PQIP

Perioperative Quality Improvement Programme

Report 3: August 2019 – July 2021

RCOA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia
HSRC Health Services Research Centre
The Health Foundation
source surgical outcomes research centre
UCL

PQIP Perioperative Quality Improvement Programme

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Cover illustration

Top and bottom left – images taken at the Royal London Hospital (© 2017 Royal College of Anaesthetists).

Top right – image taken at University College Hospital (© Dr J D Williamson).

Bottom right – members of the Lister Hospital PQIP team. The Lister hospital has been our top-recruiting site for two reports in a row. They are a 730-bedded district general hospital in Stevenage providing a range of surgical services including urology, vascular and plastic surgery to patients across Hertfordshire and South Bedfordshire. They recruited their first patient on 21 May 2019 and have recruited 896 patients to date of which 451 are urology patients. PQIP at Lister hospital is a truly multidisciplinary initiative combining efforts from anaesthetists, surgeons, specialist nurses and research nurses. Carina and Anna, Lister hospital's research nurses are largely responsible for recruitment and data collection on a day-to-day basis. Anna has become a regular feature at the preoperative assessment clinic, even setting up her own PQIP corner. Developing a good relationship with the preoperative assessment team appears to have been central to their recruitment success. Lister hospital's growing dataset is generating much interest locally from clinicians, nurses and managers and we look forward to hearing more about how PQIP data is being used on a local level. Photo provided by The Lister Hospital PQIP Team and used with consent.

Dear collaborators,

What a couple of years it has been. Our last PQIP Collaborative event was held almost exactly two years ago at King's Place – an event of great joy, celebration and optimism. Of course, the world has changed almost indescribably since then, and we have all been affected by it. Many of you will have endured personal loss, extreme pressure at work, and been challenged by the limitations of lockdowns at home. Many of you will have had an extremely challenging Summer at work, and while vaccination offers huge hope, we know that COVID-19 will be here to stay for at least a while, and its legacy for very much longer. Everyone in the PQIP central team offers you our thanks and admiration for all you have done for the NHS and our patients. On a different note, I also want to offer my personal thanks to the members of the PQIP project team who have helped to write this report – Kylie, Georgina, Cecilia, Cristel, Christine and Dominic – a huge effort in difficult times.

COVID-19 has obviously had a big impact on PQIP. The average number of locked cases since our last report is 90 cases per week, compared with 101 in our first cohort and 178 in our second. However, the average number of locked cases between the last report and when COVID-19 hit the NHS in March 2020 was 203 per week. So, we are really optimistic that we will now get back up to more than 200 patients recruited per week, as a result of your continuing amazing efforts, and yet more hospitals joining every month.

We are at an exciting point in PQIP. We have started analysing the data collected on patients who had their surgery before March 2020. We will soon have some great results to share with you through journal publications and presentations. We are collaborating with clinical trials teams to run embedded studies to further improve the evidence base for what we do – the first of these, VITAL, will compare IV and inhalational anaesthesia in patients having major surgery in at least 40 NHS hospitals and starts recruiting in Autumn 2021.

The general landscape for patients having surgery in the NHS is even more challenging than ever before, because of waiting list growth and the risk of patients becoming more deconditioned while they wait for surgery. For this reason, **there has never been a greater need for the type of improvements which PQIP is trying to promote.** We know the value of individualised risk assessment in shared decision making and perioperative planning, how DrEaMing within 24h is associated with reduced length of stay, and how really good pain management is associated with better processes and outcomes of care. We have identified our five improvement targets for this year around really trying to focus on local QI to reduce morbidity and length of stay, rather than just collecting data for research. Now has also never been a better time for you to try to leverage the need to improve outcomes and efficiency to get what you need from your trusts and systems to support PQIP related QI.

Your continued support for PQIP and for our patients is truly inspirational. We hope that you are able to stay safe, well and take care of yourselves. Thank you for everything you do. We hope you enjoy reading this report.

Very best regards,

Ramani Moonesinghe
On behalf of the PQIP Project Team

PQIP Perioperative Quality Improvement Programme

Top 5 improvement priorities 2021/2022

Recruitment strategy

- Maximise opportunities for local quality improvement by recruiting as many patients as possible from a few specialties that you want to focus on, rather than one or two from lots of specialties.
- Enrol colleagues to help lead locally through the NIHR Associate PI scheme.*

1

DrEaMing

- Drinking, Eating and Mobilising within 24h of surgery is associated with reduced complications and reduced length of hospital stay.
- It's a great QI target and patient engagement is a route to success – encourage patients to ask 'why not?' if they are not DrEaMing according to plan.

2

Individualised Risk assessment

- Be consistent – have a locally agreed protocol for individualised risk assessment. This might include a risk assessment tool such as the SORT (sortsurgery.com), and screening tools such as the Duke Activity Status Index.
- Document and act – mortality risk >1% merits consideration of enhanced care admission after surgery; >5% requires postoperative critical care.

3

Individualised pain management

- A large number of patients report severe pain after surgery; as well as being distressing for patients, pain is associated with a risk of not DrEaMing and extended length of stay.
- Preoperative screening and planning, multimodal analgesia and robust postoperative surveillance are all essential to reduce the risk of significant postoperative pain.

4

High quality data to inform research and local improvement

- Make the discussion of your data part of your routine at work – team briefs; department meetings; department messages; MDT meetings.
- As well as all the valuable inpatient data, build a team to help collect as much post-discharge PROMs data as possible.
- Pick a small number of priorities to focus on – get MDT consensus and then get started!

5

*NIHR Associate PI Scheme – National Institute Health Research Associate Principle Investigator Scheme.

National PQIP recruitment

Since PQIP started, 151 hospitals have recruited patients to the study – more than 80% of eligible hospitals in England and Wales. Of these, 144 hospitals have recruited patients in this report cycle (since 7 August 2019). At the moment, these sites are all in England and Wales, but we hope to be recruiting the first patients in Scotland and Northern Ireland soon!

In this report, we have categorised patients into three cohorts: those having surgery before 28 February 2018 (Cohort 1 patients; n = 6,401), between 1 March 2018 and 6 August 2019 (Cohort 2 patients; n = 13,359), and after 7 August 2019 (Cohort 3 Patients; n = 9,073). We have only analysed locked records. The numbers in the earlier cohorts are slightly higher than we reported in our Cohort 1 and 2 reports, due to the success of hospitals in locking previously unlocked records.

Individual site recruitment

The top recruiting site (for the second report running) is The Lister Hospital, recruiting 749 patients in Cohort 3. Other top recruiting hospitals include University College Hospital, Pinderfields Hospital, The Royal Marsden Hospital, The Royal National Orthopaedic Hospital, St Thomas' Hospital, University Hospital Wales, St George's Hospital, Salford Royal Hospital, Musgrove Park Hospital, and The Royal Blackburn Hospital.

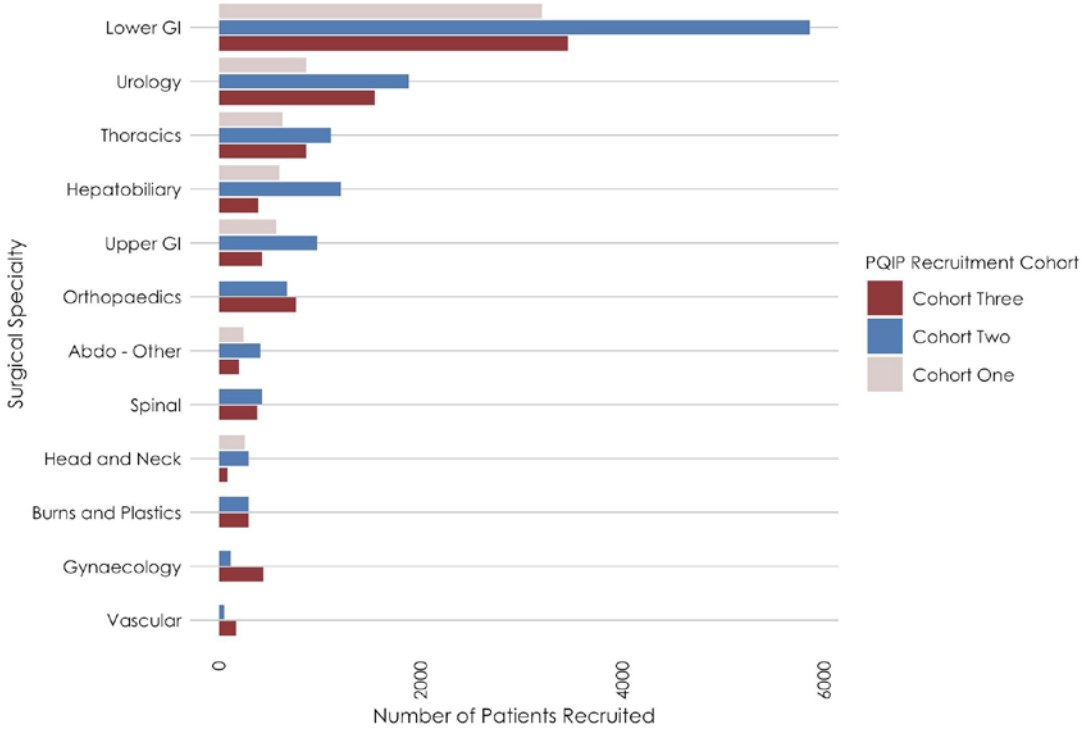
Twelve sites recruited their first patients following the onset of the COVID-19 pandemic in March 2020 – Addenbrooke's Hospital, Dewsbury and District Hospital, Glan Clwyd Hospital, Leeds General Infirmary, Maidstone Hospital, Pontefract General Infirmary, Poole Hospital, Princess Royal Hospital (SaTH), Royal Gwent Hospital, Royal Victoria Infirmary, Tunbridge Wells Hospital, and Walsall Manor Hospital. Thank you and welcome to the PQIP community!

Top tip: How Do the Top Recruiting Sites Do It?

It's not one size fits all; different approaches to recruiting PQIP patients suit different hospital set-ups. However, there are some features that appear to be common to our top recruiting sites:

- Teams have focused on understanding the local surgical caseload and have developed a sampling strategy that is locally feasible – often starting with a single specialty.
- Regular review of the recruitment process and openness to trialling different methods of recruitment.
- Approaching patients as early as possible during their surgical pathway often integrating recruitment with preoperative assessment clinics.
- A multidisciplinary approach combining efforts from surgeons, anaesthetists, specialist nurses, research nurses and trainees.
- The set-up of local PQIP communication networks to remind staff involved on the day of surgery and on day 1 after surgery.
- Support from local Clinical Research Networks through the National Institute for Health Research (NIHR); PQIP is a portfolio-adopted study.

