**SUPPLEMENTARY DIGITAL CONTENT**

**Appendices**

1. Safety Practices allocated to nine categories related to Helsinki Declaration
2. Safety Practices Scoring Sheet
3. Safety items with at least one nomination for ‘Top 5 items likely to bring greatest safety gains’ ranked by weighted score
4. Expert comments on potential harms, further comments, and relevant guidelines
5. Guidelines and existing evidence noted by experts

**Appendix 1: Safety Practices allocated to nine categories related to Helsinki Declaration**

***Categories***

1. Pre-operative assessment and preparation (7 items)
2. Medication safety (22 items)
3. Equipment safety (9 items)
4. Airway management (9 items)
5. Other emergencies (11 items)
6. Organisation and staffing (23 items)
7. Safety education (16 items)
8. WHO safe surgery checklist (12 items)
9. Safety data collection and critical incident reporting (8 items)

*Total 117 items*

*CATEGORY 1 Pre-operative assessment and preparation*

1. Develop clear guidelines for who should be referred to pre-assessment clinic. This may help reduce the number of patients arriving in theatre having inappropriately bypassed the clinic.
2. Separate consent for anaesthesia.
3. Improve systems to ensure medical records (e.g. old patient charts or information from transferring hospitals) are available at time of surgery.
4. Further develop pre-assessment clinic such that clinics could be staffed by both a trainee and consultant.
5. Create a WhatsApp group of surgeons, anaesthesiologists, and senior theatre nurses to help co-ordinate the pre-operative assessment, preparation, and scheduling of elective surgical patients (in a particular theatre – e.g. one group for vascular theatre team).
6. Introduce the 6/4/1 fasting protocol for children.
7. Stratify operations by expected intensity and duration of post-operative pain.

*CATEGORY 2 Medication safety*

1. Develop a departmental Safe Drug Handling SOP to be available in each anaesthetic room including recommendations for which emergency drugs should be drawn up and e.g. for only drawing up LA in real time.
2. Stock drugs controlled under the Misuse of Drugs Act (MDA drugs) in a central storage area rather than having an MDA press in each theatre to reduce risk of drug errors and drugs going out of date.
3. Use an anaesthetic trolley for theatre (not just induction rooms) to reduce time away from the patient, e.g. going to the induction room to get drugs and equipment.
4. Stock anaesthetic trolleys in a standardised format so that each location where anaesthesia is provided has the same layout.
5. Standardise the layout of drug storage areas, and separate high-risk injectable medications e.g. neuromuscular blocking drugs and adrenaline.
6. Use dedicated trays for drug storage, once prepared by the anaesthesiologists. Use specific drug trays for routine and emergency drugs (Drug trays – blue and red).
7. Use prefilled syringes (for cost saving and safety reasons).
8. Introduce spinal packs, which contain spinal needles protected from chlorhexidine during preparation by clear plastic film.
9. Stock only one concentration of heparin in non-cardiac theatres.
10. Avoid having two separate preparation guidelines for high-risk medications – e.g. making up a remifentanil preparation as 50mcg/ml or 100mcg/ml depending on TCI pump or otherwise.
11. Use partial capitalisation of letters in drug names for syringe labels and some drug packages.
12. Store ampoules separately as unwrapped ampoules rather than storing ampoules in their original packaging (risking misplacement when they are returned to the box).
13. Use coloured labels to label venous, arterial and epidural lines, and catheters, aiming to reduce the likelihood of accidental injection.
14. Display a poster in the room where blocks are performed detailing the actions necessary when considering regional anaesthesia in a patient taking anticoagulants or antiplatelet drugs.
15. Employ a pharmacist/pharmacy technician who can work within the operating theatre suite to stock up anaesthetic drugs to help save nurses’ time and make sure stock levels, expiry dates, etc, are correct.
16. Involve a pharmacist in pre-operative assessment to facilitate better perioperative medication management, documentation of allergies, etc.
17. Prescribing of analgesics by anaesthetists (rather than surgical team) for patients being discharged home after day surgery.

1. Design pain management protocols for the ward with input from the anaesthetic department and dedicated pain service. A department could develop protocols for pain management following common operations (e.g. post knee replacement). Order sets should be procedure-specific (rather than anaesthetist-specific).
2. Use pain management protocols stating the recommended analgesic regimens, given by the clock at pre-specified times after surgery, rather than ‘as required’.
3. Introduce a protocol for the management of pain in patients in whom it is difficult to treat, e.g. with the use of clonidine, ketamine, etc.
4. Only give post-operative oxygen to patients in recovery who need it, not as routine for everybody.
5. Encourage greater compliance with antimicrobial prescribing guidelines (on available app).

*CATEGORY 3 Equipment safety*

1. Use a Central Venous Catheter (CVC) Documentation Record for patients having central lines placed in theatre to ensure adherence to CVC insertion bundle.
2. Move to electronic anaesthesia records and electronic prescribing in line with the rest of the hospital. (However, some report electronic recording can result in need to double record checks, taking time from patient care, and some staff reportedly find paper recording quicker. Electronic anaesthesia recording may also require extra computers - currently the anaesthesiologist may not have an available computer as the scrub nurse and anaesthetic nurse also must record their checks on a computer.)
3. Ensure ICU electronic system is interfaced with ward electronic system.
4. Design IT systems to enable safety and support existing formal and informal safety practices (rather than hampering safety practices if IT systems do not consider work context).
5. Intranet page where documents can be found.
6. Standardise machines, e.g. infusion pumps or anaesthetic machines to reduce the burden of training needs for different devices and makes errors due to unfamiliarity less likely.
7. Use disposable, single-use theatre scrub suits.
8. Introduce phones for the ICU/theatre trainees on-call instead of a bleep system to allow easier contact of the trainees on-call.
9. Use simulation to inform the procurement process for new equipment (i.e. simulation performed before new anaesthetic machines commissioned).

*CATEGORY 4 Airway management*

1. Introduce an ‘Airway alert’ letter to give to patients who have had difficult airways. E.g. could set up electronic record systems so that an ‘Airway alert’ letter is automatically generated when a patient is found to have a difficult airway in the operating theatre.
2. Ensure McGrath video laryngoscope is available in every theatre as this is the video laryngoscope, which trainees from other hospitals are most familiar with and should be readily available.
3. Ensure greater availability of anaesthetic nurses in theatre at the time of extubation and avoid sharing anaesthetic nurses between theatres.
4. Ensure capnography available in recovery.
5. Ensure uniform use of oxygen during transfer from theatre to recovery.
6. Design difficult airway trolley in keeping with DAS recommendations, and place DAS obstetric guidelines on difficult airway trolley in hospitals which may have to deal with obstetric patients on rare occasions.
7. Provide a portable airway rescue ‘grab bag’ which can be taken to wards and is more portable than a trolley.
8. Increase the number of fibreoptic scopes to also encourage use in non-emergency cases and thereby increase familiarity.
9. Install a drying cabinet to speed up processing of fibreoptic scopes, allowing increased use for both elective training cases and emergency cases.

*CATEGORY 5 Other emergencies*

1. Stock a folder or Quick Reference Handbook in every anaesthetic machine and theatre containing algorithms for management of anaesthetic emergencies. In the obstetric or paediatric theatre, this could contain algorithms and guidelines specific to obstetric emergencies/paediatric emergencies.
2. Design an anaesthetic-specific massive haemorrhage protocol with accompanying Standard Operating Procedures.
3. Introduce a dental protocol to facilitate management of patients who suffer dental injury while under anaesthesia.
4. Introduce a ‘Code Red Trolley’ in theatre for management of massive haemorrhage. The trolley could contain tranexamic acid, fibrinogen, photos on how to take cross match, and designated lanyards.
5. Develop kits containing all the relevant materials, drugs, instructions, guidelines, etc, for managing massive haemorrhage and anaphylaxis.
6. Use an electronic blood-checking system for rapid identification and location of available blood products.
7. Provide ‘Grab bag’ containing Intralipid hanging prominently on the wall of theatre recovery ready for use.
8. Standardise cardiac arrest call telephone number to 2222.
9. Use an emergency bell and ensure it rings throughout the anaesthetic department – including the coffee room – which results in a much greater response and is particularly important on the weekend. Streamline response to emergency bell – so that dedicated staff respond rather than everyone.
10. Ensure hospital has a resus team available (consisting of a medical registrar and intensivist), which can be called to deteriorating patients on the ward or following activation of early warning scores.
11. Introduce a fast-track programme to improve time to theatre for patients arriving for emergency surgery following ruptured AAAs.

*CATEGORY 6 Organisation and staffing*

1. Highlight to management the lack of nurses available for emergency cases after hours due to inappropriately long surgical lists or lack of daytime emergency theatre.
2. Rotate theatre staff between main theatres and day care to improve nurses’ familiarity with drawing up infusions for difficult cases in day ward.
3. Ensure availability of trainee during working hours to deal with ward requests, e.g. pre-assessments, emergency IV access, problems with epidurals. (Currently the trainee carrying the bleep is taken away from their patient to answer bleeps and delegate jobs to others.)
4. Improve availability of ancillary staff, e.g. radiographers, to reduce delays in theatre and patients spending unnecessary longer times under anaesthesia.
5. Appoint a departmental ‘Safety Lead’ responsible for co-ordinating and organising safety matters.
6. Rotate anaesthetists between different surgical specialties (especially those they cover on-call).
7. Involve all staff groups, not only doctors, in safety initiatives in the operating theatre. E.g. the role of nurses in influencing medical colleagues should not be underestimated.
8. Establish an Outreach ICU service, which consists of ICU nurses who review deteriorating patients on the ward or recent discharges. The Outreach nurse then communicates with the ICU team, which helps facilitate early admission for deteriorating patients.
9. Develop a pain service for management of acute pain on the ward.
10. Hold daily meetings of the entire anaesthetics department to hand over from night to day staff, discuss patients on the operating lists for the day ahead, and air problems, incidents, and risks to safety. Also, hold a later afternoon handover from day to on-call overnight staff and/or for group discussion of the following day’s patients.
11. Write the names of all staff members on a whiteboard at the start of each day. This initiative has been well received by trainees and nursing staff. We heard the view that asking staff names and placing their names on the board makes staff feel valued; new members of staff entering theatre can add their names to the board.
12. Use an anaesthesia specific App which could contain contact details of all trainees and consultants, to facilitate rapid contact in emergency situations. There are also links to protocols for anaesthetic emergencies, which can be easily accessed as well as department protocols. Some apps also allow uploading of the teaching schedule and weekly rosters.
13. Use a ‘block bay’, where regional anaesthesia is administered in a controlled environment with a nurse assistant.
14. Introduce practice of ‘Stop before you block’ using stickers, posters, and education sessions to improve uptake.
15. Have a mobile regional block trainee rather than a block bay which is a useful training model where there are not staff for a block bay. Trainees were on this allocation for the week, so were continually reminded of the ‘Stop before you block’ initiative, which improves uptake.
16. Display safety information at ‘point of care’ e.g. mounting copies of checklist and other safety documents on the wall of the operating theatre for quick reference. Emergency telephone numbers are displayed on wall of theatre.
17. Use a protocolised handover form for transfer to recovery, completed by the recovery nurses with information provided by the theatre anaesthesiologist.
18. Use a critical care handover sheet/proforma for patients coming from theatre to ICU.
19. Keep one ICU bed available in the unit for emergency admissions.
20. Separate operating theatres for ‘clean’ and ‘dirty’ operations.
21. Avoid using anaesthetic rooms to minimise risks of unnecessary transfer of anaesthetised patients.
22. Re-imagine the post-anaesthesia care unit into a ‘perioperative room’ to send a practical message that the whole perioperative period is important and also provide a flexible space where procedures can be performed and patients can be optimised before urgent surgery, as well as recovering from anaesthesia.
23. Develop a recovery area for endoscopy and develop guidelines for who should be referred to anaesthesia before receiving sedation by gastroenterologists/surgeons (in endoscopy for example). This may reduce incidents of anaesthesia being called to rescue situations in endoscopy.

*CATEGORY 7 Safety education*

1. Run a ‘boot camp’ lecture series with simulation training for 1-2 weeks for trainees beginning anaesthesia. Trainees could attend lectures/simulation in the morning and then attend theatre in the afternoon.
2. Provide education to anaesthesiologists on what constitutes a Critical Incident or Near Miss, and hence what should be reported.
3. Run a wellbeing series for trainees and consultants. This could consist of a series of teaching sessions on topics including fatigue, burnout & resilience, stress management (from Samaritans Organisation), mindfulness sessions (from a psychologist), a CV and interview preparation course, financial planning session, and a dance lesson.
4. In addition to wellbeing series, run regular departmental ‘Coffee and Gas’ sessions as recommended by the AAGBI and trainee only ‘Confession Sessions’, where trainees can discuss cases or difficult situations together – these meetings could be chaired by a senior trainee.
5. Improve trainee-consultant relationships with departmental sports matches between NCHDs and consultants (e.g. golf outing) and nights out.
6. Run departmental patient safety lecture series (e.g. 1 lecture/week for 6 weeks). Topics could include human factors, critical incident analysis, checklists/protocols (WHO checklist), Helsinki Declaration, medication safety, etc.
7. Run departmental regular simulation training sessions, some of which are multidisciplinary (with paediatric and emergency department trainees).
8. Introduce combined teaching/simulation sessions for cardiac theatre staff, which could include perfusionists.
9. Provide 3-month education orientation for all new nurses (not just anaesthetic nurses). During this period, they should be familiarised with equipment that they do not regularly use but may have to during emergencies.
10. Increase education for nursing on the wards regarding anaesthesia (e.g. education around importance of highlighting family history of malignant hyperthermia before a patient comes to theatre).
11. Hold a regular audit day consisting of a series of 7-minute presentations by trainees on their recent audits.
12. Incorporate time spent in general medicine (e.g. nephrology or cardiology) into anaesthesia training programmes to help trainees understand concurrent medical management in the perioperative period, and with critical care management too.
13. Actively recruit new staff from outside the region to facilitate the exchange of new ideas.
14. Invite international speakers into the hospital to help promote a new initiative.
15. Hold a seminar devoted to patient safety topics for senior hospital management.
16. Establish regional/national safety peer review networks.

*CATEGORY 8 WHO safe surgery checklist*

1. Use a checklist or written prompt of WHO checklist items to ensure parts of checklist are not missed.
2. Introduce a section on Timeout for ‘anaesthetic gases on’.
3. Adapt WHO ‘Sign Out’ in respect to ‘Any concerns?’ to result in more focused question.
4. If electronic record keeping systems are used, incorporate the WHO checklist into the electronic system, then read from the screen.
5. Conduct the pre-anaesthetic part of the WHO checklist with surgeons present in the induction room.
6. Operating surgeon personally performs the identity and procedure check when the patient arrives at the operating theatre and reiterates the information from the consent process.
7. Ensure greater compliance with surgeon being present for ‘Sign in’ portion of checklist.
8. Standardise who initiates the ‘time out’ checklist moment, and who reads out the questions.
9. Standardise the way in which staff introduce themselves during ‘time out’.
10. If a patient wristband has to be removed from his/her wrist (e.g. for venous cannulation), fix the wristband to the patient’s shoulder with a transparent surgical dressing so it is still applied to the patient and does not get lost.
11. Use additional wristbands for specific purposes e.g. a red wristband usually denoting a drug allergy, or e.g. a green wristband denoting that blood has been cross-matched for the patient, and a further wristband denoting patient has had previous mastectomy.
12. Introduce huddle at the start of the morning between surgeons, anaesthetists, and nursing staff to discuss the list and allow preparation for the day.

*CATEGORY 9 Safety data collection and critical incident reporting*

1. Develop a separate anaesthesia incident reporting system (this would likely require a national approach).
2. Use data in various forms to promote safety, e.g. the template for an Annual Safety Report, as provided by the ESA, is fairly brief and allows for an annual ‘stocktake’ and planning for the coming 12 months. More sophisticated data collection, such as for a National Anaesthesia Database, can be used locally to improve specific threats to safety (e.g. perioperative hypothermia).
3. Develop an audit tool to facilitate automatic surveillance of Multi Drug Resistant Organisms.
4. Encourage improved documentation by surgeons for patients admitted to ICU post- operatively.
5. Nominate Patient Safety Champions within the department to further improve the safety culture.
6. Create a WhatsApp group for trainees to share and discuss critical incidents encountered, to allow them to review clinical aspects of the cases and provide support and further encouragement to report and discuss problems within a small forum of immediate peers. This is supplemented by small group face-to-face meetings.
7. Encourage feedback from risk management to the department on critical incidents reported in theatre. Such intelligence could form part of morbidity and mortality meetings, which could be joint with surgeons and theatre staff.
8. Hold informal meetings where problems can be discussed in a supportive, non-judgmental way, and solutions found. Important to distinguish between dealing with individuals’ emotional responses to incidents (and others’ responses to their colleague) and the actions necessary to reduce the risk to future patients. Refreshments are provided (the ‘mistake cake’). Such events promote an atmosphere of mutual trust and respect, making people more willing to talk openly about problems, and consider changes.

