1 Preoperative care

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1.1 Patient information for anaesthesia

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Why do this quality improvement project?

High-quality evidence-based patient information empowers patients. It is an essential part of the surgical pathway as a prelude to consent. It helps patients to understand their treatment and the detail of the process surrounding this. The Sprint National Anaesthesia Project (SNAP-1) showed that patients reported anxiety as being the worst part of having an operation.[1] Well-written patient information will help allay anxiety and lack of understanding through clear explanation. It can also ensure that patients have more realistic expectations and so improves patient satisfaction.

Each person should receive the amount of information they want, in a form that they can understand and digest, to allow them to:

- optimise their preparation for surgery
- take an active part in shared decision making and the consent process
- be well informed as what to expect at each stage of the perioperative care pathway in the hospital so as to reduce anxiety
- be able to actively plan and best manage their recovery from surgery with the help of family, friends or healthcare professionals.

Background

Association of Anaesthetists guidelines on consent state that 'Information about anaesthesia and its associated risks should be provided to patients as early as possible, preferably in the form of an evidence-based online resource or leaflet that the patient can keep for future reference'.[2]

Patient information should cover any choices there may be for anaesthesia, risks of anaesthesia and information about analgesia options. Such information is available via the RCoA website, with a comprehensive range of resources explaining anaesthesia and risks.

Following on from the Montgomery ruling,[3] the information that is provided to the patient should be determined by the question: 'What would this particular patient regard as relevant when coming to a decision about which of the available options to accept?'.[2]

Printed information should be clearly written in simple language and should explain any terms that may not be familiar, bearing in mind that the average reading age of those commonly using information is around 13 years.[4] If hospitals are producing their own patient information resources, they should ensure that they follow the criteria set by the NHS Information Standard for high quality-health information.[5]

Where possible, patient information should be available in languages commonly read by local patients and in formats for those with impaired vision. Translators or readers must be available for those patients unable to read the written information provided. Modern accessibility software on electronic documents can read out text or clear background distractions – for example Browsealoud is now available on the RCoA website.[6]

Suggested data to collect

Standards	Measures
Preassessment nurses and anaesthetists should be trained and updated so they are able to print or signpost to patients a range of patient information resources, depending on the needs of the patient.	Have they been given specific training on available resources? Do they know where to find high-quality evidence-based information in both written and online format, covering: ■ basic information on anaesthesia and recovery ■ information on risks and adverse effects of anaesthesia, ranging from a summary to more in-depth information? ■ information on optimising health, lifestyle and preparation for surgery? ■ more specific information resources for particular procedures?
What resources are available to patients attending preassessment clinic?	■ Screen displaying information or an animation. ■ Posters displaying information. ■ Range of leaflets to read. ■ Computers to access information.
Is the specific information given to each patient recorded in the patient notes? Patient satisfaction with the information given to them at preassessment.	■ Are patients able to read and understand the information provided and are they happy with the format? ■ Do they feel they have the right amount of information? ■ Did this help to inform decisions about anaesthesia, postoperative care and pain relief?
Are resources available to allow all patients to access information?	■ Information for those with low literacy skills. ■ Translated into any common local languages for non-English speaking patients. ■ Accessible information for those with disabilities. ■ Interpreters booked for those who speak no English. ■ Does the information given pertain to local services?
What information is sent or signposted to patients who do not attend preassessment?	

1.1 Patient information for anaesthesia

Dr Hilary Swales
Lead for Patient Information, RCoA

Quality improvement methodology

- Map out current pathways of how patients receive information on anaesthesia and what information is routinely given. Are there any opportunities to improve?
- Consider working with patients to co-design information: can you use patient stories to deliver information in a more engaging manner?
- What training and resources are available to staff on the wards and preassessment clinics?

Mapping

ACSA standards: 1.2.2.1, 3.1.1.1, 3.2.2.3, 3.1.2.1
Basic curriculum competences: HT_BK_01–04, HT_BS_01–08, CE_BS_01–04, CE_BK_01–05
Intermediate curriculum competences: GU_IK_11, GU_IS_01
CPD matrix codes: 1F01, 2A03
GPAS 2020: 2.7.2, 2.9.1, 2.9.2, 2.9.3, 2.9.4, 2.9.5, 2.9.6, 2.9.7, 3.9.1, 3.9.2, 3.9.3, 4.9.1, 4.9.3

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3. Montgomery vs Lanarkshire Health Board [2015] UKSC 11 (https://www.supremecourt.uk/cases/docs/uksc-2013-0136-judgment.pdf).
4. NHS England. Accessible Information Standard (https://www.england.nhs.uk/ourwork/accessibleinfo).
5. Royal College of Anaesthetists. Fitter Better Sooner Toolkit (https://www.rcoa.ac.uk/fitterbettersooner).
6. Royal College of Anaesthetists. Accessible resources (https://www.rcoa.ac.uk/patients-and-carers/accessible-resources).

Preoperative care

1.2 Perioperative risk prediction

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Why do this quality improvement project?

Central to the decision-making process around surgery is the patient. Accurate risk stratification allows meaningful informed patient consent and shared decision making, as well as careful planning of perioperative care. Hence, every patient contemplating an operation should have an individualised risk assessment.

Background

Traditionally, risk assessment relied on the subjective clinical expertise of the healthcare professionals involved. The main focus of these consultations was to define fitness for surgery and anaesthesia. Increasingly, however, risk assessment is informing processes beyond the confines of the operating theatre. Perioperative risk prediction and stratification is now used to guide perioperative planning, investigation, and physiological optimisation. It informs communication and decision making between clinician and patient and, importantly, between professionals. Relating preoperative risk to much longer-term patient-centred outcomes is currently an area of research.

Perioperative risk assessment:

- allows meaningful discussions with patients around consent, shared decision making and consideration of alternatives to surgery
- helps to determine the need for further specialised investigations and interventions, such as pulmonary function testing or cardiac stress testing
- informs decisions regarding intraoperative monitoring and postoperative admission to critical care
- Perioperative risk stratification is useful in comparing performance across hospitals enabling risk adjusted comparisons
- identifies patients with similar risks profiles, which can facilitate the design of research studies.

Best practice

The RCoA, the Royal College of Surgeons and NCEPOD recommend that all patients should have their perioperative risk recorded on the consent form and in the medical record.[1,2] For hospitals participating in the National Emergency Laparotomy Audit (NELA), documentation of risk is a standard,[3] and the recommendations from the Perioperative Quality Improvement Project is that patients should have an individualised risk prediction.[4]

There are a number of validated risk prediction tools available, all of which may be used. Clinician experience, familiarity with risk prediction, type of surgery and other resource availability (eg cardiopulmonary exercise testing) will influence the choice of tool.

Suggested data to collect

Standards	Measures
All patients undergoing surgery should have their individualised perioperative risk of morbidity and/or mortality recorded both on the consent form and in the medical notes.	■ The proportion of all patients having elective or emergency surgery who have their perioperative risk explicitly recorded in both.
Patients with a predicted hospital mortality greater than 5% are treated as high risk and should be considered for critical care admission following surgery.	■ The portion of patients considered high risk undergoing surgery not admitted to intensive care.
To provide adequate critical care access for patients with a high risk, each hospital should regularly assess the volume of high-risk surgery carried out.	■ The proportion of high-risk patients cancelled on the day of surgery because of a lack of intensive care beds.

All high-risk patients undergoing elective surgery should be seen and fully investigated preoperatively. Expedited surgery should have the same quality of preoperative assessment and investigation.	■ Proportion of patients considered high risk assessed and investigated preoperatively.
All patients undergoing emergency major surgery should have a perioperative risk recorded at the time of booking surgery.	■ Proportion of patient bookings accompanied by a risk prediction.

Quality improvement methodology

Risk assessment and proportions of standards met lend themselves to particularly well to run charts.

Identifying barriers to risk assessment, critical care capacity or the challenges to comprehensively assess patients preoperatively can be examined using process mapping.

Evaluate electronic or manual booking systems to identify how risk prediction could be incorporated into mandatory information, therefore making it available to anaesthetists, surgeons, schedulers, critical care and bed management.

Risk prediction tools

P-POSSUM: www.riskprediction.org.uk
NELA Risk Calculator:
https://data.nela.org.uk/riskcalculator
American College of Surgeons NSQIP Surgical Risk Calculator: https://riskcalculator.facs.org/RiskCalculator
John Carlisle's Perioperative Risk Calculator:
https://sites.google.com/site/informrisk/home
Surgical Outcome Risk Tool (SORT):
www.sortsurgery.com

There are many examples of a 'boarding card' system for emergency laparotomy theatre bookings, where risk prediction is mandatory.[5] Quality improvement projects in the Emergency Laparotomy Collaborative and published by institutions have demonstrated this system well, and it appears to improve care as part of a bundle of interventions.[5,6]

In the elective setting, many perioperative clinics use a risk prediction tool to stratify level of perioperative care using a categorisation or 'traffic light' system. Examples include Southampton University Hospital, York Hospital, Torbay Hospital, University College London.

