SAFEST Guide:

Patient Safety Recommendations in the Perioperative Setting

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1. Safety & Quality Management

PPSR-001
Safety Culture Enhancement

We suggest:
A clear and explicit strategy for developing a strong safety culture is implemented, including:
1. Recognition that errors are human;
2. Commitment to discuss and learn from errors;
3. Proactive identification of latent threats;
4. Incorporation of a non-punitive, fair, and transparent systems for reporting and analysing adverse events;
5. Adverse events Open Disclosure to patients.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Clear methods and activities are in place to develop a strong safety culture. These may include:

1. **Acknowledging that errors are human,**
2. **A commitment to discussing and learning from them,**
3. **Proactive identification of potential hazards, and**
4. **Using non-punitive, fair, and transparent systems for reporting and analysing adverse events.**
5. **Patients are informed of any preventable harm.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Hospitals should have a clear and explicit strategy for developing a strong safety culture, which includes the following characteristics: recognition of the inevitability of errors, commitment to discuss and learn from errors, proactive identification of latent threats, and the incorporation of non-punitive, fair and transparent systems for reporting and analysing adverse events."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Nurturing a safety culture, learning from mistakes, preventing harm and working as part of a team are all part of the discipline of safety. To this end, shared learning and quality improvement that contribute towards improvements in safety, such as critical incident reporting with thematic analysis, and communication through morbidity and mortality meetings, could be undertaken."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Encourage a culture of safety, candour and constructive challenge in your team, where difficulties and problems that may cause harm to the patient can surface and be openly discussed and mitigated."[2] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-002
Proactive Risk Identification Tools

We suggest:
Registers, surveys, interviews, and other proactive tools are implemented to identify and prevent high-risk injury situations in the perioperative period.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital uses different ways to identify situations in which patients are frequently at high risk before, during and after surgery. These include keeping records, questionnaires, and other methods to prevent potential problems.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Identify high-risk tasks by reviewing injury data of the perioperative area, conducting surveys, and interviewing the perioperative team."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-003

Multidisciplinary Training for Safety and Teamwork´´

We suggest:
Healthcare professionals involved in perioperative care should have initial and regular multidisciplinary training that promotes patient safety, teamwork, effective communication, openness, and technology-handling skills.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Healthcare professionals involved before, during and after surgery receive regular training from the beginning. This training includes how to work together to keep patients safe, how to communicate and be open with each other, and how to use the equipment correctly.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Participate in initial and ongoing education, training, and competency verification activities related to safe patient and equipment handling, including when new technology solutions are introduced."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- “Theatre teams should undergo regular, multidisciplinary training that promotes teamwork, with a focus on human factors, effective communication and openness."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "There should be induction programmes for all new members of staff, including locums. Induction for a locum doctor should include familiarisation with the layout of the hospital and the location of emergency equipment and drugs, access to guidelines and protocols, information on how to summon support/assistance, and assurance that the locum is capable of using the equipment in that hospital. All inductions should be documented."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "We recommend structured staff education and training."[4] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-004
Patient Identification Verification

We suggest:

Throughout the care process, especially during admission process and informed consent phases, patient identity is confirmed through verification of their full name, date of birth, health record number (or other unique identifier), and planned procedure, with the patient, legal guardian, or caregiver.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Throughout the care process, especially during admission process and informed consent phases, the identity of patients is confirmed by checking their full name, date of birth, health record number (or other unique identifier), and the planned procedure with the patient, their legal guardian, or caregiver**.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The patient's name to include first name and last name, address, date of birth, healthcare record number and planned procedure should be verified with the patient/child/parent/guardian during each stage of the admission process (nursing/midwifery admission, medical admission and informed consent/confirmation)."[5] 2013 (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-005
Quality Indicator Monitoring

We suggest:
Perioperative departments monitor, use to plan for improvement, and internally share the key quality indicators relevant to their activity to facilitate quality enhancement.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Departments involved with surgery have key measurements and share data that support quality of care improvement.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Departments of anaesthesia should be encouraged to develop local key quality indicators relevant to their activity, which will assist in the process of supporting quality improvement."[6] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-006

Continuous Audits of Care

We recommend:
The hospital performs continuous audits of care processes, guideline compliance, and outcomes, which are shared with the entire multidisciplinary team.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital regularly checks if the care provided follows the guidelines and produces good results for patients. They share these findings with their team.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Continuous audit of processes of care, compliance to guidelines, and outcomes is recommended."[7] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-007
Complaints and Incident Analysis

We suggest:
Regular and systematic analysis of serious incidents, adverse events, and complaints are performed to learn from them and prevent their recurrence. Patients also participate in the process, and receive back timely, transparent information.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital regularly and carefully examines complaints, accidents, and preventable harm to understand what happened and prevent them from happening again. Patients are also involved in identifying potential problems, and the hospital makes sure to give them appropriate on time and transparent updates about what the hospital is doing to address the issue.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Robust procedures should be in place to report and investigate adverse incidents involving equipment, staff or patients. The published outcomes of these investigations should be disseminated to all relevant anaesthetists and others."[8] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "A system for reporting and regular audit of critical incidents and near misses is an essential part of a well led safety structure, and there should be multiprofessional involvement in this. The methodology must be explicit and identify underlying relevant factors to inform learning and development of safe systems. All staff must recognise the duty of candour and foster a culture for reporting incidents and concerns."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Make full use of local electronic systems for reporting incidents and adverse events. You should reflect on adverse incidents in which you have been directly involved and present them for discussion at appraisal."[2] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)
- "The regular systematic discussion and analysis of serious complaints, complications errors and (near) accidents with the aim of learning from them and taking measures to prevent repetition, whereby a written report is always made."[9] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-008
Crisis Management Aid Availability

We suggest:
Cognitive aids or manuals for managing crisis scenarios are readily available.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Reminder tools or manuals are available in case of emergencies.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Decision support systems for crisis scenarios should be available, for example the Association of Anaesthetists Quick Reference Handbook, advanced life support algorithm, difficult airway guidelines and major haemorrhage protocols."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The following policies should be immediately and reliably available at sites where anaesthesia and sedation are provided:
    - guidelines for the checking of anaesthetic machines
    - guidelines for the management of anaesthetic emergencies, including anaphylaxis, malignant hyperpyrexia and major haemorrhage
    - periarrest and cardiac arrest algorithms
    - difficult airway management, including the 'can't ventilate, can't oxygenate' scenario."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE).

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-009
Post-incident Support for Healthcare Teams

We suggest:
After a serious adverse event, healthcare team members involved should be provided with immediate practical and psychological support, as needed, as part of a second victim program. They should also be invited to participate in the learning conversation as soon as possible.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When a serious unexpected harm happens in healthcare, it also affects the involved healthcare team members. To help them cope, it's important to give them support right away, both practical and emotional (called "second victim plan"). They should also be invited as soon as possible to talk about what happened and share what they learned from the experience.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "When members of the healthcare team are involved in a critical incident, they can be profoundly affected. A team debriefing should take place immediately after a significant critical incident. The lead clinician should review the clinical commitments of the staff concerned promptly. Further practical and psychological support may be necessary to assist individuals to recover from a traumatic event."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-010
Morbidity and Mortality Meetings

We suggest:
The hospital has established procedures for multidisciplinary morbidity and mortality meetings.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital has a plan for clinical staff to meet and discuss cases of patients that have suffered complications or death during their care.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Hospitals should have systems in place to facilitate multidisciplinary morbidity and mortality meetings."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Participation in morbidity and mortality and governance meetings, and participation in audit and development of local protocols, should be supported in the job plans."[11] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-011
Staffing Levels Protocols

We suggest:
Hospitals have approved documentation determining safe staffing levels for surgical teams, including contingency plans to avoid staff shortfalls. Annual reviews of compliance with standards are performed.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Hospitals have set up plans to determine how many people should be on a surgical team to make sure everyone stays safe. They also have emergency plans in case the team is understaffed. The follow-up of these plans is checked annually.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Hospitals should have approved documentation defining safe staffing levels for anaesthetists and anaesthetic practitioners, including contingency arrangements for managing staffing shortfalls; annual reviews of compliance with these standards should be performed."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-012
Full surgical teams for high-risk surgeries

We suggest:
In high-risk surgery care in the operating room should be provided by a full surgical team comprising, at a minimum, a consultant anaesthetist, consultant surgeon, and an operating room-trained nurse.

This recommendation can be shared with patients and other stakeholders in the following lay language:
For surgeries or patients with a high risk of complications, a full surgical team is present in the operating room. This team should consist of at least a consultant anaesthetist, a consultant surgeon, and a nurse who is trained to work in the operating room.

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "High-risk patients (5% or above mortality risk) or lower-risk patients undergoing high-risk surgery should receive direct consultant anaesthetist and consultant surgeon delivered care in the operating theatre."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-013
Availability of Anaesthesia Assistants

We suggest:

In every location where anaesthesia is administered, there is always a dedicated and trained anaesthesia assistant (such as an anaesthetic nurse, Operating Department Practitioner, or equivalent) available in case needed, even if the anaesthesia procedure is being performed by an anaesthesiologist.

This recommendation can be shared with patients and other stakeholders in the following lay language:
In every place where anaesthesia is given, there is always someone available who is trained to help the anaesthesiologist, like an anaesthetic nurse or an Operating Department Practitioner. Even if the anaesthesiologist is the one who is directly giving the anaesthesia, there is always an assistant.

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "There should be a dedicated trained assistant (i.e. an operating department practitioner, anaesthetic nurse or equivalent) who holds a valid registration with the appropriate regulatory body, immediately available in every location in which anaesthesia care is being delivered, whether this is by an anaesthetist."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-014

Pain Management Training

We suggest:
Recovery facilities, such as ICU, PACU, and postoperative wards, have sufficient numbers of nurses who have advanced pain training, as well as appropriate anaesthetic and surgical support, including specialist pain medicine services, until patients meet the agreed-upon discharge criteria.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Recovery facilities (such as intensive care units, post anaesthesia care units and postoperative wards) should have enough healthcare team members such as nurses, specialized in pain treatment, until the patient is well enough to leave the hospital.

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Recovery facilities should be staffed and have appropriate anaesthetic support until the patient meets the agreed discharge criteria."[13] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "Clinical areas caring for patients receiving analgesic techniques which may result in cardiovascular, respiratory or neurological impairment should have appropriate facilities and adequately trained staff to provide appropriate monitoring."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Adequate numbers of clinical nurse specialists in pain medicine should be available to fulfil the following roles within working hours: ·
    - review of patients in pain with appropriate frequency to provide a safe and effective service
    - provision of advice to ward staff and other healthcare teams regarding all aspects of pain management
    - liaise with an appropriate pain medicine specialist to highlight clinical or systematic problems
    - ensuring that systems are in place to support non specialist healthcare staff to safely and effectively manage acute pain overnight and at weekends if the IPS is not immediately available."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Whenever emergency surgery is undertaken, the recovery unit should be open continuously and adequately staffed. Until patients can maintain their own airway, breathing and circulation, they should be cared for on a one-to-one basis, with an additional member of staff available at all times."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The care of an individual patient should be delivered on a one-to-one basis until the patient is able to maintain their own airway, has respiratory and cardiovascular stability and is able to communicate appropriately. All recovery units should be staffed to a level that allows this to be routine practice, and the recovery staff should not have any other duties during this time."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-015

Minimum Anaesthesia Equipment Availability

We suggest:
The following equipment is available at all sites where anaesthesia is administered. Even during a conscious sedation setting, the equipment mentioned is available just in case it is required to convert into general anaesthesia due to an untoward event:
1. Continuous electrocardiograph;
2. Pulse oximeter;
3. Non-invasive blood pressure monitor;
4. A quantitative neuromuscular monitor to guide dosing and reversal of Neuromuscular Blocking Agents;
5. Patient's body temperature measurement and warming equipment;
6. Anaesthesia's depth monitoring;
7. A device to display airway pressure whenever positive pressure ventilation is used, with alarms that warn if the airway pressure is too high or too low;
8. Gas analyser for oxygen, volatile anaesthetic agents, and capnograph;
9. Defibrillators and equipment for external heart-related pacing;
10. Positioning equipment;
11. Equipment needed for the administration of a volatile-free anaesthetic;
12. Enough infusion pumps and syringes (injections) for high-risk medicines;
13. Equipment for the management of patients with a difficult airway, including video-laryngoscopy;
14. Vacuum device;
15. Rapid infusion device for the management of major haemorrhage;
16. Ultrasound imaging equipment for vascular access and regional anaesthesia;
17. Other regional anaesthesia equipment, including anaesthesia nerve stimulators.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When a patient needs anaesthesia or sedation, all the right equipment should be available. This equipment includes, among others, a machine to monitor heart activity, a machine to measure how much oxygen is in the blood, a machine to measure blood pressure, a machine to help air flow in and out of the lungs, an ultrasound machine and equipment to help with pain management.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The following equipment is required for the safe delivery of anaesthesia and should be available at all sites where patients are anaesthetised in sufficient quantities for the case mix and workload:
  - defibrillators and equipment for external cardiac pacing
  - positioning equipment (stirrups for lithotomy, arm boards, head rest for prone positions, bariatric supports etc.)
  - ultrasound imaging equipment for vascular access and regional anaesthesia
  - equipment required for the administration of a volatile free anaesthetic, including infusion pumps, volatile-free anaesthetic machine and/or activated charcoal filters

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  - adequate numbers and types of infusion pumps and syringe drivers available for high risk medicines
  - at least one readily available portable storage unit with specialised equipment for the management of patients with a difficult airway in every theatre suite including video laryngoscopes and fibre-optic scopes
  - active patient warming devices
  - fluid warming devices, allowing the transfusion of body temperature blood products and intravenous fluids of body temperature
  - rapid infusion device for the management of major haemorrhage
  - regional anaesthesia equipment, including ultrasound and regional anaesthesia nerve stimulators."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The recommended standards of monitoring, by instrument or otherwise, should be met for every patient. All monitors should be fitted with audible alarms, with preset but adjustable limits. The following equipment should be available at all sites where anaesthesia is administered:
  - oxygen analyser
  - device to display airway pressure whenever positive pressure ventilation is used, with alarms that warn if the airway pressure is too high or too low
  - vapour analyser whenever a volatile anaesthetic agent is in use
  - capnograph
  - pulse oximeter
  - non-invasive blood pressure monitor
  - electrocardiograph
  - a means of measuring the patient's body temperature
  - a nerve stimulator when neuromuscular blocking drugs are used."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "MTCs receiving major trauma patients should have a trauma theatre equipped with a radiolucent operating table that allows fluoroscopic imaging of all body parts without repositioning the patient."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-016
Point-of-Care Diagnostic Facilities

We suggest:
Onsite laboratory or point-of-care diagnostic for blood gases, serum electrolytes, activated clotting time, thromboelastographic and platelet function assay, are available to allow safe management of patients during high bleeding risk surgical procedures in the operating room.