Figure 1 Patient recruitment by surgical specialty



News!

PQIP is now registered on the National Institute for Health Research (NIHR) Associate PI scheme! The Associate Principal Investigator (PI) Scheme aspires to support trainees, non-consultant grade doctors, nurses and allied health professionals to become the Principal Investigators of the future. It provides formal recognition of an individual's engagement in NIHR Portfolio research studies through the conferment of Associate PI status, and is endorsed by the NIHR and medical Royal Colleges including the Royal College of Anaesthetists, Royal College of Surgeons (England) and the Faculty of Intensive Care Medicine.

If you are not a consultant and want to be involved and gain recognition for a significant leadership role in PQIP at local level, then talk to your local PQIP PI first, and then apply to the scheme. The link to the application form is here.

We also want to continue to support all trainees who play a supportive role in PQIP locally, including data collection and QI projects based on PQIP data. Our top tips for how to get involved can be found in our 'Introduction Pack' for PQIP investigators, and our 'Engagement certificate' which can be used in evidence in ARCPs and appraisals – see the 'How to get involved' section in the 'Study Documents' tab on the website here.

What do PQIP patients look like?

Table 1 Patient demographics

	Cohort 1 n = 6,374	Cohort 2 n = 13,308	Cohort 3 n = 9025
Age (Years, Median; IQR)	67 (57–74)	66 (56–73)	66 (56–73)
Gender (% Female)	39	42	46
BMI (Median; IQR)	27.0 (23.9–30.4)	27.1 (24.0–30.9)	27.4 (24.3–31.2)
Current Smoker (%)	11	11	11
ASA Physical Status (%)			
1	11	11	10
2	61	61	60
3	27	27	29
4	1.1	1.0	1.0
5	<0.1	<0.1	<0.1
Surgical Complexity (%)			
Major	13	11	12
Complex Major	34	34	34
Complex	53	55	55
Surgical Urgency (%)			
Elective	89	90	91
Expedited	11	9.6	8.8
Cancer Diagnosis Within 5 Years (%)			
None	24	31	37
Solid, No Mets	59	54	53
Solid, Mets	17	15	10
Lymphoma	0.3	0.3	0.2
Leukaemia	0.1	<0.1	<0.1
Diabetes (%)			
None	87	87	87
Type I	0.7	0.7	0.5
Type II – Diet Control	2.8	3.1	2.9
Type II – Oral Agents	6.6	6.5	7.3
Type II – Insulin	2.7	2.9	2.1
NYHA Heart Failure Class (%)			
I	83	83	81
II	14	15	16
III	2.6	2.5	3.1
IV	0.1	0.1	0.1
Other Co-Morbidities (%)			
Respiratory History	16	15	17
Respiratory Infection (Past Month)	4.0	3.3	3.4
Cardiac History	25	25	26
Abnormal ECG	23	22	21
Cerebrovascular Disease	3.9	4.0	3.6
Dementia	0.6	0.8	0.7
Liver Disease	1.2	1.0	0.8

PQIP patients are having complex surgery, with 61% of procedures in Cohort 3 taking longer than three hours. A wide variety of procedures have been included in PQIP. The five most frequent procedures for each specialty are in the table below.

Table 2 Most frequent surgical procedures recruited to PQIP, by surgical specialty

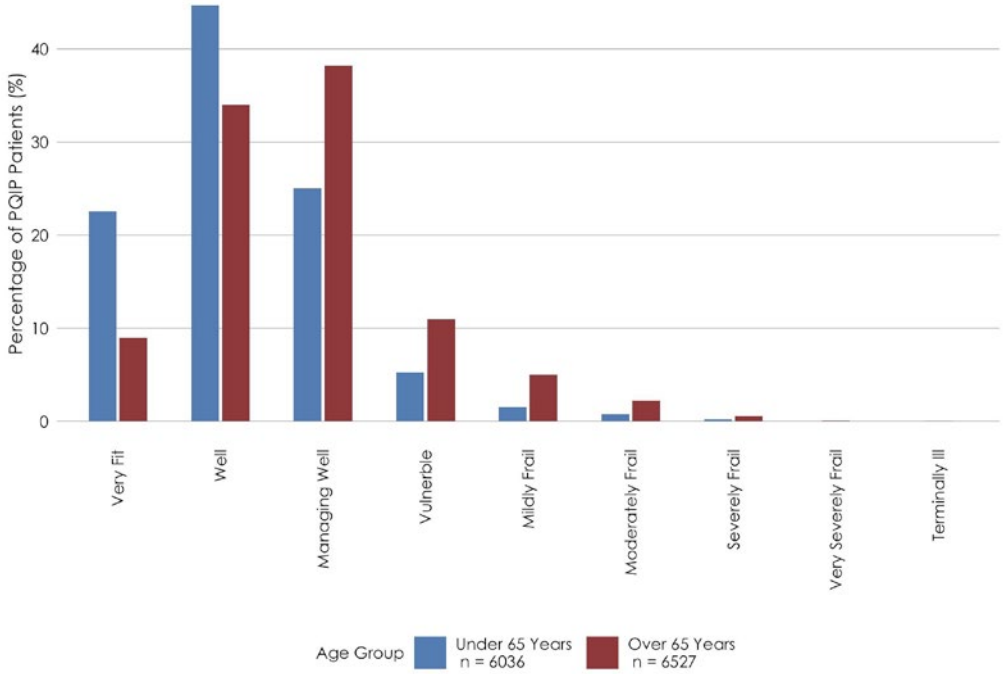
Lower GI	Urology	Thoracics	Hepatobiliary
• Anterior resection • Right hemicolectomy (with anastamosis) • Excision of sigmoid colon • Reversal of Hartmann's procedure • Abdominoperineal (AP) resection with end colostomy	• Radical prostatectomy • Total nephrectomy (non-transplant) • Cystectomy • Nephrectomy and excision of perirenal tissue • Nephroureterectomy	• VATS lobectomy • VATS wedge resection of lung • Pulmonary lobectomy including segmental resection • VATS pleurodesis/ pleurectomy • VATS excision lesion of mediastinum including thymectomy	• Resection of lesion(s) of liver • Pancreatoduodenectomy and excision of surrounding tissue (Whipple's procedure) • Hemihepatectomy (right) • Pancreatectomy (partial/ distal) • Hemihepatectomy (left)
Upper GI	**Orthopaedics**	**Abdo – Other**	**Spinal**
• Oesophagectomy (total) / Oesophagogastrectomy • Gastrectomy (total or partial) with excision of surrounding tissue • Oesophagectomy (partial) • Pancreatoduodenectomy and excision of surrounding tissue (Whipple's procedure) • Transabdominal anti-reflux operations • Transabdominal anti-reflux operations	• Revision of total replacement of knee joint • Revision of total hip replacement • Revision of uncemented or cemented total hip replacement without adjunctive procedures • Removal of total hip replacement • Distal femoral Replacement	• Abdominal wall reconstruction • Adrenalectomy (unilateral) • Complex restoration of intestinal continuity • Total exenteration of pelvis • Laparotomy + excision of sarcoma tumour	• Anterior discectomy, decompression and fusion (C) • Primary posterior fusion +/- decompression +/- discectomy (L) • Combined anterior approach discectomy, decompression and fusion and posterior fusion (L) • Anterior discectomy (C) • Primary posterior fusion with instrumentation +/- decompression +/- discectomy (L)
Head and Neck	**Burns and Plastics**	**Gynaecology**	**Vascular**
• Selective dissection of cervical lymph nodes • Extensive excision of mandible • Total laryngectomy • Partial or hemi maxillectomy for malignancy • Radical dissection of cervical lymph nodes	• Mastectomy with soft tissue reconstruction • Reconstruction of breast using flap • Delayed reconstruction of breast using pedicled TRAM • Partial reconstruction of breast using pedicled perforator flap • Lumpectomy and immediate partial reconstruction of breast using pedicled perforator flap	• Vaginal hysterectomy including salpingo-oophorectomy • Hysterectomy with excision/ biopsy and or removal of omentum and uterine adnexa for ovarian malignancy • Anterior (+/- posterior) colporrhaphy with vaginal hysterectomy • Radical hysterectomy and lymphadenectomy (Wertheim's) • Anterior exenteration of pelvis	• Endarterectomy of femoral artery • Femoro-popliteal bypass using vein • Open infrarenal abdominal aortic aneurysm tube graft • Aorto-bifemoral bypass • Aorto-iliac, aorto-femoral, ilio-femoral bypass

Each box contains the five most frequent procedures for each surgical specialty, in descending order of frequency. For Spinal Procedures: C = Cervical, L = Lumbar.

How frail are PQIP patients?

Frailty is an age-related syndrome that increases a patient's vulnerability to adverse outcomes following stressors such as major surgery. We have started collecting data on frailty in our PQIP population using the Rockwood Clinical Frailty Scale beginning during Cohort 2. We now have frailty assessment data for 12,563 patients. The majority (87%) of patients have low levels of frailty at baseline and are assessed as 'Managing Well' or better. However, if we focus in on patients over the age of 65, you can see that 19% are vulnerable or more frail than that. We're looking forward to doing further research on frailty and outcome in PQIP, and also look out for SNAP-3, coming soon.