**Appendix 2: Safety Practices Scoring Sheet**

**Appendix 3: Safety items with at least one nomination for ‘Top 5 items likely to bring greatest safety gains’ ranked by weighted score**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Rank by weighted score** | **Category** | **Item** | **1** | **2** | **3** | **4** | **5** | **TOTAL nominations** | **Weighted score** |
| 1 | Cat 1 | 3.    Improve systems to ensure medical records (e.g. old patient charts or information from transferring hospitals) are available at time of surgery. | 3 |  |  |  | 1 | 4 | 16 |
| 2 | Cat 6 | 7.    Involve all staff groups, not only doctors, in safety initiatives in the operating theatre. E.g. the role of nurses in influencing medical colleagues should not be underestimated. |  | 2 | 1 |  | 1 | 4 | 12 |
| 3 | Cat 4 | 6.    Design difficult airway trolley in keeping with DAS recommendations, and place DAS obstetric guidelines on difficult airway trolley in hospitals which may have to deal with obstetric patients on rare occasions. |  | 2 | 1 |  |  | 3 | 11 |
| 4 | Cat 3 | 2.    Move to electronic anaesthesia records and electronic prescribing in line with the rest of the hospital. (However, some report electronic recording can result in need to double record checks, taking time from patient care, and some staff reportedly find paper recording quicker. Electronic anaesthesia recording may also require extra computers - currently the anaesthesiologist may not have an available computer as the scrub nurse and anaesthetic nurse also must record their checks on a computer.) |  | 1 | 2 |  |  | 3 | 10 |
| 5 | Cat 4 | 2.    Ensure McGrath video laryngoscope is available in every theatre as this is the video laryngoscope, which trainees from other hospitals are most familiar with and should be readily available. |  | 2 |  |  |  | 2 | 8 |
| 6 | Cat 6 | 5.    Appoint a departmental ‘Safety Lead’ responsible for co-ordinating and organising safety matters. | 1 |  | 1 |  |  | 2 | 8 |
| 7 | Cat 8 | 1.    Use a checklist or written prompt of WHO checklist items to ensure parts of checklist are not missed. |  |  | 2 |  | 1 | 3 | 7 |
| 8 | Cat 1 | 1.    Develop clear guidelines for who should be referred to pre-assessment clinic. This may help reduce the number of patients arriving in theatre having inappropriately bypassed the clinic. | 1 |  |  | 1 |  | 2 | 7 |
| 9 | Cat 2 | 18.  Design pain management protocols for the ward with input from anaesthetics department and dedicated pain service. A Department could develop protocols for pain management following common operations (e.g. post knee replacement). Order sets should be procedure-specific (rather than anaesthetist-specific). |  | 1 | 1 |  |  | 2 | 7 |
| 10 | Cat 2 | 20.  Introduce a protocol for the management of pain in patients in whom it is difficult to treat, e.g. with the use of clonidine, ketamine, etc. | 1 |  |  | 1 |  | 2 | 7 |
| 11 | Cat 6 | 10.  Hold daily meetings of the entire anaesthetics department to hand over from night to day staff, discuss patients on the operating lists for the day ahead, and air problems, incidents, and risks to safety. Also, hold a later afternoon handover from day to on-call overnight staff and/or for group discussion of the following day’s patients. |  | 1 | 1 |  |  | 2 | 7 |
| 12 | Cat 4 | 3.    Ensure greater availability of anaesthetic nurses in theatre at the time of extubation and avoid sharing anaesthetic nurses between theatres. |  |  | 1 | 1 |  | 2 | 5 |
| 13 | Cat 1 | 7.    Stratify operations by expected intensity and duration of post-operative pain. | 1 |  |  |  |  | 1 | 5 |
| 14 | Cat 2 | 4.    Stock anaesthetic trolleys in a standardised format so that each location where anaesthesia is provided has the same layout. | 1 |  |  |  |  | 1 | 5 |
| 15 | Cat 2 | 7.    Use prefilled syringes (for cost saving and safety reasons). | 1 |  |  |  |  | 1 | 5 |
| 16 | Cat 3 | 4.    Design IT systems to enable safety and support existing formal and informal safety practices (rather than hampering safety practices if IT systems do not consider work context). | 1 |  |  |  |  | 1 | 5 |
| 17 | Cat 3 | 8.    Introduce phones for the ICU/theatre trainees on-call instead of a bleep system to allow easier contact of the trainees on-call. | 1 |  |  |  |  | 1 | 5 |
| 18 | Cat 4 | 1.    Introduce an ‘Airway alert’ letter to give to patients who have had difficult airways. E.g. could set up electronic record systems so that an ‘Airway alert’ letter is automatically generated when a patient is found to have a difficult airway in the operating theatre. | 1 |  |  |  |  | 1 | 5 |
| 19 | Cat 5 | 8.    Standardise cardiac arrest call telephone number to 2222. | 1 |  |  |  |  | 1 | 5 |
| 20 | Cat 6 | 1.    Highlight to management the lack of nurses available for emergency cases after hours due to inappropriately long surgical lists or lack of daytime emergency theatre. | 1 |  |  |  |  | 1 | 5 |
| 21 | Cat 8 | 12.  Introduce huddle at the start of the morning between surgeons, anaesthetists, and nursing staff to discuss the list and allow preparation for the day. | 1 |  |  |  |  | 1 | 5 |
| 22 | Cat 7 | 15.  Hold a seminar devoted to patient safety topics for senior hospital management. |  |  | 1 |  | 1 | 2 | 4 |
| 23 | Cat 8 | 11.  Use additional wristbands for specific purposes e.g. a red wristband usually denoting a drug allergy, or e.g. a green wristband denoting that blood has been cross-matched for the patient, and a further wristband denoting patient has had previous mastectomy. |  |  |  | 2 |  | 2 | 4 |
| 24 | Cat 2 | 17.  Prescribing of analgesics by anaesthetists (rather than surgical team) for patients being discharged home after day surgery. |  | 1 |  |  |  | 1 | 4 |
| 25 | Cat 4 | 7.    Provide a portable airway rescue ‘grab bag’ which can be taken to wards and is more portable than a trolley. |  | 1 |  |  |  | 1 | 4 |
| 26 | Cat 6 | 23.  Develop a recovery area for endoscopy and develop guidelines for who should be referred to anaesthesia before receiving sedation by gastroenterologists/surgeons (in endoscopy for example). This may reduce incidents of anaesthesia being called to rescue situations in endoscopy. |  | 1 |  |  |  | 1 | 4 |
| 27 | Cat 8 | 6.    Operating surgeon personally performs the identity and procedure check when the patient arrives at the operating theatre and reiterates the information from the consent process. |  | 1 |  |  |  | 1 | 4 |
| 28 | Cat 9 | 1.    Develop a separate anaesthesia incident reporting system (this would likely require a national approach). |  | 1 |  |  |  | 1 | 4 |
| 29 | Cat 9 | 2.    Use data in various forms to promote safety, e.g. the template for an Annual Safety Report, as provided by the ESA, is fairly brief and allows for an annual ‘stocktake’ and planning for the coming 12 months. More sophisticated data collection, such as for a National Anaesthesia Database, can be used locally to improve specific threats to safety (e.g. perioperative hypothermia). |  | 1 |  |  |  | 1 | 4 |
| 30 | Cat 4 | 4.    Ensure capnography available in recovery. |  |  |  | 1 | 1 | 2 | 3 |
| 31 | Cat 5 | 2.    Design an anaesthetic-specific massive haemorrhage protocol with accompanying Standard Operating Procedures. |  |  |  | 1 | 1 | 2 | 3 |
| 32 | Cat 9 | 5.    Nominate Patient Safety Champions within the department to further improve the safety culture. |  |  |  | 1 | 1 | 2 | 3 |
| 33 | Cat 9 | 8.    Hold informal meetings where problems can be discussed in a supportive, non-judgmental way, and solutions found. Important to distinguish between dealing with individuals’ emotional responses to incidents (and others’ responses to their colleague) and the actions necessary to reduce the risk to future patients. Refreshments are provided (the ‘mistake cake’). Such events promote an atmosphere of mutual trust and respect, making people more willing to talk openly about problems, and consider changes. |  |  |  | 1 | 1 | 2 | 3 |
| 34 | Cat 1 | 4.    Further develop pre-assessment clinic such that clinics could be staffed by both a trainee and consultant. |  |  | 1 |  |  | 1 | 3 |
| 35 | Cat 2 | 1.    Develop a departmental Safe Drug Handling SOP to be available in each anaesthetic room including recommendations for which emergency drugs should be drawn up and e.g. for only drawing up LA in real time. |  |  | 1 |  |  | 1 | 3 |
| 36 | Cat 2 | 19.  Use pain management protocols stating the recommended analgesic regimens, given by the clock at pre-specified times after surgery, rather than ‘as required’. |  |  | 1 |  |  | 1 | 3 |
| 37 | Cat 5 | 5.    Develop kits containing all the relevant materials, drugs, instructions, guidelines, etc, for managing massive haemorrhage and anaphylaxis. |  |  | 1 |  |  | 1 | 3 |
| 38 | Cat 7 | 16.  Establish regional/national safety peer review networks. |  |  |  |  | 2 | 2 | 2 |
| 39 | Cat 9 | 7.    Encourage feedback from risk management to the department on critical incidents reported in theatre. Such intelligence could form part of morbidity and mortality meetings, which could be joint with surgeons and theatre staff. |  |  |  |  | 2 | 2 | 2 |
| 40 | Cat 3 | 9.    Use simulation to inform the procurement process for new equipment (i.e. simulation performed before new anaesthetic machines commissioned). |  |  |  | 1 |  | 1 | 2 |
| 41 | Cat 5 | 11.  Introduce a fast-track programme to improve time to theatre for patients arriving for emergency surgery following ruptured AAAs. |  |  |  | 1 |  | 1 | 2 |
| 42 | Cat 6 | 14.  Introduce practice of ‘Stop before you block’ using stickers, posters, and education sessions to improve uptake. |  |  |  | 1 |  | 1 | 2 |
| 43 | Cat 6 | 21.  Avoid using anaesthetic rooms to minimise risks of unnecessary transfer of anaesthetised patients. |  |  |  | 1 |  | 1 | 2 |
| 44 | Cat 7 | 3.    Run a wellbeing series for trainees and consultants. This could consist of a series of teaching sessions on topics including fatigue, burnout & resilience, stress management (from Samaritans Organisation), mindfulness sessions (from a psychologist), a CV and interview preparation course, financial planning session, and a dance lesson. |  |  |  | 1 |  | 1 | 2 |
| 45 | Cat 7 | 7.    Run departmental regular simulation training sessions, some of which are multidisciplinary (with paediatric and emergency department trainees). |  |  |  | 1 |  | 1 | 2 |
| 46 | Cat 5 | 1.    Stock a folder or Quick Reference Handbook in every anaesthetic machine and theatre containing algorithms for management of anaesthetic emergencies. In the obstetric or paediatric theatre, this could contain algorithms and guidelines specific to obstetric emergencies/paediatric emergencies. |  |  |  |  | 1 | 1 | 1 |
| 47 | Cat 6 | 18.  Use a critical care handover sheet/proforma for patients coming from theatre to ICU. |  |  |  |  | 1 | 1 | 1 |
| 48 | Cat 6 | 22.  Re-imagine the post-anaesthesia care unit into a ‘perioperative room’ to send a practical message that the whole perioperative period is important and also provide a flexible space where procedures can be performed and patients can be optimised before urgent surgery, as well as recovering from anaesthesia. |  |  |  |  | 1 | 1 | 1 |
|  |  |  |  |  |  |  |  |  |  |

**Appendix 4: Expert comments on potential harms, further comments, and relevant guidelines**

*CATEGORY 1 Pre-operative assessment and preparation*

|  |  |  |
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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Develop clear guidelines for who should be referred to pre-assessment clinic. This may help reduce the number of patients arriving in theatre having inappropriately bypassed the clinic. | * Many benefits for patients, reduction of delays and cancellations, better preparations. Need organizational and logistic changes, patients need to visit hospital twice * Depending on degree of error in referral criteria could represent significant inconvenience for patients (or even potential harm if needing to attend a clinic risking exposure). * Just if someone who should have been referred, are not referred * some patients will fail to be captured by the selection process * Unlikely (but the related costs may indirectly cuase harm because money may be missing for other safety-related tools/projects) * no specific harms * Main cost is not developing guidelines but with dealing with the increased number of referrals. In my experience institutions who have advanced nurse practictioners dedicated to preassessment cope best with this - nurses can deal with the low risk paients and anaesthesia can focus on the higher risk patients. Investment here is cost saving in the long run. * None | * I tend to believe that the best service is rendered by all patients being seen by a competent physician in pre-assessment, and thus feel that selecting patients that can bypass this may actually lessen safety. * the major cost will b associated with changing the surgeons' mindset * Would require wide dissemination among all practitioners who refer to clinics - need to explore what prompts surgeons (or GPs) to refer, or more importantly, not refer. This could be guarded against by 100% telephone screenings by nurses and funneling patients for further assessment as needed, time allowing. * I feel that all pateints should hae the benefit of an explanation of the process and what to expect from their perioperative experrience / journey. I think an input from the Anaesthesia preoperative service is required to provide this * Fortunately, there are plenty of generally well-recognised international/national guidelines about preoperative assessment / evaluation / optimisation * Basic Standards for Preanesthesia Care . ASA * in our conditions, each patient must have a preoperative anesthesiological examination. Only urgent cases have an exception * Guidelines; AAGBI guidelines on preassment and role of the anaesthetist. Also Guideline from National Clinical Pogramme of Anaesthesia in Ireland; Model of Care for Preadmission Unit. (applies to other recommendations also in this category)  Patients don't always fit into guidelines. In my opinion it is easier to err on the side of caution and have a lower threshold for referring patients to clinic but this leads to large numbers of patients being referred to clinic, which has resource implications * It is much better to have inaapropriately added preoperative assessment than to miss one which is indicated. Enough personel should be allocated to the preoperative assment clinic. Team work and communication with the surgeons, in order to recognize patients who should be assessed by anaesthesiologist * We have the Expert Guideline of the Ministry of Health of the Slovak Republic on outpatient examinations before planned medical interventions. |
| 1. Separate consent for anaesthesia. | * None * Not necessary by law in Norwegian hospitals, organized differently. Patients are informed but does not have to give written consent. Practice vary. Increase paper burden and time consuming. Both pro and con issues. * Increasing patient anxiety preoperatively. * Achieving consensus across a Department might be challenging * Not harm, but maybe inconvenience for patients * no specific harms * Different people are involved in preoperative assessment and consenting the patient. Mistakes are possible as well as misinformation | * It may be a legal requirement already in many countries * Am assuming what is meant by separate consent for anaesthesia is separate written consent for anaesthesia as verbal consent (with documentation) is already standard practice. * Can be difficult to differentiate from other harms * In my country this is standard of care anyway (Switzerland) * AAGBI: Consent for anaesthesia 2017 * we already have specific or separate consent for anesthetic procedures * Consent should always be part of anaesthesia and patients should be consented before an anaesthetic. I dont think its necessary to have a written consent form for general anaesthesia but we should document that we have discussed risks (such as damage to teeth). When a procedure is purely anaesthetic delivered (such as epidural for labour or central line for TPN) - this is a separate scenario and written consent is important here (although legally not required for a consent to be valid as far as i am aware) * In Switzerland anaesthesia is asking for an independent consent * I do not see much advantage in taking consent separately, sounds logical to me to do it during preoperative assessment * Always "looking for the paper". |
| 1. Improve systems to ensure medical records (e.g. old patient charts or information from transferring hospitals) are available at time of surgery. | * None * Loss of information may cause harm to patients being transfered betwen hospitals, if medical records are not available * No direcrt harms identifiable. Would carry a potentially significant cost of implementation to put in place resources (human, services) required. * no obvious disadvantage * In most hospitals nowadays this will be related to the clinical information management system or electronic health records in use in the hospital. Unfortunately, hospital IT solutions often prioritise billing/management requirements, but are not suited or practical for the needs of clinicains. * leak of personal data * not all informations about patients are yet in our electronic health system. There are still some questions about personal data protection. * Risk of data protection breaches with faxing and sending of patient information if sent to wrong person * No harm at all. Just educated personel to know how to use the system. Or to be sure that information will be looked after | * It needs NHS or regional leadership to build an appropiate shared electronical medical record and include all the historic records. * Speed of implementation depends on the systems already in place. If the implementation hinges on prior implementation of an electronic medical record (EMR), this might significantly impede implementation. Scanning of previous paper-based anaesthetic charts into a dedicated section of the EMR would be helpful. * Most important would be if the patient is made aware of any anaesthesia-related problems from earlier and can alert the anaesthesia providers, so we can actively seek those charts. * this would be very useful out of hours * In my personal experience, bad health IT is a huge problem that is often beyond the influence of physicians and other clinicians, and introduced "top-down" in many cases even against the opinions of majorities of clinicians * In our institution, we can find in electronic system all medical records from the year 2007. Information from transferring hospitals are always available, documentation is transmitted with the patient from the other hospital * This typically requires dedicated adminstrative staff or a trained nurse, which again has resource implications but is massively important for ensuring complete preassesment. * If this refers to dana base and online hospital recirds it depends on money and technology support in the hospital. However, it seems that it is developing proces and that at certain point it will become a standard of care. |
| 1. Further develop pre-assessment clinic such that clinics could be staffed by both a trainee and consultant | * None * Cost benefit? Experience is important * Introducing further elements into the chain carries usual risks associated with it. * none unless personnel withdrawn from other service * Unfortunately, staffing is one of the most challenging difficulties... * it is just about personal availability * consultants only. * trainee should know exactly what to do and what is he/she is looking for. If they go beyond the competencie,s than it could lead to a bad judgment * Possible inexperience of trainee in the evaluation of health status in complicated patients. | * Expensive if not already implemented. In Spain there are national guidances to ensure preop assesment clinics. * Availability of staff may prove a problem * Would be beneficial for training. In line with suggestion 1 a clear distinction could be made for which cases need consultant assessment (higher risk procedures, high risk patient factors) to prevent harm. * Most important is that the trainee consult a consultant if there are any red flags * Possible reduction in clinical anaesthesia time for trainees * National legal background may help, for example legal requirements for getting informed consent at a minimum distance in time before the operation. * difficult to implement as it has resource implications in that more trainees are required. But it is essential that trainees get adequate exposure to preassessment clinics so they can develop their skills in the area and learn about their benefits. * Communication skills should be developed. Clear tasks of the trainee should be defined. * Possibility of better trainee education. |
| 1. Create a WhatsApp group of surgeons, anaesthesiologists, and senior theatre nurses to help co-ordinate the pre-operative assessment, preparation, and scheduling of elective surgical patients (in a particular theatre – e.g. one group for vascular theatre team). | * Confidentiality security issues. Misuse of the communication channel * I'd like to challenge the legality of a WhatsApp group under the EU GDPR laws. I would refrain from this. * Protection of privacy data is at risk if this is not carried out within the hospitals IT systems. Hospital systems should be able to take care of this * Privacy issues of sharing sensitive patient information via unprotected service; theoretical risk of burnout in staff who cannot distance themselves from the work when they are not at work * Wellbeing of staff and "constant availability" when not on-call/working. Risk of closed loop communication failure (messages sent, but missed and not seen). Needs wide buy-in from all stakeholders to work. * Maybe not harm, but those teams are not always fixed, so it can be difficult to keep updated. In principle, we should not depend on "private social platforms" at work. Harm: Patient identity leaks. * I have experience of this one! Too much information can be a problem, care neeed to avoid patient identifiers * YES - Whatsapp is yet another information channel that rather adds to the confusion resulting from too many parallel information streams - "keep it simple & stupid". It is very important NOT to have too many information streams that create more gaps that may contribute to information loss * it can be a suitable and simple aid with a positive perioperative outcame for the patient. So far we have not considered such a possibility * Risk of confidentiality breaches and data protection issues - suggest using a more secure platform than Whatsapp (some departments are using 'Signal') * Depends how well the team communicate in general. Some members of the group maybe reading and not participating, or some people always have to add some more suggestions. Sounds great in the technology world, but can lead to the misscommunication as other means of unformal communication * Involved many people who share a lot of information in which they can get lost. | * It should be an administered channel with clear rules * Other platforms which handle work/life balance more discretely might also be appropriate (e.g. Microsoft Teams). This also depends on the scope of worked expected to be offloaded onto WA. If it's for troubleshooting fine points, it might make sense, but not for most planning. * Probably no formal evidence but this was very useful where the cases listed changed at extremely short notice so the advantage was that all team members were kept abreast of vhanges * Whatsapp - why depend on one commercial social platform? What about data privacy? * Certainly a more coordinated approach to preassessment is needed. Often preop clinics are operating in isolation. We shouldnt have to fight to get access to investigations (such as ECHO). Ideally preassessment clinics should be 'preadmission units', where they are a one stop shop for preassessment care - for example linking in with social work or physio preop to avoid unneccesary prolonged stays post surgery. * Can be used if there is a concensus between the members of the team * Suitable for a constant team of co-workers. |
| 1. Introduce the 6/4/1 fasting protocol for children. | * Exceptions need to be protocolized. Risk of cancellations if the protocol is not fully accepted by all surgeons and anaesthesiologysts. * Changes and implementation takes time * Mistakes around implementation and miscommunication - need to ensure all staff involved in the perioperative care familiar with change and materials designed for patients/relatives to avoid cancellations on day of surgery. * I don't practise paediartic anaesthesia * rigidity of the current approach * If not well implemented, mistakes could happen (it could be assumed that the patient has been fasted at the correct time) | * There are national recommendations (Spain) not always followed. * Need to coordinate with the department staff and change the established routines may take patience (in my experience) * There is some data suggesting we could safely even go further by implementing a 6/4/0 protocol (for children) and 6/0 for adults. https://pubmed.ncbi.nlm.nih.gov/29168341/ * Implementation science - not always easy to implement new methods * We do not do any pediatric cases, I'm not familiar with this protocol * we already have early the same preparation with questions of fasting. Surgical stuff is often too conservative * Main cause of prolonged fasting in patients in my opinion is lack of access to thteare or inefficient theatre scheduling and not innapropriate fasting guidelines. To improve fasting times we need a coordinated efficient system, where anaesthesiologists, surgeons and ward/theatre nursing staff are working closely together - one example of this is having morning huddles before a list, where the order of the list can be finalised and patients who are going to be delayed can be identified early and given the opportunity to drink/eat * Implementation needs some time, for the education of the personel and for new protocols to be developed. In general, evry member of the department should be aware of the protocol and there must be a checking point for the patients (to asure that the protocol is implemented for all patients) |
| 1. Stratify operations by expected intensity and duration of post-operative pain. | * None * This is a clinical evaluation that is carried out every day when operations are selected and prioritiesed. Need to include other factors in this assessment as well. * Misclassification and inappropriate allocation of resources - overallocation or underallocation. * other important details might be overlooked * I can't see potential harm (except costs that may cut the budget for other safety interventions) * no specific harms * The patient's individual demands for pain treatment may be overlooked. | * Will require education * Strikes me as an intervention less to do with patient safety and more with intelligent resource planning. Would imagine any enhanced recovery (ERAS) pathway would factor resources required for analgesia and expected patient trajectories into its implementation? * Again - implementation science - not easy. * Requires a team-based approach, because surgical/nursing perspectives have to be considered besides anesthetic perspective. Rather than base stratification only on pain I'd prefer a more comprehensive approach basing stratification besides pain on overall risk for complication/mortalities (seeing pain as one potential complication besides others) which is practically very important for planning postoperativ care (e.g. - intermediate care or intensive care ed needed?) * we have this stratification, but we don't have a separate written document * This is an important component of our preassessment. This may also have benefits for improving efficiency - we could avoid unplanned prolonged stays in PACU for example by planning HDU admissions ahead of time. |