This recommendation can be shared with patients and other stakeholders in the following lay language:
There is always a lab nearby to quickly test the patient's blood in case of a high-risk bleeding during surgery. The tests can include diagnostic of different chemical blood levels and how well the blood is able to clot.

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "There should be onsite laboratory provision, or near patient testing, for blood gases, serum electrolytes, platelet function assay, activated clotting time and thromboelastography, to allow safe management of patients in the operating theatre."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Near-patient testing for haemoglobin, blood gases, lactate, blood sugar and ketones should be readily available for emergency theatres."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Point of care testing for haemoglobin, blood gases, lactate, ketones, coagulation, viscoelastic measurements and blood sugar should be available during surgery for patients with major trauma and those undergoing orthopaedic procedures associated with a risk of haemorrhage. If near-patient testing is not available, laboratory testing should be readily and promptly available."[15] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-017
Daily Anaesthesia Equipment Verification

We suggest:
A checklist is used to daily verify the anaesthesia equipment. Checking should include the anaesthesia machine circuit leaks and electrical devices potential damage or malfunction.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Every day, the anaesthesia equipment is checked using a checklist to look after properly functioning of both breathing circuit and electrical components.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "The anaesthesia professional should verify that the anaesthesia circuit is free of leaks."[3] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)
- "Inspect all electrical equipment, including all loaned equipment, for damage periodically and before each use."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "All anaesthetic equipment should be checked before use in accordance with the Association of Anaesthetists published guidelines. Anaesthetic machine checks should be recorded in a log and on the anaesthetic chart."[8] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-018

Minimum Equipment in Post-Anaesthesia Care Unit

We suggest:
Within the Post-Anaesthesia Care Unit (PACU) there must be available a minimum of:
1. Hand washing facilities;
2. Equipment and drugs for airway management, and difficult airway equipment easily accessible;
3. Devices for manual ventilation with oxygen;
4. Pulsoximetry and capnography;
5. Basic haemodynamic monitoring;
6. A means of measuring body temperature;
7. Emergency medications and means to administer it intravenously or inhaled;
8. Ready access to a defibrillator.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The Post-Anaesthesia Care Unit, where the patient is usually recovering right after surgery, is equipped with various devices and equipment to help monitor and manage patients after surgery. These include at least handwashing facilities, equipment for managing the patient's airway and breathing, heart's activity, temperature and blood monitoring equipment, drugs that could be needed in case of emergency, and a machine that can help restart the heart if it arrests.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Capnography, pulse oximetry and non-invasive blood pressure monitoring should be available until the patient is fully recovered from general anaesthesia. An electrocardiograph, nerve stimulator, thermometer and glucometer should also be readily available."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Within the post-anaesthesia care unit (PACU) area there should be: devices available in a ratio of one per two bed spaces, for manual ventilation with oxygen but with a minimum of two such devices. Equipment and drugs for airway management including endotracheal intubation. Difficult intubation equipment should be easily accessible. Capnography where there is any possibility that a patient may be intubated or require intubation in the PACU. ECG monitoring capability. A means of nebulising medications. Emergency and other drugs. Ideally, there should be separate trolleys/packs for specific emergencies. Such emergencies include cardio-respiratory arrest, anaphylaxis, local anaesthesia toxicity and malignant hyperthermia (if triggering agents are used). Such kits should include approved cognitive aids/management cards. A range of intravenous equipment and fluids and a means of warming those fluids. Ready access to analgesic, anti-nausea and local anaesthetic drugs. A range of syringes and needles. A means of measuring body temperature. Equipment for point of care testing of blood glucose and ketones. A stethoscope. Ready access to a defibrillator. A handwashing basin. A written routine for checking equipment and drugs should be established and used regularly."[17] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-019
Medical Equipment Maintenance Protocols

We suggest:
Medical equipment is regularly inspected and maintained; and a replacement plan is established and accomplished in a timely manner.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The medical equipment is checked regularly, and if needed, will be timely replaced by new equipment.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Equipment should be properly maintained and replaced in a timely and planned fashion"[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "We recommend that each intensive care department have a system of uniform equipment for securing difficult airways and established a formalized system for its regular checks."[18] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Create and implement a plan for managing and restoring the utilities and repairing damage to the surgical suite after failure of an internal or external utility."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "There should be a planned maintenance and replacement programme for all anaesthetic equipment."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-020

Multidisciplinary preoperative discussions for complex cases.

We suggest:
Before surgery, the multidisciplinary team discuss the optimal surgical strategy of difficult therapy choices and severe comorbid patients based on their clinical status, comorbidities, bleeding risk, and the team's expertise.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Before surgery, the team of doctors and healthcare professionals meets and discusses the best surgical approach for difficult surgeries and severely ill patients, based on all their medical conditions, their current health status, their bleeding risk, and the expertise of the team.**

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "It is recommended that the members of the multidisciplinary team discuss the optimal surgical strategy based on clinical status, comorbidities, bleeding risk and team expertise."[19] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "Establish and implement a standardized briefing process before the surgical procedure."[3] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-021

Verbal Communication Standardisation

We suggest:
To ensure effective communication and minimize misunderstandings in the operating room, verbal communication is standardised among team members. This can be achieved by avoiding assumptions and ensuring that all team members explicitly close the communication loops as part of the communication culture.

This recommendation can be shared with patients and other stakeholders in the following lay language:
To avoid confusion and mistakes in the operating room, explicit and effective communication techniques are used among team members. As part of it, everyone must acknowledge understanding of what was said.

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "It is recommended that verbal communication between team members in the operating room is standardized and always acknowledged."[20] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-022
Effective Communication Enhancements

We suggest:
A process for reducing barriers to effective communication is implemented; these may include facility design problems, irrelevant conversations, noise levels, social (e.g., status, hierarchy), distractions, and interruptions.

This recommendation can be shared with patients and other stakeholders in the following lay language:
A plan to help people communicate better has been developed. This includes removing obstacles, such as the way the room is set up, loud noises, people talking about irrelevant things, distractions, and interruptions.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Reduce barriers to effective communication, including facility design barriers, irrelevant conversations, noise levels, social setting barriers (e.g., status, hierarchy), distractions, and interruptions."[3] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-023
Standardised hand-over process

We recommend:
A standardised hand-over process for patient information transfer between individuals and teams is implemented.

This recommendation can be shared with patients and other stakeholders in the following lay language: **A plan has been implemented to make sure everyone has all relevant information about a patient when the care passes on to a different person or team.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Establish and implement a standardized hand-over process for the transfer of patient information between individuals and teams."[3] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)
- "All participants should have had handoff education and training."[21] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality Not determined)
- "Take precautions to mitigate the risk for errors during the transitions of care between phases of perioperative care."[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "Include all phases and locations of patient care in a standardized hand-over process design. Phases of care include scheduling, preadmission, preoperative, intraoperative, and postoperative. Locations of care may include the primary care provider's office, surgeon's office, scheduling department, paranaesthesia testing unit, presurgical testing unit, preoperative holding area, operating room or procedure room, postanaesthetic care unit, and other areas where postoperative care is provided (e.g., medical/surgical ward, intensive care unit)."[3] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)
- "All handovers should contain representatives for the multidisciplinary teams from both theatre and the receiving area and should be documented and structured to ensure continuity of care."[8] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Handover protocols for patients requiring an emergency procedure should include clear documentation of care delivered and the future treatment plan for the patient."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-024
Surgical Safety Checklist Implementation

We recommend:
A locally adapted WHO Surgical Safety Checklist, or equivalent (e.g., SURPASS), is adopted and used by all the surgical team applying memory aid-tools.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital uses a special safety checklist and memory tools for surgeries to make sure that everyone on the surgical team remembers what to do to keep patients safe.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "The theatre team should all engage in the use of the WHO surgical safety process, including the 'Five Steps to Safe Surgery' commencing with a team brief, and concluding the list with a team debrief. The team debrief should highlight things done well and also identify areas requiring improvement. Teams should consider including the declaration of emergency call procedures specific to the location as part of the team brief."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Use memory aid tools such as whiteboards, electronic whiteboards, or other tools to guide safe surgery checklist use."[10] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)
- "Incorporate the safe surgery checklist in perioperative team training."[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "All patients undergoing emergency procedures must have the World Health Organization checklist completed."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Team briefing and the WHO checklist should be in routine use on the labour ward to promote good communication and teamworking and reduce adverse incidents."[10] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Surgical Checklists have been proved to reduce both morbidity and mortality in multi-centre cohort studies across multiple surgical specialties and as such are recommended for use for all patients undergoing cardiac or thoracic surgery. "[22] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Surgical safety checklists have been shown consistently to reduce mortality and morbidity. Specialist checklists are likely to reduce morbidity and mortality more effectively than the available generic general surgical checklists. Additional checklist items, based on the expert opinion of multiple specialty groups and societies, are likely to improve safety further."[22] (Strength of recommendation WEAK; Level of evidence VERY LOW; Methodological quality LOW)
- "The use of a checklist is recommended (e.g. WHO 2009) to ensure compliance with best practices to improve surgical patient safety."[23] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "The theatre team should all engage in the use of the WHO surgical safety process, commencing with a team brief, and concluding the list with a team debrief. Debrief should highlight things done well and also identify areas requiring improvement. Teams should consider including the declaration of emergency call procedures specific to the location as part of the team brief."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

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- "A World Health Organization (WHO) checklist adapted for neuroscience procedures should be in use."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The use of the surgical checklist is recommended for the prevention of adverse events and mortality related to the intervention."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "National safety standards for invasive procedures should be adapted for local use as local safety standards for invasive procedures. The WHO preoperative team brief and checklist system, for example, could be adapted to incorporate intraocular lens selection to help prevent 'wrong lens' errors."[25] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Active involvement and communication by ALL team members in the checks of the checklist is essential for the prevention of incidents in surgery."[26] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-025
Safety Pause Initiative

We suggest:

To address safety concerns, any perioperative team member can call for a safety pause, which involves identifying the issue, asking for a pause and communicating the concern, resolving the event with a team response, discussing it during the debriefing process, and identifying opportunities to improve patient care.

This recommendation can be shared with patients and other stakeholders in the following lay language: **If anyone on the perioperative team is worried about patient's safety, she/he can ask for a "safety pause". This means they stop and discuss the situation with everyone in the team to solve the problem before continuing with the surgery. After surgery they talk about what happened and how they can improve next time.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "When a distraction or interruption occurs that could affect patient safety, a safety pause should be implemented by any perioperative team member. A safety pause may consist of identifying a safety event, calling for a safety pause and communicating the concern, resolving the event with a team response to the concern, and discussing the event during the debriefing process and identifying ways to improve patient care."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-026

Continuous Patient Data Documentation

We suggest:
Patient data and clinical information should be continuously documented and updated in a standardised format, either in hand-written or electronic form, and be available for future consultation.

This recommendation can be shared with patients and other stakeholders in the following lay language: **All important information about the patient's health and care is written down on paper or computer in a way that is easy to understand and follow and is available for future care.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Patient information should be continuously recorded and updated (in electronic or written format). Anaesthetic Information Management Systems, a specialised form of electronic health record, should be considered as electronic patient charts in the perioperative and recovery period as they provide a more accurate and complete reflection of the patient's perioperative physiological parameters."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Careful records, including instructions, patient observations and drug administration, should be maintained (increasingly in an electronic form) and staff should be able to interpret the information and initiate appropriate action where necessary."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-027
Comprehensive Discharge Information

We recommend:
Patients and caregivers receive verbal and written understandable and complete personalised information upon discharge. This information is also provided to primary health care and community social providers to ensure continuity of care with special emphasis on medication changes and prescription.

This recommendation can be shared with patients and other stakeholders in the following lay language: **When patients leave the hospital, they will be given all information they need in an easy-to-understand and an individually adapted way. This information will also be given to other care providers and any community services that may be involved in their care. The most important part of this information will be about current medication status. This is to make sure that everyone involved in the patient's care is informed and can continue to provide the best care possible.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Discharge planning should ideally start as soon as the patient opts for surgery so that all essential resources and obstacles to discharge can be identified and dealt with, including liaison with primary care and social care services as required. This will minimise late cancellation of procedures."[1] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "It is recommended to give patients individualized instructions for pre-operative and post-operative changes in medication, in verbal and written formats with clear and concise directions."[27] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "Patients and their caregivers should receive, upon discharge, understandable and complete personalised information. Planning discharge and providing adequate information on post-discharge care influences the mean stay and readmissions."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "All patients should receive a copy of their discharge summary in case emergency treatment is needed overnight."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Provide clear verbal and written instructions for preoperative bathing to the patient and patient care provider."[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "The patient's GP should be informed of the patient's procedure as soon as practical, and provided with a written discharge summary, which will usually be completed by the surgeon."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The panel recommends that clinicians provide patient and family-centred, individually tailored education to the patient (and/or responsible caregiver), including information on treatment options for management of postoperative pain, and document the plan and goals for postoperative pain management."[29] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)

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- "The panel recommends that clinicians provide education to all patients (adult and children) and primary caregivers on the pain treatment plan including tapering of analgesics after hospital discharge."[29] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)
- "Postoperative short term memory loss may prevent verbal information being assimilated by the patient. If postoperative analgesia has been provided, clear, written instructions on how and when to take medication should be provided. Other important information should also be provided in writing."[28] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Patients must receive complete verbal and written information of what is required of them to improve their recovery after surgery."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Leaflets should explain pain management after discharge, including a step-down analgesic plan and how further supplies of medicine can be obtained. Patient information should emphasise the need to avoid harm from long term strong opioid use and give clear advice on the impact of analgesics on driving, acknowledging the current DVLA guidance."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "If the patient is discharged home from the postoperative care unit, all the surgery-related recommendations, the alarm signs and unexpected adverse events shall be submitted to the patient in writing."[30] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-028