Figure 2 Rockwood Clinical Frailty Scale assessment by age group



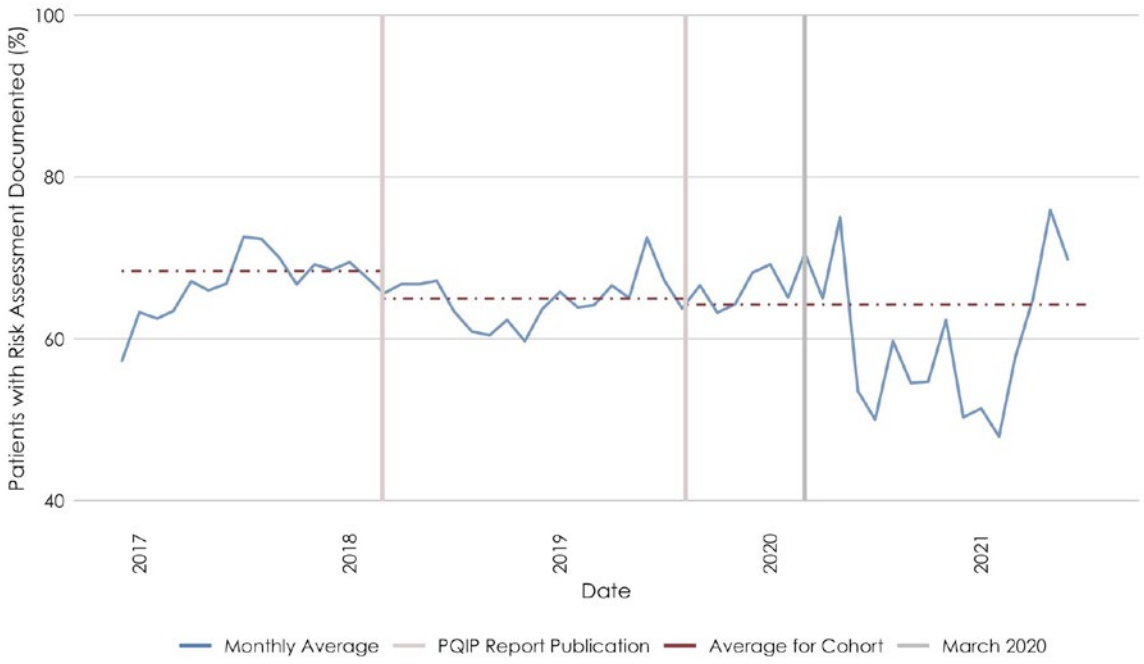
Frailty, delirium and SNAP-3

It still isn't clear what the best approach is to identify frailty and risk of delirium in routine clinical settings, what to do with frailty, multi-morbidity and delirium risk in the time before surgery, and how these conditions should be managed during and after surgery. SNAP-3 will generate a large, high-quality dataset on a cohort of older people undergoing a range of surgical procedures to help address these questions.

Improvement highs and lows – individualised risk assessment

We're still a long way off our target of 100% of patients having an individualised risk assessment, with overall performance dropping since COVID-19.

Figure 3 Percentage of patients with individualised risk assessment performed



What's really going on here?

Our definition of individualised risk assessment is: a risk assessment performed preoperatively, recorded in the notes or consent form, which is readily accessible and recognisable to whoever is entering the PQIP data and accurately recorded. We've talked to a number of hospitals and realise we have an opportunity to improve the way we collect this data.

We are changing the way we collect risk assessment data

To help us understand how risk assessment happens locally, the preoperative question will now assess both whether qualitative (eg clinician judgment of high, medium, or low risk) or quantitative measures are used to perform the risk assessment. Additionally, for quantitative assessments we will collect data on whether the risk assessment is made using CPET or a risk calculation tool such as SORT, SORT-clinical judgment or NSQIP. Please keep in mind that ASA Physical Status is not an individualised risk assessment tool.

Why is individualised risk assessment important?

In the UK we are required by law to explain the specific risks to individual patients of medical interventions (following the Montgomery ruling, 2015). Risk assessment facilitates shared decision making, open communication and discussion of risk with patients and colleagues. Additionally, quantitative risk assessment allows for planning of perioperative care including prioritisation of appropriate patients for prehabilitation and critical care. There is recent joint guidance on preoperative assessment and optimisation which provides lots of information and references on how, when and why to individually risk assess patients for surgery.

Individualised risk assessment: why and how guide

In the UK we are required by law to explain the **specific risks to individual patients** of medical interventions (Montgomery ruling)

Use your risk assessment to: **communicate** and discuss risk with colleagues and patients; **prioritise** patients for critical care; **plan** the perioperative care pathway

Individualised risk assessment is also good practice and supports **shared decision making** between patients and clinicians

Use the **Duke Activity Status Index or Cardiopulmonary Exercise testing*** to evaluate individual patients' suitability for prehabilitation interventions such as exercise training

Use the Surgical Outcome Risk Tool **SORT (sortsurgery.com)**** **combined with clinical judgement** to estimate short-term mortality risk. The SORT is an accurate free, online risk calculator and requires no blood tests or other investigations

Risk assessment should occur as **early as possible in the perioperative pathway:** ideally at the time of surgical referral or MDT discussion – or at latest in the pre-op assessment clinic

*METS: Lancet 2018;391:2631–2640 (https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31131-0/fulltext)

**SORT: https://bjssjournals.onlinelibrary.wiley.com/doi/10.1002/bjs.9638
SORT-clinical judgement: https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003253

Top tip: The SORT-clinical judgement risk model

The Surgical Outcomes Risk Tool (SORT) is a preoperative risk prediction tool which estimates short term mortality risk. The SORT is a free online risk calculator and does not require any blood tests or other investigations. The most recent update published in PLOS Medicine in 2020 supports the use of the new combined SORT-clinical judgment model in which a clinical assessment of risk is provided by senior clinicians in the multidisciplinary team. Combining subjective and objective measurements improves the reliability of perioperative risk assessment compared with using either method alone. The SORT-clinical judgment tool is available at www.sortsurgery.com/SORT2_home. You can still use the original SORT if experienced clinicians are not available to provide a risk estimate.

Which patients are likely to benefit from higher levels of postoperative care?

Guidance from the Centre for Perioperative Care and the Faculty of intensive Care Medicine on enhanced care, and the Royal College of Surgeons 'Raising the Standard' in 2018 set standards for level of postoperative care by predicted mortality:

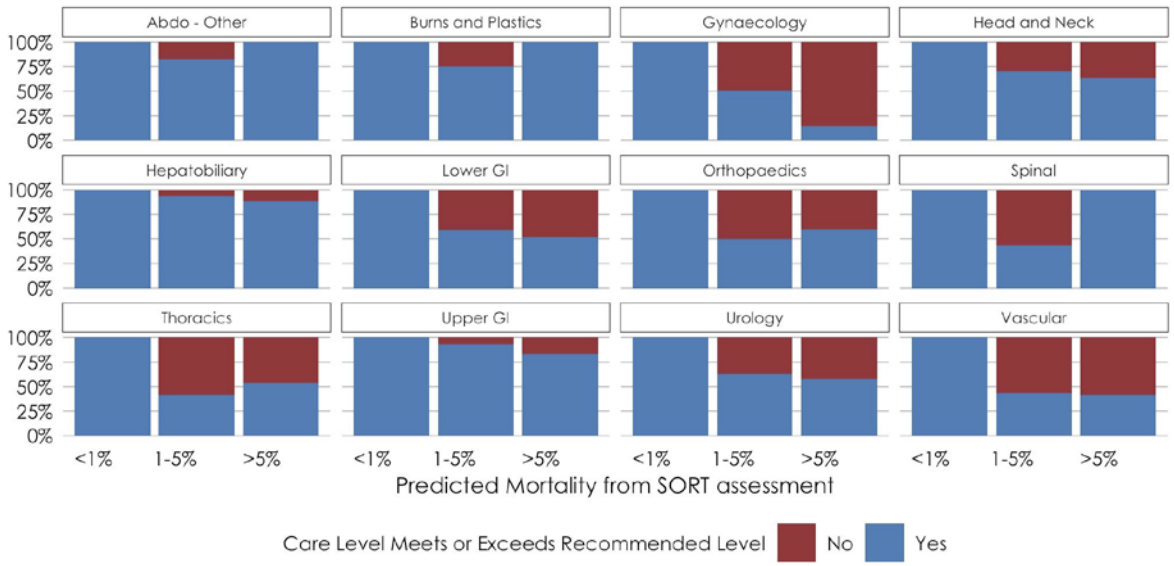
- Patients with a predicted 30-day perioperative mortality risk (using a validated risk assessment tool) of >1% are most likely to benefit from enhanced perioperative care.
- Patients with a predicted 30-day perioperative mortality risk of ≥ 5% should be managed in level 2 or 3 critical care facilities after surgery.

Table 3 Postoperative destination by SORT predicted mortality, all PQIP cohorts

	<1% (n = 20067, 69.9%)	1–5% (n = 7124 24.8%)	5–10% (n = 1015, 3.5%)	10–20% (n = 346, 1.2%)	>20% (n = 125, 0.4%)
Ward Care	54%	37%	33%	29%	24%
Enhanced Care	13%	13%	13%	12%	14%
ITU	33%	50%	54%	60%	62%

How many PQIP patients are receiving the recommended level of postoperative care?

Figure 4 Percentage of patients where postoperative destination meets recommended minimum standard, by surgical specialty



We know that lots of hospitals have pathways which triage patients to postoperative destinations based on the procedure they are having rather than their individualised risk. This can be great, and support reducing unwarranted variation in practice – **BUT** – don't forget that an individualised risk assessment should also be used to ensure that some high-risk patients don't slip through the net and end up on the ward rather than critical or enhanced care. Almost a third of patients with a SORT predicted mortality > 10% are going to a normal ward after surgery – this seems high to us and requires local teams to check their data and confirm that their processes are reliable and meet national standards.

Top tip: Enhanced perioperative care services

The >1% mortality risk guideline for enhanced care admission is relatively new, and we know that many hospitals do not yet have an enhanced perioperative care service. Use your PQIP data to start a local conversation about how you are caring for your higher risk patients and how your perioperative and critical care services are structured to support elective recovery as well as emergency care. Potential benefits of enhanced perioperative care services include:

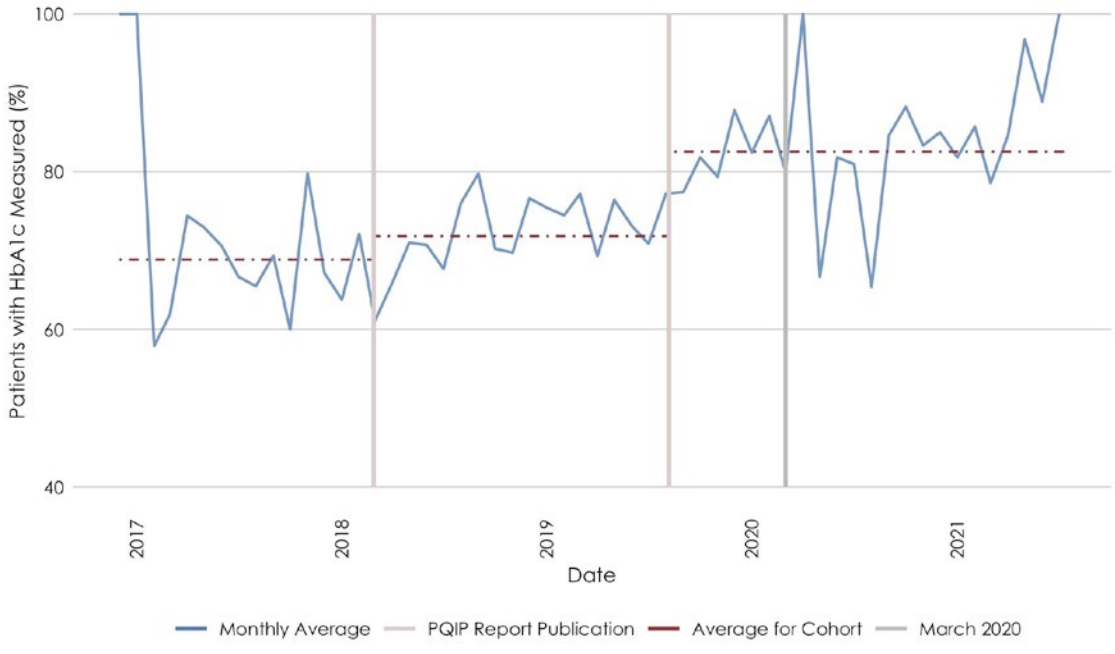
- separation of elective and emergency pathways therefore reducing risk of cancellation due to lack of a postoperative high acuity bed
- nurse/patient ratios optimised for patient needs and more efficient for the service
- calmer more suitable environment for patients recovering from surgery than the hustle and bustle of a critical care unit
- great opportunities for training of all healthcare professional staff.