Mapping

ACSA standards: 1.2.1.1, 1.2.1.2, 1.2.1.3,
Curriculum competences: POM_HK_03, POM_HS_03, POM_HS_04, POM_HS_05, POM_HS_06, POM_AK_01, POM_AK_03, POM_AS_05
CPD matrix code: 2A03
GPAS 2020: 2.5.19, 2.5.2, 2.5.21, 2.5.22, 2.5.23, 2.5.24, 2.5.25, 2.5.5, 2.7.2, 2.9.1, 2.9.12, 2.9.13

References

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1.3 Prehabilitation before surgery

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Why do this quality improvement project?

The preoperative period is a 'teachable moment' when patients may be more receptive to lifestyle modification to improve health. We should be able to provide high-quality advice and direct patients to local services to help them improve their health. This wider approach is known as prehabilitation.

Background

Physical inactivity is common in the UK surgical population. Poor cardiorespiratory fitness and sarcopenia are associated with poorer surgical outcomes.[1] Current research into preoperative exercise aims to identify which interventions and exercise modalities are most effective, the optimal preoperative exercise volume and the most beneficial environment for delivery (eg supervised vs non-supervised and hospital vs community setting).[2–4]

Guidelines are available around delivery of a safe and effective exercise prehabilitation programme.[5]

Smoking is common (20% of UK adults). Evidence for the positive impact of preoperative smoking cessation is established,[6] and research has also demonstrated longer-term abstinence from tobacco following a preoperative cessation programme.

Alcohol excess demonstrates a dose–response relationship for adverse perioperative outcome beyond consumption of 14 units/week. Preoperative intervention to reduce consumption to recommended levels has been shown to improve outcomes.[7]

Best practice resources

Exercise prehabilitation guidelines.[5]

Preoperative smoking cessation: Action on Smoking and Health joint statement.[8]

Alcohol intervention before surgery.[7]

Fitter Better Sooner: resources from the RCoA.[9]

Suggested data to collect

- What proportion of patients undergoing elective major surgery have an objective measurement of fitness?
- What proportions of patients have had health-related quality of life questioning?
- What resources are available to patients attending preoperative assessment clinics to encourage lifestyle changes and how can they be accessed?
- What written information on modifiable lifestyle factors is available to patients attending a preoperative assessment clinic?
- Have preoperative assessment personnel had formal training in offering advice and guidance on exercise interventions?
- Are all smokers referred to a local smoking cessation service? (aim for more than 80%)?
- If there are referral pathways in place for interventions, what percentage of those patients use them and what are the outcomes?
- If there is an exercise intervention programme available, what proportions of high-risk patients are offered access to this intervention?
- If there is an exercise intervention programme, what metrics are being recorded?

Quality improvement methodology

In many cases a formal structured exercise programme will be part of a research study and will be a large project to set up. There are areas of the UK where this has started. Examples include the 'surgery school' at University Hospital Southampton,[10] the PREPWELL programme in South Tees,[11] Prehab4cancer in Manchester,[12] PREPARE at Imperial Healthcare.[13]

A quality improvement project may focus on getting the simple interventions right and may focus on how patients can be identified: smoking cessation would be a good example (Figure 1.3.1).

If you were to design an exercise intervention programme, which patients would you target? Is there a screening process in place to identify those who would benefit? Is a smaller intervention possible, for example inspiratory muscle training for patients at risk of postoperative pulmonary complications?

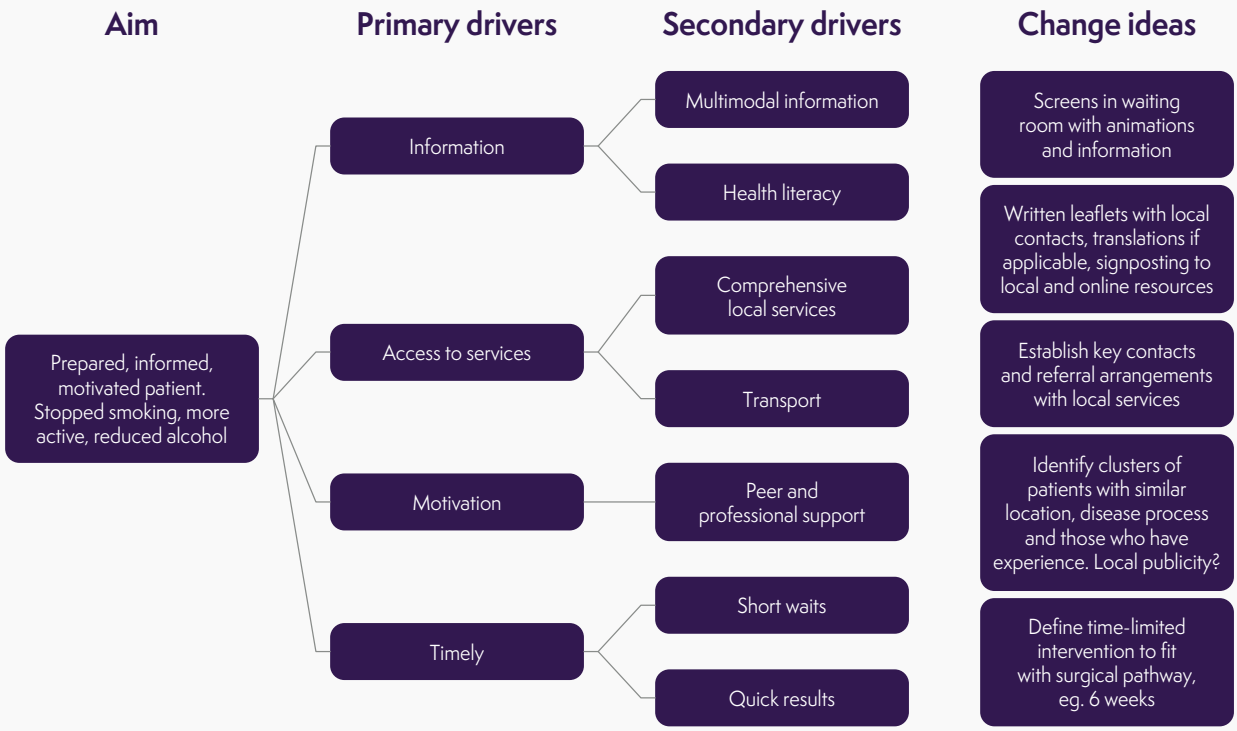

Figure 1.3.1: A quality improvement project on smoking cessation.

Case study: PREPWELL prehabilitation service, South Tees

Patients are identified at point of listing to determine suitability for a pilot, face-to-face, community-based multispecialty and multimodal prehabilitation programme. Following a 'one-stop' multiple risk factor 'entry' assessment, patients embark on a six- to eight-week programme at a community wellbeing centre with multiple health and lifestyle services co-located. A home-based option is also available. They attend twice weekly and exercise for 60 minutes in a supervised 'circuit-based' mixed aerobic and resistance programme tailored to the patient by health trainers. Those at higher risk of postoperative pulmonary complications undergo additional inspiratory muscle training. Patients are then reassessed prior to surgery with a mirroring 'exit' assessment to evaluate lifestyle and fitness benefits. Follow-up for the pilot quality improvement project has demonstrated; improved quality of life, improved fitness levels in 73% of patients, reduction in smoking and alcohol use and high levels of patient enjoyment and engagement with the service.

Mapping

ACSA standards: 1.3.2.1, 3.1.1.1, 3.1.2.1, 3.1.1.2

Curriculum competences: POM_BK_07, POM_BK_11, POM_BK_12, POM_IK_06, POM_IS_05, POM_HK_01, POM_HK_03, POM_HK_04, POM_HK_06

GPAS 2020: 2.5.9, 2.5.10, 2.5.16

1.3 Prehabilitation before surgery

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Preoperative care

1.4 Consent in anaesthesia

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Why do this quality improvement project?

Consent is integral to all medical practice, including anaesthesia, and is based on the moral and legal premise of patient autonomy. Anaesthetists may be gaining consent for anaesthesia and, in some higher risk cases, this will extend to decision making around surgery. Patients should be involved in a discussion regarding their anaesthetic care.[1] Projects dedicated to strengthening this process will improve the quality of the patient's experience, will ensure that clinicians are working within national guidance and the law, and will demonstrate respect for patients' human rights.

Background

Valid consent is dependent on three factors:[2]

- Information: patients have varying requirements regarding depth and format of information provision. Case law from 2015 has reinforced the need for an individualised approach towards the discussion of risk.[3] Sufficient time must be permitted to allow full understanding and to address questions arising from the information given.
- Voluntariness: the patient must not experience coercion from family, friends or staff when making their decisions.
- Capacity: the default assumption is that an adult has capacity, but this should be evaluated formally if there are concerns.