*CATEGORY 2 Medication safety*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Develop a departmental Safe Drug Handling SOP to be available in each anaesthetic room including recommendations for which emergency drugs should be drawn up and e.g. for only drawing up LA in real time. | * None, provided that the SOP is periodically updated * potential unavailability of drugs for an emergency * One downside could be that the availability of an SOP can distract from the problem in many hospitals that drug handling can be influenced by other issues (e.g. production pressure, staffing shortages, etc) * no specific harms * AAGBI Guidelines on Controlled Drugs in Perioperative Care * None | * Might be a bit of an imposition on anaesthetist preference on which drugs to have drawn up - increased waste in some instances. * ESA/EBA guidelines are verz usefull * it's mainly about time, coordination and agreement in the department * Great idea. ive seen departments do this after they've had a critical event but we need to be proactive here. * Make sure that everybody is informed and that implementation of the recommendations are available. Some instructiong in the Ors is necessery, as well as reinforcement of the information from time to time. Like for every implementation of the practise, persistance in education and implementation is the key of success |
| 1. Stock MDA drugs in a central storage area rather than having an MDA press in each theatre to reduce risk of drug errors and drugs going out of date. | * Lack of awarenes of these medications location in case of emergency * The theoretical harm in not being able to access the needed drug in time * Ease of access issues in emergency situations. * delays in accessing drugs * availability of drugs * Any change in storage of MDA drugs needs to ensure that access to MDA drugs isnt delayed during emergencies. * Not having a drug when needed. Not being able to reach the drug easily when needed | * Collaboration between theatre personell reduce this need to centralize drug storage * Both this and the below are very specifc for one way of doing things - we do it very different in my setting * we have a regular check of expiration date. In the theatre there are e only regularly used drugs * AAGBI Guidelines on Controlled Drugs in Perioperative Care (applies to other recommendations also in this category) |
| 1. Use an anaesthetic trolley for theatre (not just induction rooms) to reduce time away from the patient, e.g. going to the induction room to get drugs and equipment. | * None * infection control issues, duplication of stock, time consuing stock checks for both areas * no specific harms * ensuring both trolleys are well stocked * None | * I've neven known a theatre without ana anaesthesia trolley. But if it is needed to be dupplicated, there will be a cost * Absolutely ESSENTIAL, especially if teams considering not going back to anaesthetic rooms post COVID. Nonsense to have everything in the anaesthetic room and not in theatre. * I am used to having the trolley in theatre not in the pre-room. Induction of GA is done in the theatre, so the proposal is not relevant, seems to be culture specific. * Standard in my hospital / country * there is always someone with the patient if he is in our care * this is a useful resource https://academic.oup.com/bja/article/118/1/32/2763304 for medication safety guidelines that i have referred to in the past. * I thought that this was a standard. It seems logical to have medications near the patient |
| 1. Stock anaesthetic trolleys in a standardised format so that each location where anaesthesia is provided has the same layout. | * Depending of the hospital, some theatres have very different needs and should be adapted maintaining safety criteria * Standardisation is important, but difficult to change peoples opinions on how to organize equipment and drugs best ways * According to siurgical specialities, different drugs may be used predominatly. If all trolleys are standardised, certain drugs are more likely in particular rooms to go out of date * no specific harms * Drugs and syringes can still be misplaced. Mistakes are possible * Possible reduction of staff vigilance. | * Is that not the case most places already? * In my hospital, trolleys are standardised to a large extent (but not completely) * it's very important and easy way to increase safety of the patient * Simple yet really important safety intervention. there is a 'Storage of Drugs in Anaesthetic Rooms' guideline from the AoA but im not sure if they mention standardisaion of drug storage. This sould especially be beneficial to trainees moving between hospitals - if we could standardise between sites. * Every working personel should be aware of the rule. All nhe members should be well instructed about the layout in use. Must be something that is not questioned |
| 1. Standardise the layout of drug storage areas, and separate high-risk injectable medications e.g. neuromuscular blocking drugs and adrenaline. | * None * no specific harms * Same as 4 [Drugs and syringes can still be misplaced. Mistakes are possible] | * IS that not the case most places already? * Statement on Security of Medications in the Operating Room Committee of Oversight: Quality Management and Departmental Administration. ASA * it's very important and easy way to increase safety of the patient * Same as 4 [Every working personel should be aware of the rule. All nhe members should be well instructed about the layout in use. Must be something that is not questioned] |
| 1. Use dedicated trays for drug storage, once prepared by the anaesthesiologists. Use specific drug trays for routine and emergency drugs (Drug trays – blue and red). | * Srynges stored in the wrong tray. Keep labelling * Reduce unwanted variation * Not really. * no specific harms * Same as 4. [Drugs and syringes can still be misplaced. Mistakes are possible] Than different anesthesiologists may prepare different drugs. Handover should have additional point * Possible interchange of drugs on trays. | * In Norwegian hospitals - drugs and drug trays are prepared by nurse anaesthetits * Not massively beneficial, more important to have separate LA trays (yellow) * This is not relevant in the setting I am used to, so difficult to comment * Storage of Drugs in Anaesthetic Rooms. Guidance on best practice from the RCoA and AAGBI * Another simple measure using human factors principles to improve safety |
| 1. Use prefilled syringes (for cost saving and safety reasons). | * None * Unclear evidence for cost savings and safety? * See comments, risks of device malfunction, unfamiliarity, neglecting date checks when rushing. * Cost may be an obstacle (if as a consequence money is missing for other safety-related projects) * Some prefilled syringes appear very similar (eg phenylephrine and ephedrine). Also some prefilled syringes are made up at different concentrations which one might normally administer. * Personally, I do not value prefilled syringes very much. Mistakes are just the same as with the non prefilled syringes. | * In Spain there are cost problems as the regulation asigns same cost to ampoules or preffilled drugs * While it seems intuitive, it is not risk-free (e.g. https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/pdf/10.1111/anae.12101). Pre-filled syringes need to be carefully selected based on urgency of use when required. For example RSI medication can be pre-filled by pharmacy but has a limited date and there is a significant amount of waste generated with this. * As it is now, prefilled syringes will not save costs for us - if it had, it would have been implemented long ago * strong evidence * question cost - benefit ratio * prefilled syringes also reduce waste * Additional stuff and work for the central pharmacy. Maybe cheaper in the long term, but needs decisions coming outside of anaesthesia department |
| 1. Introduce spinal packs, which contain spinal needles protected from chlorhexidine and during preparation by clear plastic film. | * None * Cost may be an obstacle (if as a consequence money is missing for other safety-related projects) * false sense of security with covered needles - chlorhexidine could still be on gloves for example when opening sterile tray. * None * Will this limit the choice of spinal needle? | * easy toll for practice * useful as part of a series of interventions to reduced risk of chlorhexidine introduction. I believe trainees need more education on asepsis and chlorhexidine application - for example stressing how to apply chlorhexidine and drying times. AAGBI Guideline on asepsis for neuraxial - but dont think they mention covered spinal needle * We are already using these packs. Than I always have an imporession that it is just a standard and that everybdoy is doing that. Easier, more practical and safer. Depends just on the Central pharmacy or hospital decision in either preparing or by them. Otherwise, once the personel is having them as the option it is easy to implement as a new practice |
| 1. Stock only one concentration of heparin in non-cardiac theatres. | * None * no specific harms * None | * Is that not the case already? * we already have this aprroach * simple intervnetion. i have seen errors from heparin dosing in noncardiac theatres * In my hospital it is the same concentration everywhere in ampules, cardiac theaters included. Even less chances for mistakes. However, preparing syringes in advance might be a problem. Maybe it is better to keep the same ampules that should be prepared in syringes just before the use. |
| 1. Avoid having two separate preparation guidelines for high-risk medications – e.g. making up a remifentanil preparation as 50mcg/ml or 100mcg/ml depending on TCI pump or otherwise. | * None * Reduce risk of medication errors * None | * Resistance to the measure. Instead, ensure adequate labelling * We have only one concentration as is 50µg/ml * reducing the risk to the patient. In general, we have such a strategy * I have seen incorrect dosing because of this. AAGBI Guideline on safe practice of TIVA doesn't mentione standardising concentrations in an institution, although it is measured in the AAGBI guidelines for 'Controlled drugs for perioperatie care' * Everybody should be informed about the change. Maybe information should be visible with outher protocols of drug preparation |
| 1. Use partial capitalisation of letters in drug names e.g. (picture?) for syringe labels and some drug packages. | * None * Uncertan about evidens for this? * By changing labelling over and over again (happened in my hospital) an established routine is disrupted, which creates new dangers of mix-ups. This should be critically weighed against the theoretical advantages of "new" ways of labelling * no specific harms * we use international colorcoding * I see no harm in practices that potentially just seem to be additional safety measure. However it can not prevent all events. Human brain is very complicated organ | * National regulations may difficult the capitalization for ampoules or prefilled srynges * Do not understand what you mean * Statement on Labeling of Pharmaceuticals Used in the Practice of Anesthesiology Committee of Origin: Equipment and Facilities. ASA * very good ratio cost vs. benefit * Announcement of the change is always necessary |
| 1. Store ampoules separately as unwrapped ampoules rather than storing ampoules in their original packaging (risking misplacement when they are returned to the box). | * Misplacement can happen anyway * Risk of confusing ampoules if similar visually. Ampoules also less legible than packaging. * no specific harms * if medications are kept in ampoule form (and not in original package) then they would need to be stored in clearly labeled medication storage boxes/containers. Many anaesthetists are more familiar with the packaging rather than ampoule. * as the above [I see no harm in practices that potentially just seem to be additional safety measure. However it can not prevent all events. Human brain is very complicated organ] * Very risky. There is higher potential chance of interchange of ampoules. | * Significant safety trade-off. I believe the safety interventions should be placed elsewhere to prevent inappropriate replacement of ampoules. * As the above [Announcement of the change is always necessary] |
| 1. Use coloured labels to label venous, arterial and epidural lines, and catheters, aiming to reduce the likelihood of accidental injection. | * None * Evidence for coloured labels is uncertain. * By changing labelling over and over again (happened in my hospital) an established routine is disrupted, which creates new dangers of mix-ups. This should be critically weighed against the theoretical advantages of "new" ways of labelling * no specific harms * As the above [I see no harm in practices that potentially just seem to be additional safety measure. However it can not prevent all events. Human brain is very complicated organ] | * There are regulations to do it in Spain * Investigate evidence further * it should be a routine * AAGBI Guideline for Use of Arterial Line Sets * Again, effort for the implementation, education and instruction. From time to time reinforcement of the practice |
| 1. Display a poster in the room where blocks are performed detailing the actions necessary when considering regional anaesthesia in a patient taking anticoagulants or antiplatelet drugs. | * None * no specific harms * Moreobvious i pre-med room. * as the above [I see no harm in practices that potentially just seem to be additional safety measure. However it can not prevent all events. Human brain is very complicated organ] | * Often forgotten and easy to have printed and laminated on a wall to remind oneself what the safe timeframes are (especially with the emergence of DOACs). * re other remarks of the number of posters on the wall. Better to have that information easily accessible in e-handbooks * we already have guidelines for patients which taking anticoagulants or antiplatelet drugs. * would work best if introduction of a poster was incoportated into a time out procedure - such as Stop Before You Block iniative * Encourage people tu read it. Especcially during educational sessions with trainees |
| 1. Employ a pharmacist/pharmacy technician who can work within the operating theatre suite to stock up anaesthetic drugs to help save nurses’ time and make sure stock levels, expiry dates, etc, are correct. | * Nurses not taking responsability of drug availability * Increase of costs, no evidence that this will save time vs. costs * costs of additional staffing may leed to budget restrictions on other safety-relevant activities - needs to be weighed in the individual situation * no specific harms * risk of nurses becoming deskilled and unfamilliar with medications - which may have implications in case of emergency when medication needed and pharmacist/technician not available * More people in the chain of work can add one more step for the possible mistake | * Involve more steps in the chain of care * Trade-off. * Good to have pharmasists in the ICU to check interactions, etc, but not necessarily required to look at stock levels and expiry dates * Good to have extra hand. Depends on overall budget |
| 1. Involve a pharmacist in pre-operative assessment to facilitate better perioperative medication management, documentation of allergies, etc. | * None * Increases costs, no evidence that this will save time vs. costs nor increase safety, though we have experience with pharmasist assessing the risk areas, stocking of drugs, and review drug related procedures at an overall level - which is positive for quality and safety * costs of additional staffing may leed to budget restrictions on other safety-relevant activities - needs to be weighed in the individual situation * no specific harms * I do not see value in making process more complex. Better to have check list as a reminder what to do. More people communicating with each other on one task sounds very complicating to me | * Allergy clerking is especially important and patients should be encouraged to get tested for questionable allergies. This would need to happen well before day of surgery though, but would have a significant impact. * We should take that responsibility ourselves, it is part of our practice. * there is no tradition in our country in this direction * great idea. this fits with providing a coordinated approach to preassessment care. There would also likely be great learning opportunities for anaesthetists by having a pharmacist at clinic. See NCPA document on Model of Care for Preadmission Unit. * I do not vote for this one |
| 1. Prescribing of analgesics by anaesthetists (rather than surgical team) for patients being discharged home after day surgery. | * Anaesthesia does not follow up patients after discharge * Changes in time spend on discharge of patients may have additional costs, uncertain about effects on patient harm - evidence? * Can be risky in terms of anaesthetists not being there at point of discharge and not following patients up - for adverse events monitoring. * No additional harm comparing with the practice of surgical team. There is only realistic chance that at least some peoplke would have better treatment of pain | * An agreement on appropriate analgesic strategies for specific types of procedures at the interdisciplinary level would be sufficient. Then the surgeons can prescribe as per the guidance. * This is done as is now - standardised protocols * Feasibility depends on staffing situation * it's just a matter of cooperation with the surgical department * makes sense to ensure continuity of care and medication errors - for example 100mg diclofenac may be given intraop PR then patient goes home and takes another 75mg Diclofenac that afternoon resulting in excessive 24 hour dose. * More anaesthesiologists needed for day care surgery. And some of them could be those with special interest in pain management |
| 1. Design pain management protocols for the ward with input from anaesthetics department and dedicated pain service. A Department could develop protocols for pain management following common operations (e.g. post knee replacement). Order sets should be procedure-specific (rather than anaesthetist-specific). | * None * Any development of set protocols may result in unwillingness to adapt medication to the specific patient, and develop a beleif with the staff that a specific procedure always leads to a specific need. * Costs when training staff to use protocols, but can be done within regular 'teaching window' in departments * Strictly "protocol-based" pain therapy induces new risks: Contraindications (e.g., renal failure, hepatic conditions, allergies, etc) may be missed. Protocols are important as guide, not as "cookbook", and a protocol is no substitute for careful individual prescribing (that takes into account bothe the patient profiles and the experience of the prescribing physician). As long as physicians and patients can't be "standardised", protocol-based treatment will always have limitations. * Minimally monitors to monitor breathing and SPO2 to administration of opioids and continual epidural analgesia are needed and lacking * This could be potential improvement of the ususal practice. Harm could not be increased. Potential mistakes with the medication can still be present, but less pain is more than expected | * Same as 18. * We do this as a routine, of course there are individual adjustments for specific patients, but this should be the norm in every hospital * acute pain service is a crucial question of perioperative period. We already have some written quidelines for example gynecological procedures. * every patient is different and anaesthetists should be able to easily select/de-select medications from an order set * The only problem that I see here would be number of personel. In order that this could be implemented enough people has to be appointed and also involved in pain management.I am afraid that the number of anaesthetists will be issue for the next few years. |
| 1. Use pain management protocols stating the recommended analgesic regimens, given by the clock at pre-specified times after surgery, rather than ‘as required’. | * None * Evidence for this point? Need for flexibility in pain management? * See above. Over-standardisation induces new risks. A protocol is important to define minimum requirements, but is no substitute for careful individual prescribing, follow-up, and adjustment of therapies according to patient profiles and to physician experience. * Education of the ward staff is needed and has to be forced by management * administration of 'by the clock' medications on the ward is often limited by nursing shortages on the ward in my experience so need to focus on staffing. Also opioids given 'by the clock' result in large doses but not necessarily better pain control compared to PRN opioids * Again, this would be improvement of practice. Actually it is improved patient safety as well * Imminent unnecessary overuse of analgesic treatment. | * A combination of of medication given at specified times supplemented by as required medication would seem the optimum solution. * In general, most of the perioperative process could be standardised if consensus reached on anaesthetic techniques at departmental level. * implementation of new guidelines not always easy * rational and suitable for application * Again, effort for the implementation, education and instruction of the doctors and nurses |
| 1. Introduce a protocol for the management of pain in patients in whom it is difficult to treat, e.g. with the use of clonidine, ketamine, etc. | * None * Will necessitate education of staff and thorough follow-up of correct usage to avoid/lessen negative side-effects. * See above. Particularly in these patients it is often important to involve a physician with special experience in pain treatment; a protocol is good to define minimum standards, but not enough to take adequate care of such patients * Education of the ward staff is needed and has to be forced by management * New practice can lead to higher incidence of mistakes. Here it can be a serious issue since the drugs in use can be harmful | * Many such protocols already exist and can easily be embedded in the EMR/CPOE systems for use in recovery. It could potentially also extend to the ward, provided guidelines are in place (e.g. analgesic dose PRN ketamine). * it's necessary * a protocol would certainly be beneficial here as this is not something all anaesthetists deal with on a daily/weekly basis so its useful reference guide * Very detailed plan for implementation of the new drug protocols. Again, there have to be enough educated nurses and doctors as a safety measure |
| 1. Only give post-operative oxygen to patients in recovery who need it, not as routine for everybody. | * None * Culture changes needed, if this is to be implemented. Depend on procedure and anaesthesia types provided. * Some patients may not received oxygen in a tmely fashion * Oxymeters on wards are lacking * risk of prolonging hypoxia in patients that need oxygen * Missing the patient who needs it. Is hypoxia more dangereous than having and oxygen mask when not necessary? * Possible misevaluation of patients' oxygen demand and possible complications from it. | * This initiative needs coordination with the wards and one must be willing to accept that patients who do not need O2 in the PACU may need to have O2 administered in the ward in order to reduce risk due to a lower level of monitoring. * Hyperoxia is not without its associated harms and risks. * see above * we already have such an approach * personally i think its a better practice to give O2 to everyone post general anaesthesia on immediate arrival to recovery and then quickly taper as tolerated (based on pulse oximeter and patient status). * None |
| 1. Encourage greater compliance with antimicrobial prescribing guidelines (on available app). | * None * Cheap to follow guidelines, but challenging to implement it. * Relying on app and missing out on using clinical judgement * Education of the ward staff is needed and has to be forced by management * This could only lead to less harm | * If app available (e.g. Microguide), it is merely a question of awareness raising * It may be difficult to achieve reasonable compliance * suitable for application, we have this only like the written guidelines * I find this the most difficult change to implement. Antimicrobial therapy seems to be so misused, and has been prescribed by different doctors in the chain of management. Very strong group of professionals should be involved in order to change the usual practice |