Patient engagement in their own safety

We suggest:
Patients, their caregivers, and family members are engaged in their own safety along the entire process of care. Patients are given information and guidance on how to ensure their own safety.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Patients, their caregivers, and family members are involved in keeping themselves safe during their perioperative process. Patients are given information and guidance to ensure their own safety.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Patients should receive detailed information about how to identify and address potential adverse events."[31] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-029

Shared Decision-Making

We suggest:

Health professionals and patients are empowered to implement a shared decision-making approach along the care process, considering patients' preferences. This process should include preoperative discussion of milestones and discharge criteria with patients, discussion of risks and benefits, and assured provision of comprehensive, understandable for lay persons, and accessible information to patients.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Health professionals and patients are encouraged to make shared decisions about the perioperative process based on patient preferences and balance between risks and benefits, ensuring that information is discussed, easily understood and accessible to patients.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The organisational culture should seek to empower health professionals to implement patients' preferences, informed by discussions around risk and benefit. The ownership and decision making in healthcare should be in the hands of professionals and patients."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Where the risk of an adverse patient outcome associated with surgery is identified as being high, the preoperative assessment consultation should facilitate a shared patient discussion, which may result in a well-informed individual opting for non-surgical management. Under such circumstances the decision-making process should be endorsed through close collaborative discussion with surgical colleagues – this is ideally conducted and documented within a preoperative multidisciplinary team (MDT) meeting."[1] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "It is strongly recommended that the surgeon ensure that the patient has an advance directive and a designated a health care proxy or surrogate decision makers. These documents should be placed in the medical chart."[32] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality MODERATE)
- "Hospitals should provide information (web based and written) on types of anaesthesia offered before the date of surgery to provide opportunity for informed consent and shared decision making."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Clinicians should promote shared decision making by informing patients of the benefits and risks of postoperative pain treatments that include nonopioid analgesics, opioid analgesics, and nonpharmacologic interventions."[33] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Those with potential issues with their capacity to consent should be identified early in the antenatal period. Arrangements should be made to both to maximise their capacity and to ensure that they are adequately represented and advocated for, in keeping with current legislation"[10] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Prior to surgery, clinicians should advise patients and others involved in the postoperative care about the expected duration and severity of pain."[33] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Where a patient is seen prior to the day of surgery and shared decision making and discussion of anaesthetic conduct has taken place, the anaesthetist on the day of surgery has a responsibility to

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ensure the patient still understands and agrees with the perioperative plan."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

- "All patients undergoing elective procedures should be provided, prior to admission with information on their intended treatment pathway (day surgery or enhanced recovery) that is easy to understand. This should include information on the operation, anaesthesia, recovery and postoperative pain relief. Provision of this information should be documented in the patient's notes. The written and verbal information given to patients before their admission to hospital should explain the purpose and nature of their recovery and the recovery department. The Fitter Better Sooner resources published by the Royal College of Anaesthetists and the You and your anaesthetic leaflet, published by the Royal College of Anaesthetists and the Association of Anaesthetists are examples."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "A preoperative discussion of milestones and discharge criteria should typically be performed with the patient before surgery."[34] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality MODERATE)
- "We recommend the inclusion of pre-operative information in every pre-operative consultation, as it is very important to patients."[35] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "All patients (and relatives where appropriate and relevant) should be fully informed about the planned procedure and be encouraged to be active participants in decisions about their care."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Planning of care and decisions to operate should reflect the outcomes for older patients who are having emergency surgery and should include discussion of issues around risks and benefits, clinical benefit and realistic longer-term outcomes (e.g. a requirement for nursing home care). This discussion should involve the multidisciplinary team as well as the patient, families and carers where possible"[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Information should be arranged in such a way that it is comprehensive and comprehensible and should be available in a format suitable for the visually impaired and those with other difficulties understanding and considering the information. It may be necessary to provide information leaflets in a number of different languages to accommodate the needs of the local population."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Preoperative patient education is recommended."[36]
  (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-030
Postoperative Helpline Availability

We suggest:
A 24-hour telephone number is available for patients to consult in case of postoperative complications. A health care professional is always available to answer the call.

This recommendation can be shared with patients and other stakeholders in the following lay language: **There is a phone number that patients can call 24 hours a day if they have any problems or concerns after surgery. A healthcare worker will always be there to answer the phone and help them.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "A 24-hour telephone number should be supplied so that every patient knows whom to contact in case of postoperative complications. This should ideally be to an acute surgical area and should not be an answer phone."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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6. Preoperative Evaluation

PPSR-031
High-Risk Patient Identification Protocols

We suggest:
Evidence-based systems are used to identify high-risk surgical patients who require additional preoperative assessment based on:
- Age;
- Comorbidity;
- Medication history and allergies;
- Type of surgery, including risk of severe post-surgical pain;
- Dementia or cognitive dysfunction;
- Frailty;
- Nutritional status (all patients undergoing major surgery have a nutritional screening performed to improve any malnutrition detected before surgery);
- Lifestyle factors;
- Psychological factors;
- Functional status;
- Chronic pain.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital has tools to help identify patients who will need more attention in the assessment before surgery. They use information about age, additional health problems, medications and allergies, the type of surgery, mental and psychological status, body strength and physical status, nutrition, and life habits.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "In patients who are malnourished or at risk of malnutrition, supplementation with oral nutrition should be used to increase macronutrient and micronutrient intake, maintain or improve nutritional status, and improve survival."[37] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)
- "Objective assessment of risk should be routine and the identification of increased risk should trigger advanced planning specific to that patient. Each hospital should have a consistent and where possible evidence-based system in place to identify high risk surgical patients who require additional assessment. This assessment should be based on (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE):
    - Age
    - Comorbidity
    - Medication history and allergy status
    - Type of surgery including risk of severe postsurgical pain
    - Dementia and cognitive dysfunction
    - Frailty
    - Nutritional status
    - Lifestyle factors (i.e. smoking behaviour, excess alcohol consumption, drug use, obesity)
    - Psychological factors and anxiety

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    - Functional status
    - Chronic pain." [1]
- "Malnutrition is frequent, often under evaluated and predicts complications. Obesity is associated with an increased risk for kidney injury. We recommend the assessment of nutritional status (preferably by Nutritional Risk Screening) before making the appropriate interventions in patients at risk and that pre-operative fasting is minimised."[35] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-032
Surgical Risk Scales Use

We suggest:
Validated Surgical Risk Scales for morbidity and mortality are used and documented. The results are shared with patients to facilitate informed decision-making.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital uses evaluation tools to anticipate the occurrence of problems during surgery. The healthcare team documents these results and shares them with patients. This helps patients and doctors make better decisions about whether surgery is a good idea or not.**

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "As a minimum, all ASA 3–5 patients and those undergoing high risk surgery should have their expected risk of morbidity and mortality estimated and documented prior to an intervention, with adjustments made in accordance with national guidelines in planning the urgency of care, seniority of staff involved and postoperative care."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "There should be a documented evaluation of mortality and relevant morbidity risk prior to surgery using a standardised perioperative risk tool. This will inform both clinicians and the patient about decision making and consent."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "There should be locally agreed guidelines for risk assessment and documentation."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Preoperative scoring tools and functional capacity tests can be used to identify patients at risk of complications and to stratify perioperative risk."[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-033

High-Risk Patients Prioritisation

We suggest:
High-risk patients are identified by the surgeon and given priority in the scheduling of surgery. In case of critically ill patients, provision is made for preoperative admission to stabilize and optimize their condition if necessary.

This recommendation can be shared with patients and other stakeholders in the following lay language:
People who are at high risk for complications during surgery are identified by the surgeon and given priority for surgery. If someone is very sick, they may be admitted to the hospital so their illness can be stabilized or optimized before surgery.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Elective patients with major comorbidities or those undergoing complex or prolonged surgery should be scheduled earlier in the day, to allow time for postoperative stabilisation."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The theatre booking system should enable the identification and prioritisation of high-risk cases."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "There should be provision for preoperative admission of the critically ill patient to level 2 and/or level 3 care facilities for stabilisation and optimisation if required."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-034

Reassessment if Prolonged Preoperative Period

We suggest:

Early assessment of all patients, either face-to-face or virtually, prior to anaesthesia is conducted to allow for the optimization of their condition. In cases where a significant period has elapsed between preassessment and the surgery date, reassessment is performed.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Before someone has anaesthesia, an assessment is performed in person or virtually to check on their health and make sure the person is as healthy as possible before surgery. They will do this as early as possible and again if too much time has passed since the first check.**

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "All patients should be assessed prior to anaesthesia or anaesthesia led sedation. This could be conducted face to face in a clinic or virtually (any interaction that does not take place face to face)."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "There should be a lead anaesthetist for preoperative assessment who works closely with an appropriate preoperative assessment team."[13] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "If the patient has not been seen in a preoperative clinic, (e.g. those admitted for urgent surgery), they should undergo an equivalent assessment and preparation process with the findings documented before their final anaesthetic assessment. Most patients for expedited urgent surgery should have the same assessment and preparation as for elective surgery."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Preoperative assessment should occur as early as possible in the patient's care pathway. Greater than two weeks preoperatively is recommended as good practice and preferably as close to the point of contemplation of surgery as possible to allow for the optimisation of chronic health conditions and health behaviours, so that all essential resources and obstacles can be anticipated prior to the day of procedure, including discharge arrangements. If there are delays to surgery and a significant period of time has elapsed between preassessment and the date of surgery, a repeat preoperative assessment should be undertaken to ensure there are no changes to the patient's co-morbidities."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-035
Written Preoperative Policies

We suggest:
Written preoperative policies or guidelines are established, including but not limited to:
- Optimisation and management of regular medications;
- Preoperative tests and complementary explorations;
- Preoperative orders for potential blood transfusions;
- Preoperative fasting schedules.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Written rules or instructions are established for the period before a patient has surgery. These rules include things such as how the patient's regular medications should be managed before and after the surgery, what kind of tests or medical checks need to be done before the surgery, advancing patient's needs for blood transfusion during the surgery, and about the time when the patient needs to stop eating and drinking before the surgery.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Each hospital should have agreed written preoperative policies or guidelines, following national guidelines where available, including but not limited to:
    - preoperative tests and investigations
    - preoperative ordering for potential blood transfusion
    - preoperative fasting schedules and the administration of preoperative carbohydrate drinks
    - default to day surgery for suitable procedures
    - optimisation and continuation/ cessation of regular medication, including on the day of surgery, and including adjustments to monitored dosage systems
    - referral of patients from a nurse led clinic to anaesthetic staff for further review
    - pregnancy testing prior to surgery
    - breastfeeding guidelines."[1]

  (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Guidelines for fasting before anaesthesia for emergency surgery should comply with national guidelines."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-036

Further Preoperative Optimization for High-Risk Situations

We recommend:
Deeper preoperative evaluation and treatment is provided, if elective surgeries can be delayed, in certain clinical situations, including: acute coronary syndrome in patients scheduled for non-cardiac surgery, large or multiple strokes and severe neurological symptoms, current infections unrelated to the planned surgery, current venous thromboembolisms, anaemia in major surgical patients, and decompensation of chronic pathologies.

This recommendation can be shared with patients and other stakeholders in the following lay language:
If someone needs to have an elective surgery (a surgery that can be planned), but they have certain health problems, the surgery might be delayed. The doctor will do a careful evaluation and decide if it's better to wait and treat the health problems first. Some examples of health problems that might cause a delay in surgery include patients who have just had a heart attack and need non-heart surgery, had severe strokes or other neurological problems, an infection that isn't related to the planned surgery, blood clots, anaemia (low iron), or a chronic (long-term) illness that is getting worse, and are having a major surgery.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "If non-cardiac surgery (NCS) can safely be postponed (e.g. at least 3 months), it is recommended that patients with acute coronary syndrome (ACS) being scheduled for NCS undergo diagnostic and therapeutic interventions as recommended for ACS patients in general."[27] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Patients with large and multiple strokes and severe neurologic symptoms should be carefully evaluated by a neurologist before being offered surgery."[39] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "In patients with a new venous thromboembolism, it is recommended that surgery is delayed for at least one month, and if possible three months, to permit discontinuation of anticoagulation pre-operatively, rather than operating within one month of thrombosis."[40] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "The interval between a cerebral ischemic attack and elective surgery should be at least 6 months."[41] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-037

Primary Care Participation in the Preoperative Optimization

We suggest:

Preoperative risk factors such as smoking cessation, weight reduction, diabetic or anaemia control are optimised in primary care setting wherever possible.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Some patients need to become healthier before surgery. They will receive help to quit smoking, lose weight, or manage their diabetes or anaemia better. This will mostly be done by their general practitioner if possible.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Patients with diabetes are at increased risk of concurrent morbidity. These conditions should be identified and optimised where and when possible."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Control of cardiovascular risk factors—including blood pressure, dyslipidaemia, and diabetes—is recommended before non-cardiac surgery."[27] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Modifiable risk factors such as smoking cessation, diabetic control and weight reduction should be optimised in the primary care setting prior to elective surgery."[42] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-038

Preoperative accompaniment needs assessment

We suggest:

The need for perioperative accompaniment by a family member, translator or other healthcare worker is discussed and assessed during the preoperative visit. The decision is based on the patient's preferences and feasibility.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Before surgery, the healthcare team discusses with patients about whether they want someone like a family member, translator, or healthcare worker to be with them during the surgery and recovery. They consider the patient's preferences and whether it's possible to have someone with them during that time.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Some patients, both adults and children, may need parents or other members of their family to be with them. This need is best determined at the preassessment clinic visit, so that sensitivities can be taken into account in the operative process."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The use of family members to interpret or translate should be avoided unless absolutely necessary or an independent interpreter is specifically declined. It should be a rare occurrence that there is no alternative translation method available."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-039

ERAS Guidelines Adaptation

We suggest:
Enhanced Recovery After Surgery (ERAS) national or international guidelines are locally adapted to preoperative, intraoperative and postoperative care, are regularly updated, and implemented as early as possible (in some cases before the confirmed diagnosis) when appropriate.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital follows a special set of guidelines called Enhanced Recovery After Surgery, focussing on optimal care before, during and after surgery. These guidelines are locally adapted and regularly updated. They are used as soon as possible, sometimes even before the diagnosis.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "There should be local guidelines on preoperative, intraoperative and postoperative care for those cases where an enhanced recovery process is appropriate."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Where inpatient care is necessary, an enhanced recovery pathway should be followed as this is now considered to provide optimum perioperative care. The preoperative service should ensure that patients are clear about their own responsibilities and expected length of stay to support enhanced recovery pathways."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Enhanced Recovery Programmes for patients undergoing primary arthroplasty surgery should provide comprehensive details of the patient journey including multidisciplinary team (MDT) led hip and knee school and expectations in terms of early mobilisation postoperative physiotherapy. Information provided should be comprehensive and include details of regional anaesthesia."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "It is recommended to implement a multidisciplinary fast-track postoperative recovery protocol"[43] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Identification of people with cancer requiring prehabilitation (e.g., screening) should occur as early as possible from diagnosis (and in some cases before a confirmed diagnosis), and in advance of each treatment"[44] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-040
Uniform Ambulatory Surgical Care Standards

We suggest:

The same standard of perioperative care and follow-up is available for all ambulatory surgical patients, regardless of the type of treatment facility.