Best practice

For the majority of patients, the risks associated with anaesthesia are low and it is acceptable for the patient to meet their anaesthetist on the day of surgery, having been provided with information in advance.[1]

Some patients are at higher risk and require longer discussion time and shared decision making.[1] Patients with capacity have the right to decline treatment that clinicians believe to be in their best interests.[4]

A patient who lacks capacity requires a process of consent that is specific to their situation:[5]

- Emergency treatment must be given in the patient's best interests.
- In the absence of family or friends, the assistance of an independent mental capacity advocate should be sought.
- Consideration of lasting power of attorney for health or an advance decision.
- The Court of Protection has the power to appoint a court-appointed deputy as a proxy decision maker for a person lacking capacity.
- Young people aged 16–18 years or children under 16 years who are deemed Fraser competent may give consent but cannot refuse treatment that either their parents or doctors believe to be in their best interests, and a parent may give consent on their behalf.
- Children should be involved but it is their parents who legally give consent. As always, legal advice should be sought in the event of conflict.

National guidance does not require written consent for anaesthesia;[6] however, whatever the local arrangements for documenting anaesthetic consent, the issues discussed including risks, benefits and alternatives should be documented,[6] in addition to any specific concerns addressed.[2] In the event of a discussion involving a patient at higher risk of complications, more extensive documentation should occur.[1]

Suggested data to collect

- Patient satisfaction surveys on the consent process, focusing on different patient subgroups.
- Qualitative and quantitative audit of specific issues relating to consent; for example:
  - ensuring that patients are making independent autonomous decisions and are not coerced
  - efforts to involve the family in decision making for patients lacking capacity prior to proceeding with urgent surgery
  - anaesthetic involvement in best-interests assessments of patients having elective surgery who lack capacity.
- Survey of clinician knowledge of the consent process and management of specific patient subgroups.
- Audit of what written information is given to elective patients prior to seeing an anaesthetist.
- Audit of consent discussion documentation.

Quality improvement methodology

- Qualitative assessment of case examples of patient subgroups detailed above, checking for consistency and appropriateness of approach to consent as based on national guidance and law.
- Process maps may be useful for identifying opportunities to improve multidisciplinary communication and to ensure timely involvement of the correct personnel for patients lacking capacity or who have specific issues that need to be addressed during the consent process.
- Education of staff based on deficiencies identified in knowledge, which may include role playing the practice of consent process.
- Training in shared decision making for anaesthetists and perioperative teams.
- Consideration of amending local documentation processes to improve information delivery and documentation (eg a checklist is present on many anaesthetic charts to allow the clinician to quote general risks during the preoperative visit and acts as a memory aid).

Mapping

ACSA standards: 1.2.1.1, 1.2.1.4, 3.1.1.2
CPD matrix code: 1F01
Curriculum competences: OA_BK_11, OA_BK_12, DI_IK_08, GU_IS_06, AM_HS_01, AT_D1_03
GPAS 2020: 2.3.31, 2.7.2, 2.9.1 to 2.9.15

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1.5 Shared decision making in perioperative care

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Professor Rupert Pearse, Queen Mary University of London

Why do this quality improvement project?

To use quality improvement strategies to improve the delivery of shared decision making (SDM) in perioperative care, through multidisciplinary working and patient involvement.

Background

Shared decision making is a process through which clinicians and patients work together to make evidence based decisions centred on patient preferences and values.[1] Patients involved in SDM have fewer regrets about treatments, better reported communication with clinicians, improved treatment adherence, and an overall better experience with improved satisfaction.[2]

One in three high-risk patients choosing surgery will experience serious medical complications leading to long-term decline in health and quality of life, but awareness of these risks is poor amongst both doctors and patients. Consequently, many high-risk patients do not receive the information they need to make an informed decision about surgery.

Whilst the evidence base for best practice SDM within perioperative care is not yet available, a recent systematic review suggested surgeons more often perceived a consultation as shared, than did patients.[3] Below are suggested drivers and barriers to be considered in quality improvement initiatives focused on bridging this gap and delivering truly informed consent.

Drivers

- Legal - Montgomery judgment cites the discussion of 'material risks' with patients. Implications for perioperative care mainly focus on ensuring robust informed consent.[4]
- Ethical - SDM supports beneficence and non-maleficence.
- Improved patient experience, satisfaction and outcomes seen in studies of SDM outside perioperative care.
- Policy - Department of Health White Paper 2012 'Liberating the NHS: No decision about me, without me'.[5] SDM has also been adopted in the national policy listed below.

Best Practice

Evidence based best practice is not yet available in perioperative care. Wider resources for guidance are given below:

- Legal: Montgomery Judgment recommendations.[4]
- RCoA Perioperative Medicine Programme 'Vision Document' 2015. https://www.rcoa.ac.uk/perioperativemedicine
- National Policy: NICE SDM Collaborative/NHS E SDM Initiative/AoMRC Choosing Wisely UK.[6]
- UK Research: Optimising decision making for high-risk surgical patients (OSIRIS)[7]/Choosing Wisely UK Pilot.[8]

Barriers[9,10]

- Professional culture - 'We do this already', due to lack of clear definition and understanding of SDM and a lack of understanding of clinical and legal obligations specific to perioperative practice
- Timing of consent/SDM - current pathways support the discussion of perioperative risk and involvement of anaesthetists after surgical informed consent has been sought. This can make shared decision making more difficult.
- Lack of standardised methods for risk assessment and risk communication.
- Instituting models which support true multidisciplinary working - SDM requires concurrent input from surgeons and anaesthetists (+/- geriatrician-led perioperative services where available) alongside patients/carers.
- A lack of robust data on postoperative outcomes with and without surgery (emerging in some surgeries; eg abdominal aortic aneurysm, prostate cancer).
- Patient Education/Information - need for evidenced based information in an understandable and accessible format ahead of clinical consultation.
- Strategies for patient activation - patients need to feel empowered to participate in SDM, and some may be reluctant to engage in this conversation.
- Measurement - need qualitative and quantitative methodology. Ceiling effect exists with some of the current tools, and there is no current consensus on how to measure the quality of perioperative shared decision making.

Facilitators

Both professional-facing and patient-facing approaches are needed to implement shared decision making. A national study into SDM concluded 'Skills trump tools, attitudes trump all' highlighting the need for cultural change for patients and professionals.[9]

- Professional education and training on communicating potential harms and benefits in the perioperative arena is available through e-learning - https://moodle.wintoncentre.uk. RCoA Shared Decision Making 'Train the Trainer' workshops are also available.
- Patient Facing Resources - Use of 'Benefits, Risks, Alternatives and doing Nothing' (BRAN, Choosing Wisely UK), 'Fitter, Better, Sooner'
- Decision aids/option grids - multiple options are available

Suggested quality improvement methodology and data collection

1. Baseline Practice - eg using the SDM 9-item questionnaire (SDMQ9 and SDMQDoc) for patients and professionals in surgical or anaesthetic clinics. Eliciting qualitative data through interviews or focus groups.

   Further reading: de Mik SML, Stubenrouch FE, Balm R, Ubbink DT. Systematic review of shared decision making in surgery. BJS 2018; 105: 1721-1730.

2. Implement an education and training shared decision making programme using MAGIC methodology.

   Further reading: Joseph-Williams N, Lloyd A, Edwards A et al. Implementing shared decision making in the NHS: lessons from the MAGIC programme.BMJ 2017;357:j1744.

3. Redesign a single preoperative surgical pathway, following process mapping of current pathway and data from qualitative interviews, to support SDM

4. Review current preoperative documentation for evidence of discussion regarding 'BRAN' ('benefits, risk, alternatives, doing nothing'). Then implement BRAN, or if already implemented, perform post implementation review.

   Further reading: Santhirapala R, Fleisher LA, Grocott MPW. Choosing Wisely: just because we can, does it mean we should? British Journal of Anaesthesia 2019;122(3):306-310.

   Resources: https://www.choosingwisely.co.uk/promotional-resources

5. UK Perioperative Quality Improvement Programme (PQIP) – use your local postoperative outcomes to inform risk assessment/communication.

   Further reading: Wagstaff D, Moonesinghe SR, Fulop NJ, et al. Qualitative process evaluation of the Perioperative Quality Improvement Programme (PQIP): study protocol BMJ Open 2019;9:e030214.

Mapping

CPD: IE01, IF06, 2A03, 2C06
Curriculum: Higher Curriculum GU_HS_02, RC_HS_04, POM_HK_03, POM_HS_05, MT_HS_06
Advanced Curriculum - Assisting colleagues in decisions about the suitability of surgery in difficult situations is a core clinical learning outcome. Additionally, shared decision making is specifically mentioned in AT_D1_01, DS_AS_01, OR_AS_01, TF_AS_18
Professionalism in Medical Practice - CC_D11_01
ACSA standards: 3.1.1.1, 3.1.1.2, 3.1.2.3
GPAS 2020: 2.9.1 to 2.9.15

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1.6 Preoperative fasting

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Why do this quality improvement project?