***CATEGORY 3 Equipment safety***

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Use a Central Venous Catheter (CVC) Documentation Record for patients having central lines placed in theatre to ensure adherence to CVC insertion bundle. | * Lack of adherence of all the units placing CVC * Must be partt of regular documentation system, no additional records should be added, could lead to poor compliance if overload. Costly to change IT system? * Checklist fatigue, decreased efficiency * need to ensure that the CVC documentation record is within the medical notes (and not in separate part of the chart, which is not readily accessible) * Additional paper to fill in in the OR. | * There is scant evidence that CVC documentation records (or ticklists) increase adherence to CLABSI prevention bundles. They may be helpful for junior trainees learning the basic elements of CVC insertion. * In my personal view, practical training and surveillance is at least as important than having a documentation record * Practice Guidelines for Central Venous Access 2020: An Updated Report by the American Society of Anesthesiologists Task Force on Central Venous Access * we have the same protocol for CVC insertion in anestehesic and also in intensive care conditions * AAGBI Guideline for Safe VAscular Access * Instructing personel for the importance of the practice. Reinforcing message from time to time |
| 1. Move to electronic anaesthesia records and electronic prescribing in line with the rest of the hospital. (However, some report electronic recording can result in need to double record checks, taking time from patient care, and some staff reportedly find paper recording quicker. Electronic anaesthesia recording may also require extra computers - currently the anaesthesiologist may not have an available computer as the scrub nurse and anaesthetic nurse also must record their checks on a computer.) | * Expensive to implement new IT systems. Examples that it may be dangerous for safety reasons when it does not capture data in true time, and may not be as reliable as wanted. Prescriptions in different IT systems that do not integrate each other, is a hazard for safety, though. Making other important notes in different systems is a risk for safety, too. * Significant cost of implementation, transition period can be risky if not handled carefully. * As described in the text re intervention. Entering data into the computers can take the attention away from the patient (pwn experience) * Electronic recording may have some practical advantages (e.g., for documenting vitals, or for billing purposes), but having worked now for many years with the electronic record (and with paper-based records before) I firmly believe that the electronic record does NOT consistently contribute to patient safety - in contrast, it can be a constant distraction because many information has to be entered manually, the IT systems are often down or slow, IT support does not understand clinical priorities, update installation interferes with operations of the system during clinical work, etc. In addition, automatically recorded vitals are less thoroughly "mentally processed" by anaesthesia staff than manually recorded data. These problems depend of course on the actual local solution - if realised in an sustainingly optimal way, some advantages may result. However, in the reality of current hospital management and health IT management (and in contrast to some promotion campaigns) patient safety is only a secondary goal after other priorities like production speed, billing, (over-) burdening clinicians with (IT-based) administrative work in order to cut down on administrative staff. It should also be considered that often system updates or replacements are necessary, that regulalry result in confusion, lacking familiarity of clinical staff with new systems, no dedicated working time for staff training in the use of the new system, while production continues without interruption. Such systems are usually quite expensive as well, and later adjustments (for example because interfaces have not been bought in the first place) are often cost-intensive. * Risk of data breaches. Risk of complomised patient care if systems are not integrated (labs/radiology/medical notes & consults). Significant staff stress/anxiety in getting used to new system * If double work needed, ther can be an errorr in the documentation. Alslo, beeing overwheled with paperwork, anaesthestist or a nurse may be distracted from the patient | * Extreme potential impact, especially in incident reporting and examination * This would be absolutely essential and is likely to significantly increase patient safety and adherence to BP targets. It would also decrease the incidence of medication administration errors due to double-prescribing. * each anesthetic procedure is in our institution listed with description also as electronic record * Huge benefits for patient safety but also high challenges in implementing EHR. Also huge benefits for data collection, audit and research. * Double recording (paper and electronic) could be just temporarily used while changing from one (paper) to another(electronic). I have a feeling that electronic records are the future |
| 1. Ensure ICU electronic system is interfaced with ward electronic system. | * Very expensive process. ICU care is complex, large amount of data must be captured in true time, which few systems can handle today. Ideally, it would be great to have same system, but not yet due to IT system levels of integration. * Little in way of downsides here. * None | * As above [Extreme potential impact, especially in incident reporting and examination] * The economics of this intervention depend on the existing systems in place, but it would be essential for wards and ICU to use seamless e-prescribing platforms to reduce the chance of prescribing error. * If the hospital is fully "electroni" this would be very important - unfortunately, in my personal experience, it is quite unlikely to happen because different departments have different needs and therefore buy different (or differently configured) IT systems * we have this interface * Good electronic platform is needed for this. I do not know how does that work in different countries. |
| 1. Design IT systems to enable safety and support existing formal and informal safety practices (rather than hampering safety practices if IT systems do not consider work context). | * Good idea * Significant cost. * This is actually improving existing practice. Safetycould be improved | * Seems a simplification of the two items above, should in my opinion be omitted completely as it ads no value to this evaluation. * Clarification needed * This is a very tricky one. It requires significant investments on the software design side, but they will inevitably pay dividends when user experience (UX) design is factored into software design for EMR. It is absolutely vital that clinicians are actively involved in designing said systems. * Would be very important but is unlikely to be realisable becuase of the conditions/background problems outlined above * there is always something to improove in this field * I think that this is very much IT work and that sometimes whole platform has to be transformed. This would be improved safety and quality of work, but could be costly. There should be consensus at the level of hospital government |
| 1. Intranet page where documents can be found. | * We have IT systems for procedures and guidelines in two different places (some are not happy with that) - makes it difficult to find procedures and to be sure that they are up-dated or not. Must be easy to find and read. * Can draw clinicians away from bedside for routine tasks (e.g. looking up VTE prophylaxis policy), depending on how slow IT systems are, this can significantly reduce the time clinicians are available for other clinically more meaningful activities. * Maintenance can be a problem unless clinically competent and engaged personnel is taking care of these pages * None | * I would imagine most trusts these days have such web pages so this does not necessarily represent a significant advancement. Optimisation of accessibility and searchability of document depositories is necessary however. * "we have all hospital application forms accessible via intranet " * This should be possible with a few new computers at the right places |
| 1. Standardise machines, e.g. infusion pumps or anaesthetic machines to reduce the burden of training needs for different devices and makes errors due to unfamiliarity less likely. | * This is important for safety and it is the cheapest solution - buying in med tech equipment in larger quantum - less time to train (just on one type), fewer mistakes and mishaps follows standardisation * Lack of diversity and impeding change when new developments happen and new devices come to market. * the problem may be that we have these products from different companies * Less experience with the different types of equipment. This could be a problem if personel works in different hospitals. | * Cost, ease and speed very variable based on the existing equipment. * Essential safety feature, but needs to be weighed against the potential for impeding new developments. Teams can easily use this as an excuse to not keep up-to-date with new changes. New devices need to still be trialled specifically and implemented in a standardised fashion. * Teh scores depend on the previous systems that are in the hospitals, but in principle, the machines should be standardised in every hospital, and possibly beond (a small example: For TIVA, the propofol pumps should be above (or below- but in a uniform way in all hospitals) the remifentanil pumps, in case staff work in several hospitals * Feasibility heavily depending on organisational structure of the hospital and influence of industry / vendors who are interested in selling their products. The advantage of "standardising" by choosing only one manufacturer/system comes along with significantly higher dependence of the hospital on this manufacturer. * dont know of any guidelines here but would be useful to have formal recommendations to standardise equipment (especially relevant for infusion pumps and airway equipment) * Depends on the administartions who decides about equipment comission |
| 1. Use disposable, single-use theatre scrub suits. | * More costly than washing cotton clothes. Probably less positive for environment. * Environmental impact, waste accumulation * Environmental issues are becoming more important. | * Depends on the environment and the resources. What is the "greenest" solution? * it's only a financial questionIt is actually easier to use single use scrabs. It is costly at the beginning, as the firs investment, but later on. It is actually cheaper than non single use one. However, due to environemnt concerns, it is actually the non single use scrubs that could be recommended in the future. In terns of safety and infection control, I am not sure that there is a significant difference. |
| 1. Introduce phones for the ICU/theatre trainees on-call instead of a bleep system to allow easier contact of the trainees on-call. | * Lack of signal coverage * Costly to change systems. We have phones that is mobile, require net that works well. As wifi-net gets up-graded, phones will be more used. * None whatsoever. Just need to ensure good wifi/network coverage hospital-wide, with signal boosters if necessary (might increase implementation costs) * areas of hospital may not have phone coverage. Changeover period is difficult and there may be uncertainty in how to contact staff * Trainees can rely on telepohone information too much and decide to make phone consultation instead of coming at the site of the patient whencalled | * This is a top priority. Baton phones, be it older generation non-smartphones or smart devices, are absolutely essential for efficient communciation. Bleeps should be reserved for fast-bleeping and cardiac arrest situations only. * Not only for trainees, but also for consultants. We have both - a phone for consultations and a bleep system for alarm situations with indicator stating where the incident is happening. Result: Instant contact with the staff on call. * we don't have bleep system and trainees can always call to senior specialist * Presently we are using phones, we never had bleeps in my present hospital. Seems like a strandard to me |
| 1. Use simulation to inform the procurement process for new equipment (i.e. simulation performed before new anaesthetic machines commissioned). | * Very important point. Equipment must be used in simulation or patient settings before its bought by the hospital. To evaluate quality and safety issues beforehand, in different clinical settings (light, space, positionin, on ground or hang from ceiling etc) * No real harms as such. * there are limitations to simulation. needs to also be tested in healthcare environment * None | * This is potentially at odds with EU rules on public tenders, and would need preliminary work done centrally to ensure legality. * Good idea, would just require good coordination between procurement teams and clinical teams to make it happen. * Would be very important, but is very unlikely to be consistently adopted (except for sporadic events) because staff needs to be released from clinical work, reducing the production flow * we have always training for every new procedure or equipment on the ward * Some training of the personnel before the commissioned equipment arrives is actually the usual practice. However, having simulation seems like more efficient way of training. It is also good to have technicians on the site when equipment is new and in use |

*CATEGORY 4 Airway management*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Introduce an ‘Airway alert’ letter to give to patients who have had difficult airways. E.g. could set up electronic record systems so that an ‘Airway alert’ letter is automatically generated when a patient is found to have a difficult airway in the operating theatre. | * *Needs to be systematic. Otherwise would not be reliable* * *Require changes in IT systems. May be difficult and take long time to be allowed changes in IT system. However, it is in some systems possible to highlight or flag allergies and other important safety issues.* * *None* | * For maximum impact a national electronic record system is needed. * Easy to implement in EMR, but it is a rare event. It will still require a bit of free-form text to convey the important intricacies of difficulty so cannot be automated completely. * We have had that for years, but it is now being taken over by a national health record system where you can read essential information re every citizen, which is a more fool-proof system * The Swiss Society for Anaesthesiology and Reanimation (SGAR) provides such a "difficult airway certificate": https://sgar-ssar.ch/services/ausweis-intubation/ * During preoperative assesment we ask for that, but it's not an protocoled thing. There is a labeling box in our anesthetic application form * Great idea. In keeping with DAS recommendations. By incorporating it into electronic record and ensuring a form is automatically generated then will no doubt improve compliance with this recommendation * This could be done rather easy. In our hospital we have arrange letter that patients have with them and are explained about the meaning. Electronic record would be great. But also havin a bracelet as for some rare diseases would be good idea |
| 1. Ensure McGrath video laryngoscope is available in every theatre as this is the video laryngoscope, which trainees from other hospitals are most familiar with and should be readily available. | * *Lack of batteries. Maintenance. Lack of Macintosh training for residents.* * *Standardisation of video laryngoscope across hospitals would be positive, could be also for other types of equipment. But at least, within hospitals!* * *I think evert center shoukd have at least 1 or 2 video laryngoscpe (it does no t matter the name) and train the trainees in them* * *this requires greater collaboration between sites as regards procurement of equipment* * *Trainees are then educated to use only one type of video laryngoscope. Lack of experience with other laryngoscopes* | * *Should in my opinion be rephrased to "Ensure the availability of a video laryngoscope in every theatre" as McGrath is in no way superior to the alternatives and this choice of specific brand is unseemly.* * *Would tend to agree, it has become the go-to videolaryngoscope and might be a good step towards standardisation of availability of VL as first approach.* * *Is it really so that this is what trainees from other hospitals are most familiar with? What about C.mac?* * *I'm not sure if the reference to the McGrath would apply similarly to all countries - maybe this could be replaced by "the most widely used videolaryngoscope in the respective hospital/region/country"* * *We have laryngoscopes available when difficult intubation is expected* * *Difficult Airway Society (DAS) Difficult Intubation Guidelines 2015 recommend that videolaryngoscopy is immediately available wherever intubation is performed* * *I would suggest as many as possible video laryngoscopes of all types. For example, in Serbia we have other typesthen McGrath more often* |
| 1. Ensure greater availability of anaesthetic nurses in theatre at the time of extubation and avoid sharing anaesthetic nurses between theatres. | * *Support this point very much. There is potential for increase of safety and productivity with more nurse anaesthetists available. Takes time to educate and this should be stimulated by hospitals.* * *Would have a significant impact on staffing and costs.* * *more staff present during aerosol generating procedure (extubation), which is important during covid pandemic* * *we have 1 nurse / OR* * *I would suggest also durin intubation. I can not see any harm* | * *If recovery nurses can then potentially immediate take over care without the need for the anaesthetic team to follow the patient into recovery, then this might be an improvement, if it just adds another element to the chain and the chain stays the same otherwise, it is a step backwards.* * *If I was supposed to respond for my own country, all the figures would be 1, as we do have that system already. If the question were to be relevant for my (and some other countries) setting, I would have replaced "anaesthetic nurses" with "anaesthesiologists" as we are often overseeing more than one theatre at a time (if the case is simple).* * *Certainly important, but not sharing nurses would not be feasible in the reality of many hospitals in Switzerland (needs more staff - costs!!)* * *there is always available one nurse in the theatre and one in recovery room (if there is this room)* * *Again, I would suggest than nurses should be there for intubation too. Safety is improved with better quality of work, having enough people is one of the prerequisites* |
| 1. Ensure capnography available in recovery. | * *This have cost potential, but would be of benefit for the most sick recovery patients. Should be a must for intubated recovery patients* * *Might require procurement of new monitoring equipment and modules so cost of implementation might be high.* * *None* | * *Is a requirement.* * *In our institution is capnography in each operating theatre, but not in recovery room. We have some portable machines if it is necessary* * *In line with Helsinki Declaration on Patient Safety recommendations* * *Ensure not only availability but regular use as well* |
| 1. Ensure uniform use of oxygen during transfer from theatre to recovery. | * *Standardisation of oxygen delivery during transfer according to protocols must be uniform, across theatres, hospitals, etc.* * *Wastage of oxygen, hyperoxia* * *?risk oxygen toxicity. also false reassurance if patient has obstructed airway  - should use O2 in conjunction with c-circuit to assess ventilation (whether bag moving)* * *People tend to focus on what they do and if they have fulfilled what is asked from them. Than they can overlook the patient* | * *This can be a case-by-case discrecional decision.* * *I am not sure what is meant by "uniform", as a few patients will require more than "normal"* * *This suggestion is not in line with the suggestion in Cat2-21 (oxygen only if needed)* * *we have already implemented* * *O2 shoudl always be readily available but many factors determine whether a patient needs supplemental oxygen on transfer - patient factors, time after extubation, surgery and distance to be travelled. in some cases transfers can be performed safely without supplemental oxygen in my opinion* * *Personel should be well trained and instructed about the new protocols.* |
| 1. Design difficult airway trolley in keeping with DAS recommendations, and place DAS obstetric guidelines on difficult airway trolley in hospitals which may have to deal with obstetric patients on rare occasions. | * *Standardisation of airway trolley according to recommendations should be uniform. Potential to reduce harm when staff work across departments, theatres and hospitals. Also good for training of residents, nurse anaesthetists.* * *Need to pay attention to local/regional/national guidelines and agreements re: the layout of airway trolleys and equipment. Ideally these trolleys should be standardised across networks where trainees rotate.* * *Not enough to design the trolley, people have to be trained well to use everything that is on the trolley. Otherwise it has no use. Maybe even more danger with trying to use equipment only when confronted with difficult airway* | * *A good QIP* * *I assume that most hospitals have implemented this (or something similar)* * *we have guidelines and also package on difficult airways according DAS recommedations* * *Has to be accompanied with the well planned training for difficult airway* |
| 1. Provide a portable airway rescue ‘grab bag’ which can be taken to wards and is more portable than a trolley. | * *Depends on how rescue is organized in the hospital. Some have equipment in patient rooms already available, some have it on trolleys, some have a rescue case/bag with some drugs and airway equipment (as we do) and separate bag for anaesthesia drugs. A standard kit with most basic anaesthesia stuff will help to uniform across hospitals.* * *need to ensure videolaryngoscope is working/charged. need to ensure euipment in grab bag is serviced and working* * *Grab bag has to be quite often checked for the equipment. There is a danger to discover that something is missing at the spot* | * *Most intensive care units have such grab bags. What's in them is another issue.* * *related to the previous note* * *Regular check of the bag content. One of the nurses has to be appointed to take care of the bag* |
| 1. Increase the number of fibreoptic scopes to also encourage use in non-emergency cases and thereby increase familiarity. | * *Expensive point, though necessary for training on use of scopes and for the difficult airway teams to practice as daily routines. Create more resilience in the teams.* * *Cost* * *Non experienced personel should not be encouraged to practice new skills unsupervised. Also nurses can be overwheled with the additional work of caring for fiberoptic scopes* * *Inexperience with the technique can harm the patient.* | * *Impact depends on the current situation in the department - consideration should be made to invest in single-use fiberscopes* * *Would be positive, but needs a culture change as well and increasing awareness.* * *The imiting factor is cost* * *Problem: costs* * *fibreoptic scopes are available in our departement but not for rutine and not emergency use* * *this works best when there is also a culture of teaching trainees in use of ATI at an institution (for example theres a recognition that inductions might take slightly longer but this delay is necessary to give trainees adequate exposure)* * *There has to be enough experienced doctors to superwise an dplann training for alll anaesthetists* |
| 1. Install a drying cabinet to speed up processing of fibreoptic scopes, allowing increased use for both elective training cases and emergency cases. | * *Expensive point, as well, but necessary to have a secure process of decontamination (cleaning, disinfection and steriliisation). The cabinet may ensure higher cleaning standards of the scopes. Hence, better patient safety, and possibility to track scopes against which patient that used it (tracing of infections i.e.)* * *infection. Maybe the best option is the use of disposable fibreoptic scopes* * *we use single use scopes.* * *Someone has to be appointed to take cate of that part of work* | * *Impact depends on the current situation in the department - consideration should be made to invest in single-use fiberscopes* * *Most units these days use disposable scopes, so does not apply.* * *The tendency is towards more single-use and then this drying cabinet will be redundant* * *More fibreoptic scopes needed* * *related to the previous note* * *This is usefull but not necessary* |