Improvement highs and lows – HbA1c

HbA1c measurement in patients with diabetes

Good news: we are seeing incremental year on year progress in the proportion of patients with diabetes who are having their HbA1c measured preoperatively. This improvement in preoperative assessment was sustained even since COVID-19 impacted on services – a great result.

Figure 5 Percentage of patients with diabetes and HbA1c measured



But: the proportion of patients having surgery with a measured HbA1c above 8.5% remains high (20%). In Cohort 3, 20% of patients with diabetes having elective surgery, and 17% of patients having surgery for non-cancer indications still have poorly controlled diabetes. No specialty group is achieving an HbA1c <8.5% for more than 90% of their patient group who have diabetes.

Top tip: Care of patients with Diabetes

- If your site is not achieving more than 80% for this process measure, think about standardising the systems in your surgical and preoperative clinics to facilitate measurement becoming a routine part of preoperative care.
- If you are achieving 80%, it's time to start looking at why the remainder of patients aren't having it measured. What do the patients who miss out on HbA1c measurement have in common? Are they last minute bookings? Expedited cases? Certain specialty groups?
- Where we are measuring HbA1c, is the measurement meaningful? Is it valid (within three months), and are we taking it early enough in the perioperative planning journey to allow pre-optimisation?

The recent CPOC Care of People with Diabetes Undergoing Surgery' guideline makes interesting reading and is a good start when formulating a plan to improve care for your patients with diabetes.

Improvement highs and lows – anaemia

Good news: the proportion of patients who are presenting for surgery with moderate to severe anaemia (last measured haemoglobin prior to surgery <110) is decreasing over time (9.2% in Cohort 3 from 10.4% in Cohort 2 and 11.6% in Cohort 1). However, moderate to severe anaemia is still more common in women than men (11% vs 7.6%), and patients with moderate to severe anaemia are more likely to require a postoperative blood transfusion than patients with mild or no anaemia (1.1% vs 0.5%).

68% of all anaemic PQIP patients and 45% of patients with moderate to severe anaemia have not received treatment for anaemia prior to surgery. However, the way we capture anaemia data at the moment doesn't allow sites to identify patients who were initially anaemic and were successfully treated prior to their surgery (either by reaching an Hb level >130, or by increasing from their baseline when first seen in the perioperative pathway). To help sites in evaluating the effectiveness of their anaemia interventions, we are changing the way we collect haemoglobin data for patients who have had treatment for anaemia. For these patients only we will collect the lowest and highest readings in the three months prior to surgery.

Sharing ideas: Addressing anaemia at University College London Hospital (UCLH); a quality improvement initiative

'Despite having an established perioperative anaemia pathway at UCLH, PQIP data highlighted the challenges associated with treating perioperative anaemia in patients undergoing urgent cancer surgery. These patients often have less than 14 days between pre-assessment review and surgery. With preoperative pathways further stressed by COVID-19 we introduced a new pathway to facilitate on the day of surgery iron therapy. We recognise that whilst this doesn't give time for iron stores to increment pre-surgery, iron supplementation may help prevent further drops postoperatively when iron absorption is decreased'.

Communication for Improvement COMMS for Comms

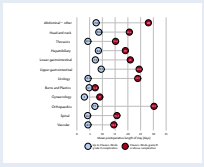
Collaborative, Objective, using Multiple media and Mindful messages with a Support plan in place

1 be Collaborative

Present the data as a shared resource and opportunity for improvement.

If less experienced members of the team present data, make sure a senior champion is there to support them.

2 be Objective



Present facts not opinions.
Let the data speak for themselves.
You can talk about your own ideas and opinions when presenting support plans (see point 5).

3 use Multiple-media

Face to face presentations, emails, texts, mobile messaging, coffee-room chat, theatre team briefs, posters, desktop screen savers...
so many different ways to share data!

4 be Mindful

We all go to work to give the best care to patients. If our data are not as good as hoped, we need to deal with this sensitively. If the news is good, shout it loud!

5 have a Support plan in place

Identify your improvement priorities, draft a plan and present it!
Build your team and evaluate your context (barriers and facilitators to improvement).
Engage clinicians and managers (and ideally patients!)
And try to make it fun! (cake can help).

DrEaMing (Drinking, Eating and Mobilising), Tubes and Drains

DrEaMing within 24h of surgery remains a key PQIP target. You could consider it to be 'Enhanced Recovery Lite!'

We look like we're doing better year on year in most specialties but there is still lots of variation between hospitals and specialties, even after excluding procedures for which there is a contraindication to one or more aspects of 24h DrEaMing.

Table 5 DrEaMing, nasogastric tubes and abdominal drains by specialty

	Cohort 1	Cohort 2	Cohort 3
Lower GI	n = 3,182	n = 5,829	n = 3,448
Drinking	85%	92%	93%
Eating	64%	65%	68%
Mobilising	79%	79%	80%
Dreaming	56%	57%	60%
No Abdominal Drain	57%	57%	59%
No NGT	91%	90%	90%
Hepatobiliary	n = 422	n = 788	n = 283
Drinking	79%	87%	89%
Eating	62%	68%	75%
Mobilising	68%	71%	70%
Dreaming	49%	57%	59%
No Abdominal Drain	33%	25%	28%
No NGT	64%	65%	71%
Abdo – Other	n = 200	n = 337	n = 159
Drinking	74%	91%	87%
Eating	55%	66%	60%
Mobilising	74%	83%	79%
Dreaming	48%	60%	52%
No Abdominal Drain	52%	53%	48%
No NGT	82%	88%	83%
Thoracics	n = 633	n = 1109	n = 862
Drinking	94%	98%	98%
Eating	93%	96%	96%
Mobilising	90%	94%	96%
Dreaming	86%	92%	93%
Spinal	–	n = 388	n = 351
Drinking	–	98%	95%
Eating	–	96%	91%
Mobilising	–	71%	68%
Dreaming	–	71%	65%
Burns and Plastics	–	n = 296	n = 297
Drinking	–	100%	99%
Eating	–	97%	97%
Mobilising	–	86%	86%
Dreaming	–	85%	86%

	Cohort 1	Cohort 2	Cohort 3
Urology	n = 866	n = 1885	n = 1,546
Drinking	92%	95%	97%
Eating	74%	82%	88%
Mobilising	80%	84%	88%
Dreaming	64%	74%	82%
No Abdominal Drain	45%	52%	47%
No NGT	94%	96%	94%
Upper GI	n = 510	n = 870	n = 390
Drinking	31%	35%	32%
Eating	14%	16%	13%
Mobilising	54%	60%	64%
Dreaming	12%	14%	11%
No Abdominal Drain	52%	44%	48%
No NGT	23%	29%	22%
Gynaecology	–	n = 115	n = 437
Drinking	–	95%	97%
Eating	–	91%	90%
Mobilising	–	89%	89%
Dreaming	–	85%	83%
No Abdominal Drain	–	87%	83%
No NGT	–	91%	91%
Head and Neck	n = 140	n =170	n = 56
Drinking	71%	63%	75%
Eating	62%	61%	73%
Mobilising	84%	78%	93%
Dreaming	60%	56%	70%
Orthopaedics	–	n = 636	n = 728
Drinking	–	99%	100%
Eating	–	97%	100%
Mobilising	–	66%	69%
Dreaming	–	66%	68%
Vascular	–	n = 52	n = 172
Drinking	–	98%	94%
Eating	–	90%	80%
Mobilising	–	73%	69%
Dreaming	–	69%	62%

How do they do it?! Successful enhanced recovery implementation in colorectal surgery

PQIP's qualitative research team has recently conducted a series of in-depth interviews with a number of our top recruiting and performing sites for colorectal surgery. These interviews were focused on the adoption of PQIP's enhanced recovery targets and their successful implementation. Several key themes have been identified and are described here.

Education

Continual education of the MDT on the evidence behind the programme and any changes in practice was identified as being essential for success.

Local Champions

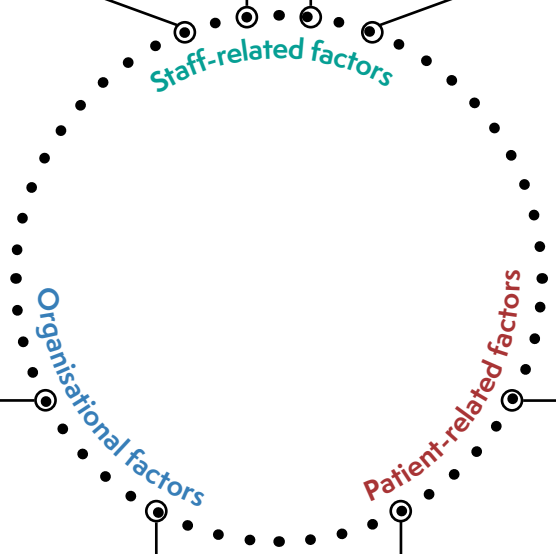
There was frequent mention of individuals who championed enhanced recovery processes and their role was considered influential to driving process improvement. Individuals described as champions of the enhanced recovery process were from a variety of roles including surgeons, specialist nurses or anaesthetists.

Teamwork and Communication

Strong collaborative relationships between surgeons, anaesthetists and the wider MDT is a great facilitator. Good communication among team members is really important, with a culture of problem solving, addressing barriers and providing support.

Positive Attitudes and Beliefs

Staff from sites performing well with PQIP's enhanced recovery targets gave a strong sense of agreement with the enhanced recovery targets. They described 'buy in' from all members of the MDT and a motivation to achieve the outcome measures.



Becoming the Standard of Care

It was commonly described that there is a culture of enhanced recovery in the department and that enhanced recovery targets are embedded in local protocols. Empowering the MDT to deliver care in line with the enhanced recovery ethos was commonly described as a facilitator to achieving the PQIP metrics.