Starvation prior to anaesthesia has existed since the late 1800s, aiming to minimise the risk of pulmonary aspiration of gastric contents, a rare but severe event. The last 30 years have seen increasing evidence that it is safe to shorten fasting times, but there is evidence that despite clear guidance, patients awaiting surgery may be exposed to prolonged fasting times. Additionally, there is evidence from recent retrospective studies that it may indeed be safe to further shorten fasting times for fluids. Changing practice in this area requires a change in culture for patients, nursing staff, surgeons and anaesthetists.

Background

Excessive fasting times may have adverse consequences for patients, ranging from discomfort to significant morbidity. The Sprint National Anaesthesia Project (SNAP-1) demonstrated that thirst in the perioperative period is one of the most common adverse sequelae of anaesthesia reported by patients.[1] Euvolaemic patients have lower rates of nausea and vomiting, improved levels of comfort and better outcomes from major surgery. Enhanced recovery programmes over the last 15 years have emphasised the importance of euvolaemia and carbohydrate loading to optimise haemodynamics and minimise the effects of the catabolic state associated with the surgical stress response.

Best practice

Patients presenting for elective surgery should have had access to clear fluids before surgery and should have been encouraged to drink to thirst up to two hours prior to surgery. No patient should arrive in theatre having had no fluid intake in the six hours prior to surgery.

Royal College of Nursing minimum fasting times are as follows.

Adults:

- two hours for clear fluids
- six hours for solid food.

Children:

- Clear fluid (up to 3 ml/kg) up to one hour prior to induction of anaesthesia
- four hours for breast milk.

Suggested data to collect

- What written fasting instructions are given to patients in the preoperative phase? Are they clear on what constitutes 'clear fluids'?
- What verbal instructions are given to patients on arrival at the hospital?
- Is water or other clear fluid available for patients to access freely while awaiting surgery?
- Is there information on the walls that patients and their carers may see to reinforce the new guidance?
- When was the last drink on arrival in the anaesthetic room?
- What do patients report as their level of thirst?
- Have there been any cases of aspiration on induction or emergence?
- What are the postoperative nausea and vomiting rates in this cohort of patients?

Quality improvement methodology

This project lends itself well to a baseline audit using some of the above data. The pathway may then be process mapped to understand what information patients are receiving preoperatively about fasting, what form this information is in and whether their route of admission influences the process. In hospital the environment and availability of fluids should be looked at. The interventions lend themselves to sequential plan-do-study-act (PDSA) cycles and improvements can be tracked using run charts tracking starvation times and correlated with patient-reported measures such as thirst and experience.

Case example

The team at North Bristol NHS Trust took this approach in their elective plastic surgery trauma patients to demonstrate continuous improvement in fasting times over a 12-month period. They used PDSA cycles:

- to educate staff and patients and improve written information for patients
- to introduce preoperative drinks and snack boxes on the ward.

Over the course of the project they demonstrated an improvement in fasting times and this was associated with an improvement in patient reported wellness and thirst.

Mapping

ACSA standards: 1.2.1.1, 1.2.1.4
Curriculum competences: POM_HK_05, POM_HK_11, PA_HK_03, PA_HS_05, DS_IK_03,04, POM_IK_04, PA_IK_03, OA_BK_04, PA_BK_03
CPD matrix code: 1I05, 2A03, 2A05, 2D02
GPAS 2020: 2.1.3, 2.5.17

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1.7 Perioperative management of surgery for patients with diabetes

Dr Sally Procter, East of England Deanery
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Why do this quality improvement project?

Some 10–15% of patients who present for surgery have diabetes.[1] The annual National Diabetes Inpatient Audit[2] and the NCEPOD Highs and Lows report[3] have found that patients with diabetes in the surgical population experience more medication errors and more complications than patients with diabetes on medical wards.

Background

Diabetes is one of the most common medical comorbidities in the surgical population. Despite the existence of cross-specialty guidance on best practice for the management of diabetes in the perioperative period,[4] surgical patients with diabetes are experiencing an unduly high rates of complications because of poor glycaemic control. Both hypoglycaemia and hyperglycaemia have significant adverse effects for patients, and hospital-acquired diabetic ketoacidosis is the third most common cause of the condition. The NCEPOD High and Lows report has highlighted issues with poor adherence to guidance and other studies have identified unsafe and inappropriate use of the 'sliding scale'.[3,5]

Best practice

Standards have been set by the Joint British Diabetes Societies for Inpatient Care (JBDS-IP) The Management of Perioperative Care guidelines,[4] which have been endorsed by the RCoA and the Association of Anaesthetists. The Association of Anaesthetists guidelines are very similar to the JBDS-IP guidelines.[1] It is recommended that all hospitals have a lead clinician for perioperative diabetes.

Suggested data to collect

Phase	Measures	Standard (%)
Preoperative	Percentage of primary care referrals containing all recommended information. This includes glycated haemoglobin (HbA1c) less than 69 mmol.mol-1, blood pressure, body mass index, estimated glomerular filtration rate and details of patients' diabetes management (JBDS guidelines, Appendix 12).[4]	80
	Percentage of patients with diabetes referred from surgical outpatients to preoperative assessment.	100
	Percentage of patients for whom a perioperative diabetes plan is created at the preoperative assessment clinic.	100

Operative	Percentage of elective patients with diabetes who are managed by simple manipulation of existing medication if the anticipated starvation time is only one missed meal.	95
	Percentage of patients with diabetes who are listed in the first third of the operating list (morning or afternoon).	95
	Percentage of people in whom a variable rate intravenous insulin infusion is appropriately used. This includes starting only when indicated, using the recommended substrate fluid of 5% glucose in 0.45% saline with potassium chloride 0.15% or 0.3% and stopping appropriately.	100
	Percentage of patients who receive hourly monitoring of blood glucose during their procedure and in recovery.	100
	Percentage of time that people with diabetes have their preoperative and intraoperative blood glucose kept between 6 mmol/l and 12 mmol/l.	100
Postoperative	Length of stay for patients with diabetes undergoing surgery or procedures requiring anaesthesia.	Not more than 10% longer than for people without diabetes
	Percentage of patients with evidence of poor perioperative glycaemic control (diabetic ketoacidosis, hyperosmolar hyperglycaemic state, hypoglycaemia requiring third-party assistance).	0
	Percentage of patients where their discharge is delayed because of diabetes related problems.	0

Quality improvement methodology

1. Planning and prescribing of a variable-rate intravenous infusion of insulin

Draw a process map of the patient journey from preassessment to postoperative ward care. What is the most reliable point to make the perioperative plan and by which staff members? What is the most reliable point to prescribe a variable-rate intravenous infusion of insulin (VRIII) and by whom? Can the prescription be standardised or preprinted to minimise prescribing errors? How can the plan be communicated most accurately across the admission phases and to the patient? How can the plan for termination of VRIII be communicated to and carried out accurately by the ward staff?

2. Monitoring of blood glucose

Look at the process map from admission to the postoperative ward stay. Look for parts where the glucose monitoring is often missed or fails to meet the recommended frequency standard. Which members of staff are present at this point? How can they be prompted to measure glucose appropriately?

3. Stakeholder involvement

- A perioperative lead for diabetes is recommended, as well as engagement with local experts (eg diabetologist with an interest in perioperative care).
- Producing an individualised plan for patients taking into account the surgery they are having, their current regimen and their usual diabetic control (eg diabetic passport).

1.7 Perioperative management of surgery for patients with diabetes

Dr Sally Procter, East of England Deanery
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- Having diabetes 'champions' in the team who are familiar with preoperative pathway for patients with diabetes can help both patients and staff in delivering teaching sessions. Change is often best facilitated 'peer to peer' (ie nurses may best engage nurses, doctors in training may best engage other doctors in training).
- Patient involvement and engagement is key in improving outcomes. Could you include patients in your improvement team or canvas the views of patients when designing your changes?

Case example

The Newcastle Hospitals Perioperative Diabetes Group have embarked on a three-year quality improvement programme to improve all aspects of perioperative diabetic management. On the wards they used sequential plan–do–study–act cycling to improve glycaemic control on surgical wards for vascular patients. They focused on education, provision of guidelines, set up of an in-reach specialist diabetic service and visual flagging of poor glycaemic control on the ward. They were able to improve rates of hypoglycaemia, abolish insulin errors in association with severe hypoglycaemia and reduce patient harm events from 20% to 6%.

In the preoperative setting, identification of poor preoperative glycaemic control has allowed a shift from admission overnight preoperatively to day-of-surgery admission and improved perioperative glycaemic control.[6]

Mapping

ACSA standards: 1.1.1.9, 1.1.3.1, 1.2.1.4, 1.2.1.5, 1.3.1.5
Curriculum competences: DS_IS_01, PB_IK_38, POM_IS_06, POM_IS_07, POM_HK_01, POM_HK_06, POM_HK_04
CPD matrix code: 2A03
GPAS 2020: 2.3.27-30, 2.5.10, 3.2.12, 2.2.9-12, 3.5.19, 4.2.18, 5.3.23-26

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Preoperative care

1.8 Managing frailty in the perioperative period

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Why do this quality improvement project?