*CATEGORY 5 Other emergencies*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. *Stock a folder or Quick Reference Handbook in every anaesthetic machine and theatre containing algorithms for management of anaesthetic emergencies. In the obstetric or paediatric theatre, this could contain algorithms and guidelines specific to obstetric emergencies/paediatric emergencies.* | * *Most anaesthesia work stations have a separate computer and screen attached for registrations of data. Here you also find the handbooks or guidelines that is tailored and specific for your theatre and organisation. Having two or more sets of guidelines will be contra intuitive and cause safety risks for patients and staff.* * *Easy solution, requires dissemination.* * *algorithms/guidelines are constantly being updated someone needs to be responsible for updating folder* * *we have it on our intranet.* * *No harm. However, I am always concerned who will read handbook if really emergency is taking place. Better to be dedicated educational tool* | * *The challenge to implementaton is in changing the culture to using the handbook - not in placing it in the OR. And that culture change is the important benefit.* * *Many will nowadays use an app on their smartphones or have it in the computer system, but the smartphone alternative goes against not using private equipment for work* * *we have this guidelines, but not in every theatre* * *often algorithms are on the back of anaesthetic machines but they are frequently difficult to access and even read* * *If it is to be used, than it should be used as a part of a training process* |
| 1. Design an anaesthetic-specific massive haemorrhage protocol with accompanying Standard Operating Procedures. | * *Already exist in large hospitals? Could be more standardisation perhaps?* * *Some of these protocols are very integrated and it might cause confusion if every profession has its own* * *i think the protocols should be different depending on each area (obstetrics/trauma/GS)* * *any such protocol needs to be designed in collaboration with surgeons/nurses/lab staff/obstetricians etc or otherwise it risks not being successfully and optimally used.* * *we have it on our intranet.* * *None. This is additional improvement of the practice* | * *For example, the SGAR provides such a protocol:* [*https://sgar-ssar.ch/fileadmin/user\_upload/sgar-ssar/public/Services/Downloads/perioperatives\_Gerinnungs/Standard\_Algorithmus\_definitiv\_2019.pdf*](https://sgar-ssar.ch/fileadmin/user_upload/sgar-ssar/public/Services/Downloads/perioperatives_Gerinnungs/Standard_Algorithmus_definitiv_2019.pdf) * *The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition* * *we have this guidelines on national level* * *As always, protocol works only if it is implemented. Training and simulation should be used in order to change the usual practice* |
| 1. Introduce a dental protocol to facilitate management of patients who suffer dental injury while under anaesthesia. | * *Cost will be most on patients. However, a protocol could be helpful to guide patients in preparations and personnel on how to treat patients' at risk for damage on teeth and gum/lesh.* * *webbased* * *None* | * *Rare events. There is specific guidance on this and I wonder what the benefit of further awareness of such guidance (or more standardised specific guidance?) would be.* * *This is not so much related to patient safety as to easy of managing the case after the patient is awake* * *My guess would be that most institutions have such a protocol* * *we don't have specific protocol for this area of interest* * *im not aware of any association guidelines here but perhaps there should be one* * *Same as the above [None. This is additional improvement of the practice]* |
| 1. Introduce a ‘Code Red Trolley’ in theatre for management of massive haemorrhage. The trolley could contain tranexamic acid, fibrinogen, photos on how to take cross match, and designated lanyards. | * *Already exist in large hospitals? Could be more standardisation perhaps?* * *Risk of too many different trolleys* * *any trolley with drugs and equipment needs to be routinely checked and esnure medications are up to date etc.* * *The trolley should be checked regularly. Surprises of the missing parts in the emergency situation may endanger the patient* | * *This can be offset by availability of code red team that actually knows how to do these things and can facilitate checking & opening blood products as opposed to photos of how to take a cross-match. People not trained will not do it right regardless in a high-stress unfamiliar situation.* * *If we have a trolley for every difficulty , then that might cause confusion, as well - re "checklist chaos" where we have created to many checklists that they "kick each other in the head"* * *we don't have such a trolley* * *much of the equipment/drugs to manage massive haemmorage is readily available (for example TXA)* * *Everybody should be aware that it exist and how to treat massive haemorrhage* |
| 1. Develop kits containing all the relevant materials, drugs, instructions, guidelines, etc, for managing massive haemorrhage and anaphylaxis. | * *Already exist in large hospitals? Could be more standardisation perhaps?* * *If all the neccesary material always available, I see no harm* | * *Better to have an integrated system* * *Maintanance causes certain costs, of course* * *very suitable, we try to prepare some kits in this way* * *certainly these kits are useful for anaphylaxis in my opinion (as recommended by NAP 6 study)* * *Everybody should be aware that it exist and how and when to use it. Instructions and information, including reinforcement of the information sem to be a regular part of training* |
| 1. Use an electronic blood-checking system for rapid identification and location of available blood products. | * *Require IT systems that have integrated such solutions. May be costly, but is important for blood transfusion safety.* * *double check* * *If alternative is available (in case the system does not work) there can be no harm* | * *This would be ESSENTIAL. The fact that we still have to manually write on blood bottles in 2020 is abhorrent.* * *I am not sure that I understand the suggestion…* * *I'm not familiar with implementation or use of such a system (answers are a guess...!)* * *we don't have experience with such an electronic system* * *Depends on the available technical possibilities of the hospitals. I am not sure if this is easy to develop everywhere* |
| 1. Provide ‘Grab bag’ containing Intralipid hanging prominently on the wall of theatre recovery ready for use. | * *Drugs are availble and sensible placed already, for use in theatre. Kit for use outside theatre is available too.* * *None.* | * *Does not need to be in recovery. It would ideally live on the arrest trolley in theatres.* * *We have already in the room where all anaesthetic drugs are prepared. It should be hanging somewhere easy to remember and easy to see, but the systems are so different so that "wall of theatre recovery" is too specific to be relevant for each place.* * *we have intralipid in the box on recovery room* * *AAGBI Guideline on LAT - it should be clearly documented where Intralipid is stored within a department. Having intralipid on view is a good idea as often staff (especially trainees rotating between hospitals) dont know ehere its kept.* * *Can go together vwith the visual reminder of the procedures in case of LA toxicity* |
| 1. Standardise cardiac arrest call telephone number to 2222. | * *Other numbers are preferred in various countries and hospitals. To change it may have large costs, and could be a safety risk (staff using wrong numbers)* * *Transition period miscommunciations* * *patient safety risk during the changeover period until staff become familiar with the new number* * *None.* | * *Essential and mostly adopted already.* * *If relevant and agreed upon, easy. We do not use any telephone at cardiac arrest, there are buttons on the wall to press, situated across the hospital, and then the location comes up on the bleeper display and it is just to start running.* * *In my view, more important than standardise this number across hospitals/countries (and assume all hospitals follow this recommendation) would be to require/ensure that the number used in a given hospital is displayed well-visibly on every single telephone that may be used for code blue calls* * *we don't have one specific number. It is needed for increase safety of the patients* * *Ten years of the Helsinki Declaration on patient safety in anaesthesiology, European Journal of Anaesthesiology: July 2020 - Volume 37 - Issue 7 - p 521-610doi: 10.1097/EJA. (Chapter 16)* |
| 1. *Use an emergency bell and ensure it rings throughout the anaesthetic department – including the coffee room – which results in a much greater response and is particularly important on the weekend. Streamline response to emergency bell – so that dedicated staff respond rather than everyone.* | * *Efectivity will depend on local architecture* * *Even with an attempt to streamline the response this will create a situation of shared responsibility - and as always: "When everybody is responsible, nobody is". I would strongly caution against this solution.* * *Streamlining response to emergency call to dedicated staff rather than everyone in the theatre/department is necessary. We use on call alarms (calling and phones) electronical system, updating on changes in OR - emergency cases, response calls etc. An emergency bell is not so precise and would alarm all, rahter than only dedicated staff.* * *alarm fatigue' if bell used too frequently* * *The second part is not very clear to me. What happens if everybody is waiting for someone else to respond?* | * *Not common events, and would take some getting used to. Depends on size of department.* * *we use another modes for warning: phones or simply scream* * *It is not very celar for me how this would work. We have interphone in the Ors, so if someone calls , everybody can hear, and all people available respond. In the OR if there are to many people, only few, who can solve the problem stay. However, it always looked to me that people calling for help do it more quickly than the system* |
| 1. Ensure hospital has a resus team available (consisting of a medical registrar and intensivist), which can be called to deteriorating patients on the ward or following activation of early warning scores. | * *Excist in larger hospitals, for cardiac arrest cases and deteriorating patients.* * *risk intensivist being called away from sick patients in the unit. if excessive innapropriate calls then this ccould impact care of existing patients in the unit. Need to ensure adequate staffing to prevent this* * *None.* | * *Depending on the existing setup this might be very difficult/costly to achive, but potentially very beneficial.* * *Why med reg and intensivist? This could also be a critical care outreach nursing team with input from ICU and medical reg if needed?* * *the team composition should be discussed* * *See Cat6-8 - what are the differences and overlaps? Implementation may depend on available staffing resources* * *we are halfway through the implantation of this point* * *Someone can always be expected to do consultation. In our department it isa person who is at 24 hours duty* |
| 1. Introduce a fast-track programme to improve time to theatre for patients arriving for emergency surgery following ruptured AAAs. | * *Introducing fast track programs require organisational support in and out of hospital. Big job to do, but may have impact on outcome for this selected patient group. Examples on other groups are patients with blood clothing, embolism or bleeding in the brain.* * *We transfer them.* * *None.* | * *Why only such a small patient group. Fast track for emergency surgery should be a universal aim for all time critical procedures.* * *This depends on systems in place and a detailed analysis of where most preventable delays happen. In a well-functioning proactive system a AAA is recognised at the door in ED and can be in theatre for knife-to-skin within 15-30 minutes. Delays are sometimes insensible as well and may be a result of stagnant departmental cultures.* * *Is that a new thing - not done already?* * *Should probably not be restricted to ruptured AAA but be functional for other super-urgent vital emergencies as well* * *very suitable* * *fast track programmes need regular staff training/simulation and commitment from all specialties. more evidence emerging now for their benefit (along with enhanced recovery programmes)* * *A hospital where I was working befora had this fast track program. It was very usefull and improved survival. However, surgeons are very important to buy in* |

