide to conduct an informed consent at this appointment (figure 1), which incorporates discussion of the details of the surgical procedure and comprehensive exploration of the risks and benefits of having the procedure; however, the patient must have the capacity to understand the information given and competence to decide on whether to proceed (Anderson & Wearne, 2007). Following the consultation, the surgeon will list the individual for the required surgery and organise a preassessment appointment. In some cases, this could be on the same day if the service incorporates one-stop clinics, which have been initiated in some areas to help streamline the service and ensure that most of the preoperative care needs are addressed in a single visit (RCOS, 2019).

Preoperative Assessment: The process of preassessment is essential for identifying any underlying co-morbidities which would increase the risk of having a general anaesthetic, as well as anything which may influence the surgical procedure itself (Gray *et al.,* 2018). However, it also provides the ideal opportunity for the early identification of and attention to individual patient needs, for patients

concerns to be addressed before admission and for patient education about surgical preparation and aftercare (see figure 2) (Association of Anaesthetists of Great Britain and Ireland (AAGBI), 2010; AAGBI and British Association of Day Surgery (BADS), 2011; Wicker, 2015; Martin, 2016). The investigations i.e. full blood count; electrocardiogram, and lung function tests conducted at the preoperative assessment are primarily dependent on the level of the surgery (elective surgical procedures are classified as minor, intermediate or major - see figure 3) and the comorbidities of the individual (see figure 4) (NICE, 2016a). The American Society for Anaesthesiologists developed a 'Physical Status Classification System' (often referred to as the ASA Grade) which is also used to determine the level of investigations which need to be conducted at the preoperative assessment and communicate patient co-morbidities to the anaesthetic and surgical team (NICE, 2016a).

Hospital ward admission: On the day of surgery, the patient will be visited by a member of the anaesthetic team, either the consultant or a junior doctor for a variety of assessments to be conducted i.e. airway and pain assessment and the risk of developing venous thromboembolism (figure 5) (Royal College of Anaesthetists (RCOA), 2019). A member of the surgical team will also need to mark the site for surgery and complete consent procedures. Surgical site marking is required in an attempt to reduce errors and must only be performed by an appropriate professional, undertaken with an indelible ink pen, using an arrow at or near the intended incision, which must be unambiguous and clearly visible as the site will be checked on three more occasions (leaving the ward, entering the operating department and prior to the incision) (WHO, 2009a). Wherever possible written consent must also be obtained before the surgery and anaesthetic and needs to be clearly documented (no abbreviations) and retained in the patient's notes so they can be accessed by all the healthcare professionals (NHS, 2020). Nursing and healthcare staff will care for the patient in the immediate period leading up to the surgery and will ensure that venous thromboembolism prophylaxis i.e. anti-embolism stockings are put into place, that preoperative medication i.e. gastric acid suppression, pre-emptive analgesia is administered,

that the patient is showered or bathed and warmed (figure 1), that protocols have been followed to minimise surgical site infections, jewellery and body piercings have been removed or taped and that the preoperative checklist has been fully completed (see figure 6) (Dunn, 2016; WHO, 2016; NICE, 2016b; NICE, 2018; NICE, 2019)

Intraoperative care

The safe surgery process continues within the operating theatre and begins with the perioperative team (i.e. surgeons, anaesthetists, nurses, ODPs and healthcare assistants) discussing the surgical procedures that are listed for the day and any specific patient requirements i.e. allergies and equipment requirements (Wicker, 2015). Once the patient arrives onto the department a member of the team will admit the patient onto the department by checking the surgical safety checklist that was commenced by the staff on the ward, as the 'check-in' part of the form must be completed before the induction of anaesthesia (WHO, 2009a; WHO, 2009b). This checklist (see figure 7) which can be tailored to the needs of the clinical area, was created to reduce the number of adverse events by improving communication between the perioperative team and since its introduction, there has been a marked improvement in the quantity of recorded adverse events from within the operating theatre (Walker *et al.*, 2012). This is supported by Tang *et al* (2014) who agree that, when effectively implemented, surgical safety checklists can be effective at avoiding complications and mortality postoperatively. This literature review was conducted in Australisia, showing that the use of surgical safety checklists are widely generalisable.