This recommendation can be shared with patients and other stakeholders in the following lay language:
For all patients who have outpatient surgery, the same level of operative care and follow-up is available, regardless of the type of medical facility they visit.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "All ophthalmic patients should receive the same standard of preoperative preparation, perioperative care and follow-up, regardless of the type of treatment facility"[25] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-041

Safe Postoperative Transportation Protocols

We suggest:
Following general or neuraxial anaesthesia the patient is being transported safely to a recovery location or remains in the operating room until recovered.

This recommendation can be shared with patients and other stakeholders in the following lay language:
After surgery, patients who receive general anaesthesia or neuraxial anaesthesia (i.e. any anaesthetic injected around the spinal cord) are safely moved to a recovery room or stay in the operating room until they have fully woken up.

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "All patients who have received an anaesthetic affecting central nervous system function and/or a loss of protective reflexes should remain where anesthetised until recovered or be transported safely (with care and monitoring as indicated below) to a specifically designated recovery location for post-anaesthesia recovery."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The panel recommends that clinicians provide appropriate monitoring of patients who have received neuraxial interventions for perioperative analgesia."[29] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-042
Postoperative Care Protocols

We suggest:
Hospitals have implemented and updated protocols, training, and have the necessary facilities for managing postoperative care and frequent undesired outcomes for each type of operation.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital has implemented a plan of how to manage care and undesired outcomes after surgery. This plan includes training, facilities, and updated protocols for any kind of surgery they provide.

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Where postoperative care is delivered outside of a main intensive care unit (e.g. a level 2 high dependency unit or specifically developed PACU), nurse-led, protocol driven care of frequently occurring problems for high-risk surgical patients (such as pain, fluid imbalance, nutrition and mild cardiorespiratory compromise) can ensure good patient outcomes. Protocols and policies should be agreed between nursing staff, critical care, surgeons and anaesthetists."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "All institutions should have protocols and the necessary facilities for managing postoperative care and should review and update these regularly."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-043

Postoperative Respiratory Risk Assessment

We suggest:
The risk of postoperative respiratory complications is assessed and documented preoperatively, and a specific strategy to prevent these complications is implemented, including preoperative physical therapy.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Before surgery, the risk of having breathing problems after the surgery is evaluated, written down, and a plan is made to prevent those problems. One way to prevent breathing problems is physical therapy before the surgery.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Assessing patients for their risk of developing postoperative pulmonary complications is strongly recommended."[32] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality MODERATE)
- "Optimization of pre-existing lung disease is important, and patients with severe concurrent respiratory problems are best managed in conjunction with a respiratory specialist. An active chest infection is a contraindication to elective procedures. Preoperative physiotherapy is invaluable for patients undergoing major chest or abdominal surgery. Patients should be taught deep breathing exercises as well as techniques for effective expectoration of secretions that may be aided by the routine use of saline or bronchodilator nebulizers and incentive spirometry devices in high-risk patient groups. Effective analgesia is essential, and patients should be taught strategies to minimize the impact of their incision on respiratory function by applying additional support or postural manoeuvres."[45] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-044

Comprehensive Post-Day Surgery Assessment

We suggest:

If the patient undergoes day-surgery under general or regional anaesthesia, they will be discharged only after undergoing a thorough assessment to ensure they meet the discharge criteria. A follow-up plan will be provided, and a responsible adult must be available to offer support during the first 24 hours after discharge.

This recommendation can be shared with patients and other stakeholders in the following lay language: **When patients have surgery under certain types of anaesthesia during the day and don't need to stay overnight in the hospital, they will be checked to make sure they are ready to go home. Before going, they will be given a plan for their care and someone will need to be with the patient for the first 24 hours after leaving to make sure they are okay.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Following procedures performed under general or regional anaesthesia, a responsible adult should escort the patient home and provide support for the first 24 hours after surgery. A carer at home may not be essential if there has been good recovery after brief or non- invasive procedures and where any postoperative haemorrhage is likely to be obvious and controllable with simple pressure."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Locally agreed policies should be in place for the management of postoperative pain after day surgery. This should include pain scoring systems in recovery and a supply of pain relief medication on discharge, with written and verbal instructions on how to take medications and what to take when the medications have finished."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Locally agreed written discharge criteria should be established."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Objective discharge criteria should be used to facilitate patient discharge directly to their home."[36] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)
- "Patients should undergo assessments of the following before discharge, and an appropriate follow-up plan should be initiated: Nutrition (Mini Nutritional Assessment) Cognition -Item Recall or Mini Mental State Exam) Ambulation ability (Timed Up and Go Test) Functional status Presence of delirium."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-045

Critical Care Outreach Services

We suggest:
Critical care outreach services are readily available and encompass a range of measures, including:
- The use of a track and trigger warning system to identify at-risk patients;
- Rapid Response Teams or Emergency Medical Teams to rescue the deteriorated patient;
- Timely transfer to ICU when needed;
- Follow up of discharge and rehabilitation of patients from critical care.

This recommendation can be shared with patients and other stakeholders in the following lay language:
There are special services called "critical care outreach services" that are always available. These include:

- **Identifying patients who are at risk of severe worsening by using an early warning system.**
- **Teams of professionals to rescue the patient, if needed.**
- **Promptly moving patients to the intensive care unit if necessary.**
- **Enabling the physical improvement and follow up of patients to safely leave the intensive care unit soon.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "It is recommended to have high awareness of peri-operative cardiovascular complications (CV), combined with surveillance for perioperative myocardial injury (PMI) in patients undergoing intermediate- or high-risk non-surgical patients (NCS)."[27] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Key parameters to monitor include respiratory and heart rate, blood pressure, oxygen saturation, level of consciousness and surgical site. A tailored, postoperative monitoring, evaluation and escalation of care pathway is recommended."[7] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Protocols should be in place for the transfer of patients from isolated units who become ill unexpectedly. They should be moved safely and rapidly to a facility which provides an appropriate higher level of care."[25] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Critical care outreach services should be available to patients 24-hour a day, seven days per week that include: a) The use of a track and trigger warning system to identify at-risk patients; b) Rapid referral to appropriately equipped experts; c) Timely transfer to ICU when needed; d) Facilitation of discharge and rehabilitation of patients from critical care."[47] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-046
Continuity of Care Protocols

We suggest:
Continuity of care is ensured through established protocols on arrangements with essential off-site specialty care providers, including clinical pharmacists, dieticians, outreach nurses, physiotherapists, mental and social care.

This recommendation can be shared with patients and other stakeholders in the following lay language:
A clear plan is in place to ensure continuity of care by the possibility to send patients to healthcare professionals outside the hospital such as: pharmacists, dieticians, specialized nurses, physiotherapists, mental health professionals, and social workers.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Explicit arrangements should be made for the provision of care from specialties that are not available on site."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "When the specialist equipment cannot be moved, all necessary emergency equipment should be immediately available and transfer arrangements to a high dependency or intensive care setting should be in place."[25] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Provision should be made to ensure access to other allied healthcare professionals, such as clinical pharmacists, dieticians, outreach nurses and physiotherapists, is available if required."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Clear lines of communication and close working with other services such as surgical and medical colleagues, outpatient (chronic) pain, palliative care, emergency medicine and primary care should be in place."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-047

Tailored Rehabilitation Programmes

We recommend:
The rehabilitation program is tailored to each patient's individual needs and characteristics, with specific focus given to respiratory physiotherapy, as necessary.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When a patient is recovering from an injury or illness, their rehabilitation plan will be designed to fit their specific needs. This includes making sure they receive respiratory physiotherapy to improve breathing if needed.

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Rehabilitation should be adjusted to the patient's characteristics and the available resources."[43] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Preoperative and postoperative respiratory physiotherapy is recommended."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-048
Medicines Management Protocols Implementation

We recommend:
Protocols are implemented to ensure reliable medicines management, including accurate medication history documentation on admission, patients' medicines used during hospitalization, technological resources (bar-coding, computerised prescriber orders, pharmacy automation, etc), stock review and management, supply, expiry checks, and access to appropriately trained pharmacy staff to manage any medicine shortages.
Medication storage is organised following safety considerations:
- Separating medications by generic name and packaging;
- Separating high alert medications, with systematic segregation of medication for general anaesthesia and neuraxial anaesthesia / peripheral blocks;
- Providing separate bins or proper dividers for all medications;
- Label storage compartments;
- Use tall man lettering;
- Use both, generic and brand names;
- Position containers so that the labels are visible;
- Avoid mere alphabetical storage.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Protocols are implemented to ensure the safe and secure management of medication. These protocols include keeping a precise record of medication used by the patient during their hospital stay, using technology such as barcodes and computerised orders to help manage medication, checking expiration dates, and having trained pharmacy staff available to handle medication shortages. Medication is stored in a way that prioritizes safety. There are separate bins or dividers across medications; Storage compartments are labelled using tall man lettering, and medications are not merely stored alphabetically. High-alert medications are also separated from other medications.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The multidisciplinary team should select technological devices (e.g., bar-code systems, computerized prescriber order entry system, biometrics, pharmacy automation, radio-frequency identification systems, electronic medication storage and inventory systems, electronic medication administration records, electronic medication reconciliation tools) to be used during all phases of the medication use process based primarily on the safety aspects incorporated into each device."[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "Facilities for medication storage should be located and designed in such a way that allows timely access when required for patient care, while maintaining integrity of the medicines and aiding organisations to comply with safe and secure storage requirements."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Robust systems should be in place to ensure reliable medicines management, including accurate medication history taking and documentation on admission, medication storage facilities, stock review and management, supply, expiry checks, and access to appropriately trained pharmacy staff

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to manage any medicine shortages."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

- "Include the following processes in the medication management plan: procuring, storing, and disposing of all medications; administering medication; managing medication shortages, discontinuations, or recalls; managing high-alert medications; and creating, maintaining, and reviewing preference cards and standing order forms."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "The multidisciplinary team should: establish, monitor, and review the portion of the formulary unique to the perioperative services; establish, monitor, and review medications that are routinely stocked at par level in perioperative medication storage areas; establish the frequency of the review of the formulary and medication stock; establish the type of labels to be used, including preprinted labels for use on the sterile field; define the scope, role, orientation, and assessment of competency for supplemental personnel (e.g., temporary personnel, contracted pharmacist) as related to the medication use process; and standardize medication-related perioperative documents."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Implement the medication management plan consistently in all areas where operative and other invasive procedures are performed."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Organize medications in the storage areas including emergency and specialty carts in a standardized manner using safety considerations, including separating medications by generic name and packaging; separating high-alert medications; providing separate bins or dividers for all medications in storage; labelling storage bins, using tall man lettering when possible, with both the medication's generic and brand names; positioning medication containers so that the labels are visible; and avoiding alphabetical storage."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "There must be a system for ordering, storage, recording and auditing of controlled medicines in all postoperative areas in which they are used, in accordance with statutory legislation."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-049
Medication Handling Training

We suggest:
All staff involved in the prescribing, dispensing, preparing, administering, and monitoring of medicines are appropriately trained and, if necessary, supervised.

This recommendation can be shared with patients and other stakeholders in the following lay language:
All healthcare team members involved in medication treatments, receive the right training and supervision if needed.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "All staff involved in the prescribing, dispensing, preparing, administering and monitoring of medicines must be appropriately trained."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-050
Medication Administration Safety Protocols

We suggest:
Ensure medication administration according to the following safety principles:
1. Verbal orders are minimized and standardised;
2. Allergies and potential interactions are verified; administration is documented;
3. Patient identification, medication dose, route and timing, strength of concentration, and setting of infusion pump, if used, is checked.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The safety of medication administration should be ensured by avoiding verbal orders if possible. If verbal orders are given, the language should be clear. Patient's allergies and medication interactions should be checked, and administration should be noted. The identification of the patient, the medication dose, timing, concentration, and way of administration should be checked. If the patient uses an infusion pump, this should be checked as well.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Before administering medication, verify the right patient using at least two patient identifiers, right medication, right dose, right route, right time, right strength or concentration, right medication administration rate, and infusion pump settings, if applicable."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Efforts should be made to minimize drug administration errors, and these should be compliant with local medicines management policies, which incorporate relevant national policy and frameworks, including the avoidance of 'Never Events'."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Take precautions to mitigate the risk for errors associated with tubing by tracing all tubing to the point of origin and point of insertion, labelling all tubing and injection ports with the point of exit (e.g., epidural, arterial, venous), avoiding the use of y-port extension tubing, aligning tubing to avoid tangling and to facilitate easy identification, avoiding use of standard Luer-lock syringes for medications intended for oral or enteric administration, allowing only individuals who have been deemed competent to manage connections and lines, and using only non-Luer-lock connectors on spinal, epidural, and combined spinal/epidural devices."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Clinicians should recommend that patients (or their caregivers) store prescribed opioids securely and dispose of unused opioids through take-back programs or another accepted method."[33] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Take precautions to mitigate the risk for errors associated with medication documentation, including during the transcription phase."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Document medications administered in a manner that is legible and easily accessible, is free of unapproved abbreviations and acronyms, and is timely."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Take precautions to mitigate the risk for medication errors in the prescribing phase of the medication use process"[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Verify all medications obtained from storage against the original medication order."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)