*CATEGORY 6 Organisation and staffing*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Highlight to management the lack of nurses available for emergency cases after hours due to inappropriately long surgical lists or lack of daytime emergency theatre. | * Organisational changes are challenging, but may be required for handling volume of surgery * Highlighting the lack of nurses still does not change what is going on in theaters | * Very local issue - unlikely to find universal application * An essential issue, but there a couple of different potential interventions hiding in this suggestion. * Again, I feel that this is not relevant in my setting. * Very important - unfortunately very unlikely to be factually successful (but likely to be applauded...) * Actually we have 3 nurses after hours. In cases of prolonged surgical list there is ussually enough nurses to change day duty. In case of need for more nurses, nurse which is in the theatre just have to finished the list or wait till one nurse after hours ended emergency case. Acually in the situation of reduce surgical list due to pandemy of COVID-19 collisions arise very rarely. * AAGBI Guidelines - The Anaesthesia Team 2018 * Having enough personel is the key for safe practice. Unfortunatelly, it will be even biger problem in the future |
| 1. Rotate theatre staff between main theatres and day care to improve nurses’ familiarity with drawing up infusions for difficult cases in day ward. | * Lack of specialization would reduce eficiency and motivate potential harm * May compromise quality in day care surgery by rotating main theatre nurses in. * Rotating of staff increases flexibility on performing tasks, but on the other hand reduces effectiviness all over. Having enough nurses specialized, would increase effectiveness. * Needs increased staffing and syphoning attention away from primary focus. * Teams that are used to working together are safer teams * During rotations nurses can still end up working alone in the unfamiliar part of the hospital. Rotations should be well planned and include both experienced and less experienced stuff. | * There are different levels of education, knowledge and skills in nurses between countries in Europe, which makes this point challenging to address. * There are pre's about staying in one place, but rather expose them to difficult situations in simulations expercises. * we rotate staff between theatres and da care and between each theatre * Reason for the rotations should be well explained in order to be accepted from the personel |
| 1. Ensure availability of trainee during working hours to deal with ward requests, e.g. pre-assessments, emergency IV access, problems with epidurals. (Currently the trainee carrying the bleep is taken away from their patient to answer bleeps and delegate jobs to others.) | * May have additional costs. * Depends on how busy the service and scope of anticipated work is. Need to factor in lack of meaningful training opportunities when holding bleeps as well. * None | * It looks like a local problem * Again, differences between countriese here. In nordic countries nurses mostly do IV lines on calls, can contribute on pre-assessments, etc. Sharing these tasks with nurses may allocate time for trainees to work in theatres? * This is also not relevant in my setting, as we do have trainees and consultants doing these tasks * I understand this would be an additional resident (requiring a position) * The trainee in our hospital is not carrying the bleep and has one senior consultant to educate him/her * National Clinical Programme of Anaesthesia (Ireland) - Model of Care for Anaesthesa - makes recommendations on required anaesthesia staffing. * Depends on the hospitals and the number of potential interventions. Larger hopsitals might need even more than one, on the other hand smaller hopsitals with low number of cionsultations during the day might not need whole working day of the trainee for the interventions on tha ward |
| 1. Improve availability of ancillary staff, e.g. radiographers, to reduce delays in theatre and patients spending unnecessary longer times under anaesthesia. | * Availability of these resources are not cheap. Need to make these tasks known for hospital management and how this affect time spend in theatre and delays operating programs. * None | * Depends if the number of staff is the issue or if it is the organisation of work. But can have a significant impact. * we have enough ancillary staff in the theatre * Everything that comes to increased number of stuff is difficult to achieve. However, sometimes it is just a matter of decision, there are enough people just reoragnization is needed |
| 1. Appoint a departmental ‘Safety Lead’ responsible for co-ordinating and organising safety matters. | * Responsibility for safety lies withihn the managerial chain and leadership. May have some impact if a senior person could be co-ordinating, though the organisation is very complex and may best be solved within the units. Different opinions on this. * Everybody should be involved in safety matters. It can work only with the broad awareness of the importance of safety. Appinting one person can decrease the involvement of the others | * Seems like a simple enough intervention, but is not in and of itself sufficient. The risk is that it can send a message that 'safety' is a niche thing for enthusiasts, and the non-safety minded in the group can become complacent as someone else is 'responsible' for safety. * Actually the leader of Safety is substitute of head of our department * i cant see this is contained in guidelines (such as Helsinki Declaration) but mabe it should be * I am not sure if this could be a good solution for an overall saftey |
| 1. Rotate anaesthetists between different surgical specialties (especially those they cover on-call). | * This is necessary for reaching levels of competency within the spesialization. * Syphoning time away from primary specialty - but minimal risk of deskilling * Anaesthetists could still have lack of experience in certain areas of work. On the other hand, this can lead to lack of highly educated people for certain area | * Again, we do this all the time, of course anaesthesiologists should be able to do more than one surgical specialty if they cover on call * We actually rotate anaestetists between surgical specialties * This is probably more important for the trainees and youn specialists |
| 1. Involve all staff groups, not only doctors, in safety initiatives in the operating theatre. E.g. the role of nurses in influencing medical colleagues should not be underestimated. | * Safety initiative may come from different professions. They should all include each other in the process and implementation. * None | * Multidisciplinary simulation sessions, educational lunch meetings and mid-day huddles can be very valuable. * Communitcation with our nurses is not so easy and we need more time and goodwill from both sites to manage this I think crucial impact factor of safety * so important for sustainability of any safety iniatives - we should involve other discplines at early stage of planning/designing safety iniatives * I have a feeling that nurses are quite often better in practicing patient safety than doctors. Also it is very important to have different perspectives for the same problem. Team work and communication are the keys for the patient safety any way, so practicing those skills is never enough |
| 1. Establish an Outreach ICU service, which consists of ICU nurses who review deteriorating patients on the ward or recent discharges. The Outreach nurse then communicates with the ICU team, which helps facilitate early admission for deteriorating patients. | * This is important for safety and for sharing responsibility for the most critical ill patients on the wards. Establishing ICU teams with doctors, ICU nurses to facilitate early admission for deteriorating patients should be a standard. However, this also provide organisational and budged issues that is difficult to solve in some hospitals. Use of nurse anaesthetists in such teams may be another solution, there need to be some highe level competence available for such teams to support the wards. * None | * Common arrangement at many units at present. * Important, but may require careful training and in some instances additional staff (-> costs) * We have no emergency medical teams or firs response teams in our hospital * Having a protocol that somehow establishes this communication between ward and ICU is important. Maybe specially dedicated nurse is not necessery (that can be a doctor on call, or trainee or the doctor that does the consultation for the day). I think that this step of communication is important, and can be achieved in different ways |
| 1. Develop a pain service for management of acute pain on the ward. | * Nice goal for pain service management. Costly, but good for patient treatment and to help providing the best pain treatment for acute pain patients ( and train ward staff on guidelines and protocols). * Can become an issue out of hours so level of care fluctuates. Can guard against that with local guidelines and protocols. * None | * Scores: Depending on the motivation of staff and others - we have had that system for years and it is much appreciated * There is even evidence about the effectiveness of an APS for achieving not only lower pain levels but also less adverse events (e.g., Kuusniemi K, Pöyhiä R. Present-day challenges and future solutions in postoperative pain management: results from PainForum 2014. Journal of Pain Research. 2016;9:25-36). Unfortunately, this requires significant resources (staff, infrastructure) - but very important!! * We have no acute pain service teams, but we actually work on it * Pain management is quite often neglected on tha wards. Dedicated service is the best way to achieve better care. |
| 1. Hold daily meetings of the entire anaesthetics department to hand over from night to day staff, discuss patients on the operating lists for the day ahead, and air problems, incidents, and risks to safety. Also, hold a later afternoon handover from day to on-call overnight staff and/or for group discussion of the following day’s patients. | * Already in place in most hospitals? Problem is to have this across professions, anaesthesiologists have separate meetings from nurse anaesthetists and theatre nurses (and surgeons). * Might be met with resistance if necessitating early start, depends on how anaesthetists percieve their lists - collectively or solo? * None | * Being used to this, this seems the bare minimum of intra-depertmental communication necessary to ensure dissimination of information and safety issues. Further it also strengthens culture and serves as a platform for building the departments position in the hospital. * Have personally worked in a collective where morning meetings were standard (Reykjavík, Iceland, tertiary teaching hospital) and started at 7:30 AM sharp. They helped maintain collective situational awareness. A starred anaesthetist from the previous day would prepare a spreadsheet. Minimal ICU handover (new admissions, bed numbers) also took place at the meeting to increase awareness of resources. Would highly recommend this! * Again: Ease of implementation depends on the culture and system - we do that as a norm, but separate for physicians and nurses, as we do both anaesthesia and intensive care medicine. * Very important * We have daily meetings and communication about problematic patients is I think in good level * This is the usual practice in my hospital, I had a feeling that it is more or less happening every where. It is very important to develop the culture of communication. This can become just a tick the box phenomenon, where important information is still missing or overlooked |
| 1. Write the names of all staff members on a whiteboard at the start of each day. This initiative has been well received by trainees and nursing staff. We heard the view that asking staff names and placing their names on the board makes staff feel valued; new members of staff entering theatre can add their names to the board. | * Low cost initiative. May support team feeling in staff members and increase visibility of team members, trainees, students. Though, some hospitals have this electronically, but that is usually not visible for the entire team - like a board is. * None | * Low yield intervention. More important to have names written on a whiteboard in specific theatres (as opposed to just introductions at huddles - names get forgotten immediately). * Depends on the system. If you move from one theatre to another all the time, it is not so easy to keep up to date. But thatre caps with names on, could be an alternative https://theatrecaps.com/blogs/theatre-cap-challenge/personalised-theatre-caps * If there is anyone new in the theatre the best current practice is to introduce him in the beginning of surgical list. * simple yet very effective intervention in building safety culture * Seems like a nice practice. I do not know if it has an impact on practice, but it can be quite useful specially in large hospitals with many people working in the Ors |
| 1. Use an anaesthesia specific App which could contain contact details of all trainees and consultants, to facilitate rapid contact in emergency situations. There are also links to protocols for anaesthetic emergencies, which can be easily accessed as well as department protocols. Some apps also allow uploading of the teaching schedule and weekly rosters. | * Apps are used on private cell phones, also in theatre by traniees and nurses. There are safety and data privacy issues with use of cell phones and not hospital phones. May be solved in futrure * Risk is "offloading" too many things into this app - so called 'feature creep' when it seems appealing to add more and more features, but need to carefully select which to include and why. Guidelines being centralised somewhere (e.g. Teams group) make sense. * Depending too much on the phone may be a distraction as well | * Can just use WhatsApp and have an open policy regarding calling in case help needed. * Again, these are culture sensitive, as the systems are different. The suggestion is also partly contradicting other suggestions above re emergency protocols, etc. We have the phone numbers to others in our hospital phones, the rosters are both on the wall and online already. * Usability and effectiveness depend on the realisation of this app * It is great idea to safe management of mainly rare complication and situation on the theatre. We have translation of ESA guideline for management of anaestic complication in main surgical theatres. * Seems like a practical networking measure. |
| 1. Use a ‘block bay’, where regional anaesthesia is administered in a controlled environment with a nurse assistant. | * None | * Simple to implement if made valuable to anaesthetist by providing optimum working conditions. * Can use perioperative "recovery" area for this as well! * We always have an assistant available as is, I do not think it is so important if there is a "block bay" or another location, it depends on the setup of the hospital * we hve only one block bay in central surgical theatres but we need for more those bays especially in orthopaedic surgery * This can also speed up the list in theaters. More than one patient can be blocked in short period of time and enough time can be waited for block to develop. Also, permanent survailance of the patients is available |
| 1. Introduce practice of ‘Stop before you block’ using stickers, posters, and education sessions to improve uptake. |  | * This is purely raising awareness of a known QI safety intervention. If uptake of practice is poor are we setting up cues appropriately? E.g. put a cognitive cue on the US machine used for blocks or the cupboard where LA lives. * Actually we have no such this approach * I do not quite understand how does this work |
| 1. Have a mobile regional block trainee rather than a block bay which is a useful training model where there are not staff for a block bay. Trainees were on this allocation for the week, so were continually reminded of the ‘Stop before you block’ initiative, which improves uptake. | * trainees within assigned theatres may become frustrated if 'block trainee' comes into their theatre, does the bloc and then leaves - results in less learning opportunity for them | * How does a trainee performing blocks across the suite obviate the need for nursing staff to monitor patients after? * May require additional staff (resident) * I do not quite understand how does this work |
| 1. Display safety information at ‘point of care’ e.g. mounting copies of checklist and other safety documents on the wall of the operating theatre for quick reference. Emergency telephone numbers are displayed on wall of theatre. | * Mount checklists on wall not always be visible for staff using the checklist. Distance, fonts and size of letters, equipment blocking view - may reduce effectiveness of wall posters. * There could be too many papers hanging on the wall * information should be displayed ins consistent manner between areas (eg same location in each theatre) * None | * Underutilised low-cost high yield intervention - need to remember when implementing changes! A 'safety lead' could helpfully provide input into QI interventions with a focus on uptake and a better understanding of the psychology of human performance in complex systems. * More important is that theinformation is easily accessible when needed, in an app, or in a catalogue on the anaesthetic machine (laminated papers could be used). Hanging a lot of papers on the theater wall is probably not good for hygiene, either. * Important and easy to implement * We have safaty information in the recovery room of our theatres. * As with everything, training should be performed and encouregement for personel to use the material. Reinforcement is necessary |
| 1. Use a protocolised handover form for transfer to recovery, completed by the recovery nurses with information provided by the theatre anaesthesiologist. | * This is a good investment, with low cost. * High potential for unnecessary duplication of work * None | * Compliance required * Current practise is that handover of the patient from theatre to recovery room is very brief and mainly done only between nurses we need to improve this. * handover form should be developed in collaboration with nursing/recovery staff * Protocol should include plan for implementation of the new practice |
| 1. Use a critical care handover sheet/proforma for patients coming from theatre to ICU. | * And the other way - from ICU to theatre. * Possible risk is lack of verbal communication of issues and things can get missed. * None | * Good high-yield low-cost intervention. * see above * We already do this like you write * As with everything, training should be performed and encouregement for personel to use the material. Reinforcement is necessary |
| 1. Keep one ICU bed available in the unit for emergency admissions. | * Can be potentially expensive and unachievable in units with little flexibility in terms of patient step-down. * often not feasible given ICU bed shortages * None | * Essential. From y point of view it should be out of discussion, but it should be already guaranteed. If not, it would be costly * One could aim to do that, but can be very difficult in real-time. But even so, there should be a list of who could be moved to where if indicated * Not easy to implement because it affects OR capacity * We have ussually two ICU beds for emergency admissions * Seems like logical thing to do |
| 1. Separate operating theatres for ‘clean’ and ‘dirty’ operations. | * Dirty operations theatre should be clean as the clean one or cross infections may ocur * This may have a high cost and be difficult in specialized theatres. But could be incorporated in pandemic plans (i.e. Covid-19 pandemic situations). For regular operations, it might not be the best way to organize the program. * Can decrease utilisation of theatre spaces. * often missing equipment in dirty operating theatre * None | * If possible, smart to do * Depends on cleaning routines / reliability; may affect OR capacity if not enough theatres * We do this like you write * If it is not already present, I think that this needs a lot of politics and negotiations to change the use od Ors, particularly with the surgeons and administartion of the hospital. On the other hand, it is basic medical rule, very hard to believe that it is not present in the hospitals. People do not recognize potential problems in their every day routine |
| 1. Avoid using anaesthetic rooms to minimise risks of unnecessary transfer of anaesthetised patients. | * Reduced theatre availability time * Use anaesthetic rooms for blocks etc. * Need to also transfer equipment into theatre and change staff culture peri-induction (attentive silence from scrub staff) to maintain sterile cockpit * benefits of using induction rooms outweigh risks in most cases in my opinion (benefits in terms of improving efficiency, placing lines and intubation without ther staff chatting etc in theatre) * We only use the anaesthetic room for spinal and block. * This slows down the Or list, since you need empty and cleaned OR to start the new patient | * Scoring depends on today's practice. For me, it would be easy, as we almost always induce the patient in the theatre. Pre-rooms are used only for blocks. * Using anaesthesia induction/emergence rooms contributes to OR effectiveness and shorter turnover times (this system is used in my hospital). The argument of unnecessary transfers is very important, but difficult to defend in hospitals that have been using this routine for many years, because the local extent of a negative impact of these transfers on patient safety is difficult to measure und to express in numbers that convince management. * We have no anaesthetic rooms, We do induction of anesthesia in the theatre. * In mu hospital we do not have anaesthetic rooms, works fine. This is an organizational issue |
| 1. Re-imagine the post-anaesthesia care unit into a ‘perioperative room’ to send a practical message that the whole perioperative period is important and also provide a flexible space where procedures can be performed and patients can be optimised before urgent surgery, as well as recovering from anaesthesia. | * Lack of postperative PACU beds * Require space that is not available per se. It would not be feasible in our hospital. But when space is available, it could have some potential. * Need to take care not to impose more work on an already stretched staff base and consider the ergonomics of space in the specific unit as well. * No improvisations should be allowed. Otherwise, flexibile spaces can become dangereous spaces | * Very sensible improvement intervention as it may increase utilisation. * Scoring depends on current situation, we use the term "postoperative ward" and do all the tasks mentioned - so for me, very easy to implemtn * we have not such room, but I think whole perioperative period is crucial for good and safe managment of patient. * Perioperative room may require increased investment and staffing * Flexible space has to be optimally equiped with both personel and technical support |
| 1. Develop a recovery area for endoscopy and develop guidelines for who should be referred to anaesthesia before receiving sedation by gastroenterologists/surgeons (in endoscopy for example). This may reduce incidents of anaesthesia being called to rescue situations in endoscopy. | * Sedation should not be given by the endoscopy operator. To accept that would increase unsafety. A dedicated nurse with an anaesthesia lead and an anaestesiologist on demand protocol would be prefeerable * So true. But challenging to re-organize other departments and their resources. * I do not see much benefit in anaesthetist seeing a patient and than some other specialist performes sedation and care for the patient during the procedures. Patient can still be under surveillance of the personel who can have a different approach and misdiagnose over sedation or other complications related to the use of anaesthesia drugs. | * Meaningful intervention depending on service provision models currently in place. * Example of a guideline developed by the SGAR together with other professional societies (German): Zalunardo M, Krayer S, Brunner T, et al. Empfehlungen und Standards für die Analgosedierung durch Nicht-Anästhesisten. SWISS MEDICAL FORUM. 2016;16(45):969–972. https://medicalforum.ch/de/detail/doi/smf.2016.02782 * Our current practice is to sedate/anaesthesise patient for invasive endoscopic procedures (gastrostomy, colonoscopy, gastroscopy) in the theatre. But I think not all patients who recieve sedation for endoscopy are sadate on the theatre * In Serbia gastroenterologists/surgeons are not allowed to sedate patient of their own. Anaesthetist, either specialist or experienced trainee are allocated for the diagnostic procedure theaters. Also, they decide if patient, after the procedure should de transfered to recovery area or can leave the hospital or go on the ward. Anyway, having a recovery area where some anaesthetic personel will take care of patients may improve safety. |