Early Communication

Patient education was frequently perceived as having an important role within enhanced recovery. Setting patient expectations as early as possible during the patient's surgical journey by discussing staged goals was considered to be really important.

Regular Review of Results and Feedback

There was frequent mention of discussion of PQIP reports in combined surgical and anaesthetic meetings. PQIP outcome data is used to build interest in the programme and to highlight areas requiring improvement.

Contact with the Multidisciplinary Team

Frequent contact with members of the MDT who provided encouragement and reassurance regarding postoperative goals was considered to be important in improving patients' confidence in the recovery process.

The PQIP team have undertaken qualitative research with the aim of identifying barriers and facilitators to DrEaMing.

What factors have we identified as being facilitators of DrEaMing?

- Clear early postoperative surgical direction (particularly with regard to oral intake)
- Conceptual agreement and prioritisation by the multidisciplinary team
- Communication and coordination between the multidisciplinary team
- Early engagement from the patient (introduce the concept at surgery school and in patient information leaflets)
- Effective postoperative analgesia
- Lack of tubes, drains and catheters

Do you recognise any of these barriers to DrEaMing? Could they be a focus for local quality improvement?

- Inconsistencies in the timing of postoperative review or unclear documentation – could we protocolise or prescribe postoperative DrEaMing?
- Staffing levels – are there appropriately trained therapy assistants or ancillary healthcare staff to assist with mobilisation? Is there scope to introduce a mobility team?
- Perceptions that early mobilisation may cause harm – is there regular multidisciplinary assessment of a patient's DrEaMing status and the setting of individualised targets? Could review of DrEaMing be part of the routine daily clinical assessment?
- Postoperative ward destination – are the physical environment, equipment and resources compatible with early DrEaMing? Are there conflicting priorities, schedules or goals?

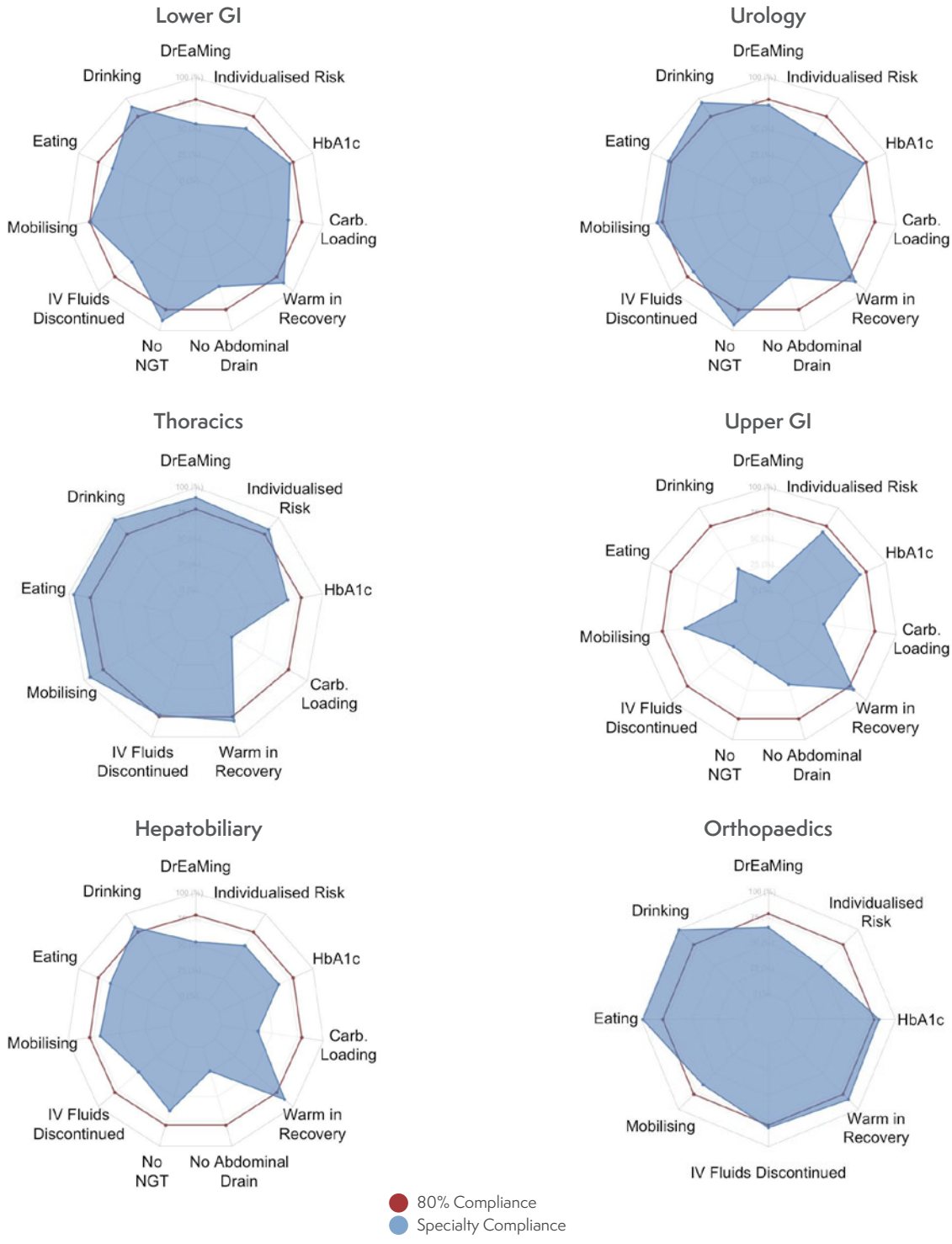
Top tip: Examples of practices that have facilitated DrEaMing

- A 'cup of tea in recovery' documented in the postoperative surgical plan/operation note (Torbay Hospital).
- Supplement drinks stored in a fridge which is accessible to patients (York Hospital).
- A dining area on the postoperative ward to be used by patients for all meals and afternoon tea (Torbay Hospital).
- Hospital gowns for the day of surgery and then encouraging patients to wear their own clothes as soon as possible after the operation, promoting independence and a good sense of wellbeing (Royal Hampshire County Hospital).
- Pain scores improved following the introduction of specialty specific postoperative pain bundles. Oral analgesia is prescribed at the time of surgery as part of a pain bundle, facilitating transition to oral medications at the earliest opportunity (Queen Elizabeth Hospital, Gateshead).

Processes of perioperative care

These radar charts show how we are doing in key processes in the PQIP specialties with the highest recruitment (>1000 patients). The red line indicates 80% compliance, which is generally considered to be the minimum level associated with a reliable process. You can see there is significant variation between specialties in some metrics, and consistently good practice in others – eg temperature management ('warm in recovery'). Every hospital will receive their own versions of these radar charts for specialties where they have recruited at least 10 patients – they should be a great talking point and a good place to start in local QI.

Figure 6 Performance in key process of care, by surgical specialty



Preoperative carbohydrate loading – what's the evidence?

The benefits of preoperative carbohydrate loading are well documented and include a reduction in surgical stress response and insulin resistance, improved patient satisfaction and well-being and minimised protein losses.[1,2]

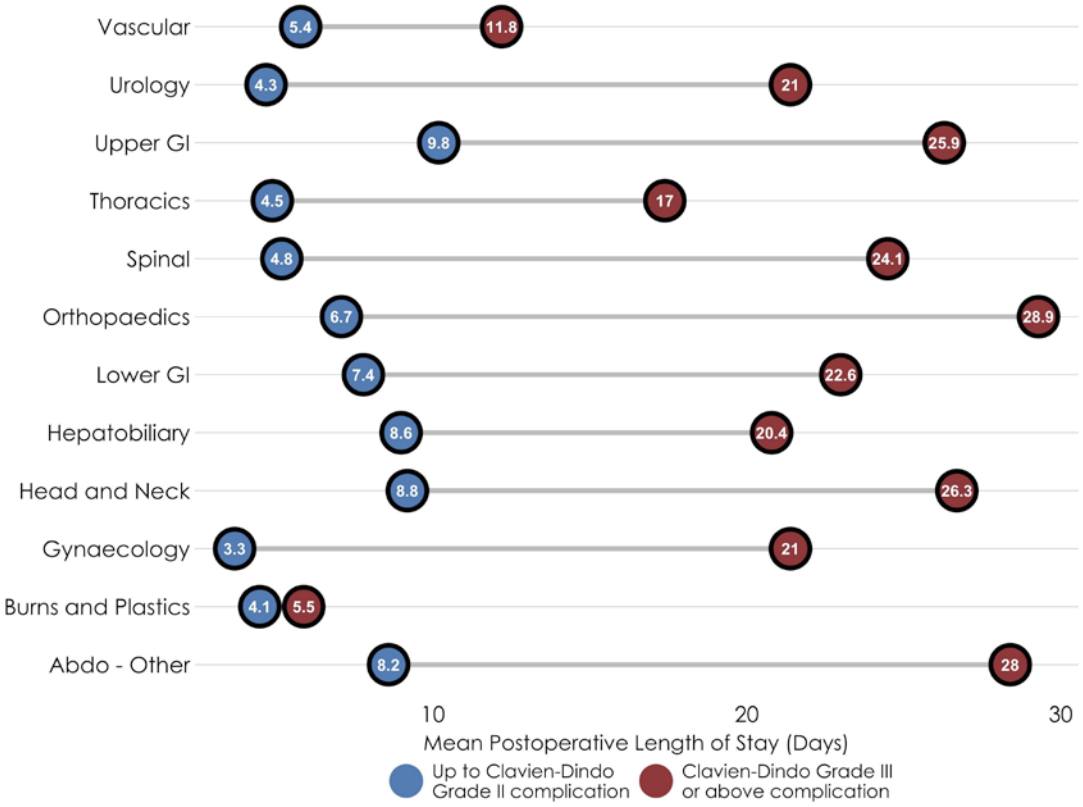
The Enhanced Recovery After Surgery (ERAS) society guidelines make strong recommendations for preoperative carbohydrate loading in the following specialties; abdominal/ colorectal, gynaecological, urological and thoracic surgery. There is a moderate recommendation for carbohydrate loading in oesophagectomy and a weak recommendation in liver surgery. The use of perioperative carbohydrate loading has not yet been fully evaluated in patients with Type 2 diabetes.

Inpatient complications and length of stay

Overall, hospital length of stay (LOS) continues to fall over time (Table 6) as does postoperative morbidity (Table 7). However, these are raw data and as we have also seen a change in case mix, with the proportion of 'lower risk' patients rising, these findings should be interpreted cautiously. We will work on risk-adjusted analyses of morbidity and length of stay for journal publications.