The intraoperative process begins with the orientation of the patient to the anaesthetic room, the application of essential monitoring (i.e. ECG, pulse oximeter) and the induction of general anaesthetic, using a range of drugs to ensure that the patient is sedated, pain-free and if necessary, paralysed (AAGBI, 2012). Upon transfer to the operating room, the 'Time Out' element of the surgical safety

checklist will be undertaken prior to the surgical incision in the patient's skin. All members of the team must be present and attentive at this stage as all areas of potential risks are discussed in detail and this is the last opportunity for adaptations to made to the surgery to prevent unnecessary harm (WHO, 2009a). As well as the safe surgical checklist several considerations also need to be addressed by the perioperative team (see figure 8) i.e. surgical positioning, skin and nerve damage, patient warming. As patients, in most cases, are not able to advocate for themselves, all members of the intraoperative team must ensure that these elements of care are undertaken to reduce harm and achieve high-quality perioperative care (Cousley, 2016b). Surgical positioning is of particular importance, not only for ease of surgical access but also to minimise any adverse physiological effects, such as pressure ulcers and nerve damage, which can extend hospitalisation, delay patient recovery and increase costs to the patient and the NHS (Wicker, 2015). These can be avoided with the use of pressure-relieving equipment, use of safe moving and handling techniques and devices, regularly skin assessments and effective communication between the perioperative team (NICE, 2014). The importance of being an advocate for the surgical patient cannot be under stated, especially in an environment as complex as the operating theatre (Sundqvist *et al*, 2016). The healthcare professional must fully consider any potential risks to the patient and develop a strategy tominimise these risks (figure 8).

Following the completion of the surgical procedure, the intraoperative team undertake the 'Sign Out', which includes confirmation of the performed surgery, surgical counts of instrumentation, swabs and other supplementary items and any key concerns for recovery or postoperative care (WHO, 2009). These details will be handed over to the Post Anaesthetic Care Unit (PACU) specialist nurse, along with a record of the patient's vital observations while in theatre (Simpson & Moonesinghe, 2013). The PACU practitioner will regularly check the patient's condition, monitor their vital signs, ensure they are comfortable and if necessary warmed (see figure 9) (Wicker, 2015). They will also pay particular attention to pain relief and the reduction of postoperative nausea and vomiting, which are often the

elements of perioperative care that most patients fear before surgery; as a consequence, these must be minimised to increase patient satisfaction but also to promote recovery and reduce the associated postoperative complications (Liddle, 2013a).

Postoperative Care

Before the patient is transferred back to the ward a comprehensive handover must take place between the PACU nurse and ward staff including details of the procedure, the patient conditions, level of responsiveness, airway and breathing, oxygen therapy, circulation, wound dressings and drains, fluid output and input, pain levels, medication and any other special instructions (Liddell, 2013a; Wicker, 2015). As well as the standard nursing roles and responsibilities, nurses caring for surgical patients also need to have a deep understanding of the potential complications that can arise following surgery i.e. surgical site infection, pain, hypothermia (see figure 10) and how they can minimise risk or recognise early signs of development (Primiano *et al*., 2011; Liddle, 2013b; NICE, 2014; NICE, 2016b; NICE; 2018). Nurses within primary and secondary care are therefore in a unique position and offer a valuable contribution to the care of the surgical patient as they have a major role to play in minimising the risk of harm and ensuring that the patient is returned to normal functioning as soon as is possible, depending upon the individual's condition and surgical intervention (Liddle, 20163b; Cousley, 2016a).

Conclusion

Due to the high level of iatrogenesis in surgery, patient safety poses a significant problem and almost half of all recorded adverse hospital events are related to surgical care (WHO, 2019). Consequently, as patient safety is "at the heart of quality care" (Fisher and Scott, 2013, p.6) it is paramount that healthcare professionals minimise the risk of adverse events occurring by undertaking appropriate risk assessments and effective teamwork (AAGBI, 2010). For more detailed information on the

management of surgical patients' undergoing anticoagulation therapy, steroid therapy and those diagnosed with diabetes mellitus review Care of the Surgical Patient: Part 2 (Ford and Robertson, 2020).