*CATEGORY 7 Safety education*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Run a ‘boot camp’ lecture series with simulation training for 1-2 weeks for trainees beginning anaesthesia. Trainees could attend lectures/simulation in the morning and then attend theatre in the afternoon. | * Training and simulation would be helpful before start of beginning anaesthesia. Strenghten confidence and understanding. * Potentially taking time away from actual hands-on experience, depending on how busy lists are and how many trainees need experience. * None | * Preferably distribute that time during the training: smaller simulations pills will increase the longterm update * A well-designed educational package could potentially enhance skill uptake and knowledge acquisition early in training. * no comment * Faculty has to be available. That is additional work for the lecturers. They should be motivated to organize good educational sessions |
| 1. Provide education to anaesthesiologists on what constitutes a Critical Incident or Near Miss, and hence what should be reported. | * This is well known in residents and experienced staff, more important for trainees to be educated. * None | * Especially for junior trainees. Would be worth dedicating a lunchtime lecture to. * Compliance with CI reporting in Switzerland is not very high after a reported critical incident has been used as evidence against clinicians in a law suit. Important events/situations are often not reported. The effective implementation of CIRS will depend on local/national legislation (e.g., protective laws). If the legal framework is not established, education on CIR will not be very helpful/effective * Current practice is to reffer such incident tothe head of the department - but no talk in the morning meetings * training in patient safety and human factors should be incorporated into medical education/training * Education should be repeted. Reinforcement of the message of the benefits of reporting is necessary. Also, local heros are necessary |
| 1. Run a wellbeing series for trainees and consultants. This could consist of a series of teaching sessions on topics including fatigue, burnout & resilience, stress management (from Samaritans Organisation), mindfulness sessions (from a psychologist), a CV and interview preparation course, financial planning session, and a dance lesson. | * Important topic in general and especially in Covid-19 pandemic situation * Distracts from organisational responsibility for actually improving the working conditions which are a potential driver of stress and burnout, by putting the responsibility on the individual suffering from it. * None | * Part of the topics may not be related to patient safety * See comment on left. While it is important to raise awareness, this is a classic example of unintended consequences and needs a long hard think before haphazardly implementing. * As a clinician I must state that my well-being is not based on my theoretical knowledge about well-being, but by my working conditions (e.g., production pressure, patient's risks, legal threats, etc). The suggested sessions may be of use, however, for career planning etc. * Current practice to care aand education bout mental health of our staff is very poor * There is a huge number educational working hours. It is important that environement should develop on terms of valuing wellbeing and safety. Facuklty for the purpose should be built in adavance |
| 1. In addition to wellbeing series, run regular departmental ‘Coffee and Gas’ sessions as recommended by the AAGBI and trainee only ‘Confession Sessions’, where trainees can discuss cases or difficult situations together – these meetings could be chaired by a senior trainee. | * Enlarging the gap between trainees and consultants * Low cost point. * None | * This goes some way towards enhancing an open culture, but will still potentially neglect more impromptu opportunities. Can distract from need for hot debriefs and cold debriefs which do not happen consistently and are likely more effective for specific case-related discussions. * actually no such coffe and gas * Association of Anaesthetists  (https://anaesthetists.org/Home/Wellbeing-support) * Support of the seniors is necessary. It should be well accepted that support and wellbeing of the trainees is very important |
| 1. Improve trainee-consultant relationships with departmental sports matches between NCHDs and consultants (e.g. golf outing) and nights out. | * Low cost point. * None | * Very positive when it works! Can be tricky to implement if baseline morale low. * I think that this is very important. You see people in different environment. Relationships anf trust are very important. Also this is usually very pleasant activit y |
| 1. Run departmental patient safety lecture series (e.g. 1 lecture/week for 6 weeks). Topics could include human factors, critical incident analysis, checklists/protocols (WHO checklist), Helsinki Declaration, medication safety, etc. | * Cultural issues that must be addressed through management and leadership * None | * This would go some way towards highlighting safety culture and would ideally be weaved into existing educational interventions already taking place at departments. * Again, faculty should exist. Building the faculty and finding the support of the people that value patient safety is the first step |
| 1. Run departmental regular simulation training sessions, some of which are multidisciplinary (with paediatric and emergency department trainees). | * Simulation training is important for trainees, but also for residents. Should be multidisiplinary, as other groups have their own simulations. There is need to coordinate and train together… * not harm but sometimes in a lot of departments the activity depends on trainees and they are not allow to miss days to other activities. * None | * In situ simulation is very valuable and can easily fit into a departmental schedule once weekly or every other week. * Costs are considerable; staff need to be released from clinical work * actually no such simulations * recommend running in-situ multidiscplinary sessions. multidisplinary sessions recommended especially in maternity care. See HSE National Maternity Stratety (Ireland) and the HIQA Maternity Overview Report and HIQA recommendations for maternity care in Ireland * Simmulation sessions do not have to be high fidelity. However, again, educating educators is necessary. All of this requires some funding. Also, hospital administration should be convinced to support building the safe environment |
| 1. Introduce combined teaching/simulation sessions for cardiac theatre staff, which could include perfusionists. | * Why cardiac theatre staff and not other specialties? Could be aligned with the point raised above. * no cardiac surgery at our institution. * None | * see above [Costs are considerable; staff need to be released from clinical work] * in our hospital we have no cardiac surgery * Same as above [Simmulation sessions do not have to be high fidelity. However, again, educating educators is necessary. All of this requires some funding. Also, hospital administration should be convinced to support building the safe environment] |
| 1. Provide 3-month education orientation for all new nurses (not just anaesthetic nurses). During this period, they should be familiarised with equipment that they do not regularly use but may have to during emergencies. | * How this is my hospital. New nurse anaesthetists, ICU- and operating theatre nurses have a one week introduction course, and a 12 months competence plan for their first part of their first duty year after graduating as spesialized nurses (some at master degree level). Education level as a spesialized nurse is 18 months, with additional 6 months for completing the masterdegree. It builds on a bachelor degree in nursing and two years of clinical training before starting on the spesialized nursing education. It is the same level in Norway. Master degree level is not a standard in the other nordic countries yet. * None * This should be done regularly to maintain knowledge. Otherwise, the risk to the patient increases. | * Interestingly, such intruduction procedures have been a standard in many hospitals in Switzerland many years ago, but have been forgotten in many places - now we somehow "reinvent the wheel"...! The same would be important for residents and other staff groups * current pracitice is that new nurse is lead by senior aneesthetic nurse for minimaly 6 moths * Nurses are often more motivated for safety issues that doctors. |
| 1. Increase education for nursing on the wards regarding anaesthesia (e.g. education around importance of highlighting family history of malignant hyperthermia before a patient comes to theatre). | * Education of ward nurses on pre-operative risk factors and routines should be a standard in surgical wards. Better collaboration between operating theatres and surgical wards may reduce harm for patients. Can further be reduced by use of pre-operative checklists:-) * Can be overwhelming for nursing staff already stretched with other clinical duties. Can create a scapegoating culture, where individuals then shift blame on other providers for something not being highlighted. Needs to be implemented carefully to minimise risk. * None | * Seems completely out of place - i would not rely on a ward nurse to provide any insight into anything so specific to anaesthesia * i think this education could be more intense than we have * if nurses are escorting patients to the Ors, protocolised handover could also be implemented here |
| 1. Hold a regular audit day consisting of a series of 7-minute presentations by trainees on their recent audits. | * Low cost point. * None | * Care needs to be taken to avoid audit fatigue. Individuals can easily develop a cynical attitude towards a mandated audit culture. QI interventions can be more engaging to discuss. Also, consideration should be given to a more open format on "ideas for improvement" without labelling it audit/QI. Might reduce bias. * Support from the seniors is necessary. |
| 1. Incorporate time spent in general medicine (e.g. nephrology or cardiology) into anaesthesia training programmes to help trainees understand concurrent medical management in the perioperative period, and with critical care management too. | * Challenging to chage time for specializations in the medical curriculum program * lack of enough time in anesthesia programm. In my country is only 4 years and i think is no enough * anaesthesia training is already long. Perhaps such exposure could be incoporated into the existing scheme) * They have minimum af 2years of mixed medicine before applying for our department. * None | * Needs to be done carefully so as to avoid low-yield training time devoid of actual teaching opportunities. Complex integration at the national level essentially. That said, if done right, could have a positive impact on understanding of these patient groups. * Requires support of professional societies * currentnly in our country there is no need to have practice before specialisation in anesthesia and intesive care in cardiology, nephrology or general medicine. * In Serbia it is already included. However, curricukum has to be celarly defined |
| 1. Actively recruit new staff from outside the region to facilitate the exchange of new ideas. | * safety risks when staff from different healthcare environment get used to new equipment/processes etc * None | * Take care to avoid an attitude of "besserwisserism" as this can easily happen. Can be guarded against by intelligently onboarding new personell and carefully defining the scope of their agendas. * there is no current habit ro do this * Seems like good practice, however, I am not convinced of the impact. Accepting new ideas are not just the result of having them. |
| 1. Invite international speakers into the hospital to help promote a new initiative. | * None | * Can help if done carefully, but can easily come across as gimmicky and even condescending. This will depend on what attitudes decision-makers have towards external parties and how far their professional circle of implicit trust extends, be it appropriate or misplaced. * in our hospital only there was only one speaker * All educational activities can have some positive impact. Communication and networking is very nice activity itself |
| 1. Hold a seminar devoted to patient safety topics for senior hospital management. | * None | * Low cost, but questionable what the yield would be. Would imagine it would need a specific agenda - e.g. What is the role of patient safety in our organisational culture/values and is this embedded into all levels of care and provision of services? Where can we improve? * I'm afraid that most day-to-day decisions taken by senior management are largely depending on priorities other than patient safety. Even if such a seminar would change individual views of senior managers to some extent, their practical decisions are unlikely to be strongly affected because they need to follow the particular constraints of their priorities and strategical goals. * I am not sure how one seminar can lead to the change of behaviour of the more senior hospital management. I think more evidence of the benefit and bringig up new policy could work. Than seminar can have some impact |
| 1. Establish regional/national safety peer review networks. | * Patient safety networks require funding from the hospital and regional boards. But is feasible. * None | * Excellent idea, but runs the risk of segregating 'safety' and alienating it from jobbing clinicians even further, especially if 'safety leads' are to engage primarily with said networks. Could also present an additional avenue of cross-pollination and idea sharing beyond the realms of safety. * Very important, in my view, because it opens opportunities of non-punitive exchange and learning about safety problems (whereas, in contrast, public reporting and benchmarking may include some degree of "blame") * there is extremly good idea and challenge, we will work on it * I support the idea very much. However I do not know how to achieve this |

*CATEGORY 8 WHO safe surgery checklist*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Use a checklist or written prompt of WHO checklist items to ensure parts of checklist are not missed. | * Evidence of potential reduction of harm, and costs associated with implementation * risks checklists become box ticking exercise and override existing safety processess that have developed over time * None | * I believe WHO checklsits are being done as actual checklists with prompts everywhere at present. * For now, the checklist has been used for so long that it goes automatically, but before that - very important to read it out * First implementation may seem easy, but it is a challenge to maintain the quality of the checks and sustained compliance with the individual steps of the checklist * Who safety checklist is current practice in our hospital * Guide - WHO Surgical Safety Checklist and Implementation (https://www.who.int/patientsafety/safesurgery/ss\_checklist/en/) * I have always thought that written part of the WHO checklist is obligatory |
| 1. Introduce a section on Timeout for ‘anaesthetic gases on’. | * Introducing complexity in checklist may be contraproducent * It may be a part of the anaesthesia machine checked item, as a sub-item. What is an anaesthesia check? Could be defined by ESA as a minium standard. That would help, since it is difficult to agree what it is or should be!! * may not be as relevant if induction rooms not being used * None | * Do we need to incorporate all elements of just normal anaesthetic practice into a checklist? Where does professional accountability and attention to basics during high risk periods factor in. This is another item that is NOT of interest to the wider team and is in the domain of the anaesthetist's professional conduct. * For us, this is part of the preanaesthesia check already * Very good tool * This is a small intervention, does not cost much and potentially may improve safety |
| 1. Adapt WHO ‘Sign Out’ in respect to ‘Any concerns?’ to result in more focused question. | * In multidisiplinary process agree on spesific focused questions and add to the list (according to WHO guidelines for adaptation of checklist items) * more focused questions may risk missing information (not all patients fit into specific questions). i believe the focus should be more on senior clinicans 'buying in' to checklist and using it appropriately * None | * Seems appropriate to keep it open-ended as it serves as a prompt for each individual to think about possible concerns. A more focused question would introduce bias. * I do not understand that question * I think this is easy to implement if WHO checklist are already in use. This is logical change as well, and in teams that are good WHO check lists this is just one step ahaed |
| 1. If electronic record keeping systems are used, incorporate the WHO checklist into the electronic system, then read from the screen. | * Screen is usually not near the team, with nurses having their backs facing the team when reading from the screen. Do not invite to a collective performance, like a hand held checklist do. Depends on how the screens physically are set up in the theatres. * electronic system down * To much monitors and technology can misplace the attention. | * Seems sensible. * Sometimes, it is very difficult to get changes to the electronic record system, but this could be a good alternative to 8:1 * Not sure if this really improves compliance with performing the checklist well * electronic record of checklist is plan to future * team communication is important, I am not sure that the exact form of checklists change much |
| 1. Conduct the pre-anaesthetic part of the WHO checklist with surgeons present in the induction room. | * Introducing complexity in checklist may be contraproducent * This is wanted by us anaesthesia personnel, but not possible in the way things are organized today in most hospitals. Having the surgeon present before induction of anaesthesia would save much time and speed up the preparation time - less waiting time for surgeons to arrive... * Surgeons (a high value resource) losing valuable clinical time for low yield tasks. * None | * This is NOT part of the original WHO checklist and is borne out of random incidents producing extra fat on an already somewhat bloated checklist. * As mentioned, I am not used to induction room/anaesthesia room, but it would be very difficult to reorganise the hospital to get this done. But it would be good if the hospital has resources to make the surgeon help during patient preparation including induction (in the theatre) * Not (consistently) feasible in many hospitals * surgeon is not ussualy in the theatre when we do checklist * Very much depends on the surgeons and their vision of patient safety |
| 1. Operating surgeon personally performs the identity and procedure check when the patient arrives at the operating theatre and reiterates the information from the consent process. | * Introducing complexity in checklist may be contraproducent * Would reduce risk associated harm * See above [Surgeons (a high value resource) losing valuable clinical time for low yield tasks.] * lack of safety culture could make it very difficult * This could lead to misunderstanding that the patient is actually just surgeon`s responsibility. Hierarchy of responsibilityu is OK, but not in terms of Patient safety | * The WHO checklist sign in needs to be performed by the anaesthetist and a nurse at the very least. If the surgeon marked the site with the pen and appropriately consented the patient, she does not need to be there before the sign in. * See above [As mentioned, I am not used to induction room/anaesthesia room, but it would be very difficult to reorganise the hospital to get this done. But it would be good if the hospital has resources to make the surgeon help during patient preparation including induction (in the theatre)] * see above [Not (consistently) feasible in many hospitals] * current practice only occasionally * Same as the above [Very much depends on the surgeons and their vision of patient safety] |
| 1. Ensure greater compliance with surgeon being present for ‘Sign in’ portion of checklist. | * Introducing complexity in checklist may be contraproducent * See above [Surgeons (a high value resource) losing valuable clinical time for low yield tasks.] * None | * Why do we need to ensure compliance with something that has not been proven to have a meaningful impact on safety? Far too often we do things reactively and because "they just seem to make sense". * See above [As mentioned, I am not used to induction room/anaesthesia room, but it would be very difficult to reorganise the hospital to get this done. But it would be good if the hospital has resources to make the surgeon help during patient preparation including induction (in the theatre)] * cooperation with surgeon is not so good actually with checklist * This is improvemnet in the practice that should already exist. If WHO checklists are implemented, than one part id that everybody is present at the Sign in. If not, it depends if checklist is just a tick the box issue or it is broader decision to be used |
| 1. Standardise who initiates the ‘time out’ checklist moment, and who reads out the questions. | * Low cost point. Guidelines for how to use the checklist must be made in the hospitals, define how and who that reads out the questions, document checklist performance etc. * Person readining out checklist should be senior (eg senior theatre nursing or surgeons - not junior theatre staff). if certain staff never initiate the timeout then there's a risk they attribute less attention to it * None | * Seems sensible. * current practice is that anaesthtist do this * Not so difficult to omplement if checklists already in use. It is just a matter of concensus |
| 1. Standardise the way in which staff introduce themselves during ‘time out’. | * Require implementation of a standard communication way. Simulation training could help to make this possible. Multidisiplinary simulation. * None | * Not essential. Why make it prescriptive if it will not have an impact? This might actually have a negative impact on staff wellbeing! * With rapidly changing team composition and familiarity of team members with each other in smaller hospitals the need of the introductory part may be questioned * I am not sure that this is very important issue |
| 1. If a patient wristband has to be removed from his/her wrist (e.g. for venous cannulation), fix the wristband to the patient’s shoulder with a transparent surgical dressing so it is still applied to the patient and does not get lost. | * Swetting patients can lose the identification. Organize to print a new wristband * In our hospital it is a rule to have two wristband, since we tend to cut away at least one when inserting arterial lines or iv-lines… Standardisation of how to deal with removing wristbands is important for safety. * we could loose the band * None | * Would rather suggest that it is ensured that a new wristband can be made out in the OR and another wristband put on the patient immediately. * Ideally get a member of staff to print off a new wristband? Promotion of these sort of practices might encourage them down the line. * we actually have no wrist bands in our hospital for patients * Seems logical. Someone just have to be appointed to make sure that this is adopted in practice |
| 1. Use additional wristbands for specific purposes e.g. a red wristband usually denoting a drug allergy, or e.g. a green wristband denoting that blood has been cross-matched for the patient, and a further wristband denoting patient has had previous mastectomy. | * In our hospital it is a rule to have two wristband, since we tend to cut away at least one when inserting arterial lines or iv-lines… Standardisation of how to deal with removing wristbands is important for safety. * risks of too many wristbands (wristband fatigue) - staff may start paying less attention to the 'red wristband denoting anaphlyaxis to penicillin' * Just not to overdo it and have many wristbands. Too much is as bad as nothing * The risk of error if not everyone is familiar with the meaning of all kinds of wristbands. | * Good intervention. * I do not understand the mastectomy issue? If it is to avoid venous cannulation in case of lymph node surgery in the axilla, then this is not a scientifically proven suggestion, but rather a habit. Lymph goes through lymph nodes, but veins do not. * there is no practice of wristbands for our patients * Just a matter of consensus. And hospital administartion to decide to print different wristbands. Many little procedures that improve patients safety are not complicated. Accepting them is another issue |
| 1. Introduce huddle at the start of the morning between surgeons, anaesthetists, and nursing staff to discuss the list and allow preparation for the day. | * Reduced theatre availability time * Welcome this point. May require more time spend on preparations, but could save time at the end of the day?! * some lists have multiple surgeons operating. surgeons not always aavailable at start of list - reisk of delayed the sart of list * None | * Unlikely to be high yield if teams work together often, and needs to be kept short in terms of details that are not relevant to wider team. * see above [?] * there is no huddle between personal in the morning * great idea. introducing huddles helps build culture of patient safety within an institution * This is very cultural thing. Trust and good communication between team members can be achieved in many ways. In my hospital some people are working more often together, non formal communication is taking place. Surgeons usually announce if they have some concerns. Same is with anaesthetists. I would ad that it is important to built and work on relationship on trust in which ever way |

*CATEGORY 9 Safety data collection and critical incident reporting*

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| **Item** | **Potential harms** | **Guidelines and comments** |
| 1. Develop a separate anaesthesia incident reporting system (this would likely require a national approach). | * There exist a few systems and there is litle coordination and collaborative efforts to uniform this. Resistance to use others tools is a cultural barrier for standardisation. Research suggest use of ICD-10 codes for complication assessment, but require changes in coding practices. * Would likely benefit top-level decision-makers to see bigger picture, but might disenfranchise the local departments and introduce even more bias into reporting if this gets benchmarked. * other critical incident reporting systems that could exist and can lead to an under repoting rate. * None | * Impact will be dependent of the quality of existing incident reporting systems * High figures as a national reporting system takes much resources. It also requires that somebody is running it. Most complications are already known. More important is that there is a local system and one can discuss across hospitals. But there should be some sort of system * If an infrastructure exists this may be an excellent approach (e.g., a national anaesthesia database run by a professional society). If the society is small, this may prove difficult. In this case, it is perhaps easier to establish an anaesthesia-specific part of a comprehensive CIRS. Infrastructure and staffing costs can be shared, and the specialist analysis can be completed by a dedicated anaesthesiologist CIRS expert group * this system is in preparation * Subspeciality incident reporting systems need to be integrated - an anaesthesia adverse event has surgical consequences and vice versa * The most difficult part is to start using reporting system and convince people to report. If it is on a national level reporting can be obligatory, but it is difficult to perform it without the reporting system and administration in hospital. And again in a small countries it is very difficult to keep anonimity. There should be real educational effort that people start seeing the value. |
| 1. Use data in various forms to promote safety, e.g. the template for an Annual Safety Report, as provided by the ESA, is fairly brief and allows for an annual ‘stocktake’ and planning for the coming 12 months. More sophisticated data collection, such as for a National Anaesthesia Database, can be used locally to improve specific threats to safety (e.g. perioperative hypothermia). | * Has a cost for ESA to store, analyse and handle the data, reporting , sharing and feedback . Will hospitals share this information voluntary? * None | * See above, It is also partly a motivation issue. [High figures as a national reporting system takes much resources. It also requires that somebody is running it. Most complications are already known. More important is that there is a local system and one can discuss across hospitals. But there should be some sort of system] * annual safety report is done every year in our department, but we need more frequent assesment of results of our targets and more frequent dealing with our complicarions * Recommendations from The Helsinki Declaration on Patient Safety are useful reference here. * There should be a dedicated group of people to collect and analyse the data and report. Again what people expect is that if reports mark something as a problem to see a solution. If that does not exist motivation for reporting can fade away |
| 1. Develop an audit tool to facilitate automatic surveillance of Multi Drug Resistant Organisms. |  | * This would benefit from centralisation (e.g. Public Health England as operations runner with a spoke and hub model for oversight). * Is that our responsibillity? * Interdisciplinary task * very useful, no current pracitce * If some form of recording intrahospital infections already exists it could be easier to implement. |
| 1. Encourage improved documentation by surgeons for patients admitted to ICU post- operatively. |  | * Depends on units. EMRs and auditing on their end would likely improve compliance. * Is that a widespread problem? * Would be technically easy and cheep, but difficult to achieve compliance! * usurgeon use to do documentation more precise when patient is on ICU * surgeons, like anaestehthetists should be accountable for not adhering to professional standards (including poor documentation) . Relevant guidelines here are the standards set out by the relevant medical council (for Ireland - see "Guide to Professional Standards for Healthcare Professionals' from IMC) * Generaly speaking all documentation must be the best possible. Training in keeping medical records and documentation should be provided |
| 1. Nominate Patient Safety Champions within the department to further improve the safety culture. | * Always good to honor staff and champions * Again, runs the risk of making 'safety' a niche & hobby thing. Can distract from need for deeper integration of safety attitudes. * not in our country due to the social culture….. * None | * This should be the leaders, culture is created from the top * good idea, no current practice * consultants who take an active role in promoting patient safety should have time set aside for this. * Champions should not be left alone. Role models are important but it is crucial for them to be supported for the ideas and education to the others that they can offer. It is not enough to plan patient safety projects and plans on volontary basis |
| 1. Create a WhatsApp group for trainees to share and discuss critical incidents encountered, to allow them to review clinical aspects of the cases and provide support and further encouragement to report and discuss problems within a small forum of immediate peers. This is supplemented by small group face-to-face meetings. | * positive to encourage sharing experiences and discussing incidents encoutnered, though data privacy must be protected for the patient and relatives * Potential patient privacy issues * Public group increases risk of significant self-censoring when discussing cases. Cases that will get discussed more openly will likely be in the category of near misses. Bias will be significant, but can still be a useful intervention. Again, many such groups form ad hoc and organically, so it's a question whether a top-down approach is even needed? * Patient protection - secrecy breaks, * Data privacy may be an issue /Whatsapp) * Date confidentiality breaches. Debriefs after harmful events can be harmful unless they are conducted properly and in some cases by trained professionals. * Trainees could be left alone to deal with the difficult sitiations on their own. This can not lead to beeter education and resolving critical incident situation | * As noted before - I think this use of WhatsApp has a high risk of being at odds with european GDPR regulations. * Low cost, potentially high yield idea. This likely already happens in an informal capacity when healthcare professionals (trainees and consultants) debrief with colleagues either in person or over WA in private chats. * Very good to be able to discuss patients and critical incidents. Should not be trainee only, and WhatsApp groups might not be feasible for patient secrecy purposes * great idea - should be expanded to whole department / or there should be separate group for consultants as staff of all levels of experience are involved in adverse events. |
| 1. Encourage feedback from risk management to the department on critical incidents reported in theatre. Such intelligence could form part of morbidity and mortality meetings, which could be joint with surgeons and theatre staff. | * Require an overriding safety culture within the hospital, to have a multidisiplinary focus on critical incidens reported in theatre and/or in hospital trauma care, or other incidents. Must be encouraged * None | * Closing the feedback loop is absolutely essential and needs to be done in meaningful way otherwise the incident reporting system is easily viewed as a "vortex" by cynics. A monthly email from the safety lead could collect anonymised incidents and summarise learning points. * Not sure how easy it would be to engage risk management. Staff would need to be released from clinical work in order to participate. In my hospital, unfortunately, I'm rarely able to actually attend an M&M meeting, because of lack of time. * no current practice in hospital * so important - more feedback will result in more reporting and promotion of safety culture. Helsinki Declaration on patient safety is useful resource here. * Hospital have to develop risk management department first. That can be significant additional cost. Somehow, on the national level it is important to have the obligatory requirement for hospitals to deal with the risk management |
| 1. Hold informal meetings where problems can be discussed in a supportive, non-judgmental way, and solutions found. Important to distinguish between dealing with individuals’ emotional responses to incidents (and others’ responses to their colleague) and the actions necessary to reduce the risk to future patients. Refreshments are provided (the ‘mistake cake’). Such events promote an atmosphere of mutual trust and respect, making people more willing to talk openly about problems, and consider changes. | * Need to be careful which venue to choose for specific discussions. Seems like there might be some overlap between M&M, hot/cold debriefs and this proposition? * Risk of causing more harm with debriefs if not conducted appropriately * None | * Strongly depending on the safety culture in an individual hospital * very usuful tool for improvement of culture of safety - no current experiences in our hopsital * Support from the senior faculty is very important. Dedication to built safety environment should be on a very high level. Also, younger members of the staff may pley important role, since they can have more intention in sharing and discussing difficult experiences |