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- "Verify that the medication dose is correctly adjusted to the patient's weight."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Use a consistent format for documenting medication administration, including the medication name, total amount of medication administered when multiple injections of the same medication (e.g., lidocaine) are administered during a procedure, route of administration, administration rate, date and time administration began, concentration of the medication and solutions administered, duration of administration or time that treatment was completed, and identity of the person administering the medication."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Take precautions to mitigate the risk of medication errors occurring when the medication is obtained and prepared."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Take precautions to mitigate the risk for errors during medication administration."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-051
Pre-Prepared Emergency Medication Use

We suggest:
Pre-prepared drugs are utilized, such as prefilled syringes containing commonly used emergency medications, sterile ampoules, or pre-prepared bags (i.e. low-dose local anaesthetic mixed with opioid solutions for regional analgesia). If not available, hospital standardised concentrations solutions are used.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital uses pre-prepared medicines like pre-filled syringes with emergency drugs, or pre-prepared bags with a mix of medications for pain relief. The hospital also uses sterile ampoules which are small, sealed containers with medication inside. If they don't have these pre-prepared medicines, they use solutions made in the hospital defined through a protocol.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Procure medications as single-dose units if available, in a size as close as possible to the anticipated dose, in prefilled syringes if available, and in limited concentrations."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Preprepared drugs should be used where available, including sterile ampoules or bags of low-dose local anaesthetic combined with opioid solutions for regional analgesia. Prefilled syringes of commonly used emergency drugs (e.g. suxamethonium and phenylephrine) should be used where available."[10] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-052
Medication Labelling and Colour-Coding Standards

We suggest:

Medications in infusions and syringes are labelled and colour-coded according to the anaesthesia recommended scheme. Compounded preparations made off the sterile field are clearly labelled with patient identification information, the names and amounts of all ingredients, the name or initials of the person who prepared the compound, the date of preparation, and the beyond-use date and time.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Medicines given through infusions or injections are labelled with clear information about the identification of the patient, the name of the medication, the amounts of all ingredients, and who prepared it. The labels also include the preparation date and when it expires. The colour of the label follows a standard scheme that helps anaesthesiologists to easily identify different medicines.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- " All medication containing infusions and syringes should be clearly labelled and ideally colour coded in accordance with the anaesthesia recommended scheme."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Label compounded preparations prepared off the sterile field with patient identification information, the names and amounts of all ingredients, the name or initials of the person who prepared the compound, the date of preparation, and the beyond-use date and time."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-053
Sound-Alike and Look-Alike Medications Precautions

We suggest:
Medications with similar sounding names and similar appearance (sound-alike and look-alike) are avoided when possible and systematically stored separately.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Medications with similar names or similar looks are avoided when possible and are stored separately.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Use tall man lettering on labels placed on containers (e.g., syringes, sterile medication cups, IV bags) if medications have look-alike or sound-alike names."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Separate sound-alike and look-alike medications in storage locations."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-054

Single-Use Vials Protocol

We suggest:
Single-dose/single-use vials or dispensing devices are used for one single patient, discarding unused opened or prepared medication at the end of procedures.

This recommendation can be shared with patients and other stakeholders in the following lay language:
One-time medication containers are used for only one patient, and any unused or remaining medicine from an opened container is thrown away after the procedure.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Use single-dose/single-use vials and single-use dispensing devices on only one patient."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-055

Specific Connection Standards for Neuraxial Infusions

We suggest:
Specific connections NR-Fit (ISO 80369-6) are used whenever neuraxial infusions and boluses are performed, instead of intravenous Luer connectors.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When healthcare professionals deliver medications directly into the spinal cord, they use special connections called NR-Fit (ISO 80369-6). These NR-Fit connections are designed specifically for this type of procedure and are safer and less likely to cause misconnections and accidental delivery of medications through a wrong.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "It is recommended that epidural infusions and boluses should be performed with devices that will not connect with intravenous Luer connectors or intravenous infusion spikes. All NHS institutions should transition to the use of the newly developed NRFit™ (ISO 80369-6) neuraxial connector"[48] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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9. Blood Management

PPSR-056
Patient Blood Management Strategy

We recommend:

A Patient Blood Management (PBM) strategy is in place in the hospital and involves identifying moderate-to-high-risk bleeding procedures before surgery, utilizing multidisciplinary preoperative and perioperative measures to conserve as much patient blood as possible, and implementing a restrictive transfusion policy based on the patient's clinical condition rather than a fixed haemoglobin threshold.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital has a program, called Patient Blood Management, to identify moderate to high-risk bleeding procedures before the surgery. A team of different specialists works together to use available methods to conserve blood before and during the surgery. They only give blood transfusions, when necessary, based on the patient's clinical condition, instead of just relying on a specific haemoglobin level.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "In patients undergoing surgery with expected blood loss of ≥500 mL, use of washed cell salvage is recommended."[27] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "We recommend a restrictive transfusion strategy which is beneficial in reducing exposure to allogeneic blood products." Kozek-Langenecker, 2017 (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "The implementation of Patient Blood Management (PBM) Programmes is recommended in all hospitals and health areas. We suggest the integration of the PBM programme within the IRPs."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "Correction of preoperative anaemia (haemoglobin <120 g/L) is indicated to reduce morbidity and mortality in the perioperative period when elective surgery is planned."[49] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Preoperative identification of high-risk patients should be performed, and all available preoperative and perioperative measures of blood conservation should be undertaken in this group as they account for the majority of blood products transfused."[50] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "It is recommended that one transfuse packed red blood cells (PRBCs) on the basis of the clinical condition of the patient rather than on a fixed haemoglobin threshold."[19] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "In patients with preoperative anaemia, we recommend the use of combined therapy with intravenous iron and erythropoietin along with a restrictive transfusion policy."[4] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality MODERATE)
- "Utilisation of blood and blood products should be guided by point of care testing together with methods to minimise blood loss."[15] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Implementation of a PBM protocol for the bleeding patient is recommended."[19] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)

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The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-057
Blood Transfusion Protocols

We suggest:
The following protocols for all patients receiving transfusion of blood and blood products are implemented:
1. Identification of the patient;
2. Double-checking blood type;
3. Timing and location of the transfusion;
4. Verification of the equipment;
5. Administrative procedures for materials, blood products and medicines;
6. Monitoring the patient;
7. Documentation of the process assuring transfusion traceability;
8. Reporting problems related with the transfusion;
9. Transport and distribution of blood and blood components at all stages of the transfusion chain must be kept under conditions that maintain the integrity of the product.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When a patient receives a blood transfusion, certain protocols must be followed. These protocols include:

1. **Checking the patient's identity and blood type**
2. **Making sure the equipment is correct, and the timing and location of the transfusion is appropriate.**
3. **Administrative procedures for handling materials, blood products, and medications.**
4. **The patient must be monitored closely during the transfusion.**
5. **The process must be properly documented to ensure that everything is traceable.**
6. **Any issues that arise during the transfusion must also be reported.**
7. **The blood and blood components must be transported and distributed in a way that keeps them safe and preserves their integrity.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Health services must have a policy for all patients receiving transfusion of blood and blood products that defines and includes:
  - positive identification of the patient
  - selection of the appropriate location and timing for the transfusion
  - validation of equipment employed in transfusion
  - administration procedures for components, compatible fluids and medications
  - optimal observation, care and monitoring of the patient
  - documentation requirements for the transfusion process
  - reporting of adverse events and outcomes of the transfusion."[51] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Health services must have a policy and protocol for requesting and obtaining blood in a critical bleeding scenario."[51] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Transport and distribution of blood and blood components at all stages of the transfusion chain must be maintained under appropriate conditions to ensure the integrity of the product."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-058

Massive Transfusion Protocols

We suggest:
Multidisciplinary massive transfusion protocol is locally adapted and implemented to allow effective, rapid intervention and the reduction of the effects of hypovolemia and coagulopathy.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital has a plan called "multidisciplinary massive transfusion protocol" to help patients who have lost a lot of blood. The plan helps the doctors and nurses to act quickly and gives people the right treatment to stop them from bleeding. This plan should be adapted to the specific facility.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "There should be clear guidance on damage control resuscitation which is understood by all staff."[15] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "It is recommended that massive transfusion protocols be implemented and activated in every hospital to allow effective, rapid intervention and the reduction of the effects of hypovolemia and dilutional coagulopathy."[52] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-059
Operating Room Floor Mapping for Sterility

We suggest:

A floor mapping of the operating room is defined to facilitate safe logistics and surgical sterility, dividing the area into four zones: sterile field, circulation pathway, movable equipment zone, and anaesthesia zone.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The operating room is divided into four areas to make it safer for surgeries. These areas are the sterile field (where the surgery is performed), the pathway for people to move around, the area for equipment that can be moved, and the area for the anaesthesiologist. This enhances sterility and safety during the surgery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "When determining the size and floor plan of the operating room, divide the area into four zones: sterile field, circulation pathway, movable equipment zone, and anaesthesia zone."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-060
Infrastructure Works Surgical Area Contamination Prevention

We suggest:
Surgical areas are protected from environmental contamination due to renovations or other infrastructure works.

This recommendation can be shared with patients and other stakeholders in the following lay language:
Surgical areas are protected from environmental contamination due to renovations or other infrastructure works.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Establish, maintain, and monitor measures for preventing environmental contamination when renovation or new construction occurs in close proximity to an occupied health care facility."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Place barriers (e.g., solid fibreboard or sheetrock walls, sealed plastic walls) between the construction site and the surgical suite and maintain them at all times."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-061

Surgical Site Infection Prevention Bundle

We recommend:
To prevent surgical site infections (SSI), the perioperative team implements a protocolized bundle of aseptic and antibiotic procedures. This includes administering a systemic antibiotic within 120 minutes before incision in high SSI risk surgeries and using alcohol-based chlorhexidine solution for skin preparation. During surgery, the team considers the half-life of the antibiotic and may administer a second dose, but they avoid prolonging its use after the operation is complete.

This recommendation can be shared with patients and other stakeholders in the following lay language:
To prevent infections during surgery, the perioperative team have a plan that they follow. In case of high infection risk, they give the patient an antibiotic within two hours before the surgery to lower the risk of infection, and they clean the patient's skin with a special alcoholic solution. During the surgery, the team may give the patient another dose of the antibiotic, but they stop giving it when the surgery is done.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "It is recommended to practice strict aseptic technique based on national and institutional guidelines"[53] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "A care bundle should be implemented, including administration of a broad-spectrum antibiotic covering S. aureus, and skin preparation using either alcohol-based iodine or chlorohexidine solution. Administration of a broad-spectrum antibiotic covering S. aureus (with possibility of repeating doses during longer surgeries)"[54] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Antibiotic prophylaxis is recommended for 120 minutes prior to surgical incision."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "The panel recommends the administration of systemic antibiotic prophylaxis within 120 minutes before incision, while considering the half-life of the antibiotic"[55] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-062
Perioperative Hand Hygiene

We suggest:
All members of the perioperative team perform hand hygiene at every indicated step following standard recommendations. Before donning of the sterile gown and gloves, surgical hand preparation is performed by rubbing with a suitable antiseptic soap and water, or with a suitable alcohol-based hand rub.

This recommendation can be shared with patients and other stakeholders in the following lay language:
All members of the perioperative team clean their hands following specific guidelines to prevent the spread of infection. Before putting on sterile clothing and gloves, they wash their hands with soap and water or use an alcohol-based hand sanitizer.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Perioperative team members should perform hand hygiene."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "We support current recommendations for hand hygiene in patient care."[56] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality Not determined)
- "Surgical hand preparation is to be performed either by scrubbing with a suitable antiseptic soap and water or a suitable alcohol-based hand rub (ABHR) before donning sterile gown and gloves"[57] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Health personnel must wash their hands before and after each direct contact with the patient, after removing gloves. Hands that are visibly dirty or potentially contaminated with dirt or organic material should be washed with soap and water."[58] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-063
Perioperative Blood Glucose Monitoring

We recommend:

Blood sugar is monitored in the perioperative period in patients at risk of hyperglycaemia, diabetic patients and non-diabetic patients undergoing major surgery, to reduce the risk of surgical infection. If necessary, hyperglycaemia is treated with the objective of achieving levels below 150-180 mg dL-1 (8.33-10 mM).

This recommendation can be shared with patients and other stakeholders in the following lay language:
Blood sugar levels are checked in both diabetic and non-diabetic patients undergoing major surgeries before, during and after surgery. If the levels are too high, the patient is treated to reduce the risk of infection after the surgery. The goal is to keep the blood sugar levels between a recommended range.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Implement perioperative glycaemic control and use blood glucose target levels less than 200 mg/dL in patients with and without diabetes."[59] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-064

Glove Change Protocol to Reduce Infection Risk

We suggest:

To minimize the risk of infection, sterile gloves are changed after draping and before handling implants. In addition, gloves are changed when there is a macroscopic perforation.

This recommendation can be shared with patients and other stakeholders in the following lay language: **To prevent infection during surgery, the medical team changes their sterile gloves when they need to handle implants or if the gloves have any visible hole in them.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "When an item or items are found to be contaminated, take the following corrective actions, at a minimum: - remove the contaminated item(s), - remove any other items that may have come in contact with the contaminated item(s), - change the gloves of any team member who may have touched the contaminated item(s), and - take any additional corrective actions required after thoughtful assessment and informed decision making based on the - specific factors associated with the individual event."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Changing gloves intraoperatively may reduce the risks of surgical site infections / periprosthetic joint infections (SSIs/PJIs) in arthroplasty surgery by reducing contamination. Based on prior studies, gloves should be changed after draping, before handling implants, and when macroscopic perforation of the glove occurs. Gloves should also be changed at least once every 60 to 90 minutes, as contamination and glove perforation rates increase with duration of surgery"[60] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality Not determined)
- "We recognize the advantage of glove changes at least every 90 minutes or more frequently and the necessity of changing perforated gloves. Permeability appears to be compromised by the exposure to methacrylate cement and gloves should be changed after cementation"[56] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-065
Sterile Closure Trays Use

We suggest:
Before closing wounds in surgeries that are classified as clean-contaminated, contaminated, or dirty, a separate set of surgical instruments is used.

This recommendation can be shared with patients and other stakeholders in the following lay language:
When a surgery involves an increased risk of infection because of the site or part of the body cannot be considered sterile, a separate set of tools is used to close the wound after the surgery is finished. This reduces the risk of infection.