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Figure 1: Case Study

Initial Investigation

Mr Singh attended his local primary care centre for an appointment with his General Practitioner. He was presenting with symptoms of localised discomfort and pain to his left groin and a bulge was visible upon standing. The GP assessed Mr Singh and diagnosed him with an inguinal hernia. He explained that he would have to refer Mr Singh to a specialist and his care would involve a surgical procedure performed under general anaesthetic to treat the hernia. The GP, with knowledge of the relevant protocol (Royal College of Surgeons, 2013), was able to refer Mr Singh safely through the appropriate pathway.

Preoperative Care

Mr Singh received a letter informing him that he was to attend appointments for an outpatient clinic and a preoperative assessment. At the appointment with the operating surgeon (operating clinic), another examination was performed, the required procedure was discussed and after gaining informed consent, arrangements were made for Mr Singh to be listed for an inguinal hernia repair procedure. At the preoperative assessment, Mr Singh was asked to fill out a basic health questionnaire to assess his past medical history and this may impact on the investigations that need to be carried out. His vital observations were taken by a preoperative assessment nurse to get a baseline reading (NICE, 2016). MRSA swabs were taken from him to ensure that he wasn't carrying the antibiotic-resistant bacteria on his skin (if this was the case a treatment package would be given to him to remove the bacteria and reduce his risk of getting an infection or spreading the bacteria). Due to his health and social status he was listed for a day surgical admission.

Hospital Ward Admission

On the day of the surgery, Mr Singh was welcomed into the day surgery department by a Staff Nurse, who sat him down in a comfortable chair and was able to reassure Mr Singh about the structure of the

day. The nurse then went through a comprehensive preoperative checklist to ensure all the precautionary measures had been taken to ensure patient safety throughout the anaesthetic and surgical phases of care (Royal College of Anaesthetists, 2019). He was asked if he had showered, was provided with theatre attire, given pre-emptive analgesia and advised of what to expect before and after the procedure.

Intraoperative Care

Mr Singh was collected by a porter from the day of surgery admissions unit and taken through to the operating department reception area, where he was met by an anaesthetic operating department practitioner (ODP), who introduced himself and completed the check-in procedure. Mr Singh was settled into the anaesthetic room and reassured before being induced using standard general anaesthesia. His airway was secured using a supraglottic airway device and he was transferred through to the operating room, where he was transferred using a PAT slide and slide sheet onto the operating table. His position was checked, pressure area relieving devices were put in place, patient warming was attached, and he was made comfortable before the 'time out' was performed. Once safe to proceed the surgical area was cleaned and prepared, sterile drapes applied, and all necessary equipment prepared and surgical instruments and swabs counted.

After successful surgery and completion of the sign-out, Mr Singh was transferred to the Post Anaesthetic Care Unit (PACU) where a specialist practitioner received a full and comprehensive handover from both the anaesthetist and the scrub practitioner. Once Mr Singh was fully awake, aware and his physiological vital signs were within the correct parameters, he was taken back up to the surgical ward to continue his recovery.

Postoperative Care

The Staff Nurses on the ward continued to care for Mr Singh and observed him closely for any signs of postoperative complications. His vital observations were taken at required intervals, he was made

comfortable, given analgesics and after a safe period encouraged to eat, drink and mobilise. Mr Singh was able to return home the same day was deemed safe and before discharge was provided with detailed information on wound care, medication requirements, advise on recovery and the signs of complications and contact details for any further advice.

Figure 2 – Preoperative processes and tests for elective surgery

(Wicker, 2015; NICE, 2016a)

Figure 3 – Surgery grades

Surgery grades	Examples
Minor	• excising skin lesion • draining breast abscess
Intermediate	• primary repair of inguinal hernia • excising varicose veins in the leg • tonsillectomy or adenotonsillectomy • knee arthroscopy
Major or complex	• total abdominal hysterectomy • endoscopic resection of the prostate • lumbar discectomy • thyroidectomy • total joint replacement • lung operations • colonic resection • radical neck dissection