Frailty is defined as a syndrome of decreased physiological and cognitive reserve across systems characterised by increased vulnerability to and recovery from a physiological insult. The presence of frailty is recognised as a predictor for poorer outcomes following surgery.[1] As yet, we do not universally screen for frailty in the preoperative setting, and this may impact on our ability to and factor into our risk assessment and decision making about perioperative care.

Background

There is currently an interest in assessing frailty and putting into place processes in the perioperative setting to address the impact of frailty on patient outcomes. While the evidence base for discrete preoperative interventions for frailty that may impact on outcomes is limited, there are models of care emerging that have demonstrated improved outcomes for patients who have been identified as frail and have undergone comprehensive geriatric assessment to plan their care and allow informed decision making around surgery.[2]

The importance of frailty has been recognised in its inclusion in the National Emergency Laparotomy Audit (NELA) dataset in 2018. Frailty is often a product of multimorbidity, and there are cases where referral to a specialist team in care of the older person or general physician will be of benefit, to optimise those comorbidities contributing to frailty in an individual. Quality improvement in this area may start with defining the local epidemiology of preoperative frailty and range as far as integrated clinic and perioperative multidisciplinary follow-up, depending on local resources.

Best practice

- NELA report percentage older than 65 years having a perioperative physician review.[3]
- NCEPOD report: Elective and Emergency Surgery in the Elderly: An Age Old Problem.[4]
- British Geriatric Society Guidance on Perioperative Care of the Elderly.[5]
- Association of Anaesthetists guidelines on perioperative care of the elderly.[6]

Suggested data to collect

Standards	Suggested data to collect
All patients over the age of 60 years admitted electively or as an emergency should have an objective measure of frailty documented.	■ Percentage of patients over 60 years with a frailty score documented.
Routine daily input from medicine for care of the older person should be available to patients over 80 years.	■ Percentage of patients over 75 years seen by geriatrician – currently already captured by existing tools (eg NELA and National Hip Fracture database).
Older and frail patients should have preoperative cognitive assessment using established screening tools.	■ Percentage screened/documented cognitive assessment preoperatively (in preassessment or preoperative visit).
Older patients should be assessed for the risk of developing postoperative delirium and guidelines should be available for the prevention and management of postoperative delirium.	■ Percentage of patients over 75 years screened for delirium before admission and on each postoperative day.
Older and frail patients should have comprehensive geriatric assessment.	■ How often is this available or carried out?

Quality improvement methodology

Process map your preoperative assessment process

Who is responsible for collecting most of the information? What is the most time efficient and practical way to measure cognition and objectively measure frailty? Can it be done during the existing appointment? This will enable you to choose an appropriate tool (examples include the Clinical Frailty Scale,[7] Edmonton Frail Scale). How would a patient be communicated as being at high risk or needing more multidisciplinary work up?

Driver diagram for multidisciplinary input needed for more complex multimorbid patients

Which members of the multidisciplinary team are currently available? What additional team members might you need to help to achieve your aim? Do they have capacity within their service? Is there a role for a smaller intervention? At what point could a comprehensive geriatric assessment be carried out preoperatively? Could it be incorporated into anaesthetic preassessment or done within an existing geriatric clinic?

Case examples

Systematic Care of Older People's Elective Surgery (SCOPES) clinic: Nottingham City Hospital has introduced a comprehensive geriatric assessment for patients considering surgery as part of their cancer management. This allows for targeted interventions to optimise comorbidities, facilitate decision making and plan rehabilitation and postoperative care.

PRIME clinic, Addenbrookes Hospital: since 2014, patients identified as frail in the preoperative assessment clinic are seen by a geriatrician, an anaesthetist, an occupational therapist and a physiotherapist. A comprehensive assessment of physical condition, comorbidities, perioperative risk and medication management is combined with shared decision making and planning of perioperative care.

The proactive care of older people service (POPS) at Guy's and St Thomas' Hospital and Darent Valley Hospital: the POPS service has been well established for some years and has published its successes. It provides a comprehensive service from preoperative through to proactive postoperative management and rehabilitation home. More recently, they have piloted the service in a district general hospital in Darent Valley, with success particularly in improving care in emergency cases.

Mapping

ACSA standards: 1.2.1.2, 1.1.3.1, 1.1.3.2, 3.1.1.1, 3.1.2.1
Curriculum competences: GU_BL_13, GU_BS_07, GU_IK_11, GU_HK_03, GU_HS_02, POM_HS_12
CPD matrix code: 2A03
GPAS 2020: 3.16–3.21, 5.11 5.19, 5.20, 3.18–3.23

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1.9 Management of preoperative anaemia

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Why do this quality improvement project?

Preoperative anaemia is associated with a number of adverse outcomes including an increased likelihood of perioperative blood transfusion, increased length of intensive care and hospital stay, mortality and morbidity.[1] In planned surgery with an expectation of major blood loss (greater than 500 ml), patients with anaemia should be investigated and treated to reduce their risk of requiring blood transfusion in the perioperative period, which in itself is a risk factor for poor outcomes. Approximately 30% of patients attending preassessment clinic for major surgery are anaemic.[2]

Background

There are a number of sound reasons for investigating and treating anaemia in patients undergoing major surgery. While there is currently a paucity of published evidence on the treatment of anaemia in patients preoperatively, there is considerable evidence that patients with anaemia have worse outcomes. There are national and international standards which support preoperative intervention, and it is one of the pillars of patient blood management. Reduction in the likelihood of transfusion benefits the individual and the system as a whole. The ability to deliver improvements in preoperative haemoglobin will depend on a number of variables, and we know that across the UK there is wide variation in the development of perioperative anaemia pathways. The application of quality improvement methodology to this part of the pathway will allow tracking of changes and improvement.

Best practice

National Institute for Health and Care Excellence Guideline 24: Blood Transfusion.[3]

British Committee for Standards in Haematology Guidance for the identification and management of preoperative anaemia.[4]

Simplified International Recommendations for the Implementation of Patient Blood Management (see also the recipe on this topic).[5]

International consensus on the perioperative management of anaemia and iron deficiency.[6]

Suggested data to collect

Standards	Measures
Measurement of haemoglobin six weeks before surgery	
Patients should have an assessment of their haemoglobin at least six weeks before planned major surgery.	■ Proportion of patients with a full blood count available six weeks before planned surgery.
Measurement of haematinics and investigation of anaemia	
Patients identified as anaemic should undergo further investigation of anaemia and intervention to improve haemoglobin prior to surgery. A pathway should exist to allow an expedited approach for imminent surgery where time is limited (eg cancer pathway).	■ Proportion of patients with haematinics performed based on anaemia and documentation of investigation of anaemia where appropriate.

Treatment of anaemia	
Patients undergoing elective major surgery should have had treatment of preoperative anaemia appropriate to the timeframe of surgery. This may be with oral iron, intravenous iron, B12 or folate supplementation as appropriate. Response to intervention should be documented.	■ Proportion of patients who have been treated for anaemia and the effect of the intervention.
Patients on antiplatelet agents and anticoagulants	
Patients on antiplatelet agents and anticoagulants should have written advice on when to stop medication and a documented plan for bridging therapy if required.	■ Proportion of patients who have a documented perioperative anticoagulation plan.

Quality improvement methodology

Measurement of haemoglobin six weeks before surgery

Draw a process map of the routes of referral to preassessment clinic or listing for surgery to identify patients on anticoagulants or antiplatelet agents, and at which points all patients could have a full blood count. How could you move the measurement of haemoglobin earlier in the pathway to facilitate earlier treatment of anaemia? How can you reliably highlight patients on relevant medications and reliably give them medication advice?

Measurement of haematinics and investigation of anaemia

Could the measurement of haematinics be automated? A number of centres have agreements with their local laboratory to run haematinics on patients attending preoperative assessment clinic whose full blood count demonstrates anaemia. This could reduce repeat testing and streamline your process and could facilitate a single point of contact for checking of results and triggering the next step in the pathway.

Treatment of anaemia

Consider a driver diagram looking at all the possible drivers to improve the treatment of preoperative anaemia. This may include GP referral for some patients or set-up of a service to deliver intravenous iron for other patients, depending on the surgery the patient requires and the referral agreements already in place.

Mapping

ACSA standards: 1.2.1.4, 1.2.1.5, 1.3.2.1
Curriculum competences: POM_HK_01
CPD matrix code: 2A03
GPAS 2020: 2.1.3, 2.5.5

References

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1.10 Patient blood management in perioperative care

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Why do this quality improvement project?

Patient blood management is a systematic evidence-based approach to optimising care for patients who might need transfusion.[1,2] As perioperative clinicians, we are well placed to oversee all aspects of patient blood management along a surgical pathway, in collaboration with haematology and surgical colleagues.