Consistent with the previous two reports, LOS in patients who experience a major complication is longer (21 days) than those who do not (six days). Although there is variation between specialties, the overall message that complications are associated with substantially increased LOS remains true across all patient groups (Figure 7).

Figure 7 Mean length of stay for patients with and without major complications. All patients (n=28,833)



[1]Ackerman RS, Tufts CW, DePinto DG, et al. How Sweet Is This? A Review and Evaluation of Preoperative Carbohydrate Loading in the Enhanced Recovery After Surgery Model. *Nutr Clin Pract* 2020;246–253.

[2]Fawcett WJ, Ljungqvist O. Starvation, carbohydrate loading, and outcome after major surgery. *BJA Education* 2017;312–316.

Table 6 Mean inpatient length of stay (days), by specialty

Specialty	Cohort 1, (N = 6, 076)	Cohort 2, (N = 13, 225)	Cohort 3, (N = 8,976)
Abdo – Other	11.0	10.3	9.2
Head and Neck	12.8	10.8	8.8
HPB	9.8	10.3	9.5
Lower GI	9.0	8.6	8.3
Thoracics	5.3	4.8	5.2
Upper GI	13.4	13.3	12.9
Urology	6.2	5.3	4.2
Burns and Plastics	–	4.9	3.4
Gynaecology	–	3.5	3.7
Orthopaedics	–	9.0	7.3
Spinal	–	5.8	5.8
Vascular	–	4.8	5.9

Table 7 Major postoperative morbidity on day 7 after surgery

Day 7 Morbidity Domain	Cohort 1, N = 6,374	Cohort 2, N = 13,308	Cohort 3, N = 9025
Pulmonary complication	6.2%	5.3%	4.5%
Gastrointestinal complication	15%	12%	8.5%
Cardiac complication	2.7%	2.2%	2.0%
Neurological complication	2.5%	1.8%	1.3%
Wound complication	4.5%	3.3%	2.1%
Haematological complication	0.8%	0.8%	0.5%
Pain complication	0.8%	0.9%	0.6%
Renal complication	1.4%	1.1%	1.1%
Infection complication	13%	12%	10%
Any complication	28%	24%	19%
Major complication*	19%	17%	14%

*Measured using the POMS major definition which includes any type of POMS defined morbidity of ≥ Clavien-Dindo level 2. For Gastrointestinal morbidity, as all definitions are Clavien Dindo level 1 we have shown all morbidity rather than just major. For more information see Grocott et al, 2007: *J Clin Epi* **60**;917–928 and Wong et al, 2017: *Brit J Anaes* **119(1)**;95–105.

Individualised pain management

A high proportion of patients continue to have severe pain in the first 24 hours after surgery. The percentage of patients who have pain on day one is much higher than in recovery, suggesting we shouldn't allow ourselves to be falsely reassured by patients who are comfortable in recovery. 13% of patients who have no or mild pain in recovery have severe pain on day one.

Spinal surgery bucks the general trend of our pain data, with high proportions of patients with recovery pain (24.4%) that are slightly lower but essentially unchanged on day one (22.8%). This might be a good improvement focus for sites who recruit spinal surgery patients.

Despite what the pain measurement data show us, less than 5% of patients are 'dissatisfied' or 'very dissatisfied' with their pain management.

Use our individualised pain management infographic as a starting point for local discussions, process mapping and improvement initiatives.

Figure 8 Frequency of severe pain in recovery and on day one. Cohort three patients by surgical specialty

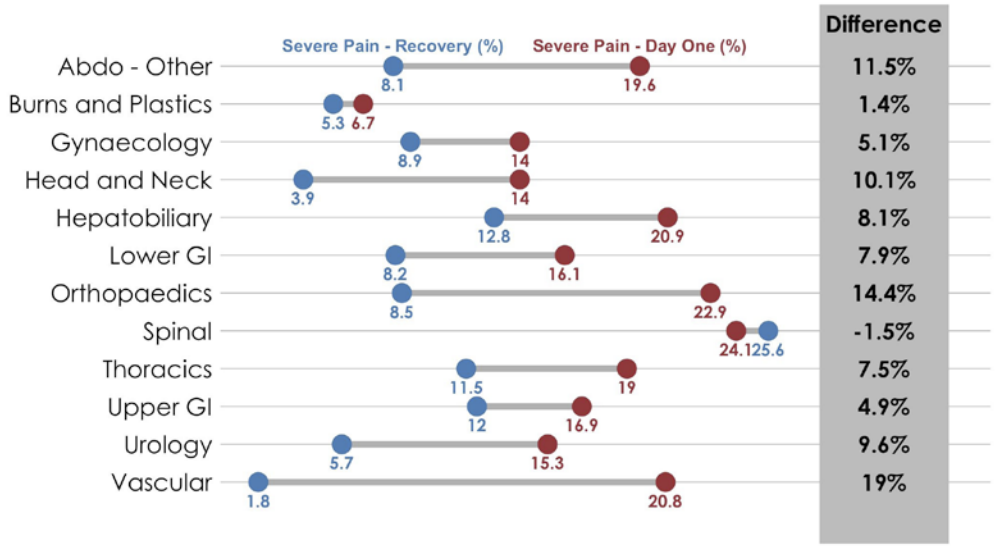
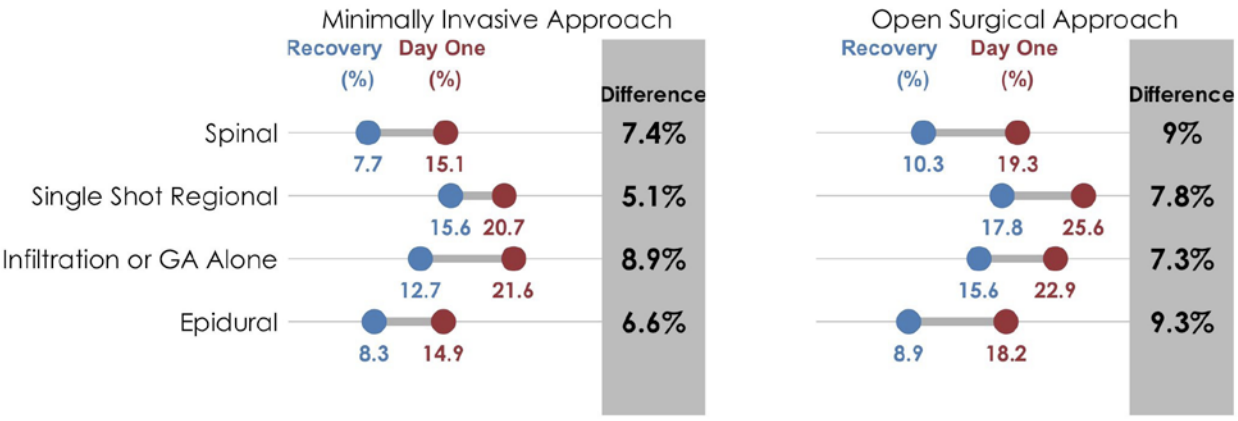


Figure 9 Frequency of severe pain in recovery and on day one for Lower GI patients in all cohorts, by surgical approach and analgesic technique



Improving perioperative pain

The 2021 PQIP report found around 1 in 5 patients experienced severe pain within 24h of surgery.
A much lower proportion (1 in 13) report pain in the immediate recovery period.
13% of patients who have no pain or mild pain in recovery have severe pain on day one.

Check your local data – do you have the same problem?
Then look below for our top tips!

Before

Preparatory materials
(eg Fitter Better Sooner) and/or
Surgery School

Pre-op referral for 'at risk' patients to pain management services
(eg patients with pain-related anxiety, chronic pain, long-term analgesia)

During

Local protocols for **multi-modal analgesia** including consideration of NSAIDs, gabapentinoids, low-dose ketamine etc where indicated

Procedure specific protocols for regional blocks, wound catheters, infiltration and regional anaesthesia

After

Local audit to identify **structural** issues, eg inadequate prescribing of regular meds or **process issues**, eg blocks wearing off overnight; inadequate prn meds
Remember: mobilisation may be painful and pre-empt accordingly

Consider if 'at risk' patients require **evening/overnight pain review**

When prescribing opioids and other strong painkillers, remember **'de-prescribing'** too

Longitudinal patient reported outcomes – quality of life

These data are fascinating! Thank you so much for all the work you put into collecting these long-term outcome data. We are really keen to bump up our data capture at 6 and 12 months, so please think about how you can put some resources into this – perhaps by recruiting trainees to help with phone calls, or Band 2, 3 or 4 colleagues who have done the appropriate Good Clinical Practice (GCP) training.

Figure 10 Responses to Euro-Quality of Life (EQ5D) questionnaire at admission, 6 months and 12 months