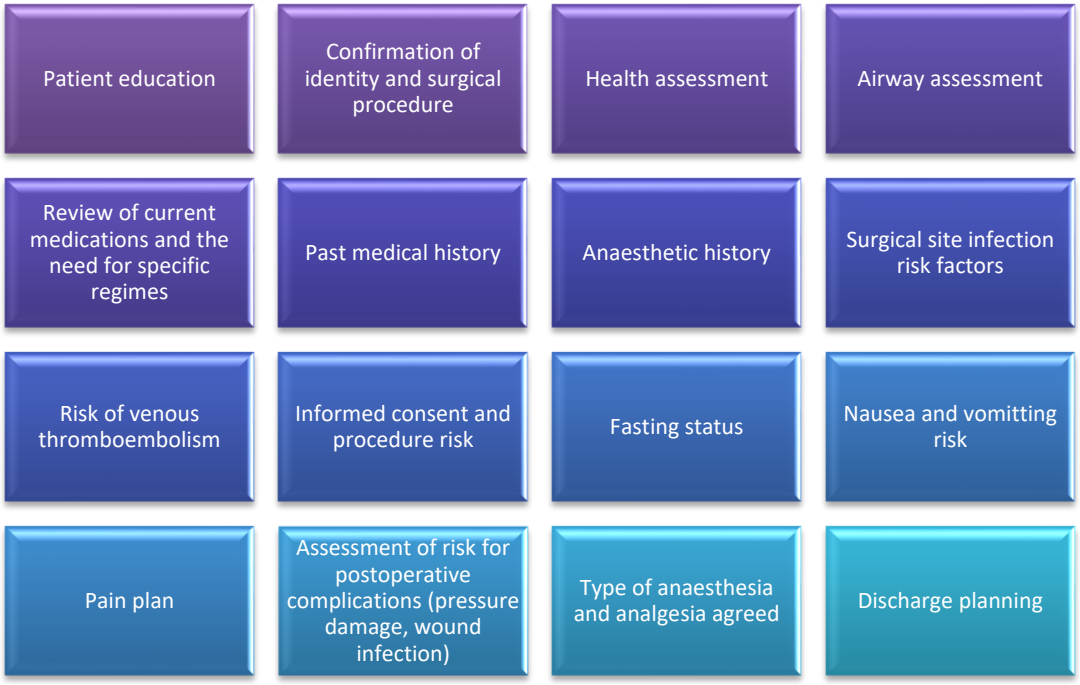
(NICE, 2016a)

Figure 4: American Society of Anaesthesiologists (ASA) Grades

ASA 1	**A normal healthy patient**
ASA 2	**A patient with mild systemic disease**
ASA 3	**A patient with severe systemic disease**
ASA 4	**A patient with severe systemic disease that is a constant threat to life**
ASA 5 (Emergency surgery)	**A moribund patient who is not expected to survive without the operation**
ASA 6 (Emergency surgery)	**A specific situation in which a declared brain-dead patient whose organs are being removed for donor purposes**

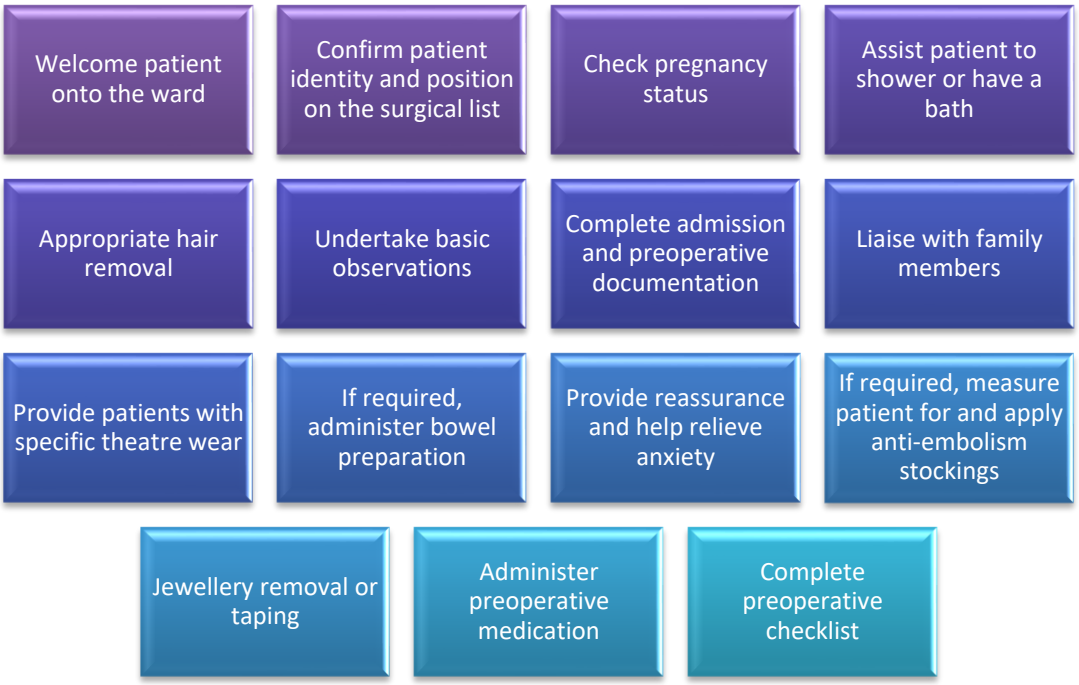
(NICE, 2016a)