Background

There are patient and surgical factors which may predispose to an increased risk of transfusion in the perioperative period. Blood transfusion is more common postoperatively than intraoperatively. In addition to the management of preoperative anaemia, other aspects of the patient blood management programme are important for anaesthetists and perioperative teams to get right. These are ideal for quality improvement projects and include:

- The identification and planning of perioperative coagulation management in patients at higher risk of bleeding, either iatrogenically through the use of anticoagulants or antiplatelets or because of coexisting coagulopathy as a result of a medical condition.
- The use of perioperative tranexamic acid.[3]
- Consideration of and systems to facilitate the use of cell salvage.[4]
- Use of point-of-care testing to guide transfusion perioperatively.[1]
- Use of restrictive transfusion practice and single-unit transfusion.[5]
- Consenting patients at risk of requiring a blood transfusion in the preoperative consultation.[1]

Best practice

- Blood conservation strategies should be employed to minimise risk of transfusion with allogenic blood. This may include the use of cell salvage and or tranexamic acid in cases with expected blood loss of greater than 500 ml. Not all units have easy access to cell salvage, and awareness of the role of tranexamic acid may not be comprehensive.
- Restrictive transfusion practice in the absence of continuing blood loss of target Hb 70 g/l in patients without cardiovascular risk factors and the practice of single-unit transfusion followed by reassessment.
- A clear plan for perioperative management of patients on anticoagulants, including bridging therapy and when to restart anticoagulants.

Suggested data to collect

- Percentage of eligible cases where tranexamic acid was used, percentage of eligible cases where cell salvage was used, volume of blood collected, transfusion rate with allogenic blood.
- Documentation in notes of transfusion trigger in stable patients; audit of frequency of single-unit transfusions compared with multiple in stable patients.
- Documentation of decision making; surveying awareness of pathways.

Quality improvement methodology

Use of cell salvage

Are there barriers currently preventing cell salvage from occurring? Is it an equipment issue, a staffing issue, training issue or policy issue? A driver diagram may help to identify the factors that will govern the appropriate use of cell salvage in all applicable cases.

Restrictive transfusion policy

Process mapping of patients on a particular surgical pathway who receive transfusion may help to identify at which point in the pathway and why patients are being transfused. Is a target haemoglobin documented postoperatively? Are the ward staff and doctors aware of the transfusion trigger? Is there a written policy on single-unit transfusion? Are there opportunities for teaching and training?

Pre- and postoperative anticoagulation

Process map the patient pathway through preassessment, theatre and postoperatively. What are the factors governing decision making about stopping anticoagulants and bridging in the preoperative phase? Is it easy to identify which patients should be bridged or not? How is bridging organised? Are there cancellations or postponements because of gaps in this process? How are decisions made about restarting anticoagulation? When are these made and how are they communicated?

Case example

Torbay Hospital has demonstrated a culture change in patient blood management, which has led to improvements in patient safety, experience and outcome. They formed a patient multidisciplinary blood management group and embarked on a comprehensive training programme whereby all operating department practitioners were trained in cell salvage and a machine was primed and ready in emergency theatre and obstetric theatre for all cases, regardless of time of day or night. Other measures, including preoperative anaemia management, blood tracking and education on single-unit transfusion and the use of tranexamic acid, have dramatically reduced the use of allogenic blood in the trust. They have doubled the number of patients receiving cell-saved blood and have reduced the surgical/intensive care transfusion rate by 39% over four years (658 units at a cost of over £80,000).

Mapping

ACSA standards: 2.2.2.1, 2.1.1.10, 2.2.2.2
Curriculum competences: GUHK02, GUHS04, POMHK04, POMHK12
CPD matrix code: 2A03
GPAS 2020: 5.2.4, 9.2.20, 3.2.21, 3.2.22, 7.2.26, 7.3.19, 10.2.1, 5.2.34, 9.2.9, 3.2.37, 9.2.28, 11.2.7

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1.11 Perioperative neurocognitive disorders: Delirium and delayed neurocognitive recovery

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Why do this quality improvement project?

The most common postoperative complication for patients over 65 years of age is delirium and longer-term cognitive dysfunction, together termed perioperative neurocognitive disorders, yet until relatively recently little attention has been paid to the assessment and optimisation of brain function in the perioperative period. This project suggests ways of improving the care of our older surgical patients through assessment of cognitive risk, patient and provider education and multidisciplinary collaborative input.

Background

The reported incidence of neurocognitive disorders ranges from 20–40% with the greatest predisposing risk factor being preoperative neurocognitive impairment.[1] Preoperative cognitive impairment may not be evident without the use of a structured screening and diagnostic process.[2] Screening tests (such as the Mini-Cog© or equivalent)[3] should be used routinely to evaluate the brain preoperatively in everyone over 65 years of age.

An abnormal preoperative neurocognitive status predicts a higher likelihood of postoperative delirium, postoperative complications, increased length of stay and discharge to a place other than home.[3] If abnormal preoperative neurocognitive function is recognised, mitigating actions can be taken and the patient and their family can be informed of the risk. Importantly, it is estimated that up to 40% of postoperative delirium events are preventable.[1]

The term 'perioperative neurocognitive disorders' should now be used to describe cognitive impairment that occurs around the time of surgery.[4] The two types of neurocognitive disorder most likely to be seen by anaesthesiologists are:

- postoperative delirium: occurs in hospital up to one week post-procedure or until discharge, whichever occurs first, and meets diagnostic criteria for delirium.
- delayed neurocognitive recovery: cognitive decline diagnosed up to 30 days post-procedure. There is potential for recovery during this time, as acute effects of medication, pain, changes in sleep and nutrition, as well as the physical and emotion stress of surgery and hospitalisation, may still be present.

Best practice and suggested data to collect

Best practice includes preoperative, intraoperative and postoperative actions.

Best practice[1]	Measures
All older surgical patients (over 65 years) should be screened for preoperative cognitive impairment.	■ Proportion of all older surgical patients who are screened for preoperative cognitive impairment.
Older surgical patients (over 65 years) should be informed of their risk of developing perioperative neurocognitive disorders as part of informed consent for anaesthesia and surgery.	■ Proportion of surgeons and anaesthetists including risk of perioperative neurocognitive disorders in the informed consent process.
Patients found to be at high risk on a preoperative screening tool should be placed on a care pathway to mitigate their risk.[5] This should include optimisation of medication.	■ Availability of a care pathway for patients screened at risk for neurocognitive disorders. ■ Percentage of at-risk patients receiving care modified to reduce their cognitive risk.
Patients at risk should be regularly screened for delirium perioperatively using a validated tool.	

Each patient aged over the age of 70 years should have multidisciplinary input available that includes early involvement of medicine for the care of older people. Patients at risk should be screened for frailty.	
Anaesthetists should monitor age-adjusted end-tidal MAC fraction, optimise cerebral perfusion and perform electroencephalogram-based anaesthetic management in at-risk older adults.	■ Availability of protocols and equipment to appropriately manage the brain in older patients.
Commonly used medications that should be used with caution in older surgical patients include first-generation antihistamines (diphenhydramine), anticholinergics, antipsychotics (haloperidol), benzodiazepines (midazolam, diazepam), corticosteroids (hydrocortisone, methylprednisolone), metoclopramide and meperidine.	■ Percentage of at-risk patients who received one or more drugs that increase risk – this percentage should ideally be zero.

Postoperative risk reduction action items:

- Ensuring that care givers or family members can stay or visit during the recovery period.
- Encouraging familiar items from home, such as photographs.
- Returning sensory aids (glasses, hearing aids, dentures) as soon as possible.
- Protecting sleep/wake cycles.
- Reorienting throughout the day.
- Requesting hospital rooms with windows.[5]

Quality improvement methodology

- Set up a pathway for risk assessment and consent in the preoperative assessment clinic. Use plan–do–study–act cycles to work on establishing an easy, acceptable screening process. Ensure that patients are included as key team members and work on improving their experience of preoperative assessment, information and support.
- Educate the multidisciplinary team on best practices for risk mitigation, prevention and supportive perioperative care; use patient stories and examples as well as data to make your case.
- Consider all your stakeholders, meeting as many of them as possible to harness ideas from all staff groups on how to reduce risk and design a care pathway to mitigate harm for at-risk patients. Are there any other departments you could ask to share learning (eg care of the elderly specialists, dementia friendly wards).

Mapping

ACSA standards: 1.1.3.1, 1.1.3.2, 1.2.1.1, 1.2.1.3, 1.2.1.4, 1.2.1.5,1.2.2.1, 1.4.4.2, 3.2.2.1
CPD matrix codes: 2A03, 2A04
GPAS 2020: 2.3.16, 2.3.17, 2.3.18, 2.3.19, 2.3.20, 2.3.21, 2.3.31, 2.3.32, 2.5.10, 2.5.11, 2.5.12, 2.5.19, 2.5.20, 2.5.23, 2.5.24, 2.5.31, 3.3.2, 4.2.18, 4.2.19, 4.3.18, 4.3.19, 4.3.20, 4.3.21, 4.3.22, 4.3.23

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1.12 Management of obesity in the perioperative period

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Why do this quality improvement project?