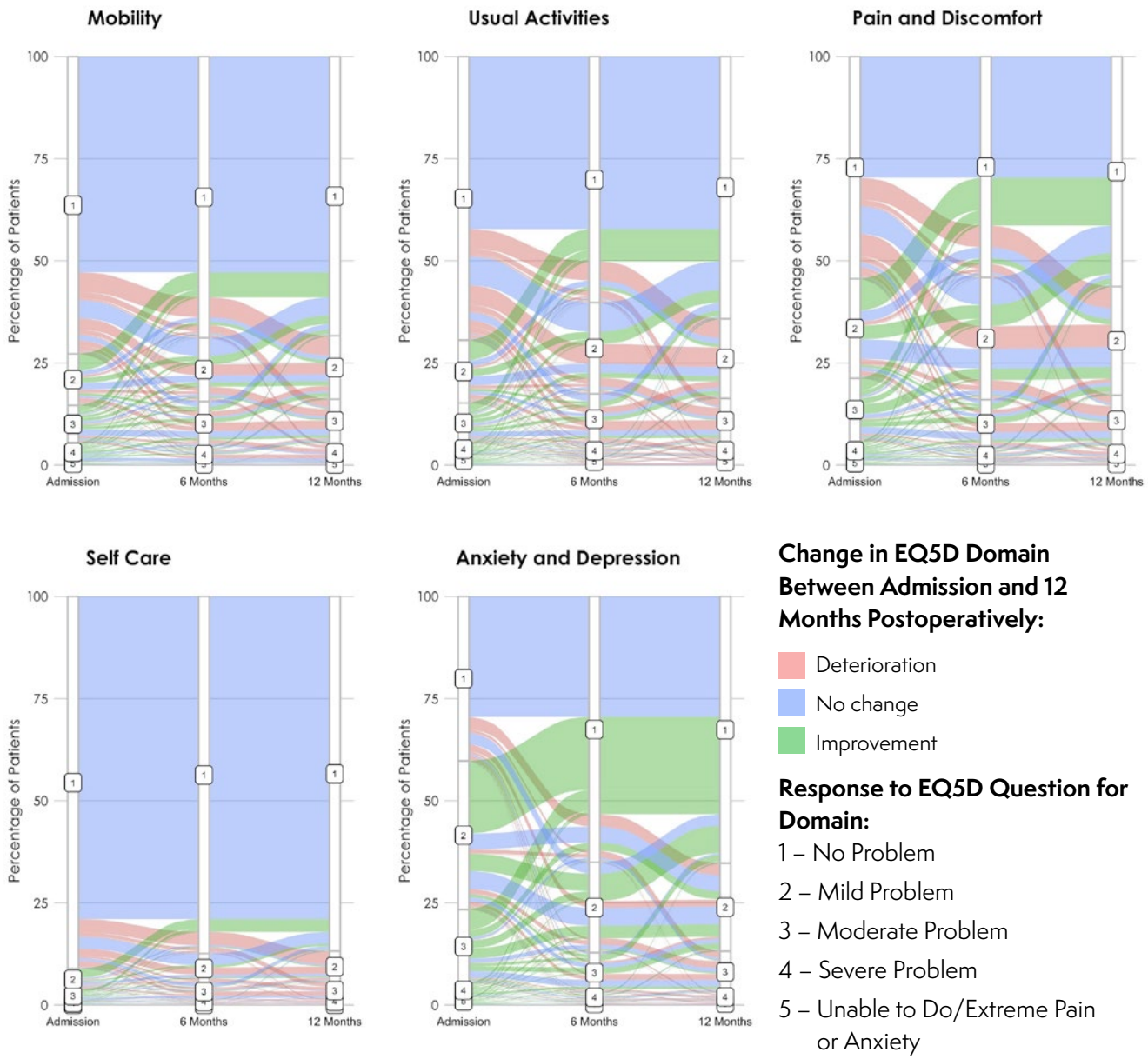
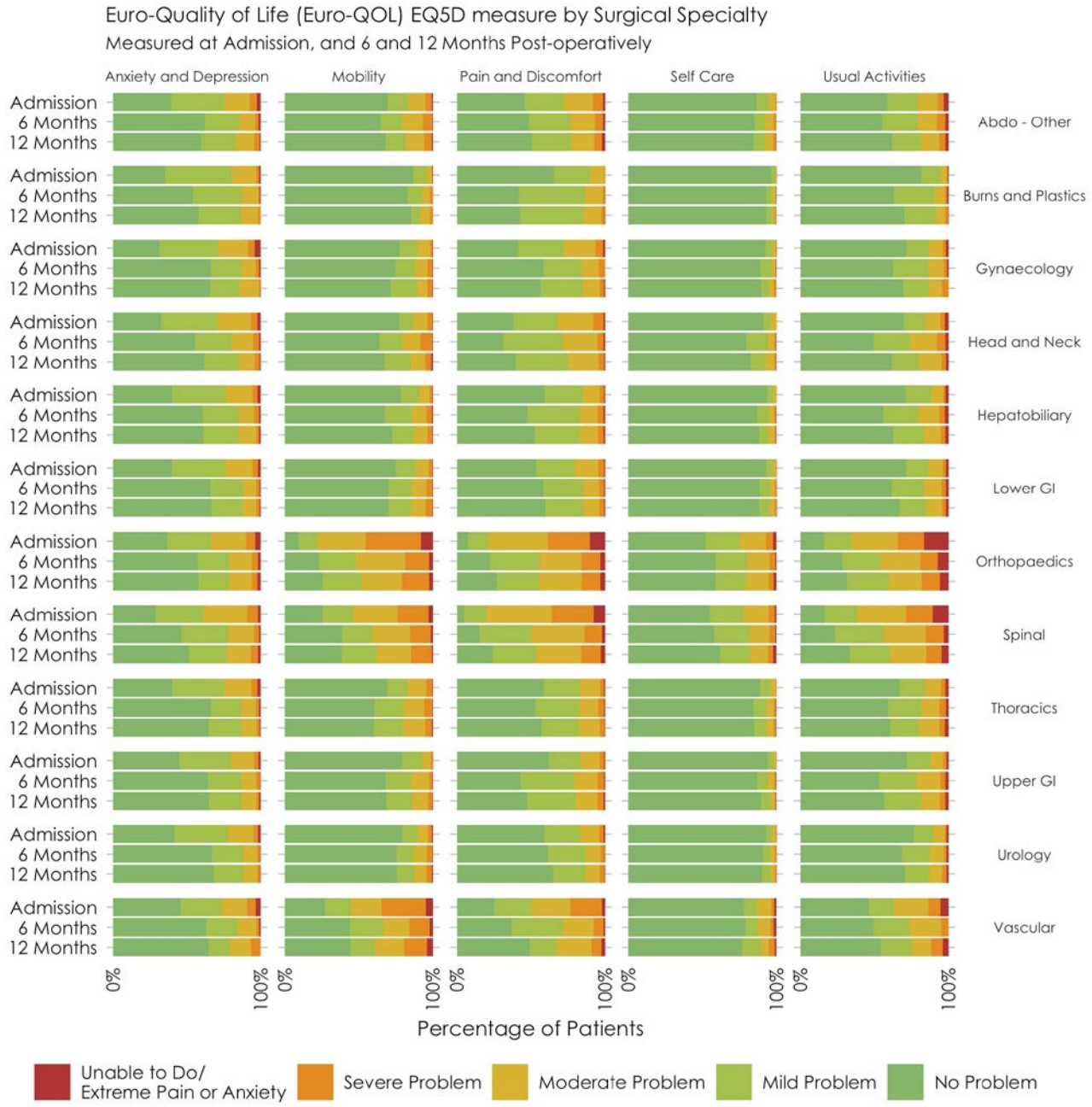


Figure 11 Responses to Euro-Quality of Life (EQ5D) questionnaire at admission, 6 months and 12 months, by surgical specialty



Positive deviance

Here we list the hospitals which are doing particularly well at various measures and have met or exceeded our national target for each process. We have only listed hospitals who recruited at least 50 patients in Cohort 3 overall, and at least 10 patients per specialty for individual specialty results.

Anaemia Management: National target >80% with preoperative Hb > 130

>80% of all patients having elective surgery in these hospitals had an Hb of >130: Sunderland Royal Hospital.

>80% of male patients having elective surgery in these hospitals had an Hb of >130: Churchill Hospital, Lister Hospital, Medway Maritime Hospital, Milton Keynes University Hospital, Nottingham City Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal Glamorgan Hospital, Royal National Orthopaedic Hospital, The Royal Orthopaedic Hospital, Torbay Hospital, University Hospital Coventry, Wrightington Hospital.

>80% of patients having elective surgery in these hospitals who had a blood loss of >500ml had an Hb of >130: Darent Valley Hospital, Gloucestershire Royal Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal Cornwall Hospital, Royal Free Hospital, Russells Hall Hospital, Sunderland Royal Hospital.

Diabetes (HbA1c measurement): National target 100%

These hospitals recruited at least 5 patients with diabetes and recorded HbA1c in 100% of those patients: Aintree University Hospital, Bristol Royal Infirmary, Churchill Hospital, Milton Keynes University Hospital, Royal Berkshire Hospital, Royal Liverpool University Hospital, Royal Victoria Infirmary, Torbay Hospital, Wythenshawe Hospital.

Individualised Risk Assessment: National target >80%

Aintree University Hospital, Airedale General Hospital, Birmingham Heartlands Hospital, Bristol Royal Infirmary, Broomfield Hospital , Hereford County Hospital, Norfolk and Norwich University Hospital , Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal Berkshire Hospital, Royal Blackburn Hospital, Royal Cornwall Hospital, Royal Lancaster Infirmary, Royal Liverpool University Hospital, Royal United Hospital, Royal Victoria Infirmary, St Thomas' Hospital, St. Peter's Hospital, Sunderland Royal Hospital, The Royal Orthopaedic Hospital, Torbay Hospital, University College Hospital, Yeovil District Hospital, York Hospital.

Carbohydrate loading: National target >80%

These hospitals gave >80% of all their PQIP patients in specific specialties preoperative carbohydrate loading: Lower GI: Bristol Royal Infirmary, Broomfield Hospital , Colchester General Hospital, Darent Valley Hospital, Epsom Hospital, Milton Keynes University Hospital, Norfolk and Norwich University Hospital , Royal Blackburn Hospital, Royal Glamorgan Hospital , Russells Hall Hospital , St. Peter's Hospital, Torbay Hospital, Yeovil District Hospital. **Hepatobiliary:** Bristol Royal Infirmary, Royal Blackburn Hospital. **Burns and Plastics:** Queen Victoria Hospital. **Head and Neck:** Queen Victoria Hospital. **Thoracics:** Bristol Royal Infirmary. **Upper GI:** University Hospital Wales. **Urology:** Epsom Hospital.

Drinking within 24hrs of surgery: National target >90%

>90% of patients in these hospitals were drinking within 24hrs: Aintree University Hospital, Airedale General Hospital, Birmingham Heartlands Hospital, Bristol Royal Infirmary, Charing Cross Hospital, Colchester General Hospital, Conquest Hospital, Darent Valley Hospital, Epsom Hospital, Hereford County Hospital, Lister Hospital, Medway Maritime Hospital, Milton Keynes University Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Pinderfields Hospital, Queen Victoria Hospital , Queen's Hospital, Burton upon Trent, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal Berkshire Hospital, Royal Blackburn Hospital, Royal Cornwall Hospital, Royal Lancaster Infirmary, Royal National Orthopaedic Hospital, Royal United Hospital, Russells Hall Hospital , St George's Hospital, St. Peter's Hospital, Sunderland Royal Hospital, The James Cook University Hospital, The Royal Orthopaedic Hospital, Torbay Hospital, University College Hospital, University Hospital Llandough, University Hospital Wales, University Hospital Coventry, Wrightington Hospital , Wythenshawe Hospital, Yeovil District Hospital, York Hospital.