Figure 5: Preoperative assessment and preparation activities undertaken during the anaesthetic visit



(Wicker, 2015; Royal College of Anaesthetists, 2019)

Figure 6: Preoperative nursing considerations

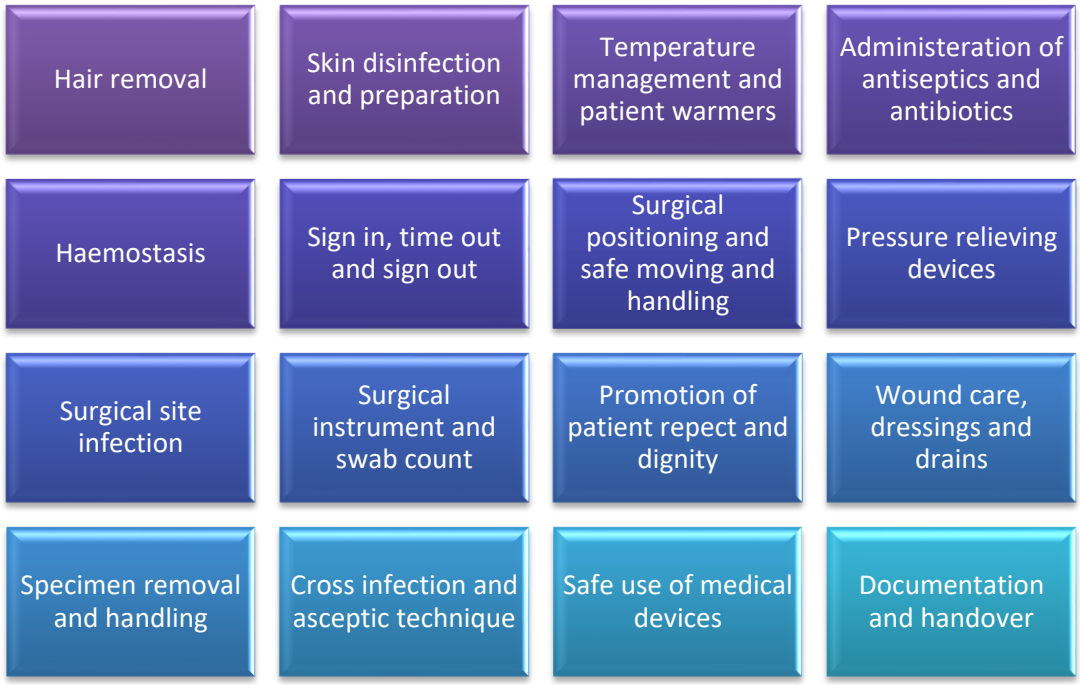


(Dunn, 2016; WHO, 2016; NICE, 2016b; NICE, 2018: NICE, 2019)

Figure 7: Example of a safe surgery checklist

BJN: Please insert an example of the safe surgery checklist which should including details of (sign in, time out and sign out)

Figure 8: Intraoperative processes and considerations



(Wicker, 2015; Cousely, 2016).