As the incidence of obesity increases, all anaesthetists will be involved in the care of obese patients. Pre-optimisation of co-morbidities, risk assessment, availability of specialist equipment and experienced clinician input will ensure better patient outcomes and reduce complications.

Background

The World Health Organisation (WHO) defines a body mass index (BMI) >30 kg.m^2 as class 1 obesity; >35 kg.m^2 as class 2 obesity; >40 kg.m^2 as obese class 3 (previously 'morbidly obese'). Adult obesity in England has increased from 15% to 26% between 1993 and 2016. [1]

Obese patients are more likely to have existing co-morbidities affecting the cardiovascular, endocrine, musculoskeletal, gastrointestinal and respiratory systems. The risk of perioperative complications such as difficult airway, post-operative respiratory failure, myocardial infarction, stroke and venous thromboembolism (VTE) is also higher.[2]

Sleep disordered breathing (SDB, encompassing obstructive sleep apnoea (OSA) and obesity hypoventilation syndrome (OHS)) is common and often undiagnosed in the obese population: 10-20% of patients with BMI >35 have severe OSA. Undiagnosed or inadequately treated SDB can increase the risk of post-operative respiratory complications, and lead to pulmonary hypertension and heart failure in the long-term.[2]

Best practice

The Association of Anaesthetists and Society for Obesity and Bariatric Anaesthesia (SOBA) have published a joint guideline[2] recommending organisational and clinical best practice approaches to delivering peri-operative care to the obese patient.

Suggested data to collect

Standards	Measures
Operating lists[2] and medical records should include the patients' weight and BMI.	■ Proportion of pre-operative assessment and/or operating lists that includes the patients' weight and BMI.
Experienced surgeons and anaesthetists should assess and manage patients who are obese.[2,3]	■ Grade of most senior anaesthetic and surgical staff seeing patient pre-operatively & in theatre.
Specialised equipment to assist in the safe management of obese patients (including properly fitting anti-embolism stockings[4]). Requirements should be included in the pre-operative team brief to ensure availability of specific equipment and staff.[2]	■ Availability of and compliance with local protocol and lists or 'obesity packs'[2] that outline equipment specific for the obese patient and their location in all theatre complexes; staff training compliance; proportion of cases in which specific requirements were discussed at WHO team brief.

Screening for SDB.[2] High index of suspicion in patients with BMI >30. Routine use of STOP-BANG questionnaire should be used for screening; scores ≥3, should be pre-operatively assessed by a clinician, to risk stratify, plan further investigations and management.	■ Proportion of obese patients 1) screened for OSA; 2) assessed by a clinician for OSA and 3) managed according to risk stratification.
Appropriate prophylaxis against VTE and early mobilisation.[2]	■ 100% patients should be risk assessed for VTE and receive prophylaxis as per local protocol and receiving correct dose of pharmacological prophylaxis; compliance with enhanced recovery protocols eg time to mobilisation.

Quality improvement methodology

Preoperative record of patient's weight and BMI

- Can entering weight and BMI become a mandatory part of the ward pre-operative checklist/theatre booking form? When/where is it most helpful to record this?

Specialist equipment and staff trained to care for the obese patient

- Map the process for the pre-operative assessment team to inform the appropriate department(s) about specialist equipment are there steps that are unreliable or onerous? Can the process be simplified or automated? Could you do a 'check and challenge' drill or simulation of where to find specific guidelines or equipment?

Screening for sleep-disordered breathing

- Map the pre-operative assessment pathway – is the process to screen, identify, refer, assess and investigate for OSA simple and reliable? Are there multiple modalities to investigate for OSA? Look at a series of cases - how long does the entire process take? Are there any common features that can be improved on or steps made simpler or quicker? Are there sufficient resources (availability of clinician/sleep study slots) to support this pathway?

Mapping

ACSA standard: 1.1.3.4

Curriculum competences: OA_BK_07, OA_BK_08, IG_BK_03, PO_BK_11, GU_BK_11, PB_BK_88, EN_BK_03, DS_IS_01, AM_IK_08, EN_IK_04, PC_IK_18

CPD matrix code: 3A13

GPAS 2020: 2.3.22, 2.3.23, 2.3.24, 2.3.25, 2.3.26, 2.5.10, 2.5.16, 2.5.19, 3.2.18, 3.3.3, 3.3.4, 3.3.5, 3.3.6, 3.3.7, 4.3.24, 4.3.25, 5.3.15 5.3.16, 5.3.17

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1.13 Enhanced recovery after surgery: a narrative review

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The majority of patients presenting for major inpatient surgery will benefit from being enrolled on to an enhanced recovery programme to minimise the risk of complications and promote recovery and restoration of function. In practice, some types of surgery (eg colorectal resection and major urological surgery) have a long and well-established enhanced recovery programme while other surgical subspecialties are not as developed. Enhanced recovery programmes with high rates of adherence to all components have been shown to improve outcomes for patients and hospitals. The principles of enhanced recovery should apply to all patients presenting for surgery.

Adherence to all components of an enhanced recovery programme is not within the control or remit of most anaesthesia and perioperative medicine departments. We have not therefore published an 'enhanced recovery recipe', since it would be too broad. There are, however, many aspects of the programme where anaesthetists make an important contribution and, as such, in this book we focus on these components as entire projects within their own right to maximise the benefits of each, in the pre-, intra- and postoperative phases. Anaesthetists should be involved as part of a team monitoring the overall adherence to and success of enhanced recovery programmes at their institutions, and these recipes can act as a framework for improvement. Some institutions will be doing this through participation in the Perioperative Quality Improvement Programme, and many of the process measures and outcome measures will be readily available to those involved.

Particular attention should be paid to:

- the optimisation of concurrent medical conditions (see recipes on anaemia, patient blood management, diabetes, preassessment, frailty, prehabilitation)
- smoking cessation (see recipe on prehabilitation)
- individualised risk assessment and shared decision making (see recipes on risk prediction and consent for anaesthesia)
- psychological status and management of expectations (see recipe on patient information)
- appropriate length of preoperative starvation (see recipe on diabetes)
- individualised pain management and procedure-specific analgesia strategy, with a focus on multimodal analgesia and the use of opioid-sparing techniques (see recipe on individualised pain management)
- risk scoring for postoperative nausea and vomiting
- strategies to minimise cognitive dysfunction (eg age-adjusted depth of anaesthesia)
- promotion of functional return (ie drinking, eating and mobilising where appropriate – see Part B recipe 3.6)
- appropriate discharge medication (see recipe on opioid deprescribing and individualised pain management).

Many of these domains readily lend themselves to audit and quality improvement, such as looking at the incidence of postoperative nausea and vomiting risk scoring, the frequency of patient-controlled analgesia prescription, the frequency of mobilising on day 1, the rate of drain/catheter/intravenous infusion removal on day 1, the use of regional techniques.

As an overall strategy to improve outcomes in major surgery, a series of quality improvement projects on each part of the enhanced recovery after surgery programme could have significant impact. It would be worthy of consideration for the quality improvement lead and relevant leads for specialties to coordinate this work accordingly.

Mapping

ACSA standard: 1.2.1.4

GPAS 2020: 2.2.5.1, 2.5.10, 2.5.12, 2.5.13, 2.5.16, 2.5.17, 2.5.19, 2.5.2, 2.5.21, 2.5.25, 2.5.26, 2.5.27, 2.5.28, 2.5.29, 2.5.31, 2.5.39, 2.3.16, 2.3.17, 2.3.18, 2.3.19, 2.3.20, 2.3.21, 3 3.3.2, 4.2.9, 4.3.27, 4.3.28

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1.14 Individualised perioperative pain management

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Why do this quality improvement project?

Identification of patients at risk of severe acute post-surgical pain and instigating preventive analgesic techniques can help to prevent chronic post-surgical pain, improve surgical outcomes and increase patient satisfaction. There is evidence that postoperative opioid prescribing can lead to an increased risk of misuse. Anaesthetic prescribers should ensure that clear instructions for deprescribing are given, to avoid inadvertent unnecessary continuation of these medicines in the community. Protocols should be in place to avoid unnecessary discharge prescriptions. Providing individualised perioperative pain management can help to address these issues.

Background

Chronic post-surgical pain is common. It is estimated to occur in between 40,000 and 100,000 patients per year in the UK, affecting up to one-third of patients undergoing cholecystectomy, up to 50% of those undergoing mastectomy/cholecystectomy and up to 85% of patients who have an amputation.[1] It is defined as 'pain developing after a surgical procedure and persisting beyond the healing process (ie at least three months after surgery). Other causes of pain (eg infection) need to be excluded.[2]

There are multiple factors contributing to the development of chronic post-surgical pain,[3] including pre-existing chronic pain and high-dose opioid use, postoperative acute severe pain and acute neuropathic pain.