By specialty – these are the hospitals where >90% of patients in specific specialties were drinking within 24h of surgery: Abdo – Other: Churchill Hospital. **Burns and Plastics:** Hereford County Hospital, Lister Hospital, Nottingham City Hospital, Pinderfields Hospital, Queen Victoria Hospital, The Royal Marsden Hospital, University Hospital Coventry. **Gynaecology:** Airedale General Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Pinderfields Hospital, Royal Glamorgan Hospital, University Hospital Wales, University Hospital Coventry. **Hepatobiliary:** Aintree University Hospital, Bristol Royal Infirmary, Nottingham City Hospital, Royal Blackburn Hospital, University Hospital Wales **Lower GI:** Aintree University Hospital, Airedale General Hospital, Birmingham Heartlands Hospital, Bristol Royal Infirmary, Charing Cross Hospital, Churchill Hospital, Colchester General Hospital, Conquest Hospital, Darent Valley Hospital, Epsom Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Lister Hospital, Milton Keynes University Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Pinderfields Hospital, Queen's Hospital, Burton upon Trent, Royal Berkshire Hospital, Royal Blackburn Hospital, Royal Cornwall Hospital, Royal Lancaster Infirmary, Royal Liverpool University

Hospital, Royal United Hospital, Royal Victoria Infirmary, Russells Hall Hospital , St George's Hospital, St. Peter's Hospital, Sunderland Royal Hospital, The James Cook University Hospital, Torbay Hospital, University Hospital Wales, University Hospital Coventry, Wythenshawe Hospital, Yeovil District Hospital, York Hospital. **Orthopaedics:** Aintree University Hospital, Darent Valley Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Pinderfields Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal National Orthopaedic Hospital, Sunderland Royal Hospital, The Royal Orthopaedic Hospital, University College Hospital, University Hospital Llandough, Wrightington Hospital, Yeovil District Hospital. **Spinal:** Gloucestershire Royal Hospital, Lister Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal National Orthopaedic Hospital, St. Peter's Hospital, The Royal Orthopaedic Hospital, University Hospital Coventry. **Thoracics:** Birmingham Heartlands Hospital, Bristol Royal Infirmary, Norfolk and Norwich University Hospital , St George's Hospital, St Thomas' Hospital, University College Hospital, University Hospital Llandough, Wythenshawe Hospital. **Urology:** Birmingham Heartlands Hospital, Broomfield Hospital , Charing Cross Hospital, Darent Valley Hospital, Epsom Hospital, Hereford County Hospital, Lister Hospital, Medway Maritime Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Pinderfields Hospital, Royal Berkshire Hospital, Royal Blackburn Hospital, Royal Cornwall Hospital, Royal United Hospital, Russells Hall Hospital , Salford Royal Hospital, St George's Hospital, St Thomas' Hospital, Sunderland Royal Hospital, Torbay Hospital, University College Hospital, University Hospital Wales, University Hospital Coventry. **Vascular:** Lister Hospital, Musgrove Park Hospital, Royal Blackburn Hospital, University Hospital Wales.

Eating within 24hrs of surgery: National target >80%

>80% of patients in these hospitals were eating within 24hrs: Aintree University Hospital, Airedale General Hospital, Bristol Royal Infirmary, Charing Cross Hospital, Hereford County Hospital, Lister Hospital, Medway Maritime Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Queen Victoria Hospital , Queen's Hospital, Burton upon Trent, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal Berkshire Hospital, Royal Cornwall Hospital, Royal Glamorgan Hospital , Royal Lancaster Infirmary, Royal National Orthopaedic Hospital, Royal United Hospital, St George's Hospital, St. Peter's Hospital, Sunderland Royal Hospital, The Royal Orthopaedic Hospital, Torbay Hospital, University Hospital Llandough, University Hospital Wales, Wrightington Hospital , Wythenshawe Hospital, York Hospital.

By specialty – these are the hospitals where >80% of patients in specific specialties were eating within 24h of surgery: Abdo – Other: Churchill Hospital. **Burns and Plastics:** Hereford County Hospital, Lister Hospital, Nottingham City Hospital, Pinderfields Hospital, Queen Victoria Hospital, The Royal Marsden Hospital. **Gynaecology:** Airedale General Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Pinderfields Hospital, Royal Glamorgan Hospital, University Hospital Wales, University Hospital Coventry. **Head and Neck:** Aintree University Hospital. **Hepatobiliary:** Aintree University Hospital, Churchill Hospital, University Hospital Wales. **Lower GI:** Bristol Royal Infirmary, Broomfield Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital, Queen's Hospital, Burton upon Trent, Royal Berkshire Hospital, Royal Cornwall Hospital, Royal Glamorgan Hospital, Royal Lancaster Infirmary, Royal United Hospital, Royal Victoria Infirmary, Sunderland Royal Hospital, University Hospital Wales, Wythenshawe Hospital, York Hospital. **Orthopaedics:** Aintree University Hospital, Darent Valley Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Pinderfields Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal National Orthopaedic Hospital, Sunderland Royal Hospital, The Royal Orthopaedic Hospital, University College Hospital, University Hospital Llandough, Wrightington Hospital, Yeovil District Hospital. **Spinal:** Gloucestershire Royal Hospital, Lister Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Royal National Orthopaedic Hospital, St. Peter's Hospital, The Royal Orthopaedic Hospital, University Hospital Coventry. **Thoracics:** Birmingham Heartlands Hospital, Bristol Royal Infirmary, Norfolk and Norwich University Hospital, St George's Hospital, St Thomas' Hospital, University College Hospital, University Hospital Llandough, Wythenshawe Hospital. **Urology:** Birmingham Heartlands Hospital, Broomfield Hospital , Charing Cross Hospital, Darent Valley Hospital, Epsom Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Pinderfields Hospital, Royal Berkshire Hospital, Royal Cornwall Hospital, Royal United Hospital, Russells Hall Hospital , Salford Royal Hospital, St George's Hospital, Sunderland Royal Hospital, Torbay Hospital, University College Hospital, University Hospital Wales, University Hospital Coventry, Wythenshawe Hospital. **Vascular:** Musgrove Park Hospital, Royal Blackburn Hospital, University Hospital Wales.

Mobilising within 24hrs of surgery: National target >85%

>85% of patients in these hospitals were mobilising within 24hrs: Aintree University Hospital, Airedale General Hospital, Bristol Royal Infirmary, Churchill Hospital, Colchester General Hospital, Darent Valley Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Medway Maritime Hospital, Milton Keynes University Hospital, Norfolk and Norwich University Hospital , Pinderfields Hospital, Queen Victoria Hospital , Queen's Hospital, Burton upon Trent, Royal Berkshire Hospital, Royal Cornwall Hospital, Russells Hall Hospital , Salford Royal Hospital, St George's Hospital, St Thomas' Hospital, St. Peter's Hospital, Sunderland Royal Hospital, University College Hospital, University Hospital Llandough, Wythenshawe Hospital, York Hospital.

By specialty – these are the hospitals where >85% of patients in specific specialties were mobilising within 24h of surgery: Abdo – Other: Churchill Hospital, Salford Royal Hospital. **Burns and Plastics:** Hereford County Hospital, Pinderfields Hospital, Queen Victoria Hospital. **Gynaecology:** Airedale General Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Pinderfields Hospital, Royal Glamorgan Hospital, University Hospital Coventry. **Head and Neck:** Aintree University Hospital, Broomfield Hospital. **Lower GI:** Aintree University Hospital, Airedale General Hospital, Bristol Royal Infirmary, Churchill Hospital, Colchester General Hospital, Darent Valley Hospital, Gloucestershire Royal Hospital, Milton Keynes University Hospital, Norfolk and Norwich University Hospital , Queen's Hospital, Burton upon Trent, Royal Berkshire Hospital, Royal Cornwall Hospital, Royal Liverpool University Hospital, Royal Victoria Infirmary, Russells Hall Hospital , Salford Royal Hospital, St. Peter's Hospital, Sunderland Royal Hospital, Wythenshawe Hospital, York Hospital. **Orthopaedics:** Aintree University Hospital, Lister Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Yeovil District Hospital. **Spinal:** Gloucestershire Royal Hospital, St. Peter's Hospital, The Royal Orthopaedic Hospital, University Hospital Coventry. **Thoracics:** Birmingham Heartlands Hospital, Bristol Royal Infirmary, Norfolk and Norwich University Hospital , St George's Hospital, St Thomas' Hospital, University College Hospital, University Hospital Llandough, Wythenshawe Hospital. **Upper GI:** Salford Royal Hospital, St Thomas' Hospital. **Urology:** Charing Cross Hospital, Darent Valley Hospital, Epsom Hospital, Hereford County Hospital, Lister Hospital, Medway Maritime Hospital, Musgrove Park Hospital, Norfolk and Norwich University Hospital , Nottingham City Hospital, Pinderfields Hospital, Royal Berkshire Hospital, Royal United Hospital, Russells Hall Hospital , Salford Royal Hospital, St Thomas' Hospital, Sunderland Royal Hospital, Torbay Hospital, University College Hospital, University Hospital Coventry, Wythenshawe Hospital.

DrEaMing within 24hrs of surgery: National target >80%

>80% of patients in these hospitals were DrEaMing within 24hrs: Queen Victoria Hospital , Queen's Hospital, Burton upon Trent, Royal Cornwall Hospital, Sunderland Royal Hospital, University Hospital Llandough.

By specialty – these are the hospitals where >80% of patients in specific specialties were DrEaMing within 24h of surgery: Burns and Plastics: Hereford County Hospital, Pinderfields Hospital, Queen Victoria Hospital. **Gynaecology:** Airedale General Hospital, Gloucestershire Royal Hospital, Hereford County Hospital, Lister Hospital, Musgrove Park Hospital, Royal Glamorgan Hospital , University Hospital Coventry. **Lower GI:** Bristol Royal Infirmary, Royal Cornwall Hospital, Sunderland Royal Hospital. **Orthopaedics:** Aintree University Hospital, Lister Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Yeovil District Hospital. **Spinal:** Gloucestershire Royal Hospital, St. Peter's Hospital, University Hospital Coventry. **Thoracics:** Birmingham Heartlands Hospital, Bristol Royal Infirmary, Norfolk and Norwich University Hospital, St George's Hospital, St Thomas' Hospital, University College Hospital, University Hospital Llandough, Wythenshawe Hospital. **Urology:** Darent Valley Hospital, Epsom Hospital, Hereford County Hospital, Lister Hospital, Nottingham City Hospital, Pinderfields Hospital, Russells Hall Hospital, Sunderland Royal Hospital, Torbay Hospital, University Hospital Coventry.

PQIP Perioperative Quality Improvement Programme

Collaborators

Our thanks to all collaborators, including any not listed below, who work so hard at local level to deliver PQIP.

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Sue Abdy
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Acknowledgements

Our thanks to all our collaborators at local level and to all the patients who have participated in the study.

PQIP is supported by the National Institute for Health Research's Clinical Research Network through portfolio adoption.

PQIP is funded by the Royal College of Anaesthetists, the Health Foundation, and the UCL/UCLH Surgical Outcomes Research Centre which is funded in part by the University College London Hospitals National Institute for Health Research (NIHR) Biomedical Research Centre. All views expressed in this report are those of the authors and not of the NIHR or Department of Health and Social Care.

PQIP is delivered by the NIAA Health Services Research Centre and sponsored by University College London.

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