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "A bundle of measures should be in place to reduce surgical site infection. Preoperative measures included a chlorhexidine shower, mechanical bowel preparation with oral antibiotics, ertapenem within 1 hour of incision, and standardization of preparation of the surgical field with chlorhexidine. Operative measures included use of a wound protector, gown and glove change before fascial closure, use of a dedicated wound closure tray, and limited operating room traffic. Postoperative measures included removal of the sterile dressing within 48 hours and daily washings of the incision with chlorhexidine."[34]
  (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-066
Cleaning Protocol Following Contaminated Surgery

We suggest:
A thorough cleaning is performed in the operating room following contaminated surgery and before further surgery, defined by locally adapted national or international standards.

This recommendation can be shared with patients and other stakeholders in the following lay language: **After a surgery that involves potentially harmful bacteria or other germs, the operating room is cleaned very well before any other surgeries are done. The cleaning process follows specific rules that are set by the local or national authorities.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "We recommend thorough cleaning as defined by local institutional standards, after contaminated surgery and before further surgery"[56] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-067

Aseptic Techniques for Central Vascular Catheter Placement

We suggest:

Strict aseptic techniques, such as hand disinfecting, and barrier precautions, including the use of sterile gowns, gloves, caps, masks covering both mouth and nose, full body patient drapes, and eye protection, are employed during central venous catheter placement to prevent infections.

This recommendation can be shared with patients and other stakeholders in the following lay language:
"A central venous catheter" is a long, thin tube that is inserted into a large vein in the body, usually in the neck, chest, or groin area. When a doctor puts in a central venous catheter, they use very clean techniques like washing their hands and wearing special clothing like gloves, gowns, masks, and eye protection to stop germs from getting into the patient's body and causing an infection.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "In preparation for the placement of central venous catheters, use aseptic techniques (e.g., hand washing) and maximal barrier precautions (e.g., sterile gowns, sterile gloves, caps, masks covering both mouth and nose, full body patient drapes, and eye protection)"[61] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-068
Peripheral Catheter Infection Prevention

We suggest:
Peripheral vascular catheters are cannulated under aseptic conditions; signs of phlebitis are evaluated on a daily basis.

This recommendation can be shared with patients and other stakeholders in the following lay language:
"A peripheral vascular catheter" is a thin, flexible tube that is inserted into a vein in the arm, hand, or foot. Peripheral venous catheters are inserted with great care, following strict guidelines for cleanliness. The catheter site is checked daily for any signs of inflammation.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The administration of peripheral parenteral nutrition (NPP) through a peripheral vein requires follow-up in order to prevent one of the most important complications associated with the limitation of tolerance such as the development of thrombophlebitis."[62] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-069
Urinary Catheter Infection Prevention

We suggest:
Urinary catheters are not routinely used. If they are used, they must be placed and handled under aseptic conditions.

This recommendation can be shared with patients and other stakeholders in the following lay language:
"A urinary catheter" is a thin, flexible tube that is inserted into the bladder through the urethra (the tube that carries urine out of the body) to drain urine. Urinary catheters are not used unless they are necessary. If they are used, doctors and nurses make sure everything is clean and sterile to prevent infections.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Health care professionals should implement strategies before, during, and after the insertion of urinary catheters to prevent urinary tract infection."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-070
Invasive Devices Early Removal

We recommend:

On a daily basis, the clinical indications for invasive devices, such as venous central lines, peripheral lines, catheters, nasogastric tubes, and drains, are evaluated to ensure they are promptly removed when no longer necessary.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Every day, healthcare team checks to see if the medical devices (like tubes or catheters) that are inside a patient's body are still necessary. If they are no longer needed, they are removed immediately.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Foleys catheter should be removed in the majority of cases within 24 h after surgery and individualized in patients with high risk of retention."[7] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Remove catheters promptly when no longer deemed clinically necessary."[61] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-071
Minimally Invasive Surgical Techniques

We recommend:
Whenever possible, surgery is performed using minimally invasive techniques to minimize the size of the incision and reduce the risk of complications.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Whenever possible, surgeons use less invasive techniques involving smaller cut in the skin when performing surgery on the abdomen to reduce the risk of complications.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Minimally invasive surgery (MIS) is preferred for appropriate patients where the resources and expertise are available."[7] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Minimally invasive techniques should be considered for frail older adults undergoing colorectal surgery."[63] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "A minimally invasive surgical approach should be used whenever the expertise is available and appropriate."[34] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "Minimally invasive surgery is recommended, provided that the surgical and oncological results do not differ between the surgical techniques."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-072
Patient-Tailored Alarm Settings

We suggest:
Alarm settings are set specifically for each patient and procedure.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The alarms are personalized for each patient, based on their unique needs and the type of surgery. The alarms help the healthcare team control the patient's vital signs and make sure everything is going smoothly during the procedure.**
Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Physiological monitoring alarm settings should be appropriate for the specific procedure."[8] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Test clinical and alert alarms on initial setup."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Establish and implement a process for responding to alert alarms when perioperative personnel are not present."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Take precautions to mitigate hazards associated with non-functioning clinical and alert alarms."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Communicate changes in clinical alarm default parameters (e.g., volume, high or low limits) verbally and visually during changes of personnel."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-073
Anaesthesia Depth Monitoring

We suggest:

Anaesthesia depth is monitored and maintained within recommended limits to prevent intraoperative awakening and postoperative delirium, especially when using total intravenous anaesthesia or neuromuscular block.

This recommendation can be shared with patients and other stakeholders in the following lay language: **During surgery, healthcare professionals closely control how well the patient is anaesthetized within recommended limits. They do this to make sure the patient doesn't wake up during the surgery or becomes confused and agitated afterwards.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Anaesthetic depth should be guided either maintaining an end tidal concentration of 0.7–1.3 minimum alveolar concentration (MAC) or bispectral index (BIS) index between 40 and 60 with the aim not only to prevent awareness but also to minimize anaesthetic side effects and facilitate rapid awakening and recovery. Avoid too deep anaesthesia (BIS<45), especially in elderly patients."[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Equipment for monitoring the depth of anaesthesia should be available for patients receiving emergency anaesthesia (e.g. processed EEG) particularly if total intravenous anaesthesia is used for emergency surgery."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-074
Protective Ventilation Strategies

We suggest:
During general anaesthesia, a protective ventilation strategy is implemented, consisting of a tidal volume of 6-8 ml kg-1 of ideal weight, individualized use of positive end-expiratory pressure (PEEP) typically set above 5 cm H2O, and application of recruitment manoeuvres.

This recommendation can be shared with patients and other stakeholders in the following lay language: **During general anaesthesia, a protective ventilation strategy is used to keep the patient's lungs safe. This includes giving the patient a specific amount of air with each breath, maintaining some air pressure into the airways at the end of each breath (known as PEEP), and doing certain exercises (called recruitment manoeuvres) to keep the lungs working well.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "The use of ventilation is recommended during general anaesthesia protection, which includes a tidal volume of 6–8 ml / kg ideal weight, the use of individualised Positive end- expiratory pressure (PEEP) generally above 5 cm H2O and the application of recruitment manoeuvres."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "In surgeries that require one-lung ventilation, we recommend the above protective ventilation measures but also decreasing the tidal volume to the lung dependent on 4–6 mL / kg of ideal weight."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "It is recommended to use lung expansion modalities in all older adults in the postoperative period, in order to reduce the risk of pulmonary complications."[37] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-075

Laparoscopy Insufflation Pressure Monitoring

We recommend:

Monitor and maintain the insufflation pressure during laparoscopy at the lowest necessary level for pneumoperitoneum, following the direction of the leading surgeon. The standard laparoscopy pressure limits usually recommended are 1.6-2.0 kPa (12-15 mmHg) for the pneumoperitoneum pressure, and 1.1-1.6 kPa (8-12 mmHg) for the intra-abdominal pressure during surgery. However, these pressure limits may vary depending on the patient's condition and the type of surgery being performed and may need to be adjusted by the surgeon or anaesthesiologist.

This recommendation can be shared with patients and other stakeholders in the following lay language: **During laparoscopy, a procedure to look and perform surgery inside the tummy (abdomen) with a telescopic camera through small cut in the skin, the amount of air pumped into the abdomen is checked and kept at the lowest possible level needed to have a good view and space to work, depending on the patient's condition or type of surgery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Maintain insufflation pressure at the lowest level necessary to achieve pneumoperitoneum within the specification of the surgeon."[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "Monitor gas insufflation pressures for maintenance of pressure at the desired level."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-076

Dantrolene Accessibility for Malignant Hyperthermia

We suggest:

Dantrolene is accessible within 10 minutes of the first signs of Malignant hyperthermia (MH).

This recommendation can be shared with patients and other stakeholders in the following lay language: **It is important to have the medicine Dantrolene available within 10 minutes of the first signs of a dangerous condition called Malignant Hyperthermia (a serious reaction to the anaesthesia). This is to ensure quick treatment and prevent serious complications.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Dantrolene needs to be accessible within 10 minutes of the first signs of malignant hyperthermia (MH) because an increase in the time interval between the first clinical signs of MH and the administration of dantrolene has been associated with increased MH-related morbidity."[64] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-077

Bone Cement Implantation Syndrome Prevention

We suggest:
Intraoperative surgical and anaesthetic strategies are used to reduce the incidence of bone cement implantation syndrome.

This recommendation can be shared with patients and other stakeholders in the following lay language: **During orthopaedic surgeries that involve using bone cement, there is a risk of a condition called bone cement implantation syndrome. To reduce this risk, surgical teams take various steps during surgery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Specific intra-operative roles:
  - a) Surgeon:
    - Inform the anaesthetist that you are about to insert cement;
    - Thoroughly wash and dry the femoral canal;
    - Apply cement in retrograde fashion using the cement gun with a suction catheter and intramedullary plug in the femoral shaft;
    - Avoid vigorous pressurisation of cement in patients judged to be at risk of cardiovascular compromise."[65] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)
- "Specific intra-operative roles:
  - b) Anesthetist. Maintain vigilance for signs of cardiorespiratory compromise. Use either an arterial line or non-invasive automated blood pressure monitoring set on the 'stat' mode during/ shortly after application of cement. Early warning of cardiovascular collapse may be heralded by a drop in systolic pressure. During general anaesthetic, a sudden drop in endtidal pCO2 may indicate right heart failure and/or catastrophic reduction in cardiac output."[65] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-078

Retained Surgical Items Prevention Procedures

We suggest:

The following procedures are established for prevention of retained surgical items:

1. **Procedures where no or less counting is needed;**
2. **Which items are to be counted;**
3. **Order and grouping of counting;**
4. **When the counts should be performed;**
5. **Minimize noise, distractions, and interruptions during counting;**
6. **Actions to undertake if there is a count inconsistency;**
7. **Use of radiographic screening and/or additional technologies;**
8. **Reporting of problems.**

This recommendation can be shared with patients and other stakeholders in the following lay language:

The hospital has certain rules to make sure that nothing is left inside a person's body after surgery (e.g. by counting the materials and tools employed). These rules include:

1. **Deciding when it's okay to skip counting.**
2. **Deciding which tools need to be counted.**
3. **The order and grouping of the counting.**
4. **Figuring out when to count the tools.**
5. **Trying to keep the area quiet and free from interruptions while the surgical tools are being counted.**
6. **Deciding what to do if the counted tools don't match up.**
7. **Using x-rays or other tools to make sure nothing is left inside the person's body.**
8. **Reporting any problems.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Include the following in policies and procedures for prevention of retained surgical items (RSI): how noise, distractions, and unnecessary interruptions will be minimized during counting procedures; items to be counted; when counts should be performed (e.g., before the patient enters the operating room or procedure room, at designated intervals during lengthy procedures); directions for performing counts (e.g., sequence, item grouping); waived count procedures in which baseline and/or subsequent counts may be exempt; interdisciplinary team actions and procedures for count discrepancy reconciliation; use of radiographic screening; use of adjunct technology; and documentation and reporting procedures for RSIs and near misses."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Use a consistent interdisciplinary approach for preventing retained surgical items (RSIs) during all surgical and invasive procedures."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "The surgeon should inform the patient or patient's representative of any surgical soft goods/miscellaneous surgical items purposely left in the wound at the end of the procedure and the plan for removing these items."[3] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-079

Verification of Neuromuscular Block Reversal

We recommend:

To prevent residual weakness and reduce respiratory complications, the reversal of neuromuscular block should be verified by obtaining a train-of-four (TOF) ratio greater than or equal to 0.9 in the adductor pollicis muscle before extubation during the anaesthetic discharge.

This recommendation can be shared with patients and other stakeholders in the following lay language: **When a patient is given medication to paralyze their muscles during surgery, it's important to make sure the effects of the medication wear off before removing the breathing tube. Healthcare professionals check this by using an electrical stimulation called train-of-four (TOF) ratio, which measures muscle activity. The TOF ratio should be 0.9 or higher, which means the muscles are starting to work normally again. This is important because if the patient is still partially paralyzed when the breathing tube is removed, they may have trouble breathing on their own and could develop complications.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "It is recommended to check the reversal of neuromuscular block (NMB) until a train of four (TOF) ratio greater than or equal to 0.9 is obtained in the adductor pollicis muscle during the anaesthetic discharge prior to extubating, to avoid residual NMB and reduce respiratory complications."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "A TOF ratio of 0.9 must beachieved to ensure adequate return of muscle function and thus preventing complications."[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Neuromuscular function should bealways monitored when using neuromuscular blockade agents (NMBA) to avoidresidual paralysis. Long-acting NMBA should be avoided. When NMBA are administered neuromuscular function should be monitored by using a peripheral nerve stimulator to ensureadequate muscle relaxation during surgery andoptimal restoration of neuromuscular function at the end of surgery. "[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "The evaluation of the neuromuscular function is deemed to reduce the number of adverse events and should be carried out during post-anesthesia recovery."[30] (Strength of recommendation Not reported; Level of evidence LOW; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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12. Common Complications Preventions

PPSR-080
Perioperative High-Risk Patient Management Protocols

We suggest:
The hospital has established and implemented protocols for patients at higher risk (for example with obesity, difficult airways or diabetes mellitus) or with additional requirements, which include clear authorship, review and publication date, and government policy oversight.