Figure 9: PACU considerations

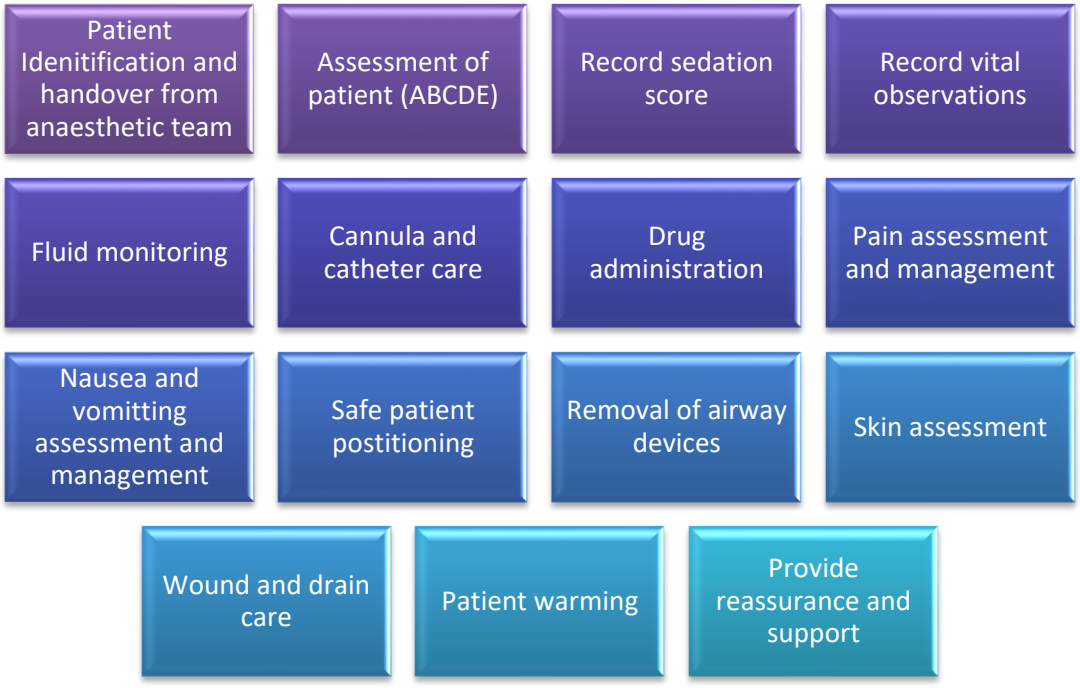
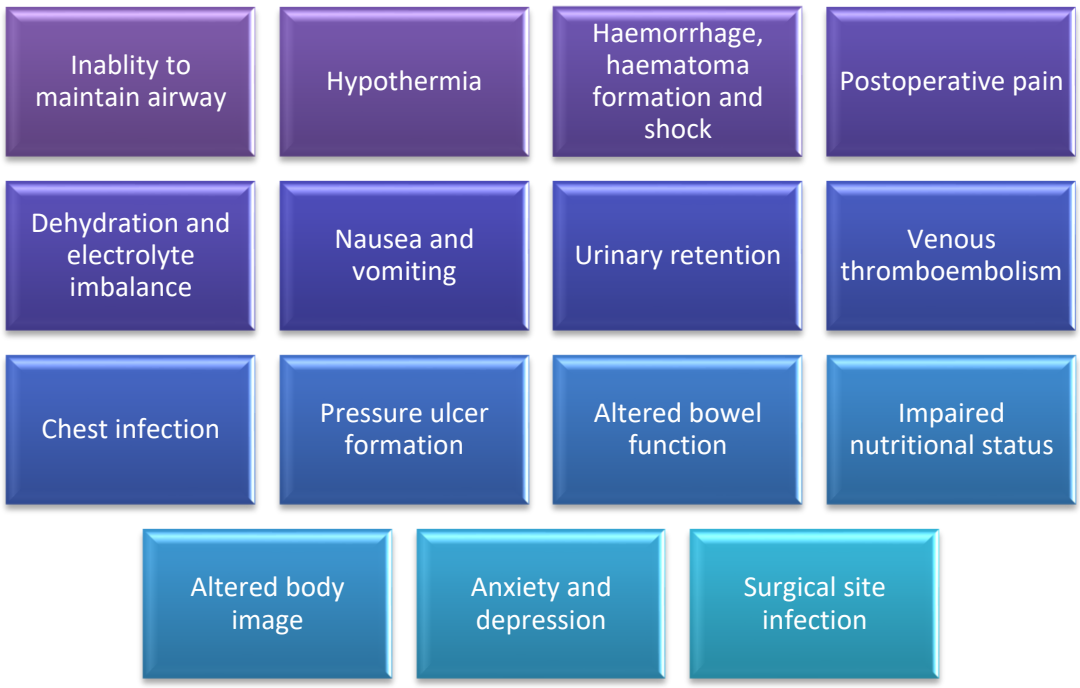


Figure 10: Potential postoperative complications



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