**Appendix 5: Guidelines and existing evidence noted by experts**

*CATEGORY 1 Pre-operative assessment and preparation*

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| **Item** | **Guidelines and existing evidence noted** |
| 1. Develop clear guidelines for who should be referred to pre-assessment clinic. This may help reduce the number of patients arriving in theatre having inappropriately bypassed the clinic. | * Plenty of generally well-recognised international/national guidelines about preoperative assessment / evaluation / optimisation * Basic Standards for Preanesthesia Care . ASA * Guidelines; AAGBI guidelines on preassment and role of the anaesthetist. Also Guideline from National Clinical Pogramme of Anaesthesia in Ireland; Model of Care for Preadmission Unit. (applies to other recommendations also in this category) * Expert Guideline of the Ministry of Health of the Slovak Republic on outpatient examinations before planned medical interventions |
| 1. Separate consent for anaesthesia. | * AAGBI: Consent for anaesthesia 2017 |
| 1. Further develop pre-assessment clinic such that clinics could be staffed by both a trainee and consultant | * In Spain there are national guidances to ensure preop assesment clinics * National legal background may help, for example legal requirements for getting informed consent at a minimum distance in time before the operation. |
| 1. Create a WhatsApp group of surgeons, anaesthesiologists, and senior theatre nurses to help co-ordinate the pre-operative assessment, preparation, and scheduling of elective surgical patients (in a particular theatre – e.g. one group for vascular theatre team). | * ? legality of a WhatsApp group under the EU GDPR laws |
| 1. Introduce the 6/4/1 fasting protocol for children. | * National recommendations (Spain) * Data suggesting we could safely even go further by implementing a 6/4/0 protocol (for children) and 6/0 for adults. https://pubmed.ncbi.nlm.nih.gov/29168341/ |

*CATEGORY 2 Medication safety*

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| **Item** | **Guidelines and comments** |
| 1. Develop a departmental Safe Drug Handling SOP to be available in each anaesthetic room including recommendations for which emergency drugs should be drawn up and e.g. for only drawing up LA in real time. | * AAGBI Guidelines on Controlled Drugs in Perioperative Care * ESA/EBA guidelines |
| 1. Stock MDA drugs in a central storage area rather than having an MDA press in each theatre to reduce risk of drug errors and drugs going out of date. | * AAGBI Guidelines on Controlled Drugs in Perioperative Care (applies to other recommendations also in this category) |
| 1. Use an anaesthetic trolley for theatre (not just induction rooms) to reduce time away from the patient, e.g. going to the induction room to get drugs and equipment. | * This is a useful resource https://academic.oup.com/bja/article/118/1/32/2763304 for medication safety guidelines that i have referred to in the past |
| 1. Stock anaesthetic trolleys in a standardised format so that each location where anaesthesia is provided has the same layout. | * 'Storage of Drugs in Anaesthetic Rooms' guideline from the AoA but im not sure if they mention standardisaion of drug storage. |
| 1. Standardise the layout of drug storage areas, and separate high-risk injectable medications e.g. neuromuscular blocking drugs and adrenaline. | * Statement on Security of Medications in the Operating Room Committee of Oversight: Quality Management and Departmental Administration. ASA |
| 1. Use dedicated trays for drug storage, once prepared by the anaesthesiologists. Use specific drug trays for routine and emergency drugs (Drug trays – blue and red). | * Storage of Drugs in Anaesthetic Rooms. Guidance on best practice from the RCoA and AAGBI |
| 1. Use prefilled syringes (for cost saving and safety reasons). | * In Spain, regulation assigns same cost to ampoules or prefilled drugs * While it seems intuitive, it is not risk-free (e.g. https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/pdf/10.1111/anae.12101) |
| 1. Introduce spinal packs, which contain spinal needles protected from chlorhexidine and during preparation by clear plastic film. | * AAGBI Guideline on asepsis for neuraxial - but dont think they mention covered spinal needle |
| 1. Avoid having two separate preparation guidelines for high-risk medications – e.g. making up a remifentanil preparation as 50mcg/ml or 100mcg/ml depending on TCI pump or otherwise. | * AAGBI Guideline on safe practice of TIVA doesn't mention standardising concentrations in an institution, although it is measured in the AAGBI guidelines for 'Controlled drugs for perioperatie care' |
| 1. Use partial capitalisation of letters in drug names e.g. (picture?) for syringe labels and some drug packages. | * International colorcoding * National regulations may difficult the capitalization for ampoules or prefilled srynges * Statement on Labeling of Pharmaceuticals Used in the Practice of Anesthesiology Committee of Origin: Equipment and Facilities. ASA |
| 1. Use coloured labels to label venous, arterial and epidural lines, and catheters, aiming to reduce the likelihood of accidental injection. | * Regulations to do it in Spain * AAGBI Guideline for Use of Arterial Line Sets |
| 1. Display a poster in the room where blocks are performed detailing the actions necessary when considering regional anaesthesia in a patient taking anticoagulants or antiplatelet drugs. | * Would work best if introduction of a poster was incoportated into a time out procedure - such as Stop Before You Block iniative |
| 1. Involve a pharmacist in pre-operative assessment to facilitate better perioperative medication management, documentation of allergies, etc. | * NCPA document on Model of Care for Preadmission Unit |
| 1. Design pain management protocols for the ward with input from anaesthetics department and dedicated pain service. A Department could develop protocols for pain management following common operations (e.g. post knee replacement). Order sets should be procedure-specific (rather than anaesthetist-specific). | * We already have some written quidelines for example gynecological procedures |
| 1. Introduce a protocol for the management of pain in patients in whom it is difficult to treat, e.g. with the use of clonidine, ketamine, etc. | * Many such protocols already exist and can easily be embedded in the EMR/CPOE systems for use in recovery. It could potentially also extend to the ward, provided guidelines are in place (e.g. analgesic dose PRN ketamine) |
| 1. Encourage greater compliance with antimicrobial prescribing guidelines (on available app). | * If app available (e.g. Microguide), it is merely a question of awareness raising |

***CATEGORY 3 Equipment safety***

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| **Item** | **Guidelines and comments** |
| 1. Use a Central Venous Catheter (CVC) Documentation Record for patients having central lines placed in theatre to ensure adherence to CVC insertion bundle. | * There is scant evidence that CVC documentation records (or ticklists) increase adherence to CLABSI prevention bundles * Practice Guidelines for Central Venous Access 2020: An Updated Report by the American Society of Anesthesiologists Task Force on Central Venous Access * We have the same protocol for CVC insertion in anestehesic and also in intensive care conditions * AAGBI Guideline for Safe VAscular Access |

*CATEGORY 4 Airway management*

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| **Item** | **Guidelines and comments** |
| 1. Introduce an ‘Airway alert’ letter to give to patients who have had difficult airways. E.g. could set up electronic record systems so that an ‘Airway alert’ letter is automatically generated when a patient is found to have a difficult airway in the operating theatre. | * The Swiss Society for Anaesthesiology and Reanimation (SGAR) provides such a "difficult airway certificate": https://sgar-ssar.ch/services/ausweis-intubation/ * In keeping with DAS recommendations. |
| 1. Ensure McGrath video laryngoscope is available in every theatre as this is the video laryngoscope, which trainees from other hospitals are most familiar with and should be readily available. | * Difficult Airway Society (DAS) Difficult Intubation Guidelines 2015 recommend that videolaryngoscopy is immediately available wherever intubation is performed |
| 1. Ensure capnography available in recovery. | * In line with Helsinki Declaration on Patient Safety recommendations |
| 1. Design difficult airway trolley in keeping with DAS recommendations, and place DAS obstetric guidelines on difficult airway trolley in hospitals which may have to deal with obstetric patients on rare occasions. | * We have guidelines and also package on difficult airways according DAS recommedations |

*CATEGORY 5 Other emergencies*

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| **Item** | **Guidelines and comments** |
| 1. *Stock a folder or Quick Reference Handbook in every anaesthetic machine and theatre containing algorithms for management of anaesthetic emergencies. In the obstetric or paediatric theatre, this could contain algorithms and guidelines specific to obstetric emergencies/paediatric emergencies.* | * Most anaesthesia work stations have a separate computer and screen attached for registrations of data. Here you also find the handbooks or guidelines that is tailored and specific for your theatre and organisation. Having two or more sets of guidelines will be contra intuitive and cause safety risks for patients and staff. * We have this guidelines, but not in every theatre * Often algorithms are on the back of anaesthetic machines but frequently difficult to access and even read * Algorithms/guidelines are constantly being updated someone needs to be responsible for updating folder * We have it on our intranet. * No harm. However, I am always concerned who will read handbook if really emergency is taking place. Better to be dedicated educational tool |
| 1. Design an anaesthetic-specific massive haemorrhage protocol with accompanying Standard Operating Procedures. | * For example, the SGAR provides such a protocol: <https://sgar-ssar.ch/fileadmin/user_upload/sgar-ssar/public/Services/Downloads/perioperatives_Gerinnungs/Standard_Algorithmus_definitiv_2019.pdf> * The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition * We have this guidelines on national level * Some of these protocols are very integrated and it might cause confusion if every profession has its own * i think the protocols should be different depending on each area (obstetrics/trauma/GS) * we have it on our intranet. * i think the protocols should be different depending on each area (obstetrics/trauma/GS) * any such protocol needs to be designed in collaboration with surgeons/nurses/lab staff/obstetricians etc or otherwise it risks not being successfully and optimally used. |
| 1. Introduce a dental protocol to facilitate management of patients who suffer dental injury while under anaesthesia. | * Rare events. There is specific guidance on this and I wonder what the benefit of further awareness of such guidance (or more standardised specific guidance?) would be. * My guess would be that most institutions have such a protocol * we don't have specific protocol for this area of interest * im not aware of any association guidelines here but perhaps there should be one |
| 1. Develop kits containing all the relevant materials, drugs, instructions, guidelines, etc, for managing massive haemorrhage and anaphylaxis. | * Recommended by NAP 6 study |
| 1. Provide ‘Grab bag’ containing Intralipid hanging prominently on the wall of theatre recovery ready for use. | * AAGBI Guideline on LAT - it should be clearly documented where Intralipid is stored within a department. Having intralipid on view is a good idea as often staff (especially trainees rotating between hospitals) dont know ehere its kept. |
| 1. Standardise cardiac arrest call telephone number to 2222. | * Ten years of the Helsinki Declaration on patient safety in anaesthesiology, European Journal of Anaesthesiology: July 2020 - Volume 37 - Issue 7 - p 521-610doi: 10.1097/EJA. (Chapter 16) |

*CATEGORY 6 Organisation and staffing*

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| **Item** | **Guidelines and comments** |
| 1. Highlight to management the lack of nurses available for emergency cases after hours due to inappropriately long surgical lists or lack of daytime emergency theatre. | * AAGBI Guidelines - The Anaesthesia Team 2018 |
| 1. Ensure availability of trainee during working hours to deal with ward requests, e.g. pre-assessments, emergency IV access, problems with epidurals. (Currently the trainee carrying the bleep is taken away from their patient to answer bleeps and delegate jobs to others.) | * National Clinical Programme of Anaesthesia (Ireland) - Model of Care for Anaesthesa - makes recommendations on required anaesthesia staffing. working day of the trainee for the interventions on tha ward |
| 1. Appoint a departmental ‘Safety Lead’ responsible for co-ordinating and organising safety matters. | * I cant see this is contained in guidelines (such as Helsinki Declaration) but maybe it should be |
| 1. Establish an Outreach ICU service, which consists of ICU nurses who review deteriorating patients on the ward or recent discharges. The Outreach nurse then communicates with the ICU team, which helps facilitate early admission for deteriorating patients. | * Having a protocol that somehow establishes this communication between ward and ICU is important. |
| 1. Develop a pain service for management of acute pain on the ward. | * There is even evidence about the effectiveness of an APS for achieving not only lower pain levels but also less adverse events (e.g., Kuusniemi K, Pöyhiä R. Present-day challenges and future solutions in postoperative pain management: results from PainForum 2014. Journal of Pain Research. 2016;9:25-36). |
| 1. Write the names of all staff members on a whiteboard at the start of each day. This initiative has been well received by trainees and nursing staff. We heard the view that asking staff names and placing their names on the board makes staff feel valued; new members of staff entering theatre can add their names to the board. | * Theatre caps with names on, could be an alternative https://theatrecaps.com/blogs/theatre-cap-challenge/personalised-theatre-caps |
| 1. Use an anaesthesia specific App which could contain contact details of all trainees and consultants, to facilitate rapid contact in emergency situations. There are also links to protocols for anaesthetic emergencies, which can be easily accessed as well as department protocols. Some apps also allow uploading of the teaching schedule and weekly rosters. | * We have translation of ESA guideline for management of anaestic complication in main surgical theatres. |
| 1. Develop a recovery area for endoscopy and develop guidelines for who should be referred to anaesthesia before receiving sedation by gastroenterologists/surgeons (in endoscopy for example). This may reduce incidents of anaesthesia being called to rescue situations in endoscopy. | * Example of a guideline developed by the SGAR together with other professional societies (German): Zalunardo M, Krayer S, Brunner T, et al. Empfehlungen und Standards für die Analgosedierung durch Nicht-Anästhesisten. SWISS MEDICAL FORUM. 2016;16(45):969–972. https://medicalforum.ch/de/detail/doi/smf.2016.02782 |

*CATEGORY 7 Safety education*

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| **Item** | **Guidelines and comments** |
| 1. In addition to wellbeing series, run regular departmental ‘Coffee and Gas’ sessions as recommended by the AAGBI and trainee only ‘Confession Sessions’, where trainees can discuss cases or difficult situations together – these meetings could be chaired by a senior trainee. | * Association of Anaesthetists   (https://anaesthetists.org/Home/Wellbeing-support) |
| 1. Run departmental regular simulation training sessions, some of which are multidisciplinary (with paediatric and emergency department trainees). | * recommend running in-situ multidiscplinary sessions. multidisplinary sessions recommended especially in maternity care. See HSE National Maternity Stratety (Ireland) and the HIQA Maternity Overview Report and HIQA recommendations for maternity care in Ireland |

*CATEGORY 8 WHO safe surgery checklist*

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| **Item** | **Guidelines and comments** |
| 1. Use a checklist or written prompt of WHO checklist items to ensure parts of checklist are not missed. | * Guide - WHO Surgical Safety Checklist and Implementation (https://www.who.int/patientsafety/safesurgery/ss\_checklist/en/) |
| 1. Introduce a section on Timeout for ‘anaesthetic gases on’. | * It may be a part of the anaesthesia machine checked item, as a sub-item. What is an anaesthesia check? Could be defined by ESA as a minium standard. |

*CATEGORY 9 Safety data collection and critical incident reporting*

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| **Item** | **Guidelines and comments** |
| 1. Develop a separate anaesthesia incident reporting system (this would likely require a national approach). | * If an infrastructure exists this may be an excellent approach (e.g., a national anaesthesia database run by a professional society). If the society is small, this may prove difficult. In this case, it is perhaps easier to establish an anaesthesia-specific part of a comprehensive CIRS. Infrastructure and staffing costs can be shared, and the specialist analysis can be completed by a dedicated anaesthesiologist CIRS expert group |
| 1. Use data in various forms to promote safety, e.g. the template for an Annual Safety Report, as provided by the ESA, is fairly brief and allows for an annual ‘stocktake’ and planning for the coming 12 months. More sophisticated data collection, such as for a National Anaesthesia Database, can be used locally to improve specific threats to safety (e.g. perioperative hypothermia). | * Recommendations from The Helsinki Declaration on Patient Safety are useful reference here. |
| 1. Encourage improved documentation by surgeons for patients admitted to ICU post- operatively. | * Relevant guidelines here are the standards set out by the relevant medical council (for Ireland - see "Guide to Professional Standards for Healthcare Professionals' from IMC) |
| 1. Create a WhatsApp group for trainees to share and discuss critical incidents encountered, to allow them to review clinical aspects of the cases and provide support and further encouragement to report and discuss problems within a small forum of immediate peers. This is supplemented by small group face-to-face meetings. | * As noted before - I think this use of WhatsApp has a high risk of being at odds with European GDPR regulations |