This recommendation can be shared with patients and other stakeholders in the following lay language:
The hospital has specific protocols in place for patients who are at a higher risk (e.g., patients with obesity, difficult airway, or diabetes mellitus) or who need extra attention. These protocols include information about the authors of the protocols, the date they were created, their expected dates to be reviewed, and surveyance policies.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "The following policies covering the entire perioperative period should be held and easily accessible for the management of patients with additional clinical requirements including, but not limited to:
    - patients with obesity
    - obstructive sleep apnoea
    - allergies, including perioperative management of latex and chlorhexidine allergies
    - management of complex cardiovascular disease including patients with cardiac pacemakers and implantable cardioversion defibrillators
    - management of significant respiratory impairment including severe chronic obstructive pulmonary disease
    - blood/component management for patients who refuse transfusion of blood or blood components
    - thromboprophylaxis including the management of patients receiving any anticoagulant therapy diabetes management."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "All guidelines should be dated and regularly reviewed. All guidelines should have a clearly documented author and review date and be published in line with local clinical governance policies with appropriate oversight."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Protocols should be available to maximise the opportunity for patients with significant co-morbidities (e.g. diabetes, morbid obesity, sleep apnoea) to be safely managed via a day case pathway."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Specific arrangements and guidelines should be available, where applicable, for the management of subgroups of vulnerable adult patients, including:
    - critically ill patients
    - elderly and/or frail patients
    - non-native English speakers
    - patients with chronic pain
    - patients with coexisting mental health problems

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- patients with dementia
- patients with multiple trauma or significant blunt chest wall trauma
- patients with opioid tolerance
- patients with physical or learning disability
- patients with problem drug and alcohol use
- patients with significant organ dysfunction
- pregnant and breastfeeding patients."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-081
Timely Hip Fracture Surgical Treatment

We suggest:
Patients with a hip fracture have surgical treatment as soon as possible, or within 36 hours from admission if no contraindication.

This recommendation can be shared with patients and other stakeholders in the following lay language: **If someone breaks their hip, they have surgery as soon as possible, ideally within 36 hours after getting to the hospital.**

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Patients with a hip fracture should ideally have surgical treatment as soon as possible, or within 36 hours from admission."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Early surgery for hip fracture is beneficial, ideally within 24-48 hours of admission."[66] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-082
Deterioration Alert Systems for Patients Awaiting Surgery

We suggest:
Monitor and alert systems should be established since surgical indication to promptly notify the responsible staff if the condition of a patient awaiting surgery deteriorates.

This recommendation can be shared with patients and other stakeholders in the following lay language: **There should be a system to let the hospital staff in charge know right away if the condition of a patient who is waiting for surgery suddenly gets worse**.

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "There should be a system in place for alerting medical staff to any change in the clinical condition of the emergency surgical patient while awaiting surgery."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-083
Screening for Depression in Vulnerable Populations

We suggest:
Depression screening is performed in old and at-risk patients in the preoperative and postoperative periods.

This recommendation can be shared with patients and other stakeholders in the following lay language: **In the periods before and after surgery, the healthcare team checks if older patients and patients at risk of depression are feeling depressed.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Depression is frequent in the elderly and is related to increased complication rates. We recommend the assessment of depression by validated tools."[35] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Screening patients for depression is strongly recommended. The physician may use simple tools, such as the Patient Health Questionnaire-2. If the patient answers YES to either question, then further evaluation by a primary care physician, geriatrician, or mental health specialist is recommended."[32] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

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PPSR-084
Coordinated Care for Frail Patients

We suggest:
Frail patient perioperative management involves a multidisciplinary coordination, including:

1. **Therapy services (physical, nutritional, and neuropsychological interventions);**
2. **Social services;**
3. **Discharge teams;**
4. **Physicians or geriatricians with expertise in frailty.**

This recommendation can be shared with patients and other stakeholders in the following lay language: **A team of different experts who work together takes care of frail patients (i.e. in a state of being weak, vulnerable, and having decreased physical and/or mental functioning) before, during, and after surgery. This includes therapists, social workers, doctors who have experience in frail people.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Pathways of care providing proactive preoperative interventions for frailty, involving therapy services, social services, discharge teams and geriatricians or physicians with expertise in the assessment and management of frailty/ delirium should be developed."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Comprehensive geriatric assessment and frailty screening tools may facilitate more informed early decision making in older trauma patients. Protocols for end-of-life care should be in place for management of elderly patients with frailty that may prove unsurvivable days or weeks after the initial trauma by a multidisciplinary team."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The risk of postoperative functional decline and complex discharge related issues should be considered. Procedures should be in place to identify complex patients at pre-assessment and complex discharge planning should begin then. This will require a multi-disciplinary team approach. Guidelines should be developed for the prevention, recognition and management of common postoperative geriatric complications and/or syndromes, including delirium, falls, functional decline and pressure area care."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-085
Perioperative Antiplatelet Therapy Management

We suggest:
Perioperative antiplatelet therapy management is based on patients' thrombotic risk, procedural bleeding risk and supported by the updated guidelines.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Anticoagulant medication that prevents blood clots is managed before, during and after surgery according to the patient's risk of blood clotting and bleeding during the surgery. The healthcare team uses up-to-date guidelines to help them make these decisions.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "It is recommended to continue aspirin perioperatively if the bleeding risk allows, and to resume the recommended antiplatelet therapy as soon as possible post-operatively."[67] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-086
Perioperative Fasting Guidelines

We suggest:

To minimize the risk of pulmonary aspiration during surgery, patients are advised to adhere to the recommended fasting guidelines for clear fluids and a minimum of six hours for solid food intake prior to the procedure. However, exceptions may exist based on the patient's specific medical condition and the type of surgery being performed.

This recommendation can be shared with patients and other stakeholders in the following lay language: **To lower the risk of accidentally inhaling food or liquids during surgery, patients are advised to avoid eating solid foods within the six hours before surgery, although they are allowed to take clear fluids until some few hours before surgery. However, there may be exceptions based on the patient's health condition and the type of surgery, so patients should always talk to their healthcare provider if they have any concerns or questions about fasting before their surgery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Preoperative period and supported by the following published recommendations:

- "Intake of clear fluids should be allowed until 2 h before induction of anaesthesia. Solids should be allowed until 6 h."[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Inform patients of fasting requirements and the reasons for them sufficiently in advance of their procedures."[68] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Oral intake of carbohydrate-rich beverages up to 2 hours before surgery is safe and is not associated with an increased risk of aspiration."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-087
Fire Safety Precautions in Surgical Procedures

We recommend:

The hospital takes precautions to prevent fires by identifying potential hazards, including electrical equipment. They establish safe communication practices, prevention measures, evacuation plans, and strategies for suppressing fires.

During surgical procedures that involve the patient's airway and have a gas delivery system, such as those above the xiphoid, special steps are taken to prevent fires:

- The surgeon notifies the anaesthesia professional before using any ignition sources near the face, head, or neck.

- The anaesthesia professional reduces the delivery of oxygen to the minimum required to avoid hypoxia, confirms it is safe to activate the ignition source after waiting a few minutes, and evacuates any accumulated anaesthetic gas mixture before using an ignition source in or near an oxygen-enriched environment.

This recommendation can be shared with patients and other stakeholders in the following lay language:

To prevent fires during surgical procedures, the healthcare team identifies potential fire threats, including electrical equipment, and establish safe communication, prevention, suppression, and evacuation plans. When the surgery involves the patient's airway, and a gas delivery system, the hospital takes certain steps to prevent fires:

- **The surgeon informs the anaesthesia professional before using anything that could cause a spark in the face, head, or neck area.**
- **The anaesthesia professional reduces the amount of oxygen delivered to the patient to the lowest amount possible without causing harm.**
- **The anaesthesia professional waits a few minutes and then confirms that it's safe to use anything that could cause a spark.**
- **The anaesthesia professional removes any anaesthesia gas mixture that may have built up before using anything that could cause a spark near oxygen-rich areas.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Identify potential hazards associated with fire safety and establish safe practices for communication, prevention, suppression, and evacuation. "[3] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "When an open gas delivery system is used and the surgical procedure is above the xiphoid, take the following steps: The surgeon should notify the anesthesia professional prior to using an ignition source in the area of the face, head, or neck. The anesthesia professional should stop or reduce the delivery of supplemental oxygen to the minimum required to avoid hypoxia. After waiting a few minutes, the anesthesia professional should inform the surgeon that it is okay to activate the ignition source. The anesthesia professional should evacuate accumulated anesthetic gas before an ignition source is used in or near an oxygen-enriched environment."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-088
Difficult Airway Management Protocol

We suggest:
Difficult airway management national or international guidelines are locally adapted and implemented. These guidelines include a risk assessment, the use of specific equipment, management strategies, and the documentation of the event for future situations.

This recommendation can be shared with patients and other stakeholders in the following lay language: **When it is challenging to establish or maintain an open passage for properly ventilating the patient's lungs during surgery, the anaesthesia team follows rules that are used nationally or internationally to manage the situation. These rules include evaluating the risk, using special equipment, having a plan to manage it, and writing down what happened so that they can be better prepared in the future.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Before the initiation of anaesthetic care or airway management, ensure that an airway risk assessment is performed by the person(s) responsible for airway management whenever feasible to identify patient, medical, surgical, environmental, and anesthetic factors (e.g., risk of aspiration) that may indicate the potential for a difficult airway; and conduct an airway physical examination"[69] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality HIGH)
- "Specific equipment for difficult airway management should be available."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "As part of a difficult airway follow up, patients should be informed in writing about any significant airway problem encountered and be advised to bring it to the attention of anaesthetists during any future preoperative assessment."[13] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "Airway management should be guided by local protocols, including formal adoption of national guidelines such as Difficult Airway Society intubation, extubation, paediatric and obstetric guidelines. These protocols should be reviewed and amended when an increased risk of infectivity during aerosol generating procedures is identified to ensure the safety of patients as well as their healthcare providers."[13] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality LOW)
- "We recommend that every Anesthesiology and Intensive Care Medicine department should have a system for recording patients with difficult airway with a description of the cause of the difficulty in securing the airway and the methods used to secure the airway."[18] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "We recommend that each intensive care department should develop its own guided document (or equivalent) to provide for difficult airway situations and taking into account specific the conditions and capabilities of the workplace/health facility. To develop your own controlled document, we recommend using the attached proposed algorithms or existing recommendations."[18] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "A difficult airway trolley, including the equipment necessary for failed intubation and surgical airway access, should be available. Appropriate specialist intubation equipment, including fibreoptic intubation equipment, should be available. A fibreoptic scope should be available to assess inhalational injury."[6] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

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- "It is recommended that each Anesthesiology and Intensive Care Medicine department should have its own controlled document (or its equivalent) to provide for anticipated difficult airways under available conditions; and the capabilities of the workplace and in accordance with the existing state of the art. "[18] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-089

Local Anaesthetic Systemic Toxicity Protocol

We suggest:

Assessment, monitoring, prevention, and treatment of local anaesthetic systemic toxicity (LAST) is crucial. To ensure timely intervention, rescue kits must be readily available, containing 20% lipid emulsion and cognitive aid for administration.

This recommendation can be shared with patients and other stakeholders in the following lay language: **It is important to evaluate, oversee, prevent, and treat the toxic effects of local anaesthesia that can affect the whole body (called "local anaesthetic systemic toxicity" or LAST). To make sure that healthcare professionals can intervene quickly if needed, emergency kits should be easily accessible. These kits should contain a substance called 20% lipid emulsion that can help reverse the toxic effects of the anaesthesia, as well as instructions on how to apply it.**

Based on a systematic review of guidelines, this standard practice is applicable to the Intraoperative period and supported by the following published recommendations:

- "Implement strategies for assessing, monitoring, treating, and preventing LAST (Local anesthetic systemic toxicity)."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Store local anesthetic systemic toxicity (LAST) rescue kits where they are immediately available to areas where local anesthetics are used (e.g., regional block areas, operating rooms).100 Include the following in the kit: lipid emulsion 20% (1 L total),100 large syringes (e.g., 50 mL) and needles for administration, IV administration supplies (e.g., tubing, catheters), and the ASRA LAST Checklist."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-090

Postoperative Nausea and Vomiting Prevention

We recommend:

A multimodal prophylaxis for postoperative nausea and vomiting (PONV) is routinely used based on a risk assessment, and timely rescue treatments with different classes of anti-emetics are implemented.

This recommendation can be shared with patients and other stakeholders in the following lay language: **After surgery, patients may feel nauseous or vomit. To prevent this, the healthcare team identifies which patients are at higher risk and uses a combination of methods to reduce it. If a patient does experience nausea or vomiting, different types of medication are provided as quickly as possible.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Risk assessment for Postoperative nausea and vomiting (PONV), routinely use of multimodal PONV prophylaxis based on assessment, and PONV rescue with different class of anti-emetic are recommended."[54] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "We recommend implementing a postoperative nausea and vomiting guideline according to the local clinical setting."[35] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "According to the score, we recommend adoption of a risk-adapted multimodal approach to reduce the postoperative nausea and vomiting rate."[35] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-091
Unintentional Hypothermia Prevention

We recommend:
Perioperative accidental hypothermia is prevented through continuous body temperature monitoring and active warming following updated guidelines.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Before, during, and after surgery, the patient's body temperature is carefully checked to ensure it stays within the safe range. If the patient's body temperature drops too low, active warming measures are used to bring it back to the safe level.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Maintain perioperative normothermia."[70] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "Normothermia should be maintained peri- and postoperatively through pre-warming and the active warming of patients intraoperatively."[54] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Implement methods for preventing or treating hypothermia for all patients during all phases of perioperative care."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "In adults who are going to undergo surgery that require general or regional anesthesia, the use of some active method of prevention of hypothermia during the perioperative period is recommended."[71] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality MODERATE)
- "It is recommended to maintain a minimum body temperature of 35.5 degrees Celsius after a surgical event."[23] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "Intraoperative hypothermia should be avoided by using active warming devices."[38] (Strength of recommendation STRONG; Level of evidence Not reported; Methodological quality LOW)
- "Core temperature should be maintained at 36º C. Active warming should be carried out in all patients in operations lasting longer than 30 min."[7] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "It is recommended to prevent and avoid involuntary perioperative hypothermia."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "It is recommended to prevent and treat hypothermia, by preheating the infusion solutions and rewarming the patient, in order to contain intra-operative bleeding, as well as for obvious reasons of comfort."[72] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)
- "Normal body temperature should be maintained peri- and postoperatively through pre-warming and the active warming of patients intraoperatively."[36] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-092

Venous Thromboembolism Prevention

We recommend:

To reduce the risk of venous thromboembolism (VTE), all patients are assessed for VTE risk and provided for appropriate thromboprophylaxis based on updated guidelines. Thromboprophylaxis measures include:
- Pharmacological and/or mechanical thromboprophylaxis for patients and procedures with VTE risk;
- Continuation of pharmacological thromboprophylaxis in the postoperative period for high-VTE-risk patients;
- General thromboprophylaxis measures such as early ambulation and optimal hydration for low-VTE-risk patients;
- Delayed initiation of Low Molecular Weight Heparin (LMWH) according to guidelines following regional anaesthetic procedures or high-bleeding-risk procedures, if necessary.