Patients taking chronic high-dose opioids (more than 100 mg oral morphine equivalent/day) are at risk of harm during the perioperative period. This can either be due to analgesia underdosing leading to severe acute pain or overdosing leading to opioid adverse effects.[4]

Opioids play an important role in the management of acute severe pain. However, they should be tapered as pain resolves to avoid inadvertent long-term use. Discharge opioid prescribing can be problematic for both medical and surgical patients, as there is the potential for misuse and diversion. Duration of prescription is a greater risk factor than dosage, with each repeat prescription increasing the risk of misuse by 40%.[5]

Best practice

Relevant guidelines are published by the RCoA Faculty of Pain Medicine, the British Pain Society and the Australian and New Zealand College of Anaesthetists (ANZCA):

- Opioids Aware (RCoA Faculty of Pain Medicine/Public Health England).[6]
- Acute Pain Management: Scientific Evidence (ANZCA/ANZCA Faculty of Pain Medicine).[7]
- Core Standards for Pain Management Services in the UK (RCoA Faculty of Pain Medicine).[8]
- Guidelines for the Provision of Anaesthetic Services (RCoA Faculty of Pain Medicine).[9]

Suggested data to collect

Identification of patients at risk of difficult-to-manage pain perioperatively

- What is the process for identifying at-risk patients in preassessment (eg type of surgery, existing chronic pain, multiple analgesics, on a pain management programme, history of poor perioperative pain control)?
- Is there a referral process for these patients to consider preoperative planning and individualised technique, including opioid management?
- How is the anaesthetist made aware of these patients?
- Are there protocols in the hospital for escalation of opioids and non-opioid rescue for poor pain control?

Individual hospital chronic post-surgical pain data

- Chronic post-surgical pain in chronic pain outpatients: measure the number of patients seen in your hospital's pain clinic who have chronic post-surgical pain. This will only represent a small percentage of the patients with chronic post-surgical pain, but it can be a useful place to start.
- How many patients attending surgical follow-up clinics have symptoms and signs consistent with chronic post-surgical pain?

Postoperative opioid prescribing

- Protocols for discharge prescription of opioids should be available for both medical and surgical patients. Leaflets should be available for patients explaining pain management after discharge, including an analgesic step-down plan.[9]
- Liaise with pharmacy to audit recent discharge opioid medications. Data collection could include:
  - preadmission diagnoses and opioid medications
  - new diagnoses and procedures performed during admission
  - opioid prescription (drug, dose, duration) during admission and at discharge.

Quality improvement methodology

Process mapping: patient journey for patient with risk factors for developing chronic post-surgical pain

- Process for preoperative identification of high-risk patients (ie chronic pain, high opioid doses – greater than 100 mg/24 hours).
- Referral of these patients to pain specialist team.
- Intraoperative techniques used (eg regional, multimodal analgesia). Is there clear accessible guidance for perioperative teams on postoperative pain management, discharge planning and follow-up?

Postoperative opioid prescribing

- Identify whether protocols exist in your hospital for opioid discharge prescriptions. They should include dose, duration and should be targeted for appropriate patient groups (ie surgical/medical).
- Who prescribes discharge medication? Are there guidelines for opioids prescribed on discharge and are these prescribers trained in tapering opioids and providing instructions to primary care?[6] Could you target these professionals to educate and improve prescribing confidence and practice?[9]
- What guidance exists for patients to understand post-surgical pain management and the risks and benefits of opioid prescribing? Could you work with patients to design better resources for their information?

Mapping

ACSA standards: 1.4.1.2, 1.2.2.1, 1.4.5.3

Curriculum competences: POM_BK_08, PO_BK_07, POM_BK_21, RA-BK_04, RA_BK_17, PM_IS_05, POM_HK_14

CPD matrix codes: 2E01, 2E02, 2A03, 2E01, 2G01

GPAS 2020: 2.4.4, 2.5.4, 2.5.5, 2.5.10, 2.5.17, 2.5.20, 2.5.21, 2.5.22, 2.5.23, 2.5.24, 2.5.25, 4.5.1, 4.5.2, 4.5.3, 4.7.1, 4.7.2, 4.7.4, 4.7.5

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1.15 Patient experience and outcome measures

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Why do this quality improvement project?

Measuring perioperative-related outcomes is central to assessing the effectiveness and quality of medical care and ties into the overarching NHS Outcomes Framework.[1] At a hospital level, outcome measures offer clinicians a better basis for judging and improving their practice and help hospitals to demonstrate quality assurance, improvement and inform funding decisions. These data are also a powerful communication tool, enabling patients to make more informed decisions about their care, while also promoting public transparency and accountability.

Background

Outcomes do not occur in isolation and depend heavily on structures as well as processes. Deciding what outcomes are important, how to measure, interpret and publish them requires a nuanced approach.

Clinical outcomes

Mortality is the most common surgical outcome reported. As perioperative mortality has decreased, attention has turned to morbidity. Of the tools available for assessing morbidity, the postoperative morbidity survey is a commonly used, well-validated measure.

Patient-reported outcomes

Patient-reported outcomes are relevant and important to patients, but they are traditionally not readily captured by clinical outcome tools. An example would be patient-reported outcome measures for patients undergoing hip and knee replacement, varicose vein and hernia surgeries. They have been mandatory since 2009 in the UK and are made available online.

Patient-related experience measures

Patient-related experience measures are captured by patient surveys, 'friends and family tests' and, with regard to anaesthesia, were reported in the Sprint National Anaesthesia Project (SNAP-1) survey and reported on experience of information delivery, postoperative pain, nausea and vomiting, thirst and overall satisfaction.[2]

Best practice

Best practice around perioperative outcome measurement is not defined by a single professional organisation or standard.

- NHS Outcomes Framework.[1]
- The Perioperative Quality Improvement Programme (PQIP)[3] makes comprehensive evidence-based recommendations looking at processes and outcomes and over time will provide valuable information to inform shared decision making.
- NCEPOD 2018: themes and recommendations common to all hospital specialties examine processes likely to influence outcome.[4]
- The Royal College of Surgeons of England Patient Reported Outcome Measures.[5]

Suggested data to collect

1. Mortality and morbidity data

- Is there departmental evidence of engagement in national or local audit projects monitoring mortality and morbidity outcomes (eg National Emergency Laparotomy Audit, PQIP, Trauma Audit and Research Network)?
- What happens to the data, how are they used and fed back to teams locally to improve care? Are there regular meetings, presentations or web tools tracking mortality and morbidity outcomes?
- What tools does your organisation use to measure postoperative morbidity (eg postoperative morbidity survey, Clavien–Dindo)? Who is responsible for collecting these data and what sources are used?
- Are length of stay, surgical site infection, unplanned critical care admission or readmission rates routinely collected and used to inform care?
- What proportions are drinking, eating and mobilising within a prespecified time frame?

2. Patient-related outcomes

- Does your hospital use patient feedback to inform perioperative care?
- Does your institution assess patient-centred outcomes post-surgery (eg disability-free survival or quality of life measures at 6 and 12 months)? What tools are used to collect patient feedback (eg Bauer questionnaire, QoR-15 questionnaire, World Health Organization disability assessment schedule 2.0)?
- Does your anaesthesia department routinely collect data on pain, nausea and vomiting, thirst and satisfaction at points on the patient pathway (eg recovery, day 1, at home)? Is there local variation?

Quality improvement methodology

As well as indicating which areas could be targets for improvement work, regular data feedback can act by itself to improve outcomes.

Good data feedback practice includes making data feedback regular, timely and accessible in a number of formats (in written form, in departmental meetings, via email etc).

Data should be accompanied by comparators in time (eg in run charts), with peers (other hospitals, or colleagues if individual level) and with any national standards.

Data should also be accompanied with advice on how to improve performance (eg reminding staff about their role in preoperative fasting arrangements when giving feedback on thirst or postoperative nausea and vomiting).

Case example

Addressing perioperative drinking times (see also recipe on reducing fasting times). Thirst appears to be one of the most uncomfortable perioperative experiences for all patients. Great Ormond Street Hospital conducted a quality improvement project from 2014–16 to improve fasting times for clear fluids.[6] They used the Model for Improvement to institute sequential interventions with evaluation using the plan–do–study–act framework. They introduced standardised letters and phoned patients before surgery to reinforce fasting instructions. They also used process mapping, failure model and effect analysis to identify where in the pathway it was safe to allow patients to drink after arriving on the ward, as well as varying the type of clear fluid available to children. Statistical process control charts were used to display improvements over time and identified changes and deviations early. The proportion of patients receiving clear fluids within four hours of surgery increased from 19% to 75% without any increase in aspiration rates.

Mapping

ACSA standards: 4.2.2.2, 4.2.3.1, 4.2.3.2
Curriculum competences: AR_BK_05, AR_BK_06, AR_BK_07, AR_BS_10, AR_IK_03, AR_IS_02, AR_HS_07, AR_HS_09, AR_HS_14, AR_AS_01, AR_AS_01
CPD matrix code: 1105
GPAS 2020: 4.7.1

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