This recommendation can be shared with patients and other stakeholders in the following lay language:
All patients are checked for the risk of blood clots and appropriate treatment is given if necessary. This includes using medication and/or special devices to prevent blood clots for patients who are at high risk. Patients are encouraged to walk as soon as possible after surgery and to drink plenty of fluids. Giving medication to prevent blood clots may be postponed if a patient had a specific type of surgery with a high risk of bleeding.

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "All patients should undergo venous thromboembolism risk assessment and receive appropriate thromboprophylaxis."[12] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "For patients at high risk for venous thromboembolism and using low-molecular-weight heparin or low-dose unfractionated heparin for thromboprophylaxis, continued dosing for 4 weeks postoperatively is recommended."[73] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "In general, it is recommended to maintain antithrombotic prophylaxis for a minimum of 7 days or until the patient is ambulation."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "In patients in whom antiplatelet agents have been stopped before surgery, the Panel recommends restarting when bleeding is no longer a serious risk – typically four days post-surgery – rather than withholding for longer periods."[40] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "For patients undergoing a high-risk procedure with additional risk factors, we recommend general measures of thromboprophylaxis (e.g. early ambulation and optimal hydration) and pharmacological prophylaxis with LMWH over other drugs."[74] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "For patients undergoing a low-risk procedure, without additional risk according to the Caprini score, we recommend general measures of thromboprophylaxis (including early ambulation and optimal hydration) over other specific measures (mechanical or pharmacological)."[74] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "The use of thromboprophylaxis is recommended in all patients undergoing major surgery or those hospitalised due to an acute medical condition."[24] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

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- "Thromboprophylaxis should be implemented based on the preoperative risk assessment as described in this guideline. For most patients, mechanical prophylaxis is recommended with or without pharmacotherapy based on risks and anticipated benefits."[73] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "It is recommended that decisions about peri-operative thromboprophylaxis in non-cardiac surgery are based on individual and procedure-specific risk factors."[27] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Every patient who is going to undergo surgery and is going to remain in the hospital after surgery must receive some effective method of preventing thrombotic complications."[58] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)
- "There should be a policy for the prevention of thromboembolic events postoperatively. This should include planning for anticoagulant prophylaxis in patients who are vulnerable to further bleeding."[15] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "We recommend that each institution develop a patient safety bundle with an institutional protocol for venous thromboembolism prophylaxis among women who undergo cesarean delivery."[75] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality Not determined)
- "The risk of venous thromboembolism should be considered pre-operatively and a standard approach to prophylaxis should be encouraged through standardized order sets where available. A team approach is encouraged in difficult cases."[73] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality LOW)
- "Preoperative antibiotic prophylaxis and measures to decrease risk of venous thromboembolism are recommended for all patients undergoing hysterectomy."[49] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-093

Goal-Directed Haemodynamic Therapy for High-Risk Patients

We recommend:

To reduce the incidence of postoperative complications and shorten hospital stays, goal-directed haemodynamic therapy is used to avoid large perioperative fluctuations in blood pressure. In high-risk patients, this approach may involve the use of cardiac output monitors to guide the administration of volume and inotropic therapy.

This recommendation can be shared with patients and other stakeholders in the following lay language: **To reduce the risk of complications and hospital stay after surgery, healthcare professionals use a technique called "goal-directed haemodynamic therapy". This means they try to keep the patient's blood pressure stable during the surgery by using special monitors to measure how much blood the heart is pumping and adjusting the amount of fluid and medication given to the patient accordingly.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "In patients with chronic hypertension undergoing elective non-cardiac surgery, it is recommended to avoid large peri-operative fluctuations in blood pressure, particularly hypotension, during the peri-operative period."[27] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "Goal-directed haemodynamic therapy is recommended to reduce the rate of postoperative complications and length of hospital stay."[20] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality LOW)
- "A cardiac index (CI)> 2.5 l / min / m2 should be maintained, using inotropes in cases of non-response to volume."[24] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "In high-risk patients and in patients undergoing major colorectal surgery associated with significant intravascular losses, the use of goal-directed fluid therapy is recommended."[34] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)
- "Maintenance infusion of crystalloids should be tailored to avoid excess fluid administration and volume overload."[34] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-094
Continuous Monitoring in Recovery Areas

We suggest:
In the recovery area, patients are always monitored and never left alone, while also ensuring their privacy and dignity are respected.

This recommendation can be shared with patients and other stakeholders in the following lay language: **After surgery patients go to a place called the recovery area. Here, someone will always be watching them, so they are never left alone. At the same time, their privacy and dignity are respected.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "The secondary recovery area should provide essential close and continued supervision of all patients, who should be visible to the nursing staff while maintaining privacy and dignity."[28] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "The bed spaces should allow unobstructed access for trolleys, x-ray equipment, resuscitation trolleys and clinical staff. The facility should be open plan, allowing each recovery bay to be observed but with the provision of curtains for patient privacy."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Patient dignity and privacy should be respected at all times but patient safety is always the primary concern. Patients should not be left alone in curtained areas where they are not able to be constantly observed."[17] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-095
Non-Ventilation for High-Risk Postoperative Patients

We suggest:
Non-Invasive Positive Pressure Ventilation or Continuous Positive Airway Pressure is employed immediately post-extubating for hypoxemic patients at risk of developing acute respiratory failure after abdominal surgery.

This recommendation can be shared with patients and other stakeholders in the following lay language: **In patients at risk of breathing problems after abdominal surgery, a treatment which involves applying gentle pressure to the airways during the person's breath will be used right after the anaesthesia breathing tube is removed. This prevents difficulty breathing and other serious breathing problems.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Non-Invasive Positive Pressure Ventilation (NIPPV) or Continuous Positive Airway Pressure (CPAP) immediately post-extubation for hypoxaemic patients at risk of developing acute respiratory failure after abdominal surgery."[76] (Strength of recommendation STRONG; Level of evidence MODERATE; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-096

Pain Control Protocols

We suggest:
Pain control protocols, which incorporate validated pain assessment tools, are implemented, periodically revised, and updated.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital has a plan to supervise and treat a patient's pain after surgery that is regularly updated and improved. They use tools to help measure the pain.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "The panel recommends that facilities in which surgery is performed have an organizational structure in place to develop and refine policies and processes for safe and effective delivery of postoperative pain control."[29] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)
- "Guidelines for the management of side effects and complications including inadequate analgesia should be available."[14] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-097

Postoperative Monitoring for Sleep Breathing Disorders

We suggest:

If a patient is suspected to have sleep-disordered breathing, their breathing is monitored overnight while receiving opioid intravenously, even through patient-controlled analgesia treatment.

This recommendation can be shared with patients and other stakeholders in the following lay language: **If patients are thought to have breathing problems during their sleep, their breathing will be watched overnight while they are being given pain medicine through morphine-like medications, even if using a system where the patient can control the amount of medicine they receive, called patient-controlled analgesia.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "The panel recommends that clinicians provide appropriate monitoring of sedation, respiratory status, and other adverse events in patients who receive systemic opioids for postoperative analgesia."[29] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality LOW)
- "The use of opioid patient-controlled analgesia (PCA) should be limited to patients with moderate to severe postoperative pain, probably when oral opioid therapy is not possible. There can be significant inter-individual variability in opioid consumption and satisfaction with pain control. Basal or continuous opioid infusions in patients with morbid obesity (MO) and particularly those with undiagnosed or untreated obstructive sleep apnoea (OSA) should be avoided. Patients with suspected sleep disordered breathing (SDB) must be observed with overnight monitoring of respiratory adequacy, during the entire time PCA is in use."[77] (Strength of recommendation Not reported; Level of evidence LOW; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-098
Early Postoperative Oral Intake

We recommend:
If there are no concerns about the integrity or function of the gastrointestinal tract after abdominal surgery, patients are assessed for safe swallowing and considered for oral intake as soon as possible within the first 24 hours post-operation.

This recommendation can be shared with patients and other stakeholders in the following lay language: **If a patient can swallow without any problems and their digestive system is working properly after abdominal surgery, they are allowed to eat or drink as soon as possible within the first day after the surgery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Postoperative period and supported by the following published recommendations:

- "Healthcare professionals should consider giving post-abdominal surgery patients who can swallow safely, and in whom there are no specific concerns about gut function or integrity, some oral intake within 24 hours of surgery. The patient should be monitored carefully for any signs of nausea or vomiting."[78] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality HIGH)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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PPSR-099

Postoperative Delirium Risk Reduction Strategies

We recommend:

To prevent postoperative delirium in surgeries and patients associated to high risk of developing cognitive disorders, it is implemented a bundle of strategies that includes:

- Screening with diagnostic tools;
- Targeted education for healthcare professionals about delirium;
- Multicomponent, multidisciplinary nonpharmacologic interventions such as daily physical activity, cognitive reorientation, and the presence of a family member at the bedside whenever possible;
- Sleep enhancement through nonpharmacologic sleep protocols and sleep hygiene;
- Early mobility and physical rehabilitation;
- Adaptations for sensorial impairment (e.g. visual and hearing);
- Nutrition and fluid repletion;
- Pain management;
- Appropriate medication usage;
- Adequate oxygenation;
- Prevention of constipation and urinary retention;
- Minimization of patient tethers whenever possible.

This recommendation can be shared with patients and other stakeholders in the following lay language: **The hospital has a plan to prevent confusion and disorientation after surgery in patients who have a high risk of developing mental problems. These strategies include using special tools to promptly identify these patients, educating healthcare workers about the issue, and using a range of techniques to help patient's recovery. These techniques might include exercises to improve strength and mental function, efforts to help patients sleep well, special attention to nutrition and hydration, and careful management of medications. Other strategies for an early and successful recovery can also be employed.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "There is a high prevalence of recognised and unrecognised cognitive impairment amongst older surgical patients. This has implications for shared decision making, the consent process and perioperative management. Older patients should have preoperative cognitive assessment using established screening or diagnostic tools."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "We recommend using a validated delirium score for postoperative delirium screening."[79] (Strength of recommendation STRONG; Level of evidence HIGH; Methodological quality MODERATE)
- "The risk of postoperative functional decline and complex discharge related issues should be considered. Procedures should be in place to identify complex patients at pre-assessment and complex discharge planning should begin then. This will require a multi-disciplinary team approach. Guidelines should be developed for the prevention, recognition and management of common postoperative geriatric complications and/or syndromes, including delirium, falls, functional decline and pressure area care."[1] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Health care professionals should implement strategies for the prevention of postoperative delirium in older adults, such as: Education targeted to health care professionals about delirium; and Multicomponent, multidisciplinary nonpharmacologic interventions that may include: Daily physical activity Cognitive reorientation Bedside presence of a family member whenever possible Sleep enhancement (e.g., nonpharmacologic sleep protocol and sleep hygiene) Early mobility and/or

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physical rehabilitation Adaptations for visual and hearing impairment Nutrition and fluid repletion Pain management Appropriate medication usage Adequate oxygenation Prevention of constipation Minimization of patient tethers whenever possible (e.g., Foley catheters, periodic removal of sequential compression devices, electrocardiogram cords)."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety. However, the panel did not agree that it is easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-100

Fall Precautions for At-Risk Patients

We suggest:
Universal fall precautions for at-risk patients should not impede early postoperative mobilization; falls risk is assessed at admission and postoperatively.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Measures are taken to prevent falls in patients at risk of falling, especially frail patients. But these steps should not stop the patient from moving around after surgery. The doctors check the risk of falling when the patient first comes to the hospital and throughout their recovery.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Establish a formal, systemized Safe Patient Handling and Movement (SPHM) program."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Use a standardized mobility assessment tool."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "All postoperative older adult patients should undergo an evaluation of their fall risk either through identification of risk factors (altered mental status, dehydration, frequent toileting, history of falls, impaired gait/mobility, medications, and visual impairment) or through the use of a risk scale."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)
- "Universal fall precautions are indicated in all older adult patients. Fall risk precautions should not interfere with early mobilization and ambulationin the postoperative setting."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

This recommendation is within the 90th percentile of highest rated topics on importance for patients

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PPSR-101

Pressure Injury Prevention

We suggest:
Health care teams apply multicomponent interventions, including the use of proper equipment, to prevent and treat pressure ulcers, bedsores, eye injuries, and nerve injuries in surgical patients throughout the entire perioperative period.

This recommendation can be shared with patients and other stakeholders in the following lay language: **Healthcare teams are using multiple methods to prevent and treat injuries due to pressure against patient's body, bedsores, eye injuries, and nerve injuries in patients who are having surgery. This includes making sure they use the right equipment.**

Based on a systematic review of guidelines, this standard practice is applicable to the Common Perioperative period and supported by the following published recommendations:

- "Equipment for safe positioning of patients with a wide range of body habitus should include: appropriate sized mattresses; positioning aids to minimise risk of eye injury, nerve injury as well as skin damage, e.g. pressure sores, during potentially prolonged operations; fixings to prevent accidental movement during the procedure."[16] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality MODERATE)
- "Position patients on surfaces that reduce the potential for pressure injury and are smooth and wrinkle-free."[3] (Strength of recommendation STRONG; Level of evidence VERY LOW; Methodological quality HIGH)
- "Conduct a preoperative patient assessment to identify patients at risk for positioning injury, develop a plan of care, and implement interventions to prevent injury."[3] (Strength of recommendation STRONG; Level of evidence LOW; Methodological quality HIGH)
- "Health care teams should implement multicomponent interventions to prevent and treat pressure ulcers in the postoperative patient at risk for developing pressure ulcers."[46] (Strength of recommendation Not reported; Level of evidence Not reported; Methodological quality Not determined)

The panel agreed that this standard practice is of high importance for patient safety and easy to implement.

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