



Royal College
of Surgeons
of England

ADVANCING SURGICAL CARE

Chole-QuIC3 Learning Report

June 2026





Contents

List of abbreviations	4
Summary	5
1. Background and context	6
RCS England vision and strategic aims	6
QI at RCS England	6
Chole-QulC	6
CholeQulC-ER	7
Chole-QulC3	7
2. Design and delivery	8
Process followed	8
Project timeline	9
Theory of change	10
Study design	11
Data collection	11
Project benefits	12
3. Results analysis	13
Overview of participation	13
QI data collected	14
Results from QI data	16
Feedback from Chole-QulC3 sites	20
4. New processes tested and reviewed	21
Gaining a deeper understanding of the hospital system	21
Creating additional capacity	21
Developing new patient pathways/processes	21
Building new relationships and ownership of the programme	22
5. Case studies	23
Dudley Group NHS Foundation Trust	23
James Paget University Hospitals NHS Foundation Trust	26
6. Conclusions	30
Project team	31
References	32

List of abbreviations

CEPOD – Confidential Enquiry into Perioperative Deaths

Chole-QulC – Cholecystectomy Quality Improvement Collaborative

CholeQulC-ER – Cholecystectomy Quality Improvement Collaborative – Extended Reach

EGS – Emergency General Surgery

HES – Hospital Episode Statistics

NHS – National Health Service

NICE – National Institute for Health and Care Excellence

PEDW – Patient Episode Database for Wales

QI – Quality Improvement

RCS England – Royal College of Surgeons of England

Summary

Since 2016, RCS England has run three Cholecystectomy Quality Improvement Collaborative ([Chole-QulC](#)) projects.¹ These have been multisite national improvement collaboratives focused on improving the quality of care for patients with acute gallstone disease.

The third collaborative project, Chole-QulC3, ran from 1 April 2021 (with the formal launch on 7 July 2021) until 1 July 2022. The aim of the programme was to provide support to a range of clinically led improvement teams to work collaboratively to improve their emergency gallstone service using QI methodologies. The main outcome measure was the proportion of patients admitted with acute gallstone disease who receive their cholecystectomy within 8 days of presentation at hospital, matching current guidelines from [NICE](#) for acute cholecystitis (surgery within 7 days of diagnosis, plus 1 additional day from presentation to allow time for diagnosis).²

All of the 12 sites fully participated in the programme, collected data regularly and tested a range of change ideas that mapped against the project's [theory of change](#). Analysis of locally collected QI data indicates that the 12 participating sites improved their 8-day surgery rates and overall mean time to surgery: 8-day rates increased from 33% in the first quarter to 60% in the final quarter and the mean time to surgery reduced from over 30 days to under 8 days. These results align closely with the evaluations of the previous two projects, Chole-QulC and CholeQulC-ER.

Some sites achieved sustained high quality with regard to time to surgery. These sites all consistently collected near-real-time data. Moreover, all had regular team meetings to review change ideas and plan new ideas, all had negotiated support and capacity for inpatient or elective surgery on an urgent pathway, and all had effective processes to manage this capacity.

As half of the sites had participated in at least one of the previous Chole-QulC projects, this round enabled a comparison between new and returning sites. All of the six returning sites were able to consistently collect complete near-real-time data whereas two of the six new sites achieved this. (All sites had regular data collection throughout.) This reinforces conclusions from previous rounds that regular and complete data collection is possible for teams carrying out QI for the first time but that familiarity with QI data collection enables complete data collection from all sites.

Five of the six returning sites achieved periods of sustained high quality with regard to time to surgery, with three demonstrating sustained quality over 4–9 months. By comparison, three of the new sites displayed pockets of quality, with one showing sustained high quality over many months.

1. Background and context

RCS England vision and strategic aims

RCS England's vision is "to see excellent surgical care for everyone".³ Fundamental to this vision is the strategic aim of "continually improving the practice, standards and safety of surgical care". Consequently, since 2015, RCS England has prioritised playing a leading role in QI in the surgical profession and sharing best practice, recognising its potential to drive meaningful change in patient care.⁴

QI at RCS England

The RCS England QI project team offers the following three services to the surgical community:

1. QI hub

The [QI hub](#) is located on the RCS England website and is free to access.⁵ In the hub, there are resources that are designed to support members of the surgical care team who want to #TryQI.

2. QI networks

We ran focus groups in England and Wales with members of the surgical care team. The aim of these sessions was to understand opportunities for setting up a [QI network](#) in surgery. This work was supported by the Health Foundation.⁶

3. QI collaboratives

RCS England [QI collaboratives](#) follow the Breakthrough Series collaborative approach from the Institute for Healthcare Improvement.⁷ This is a short-term learning approach that brings together a number of teams from different hospitals to seek improvement in a focused topic area.

More information is available at: www.rcseng.ac.uk/qicollaboratives

Chole-QulC

When scoping our first QI collaborative, the RCS England project team decided that acute gallstone disease should be the area of care to focus on. The [Getting It Right First Time](#) general surgery report identified that there is wide variation across the UK in the care provided to patients with acute gallstone disease.⁸ Gallstone-related disease accounts for a third of all EGS admissions.⁹ These conditions can be debilitating, reducing the quality of life for patients awaiting surgery, and could lead to serious complications for patients such as pancreatitis. Given the wide variation of care, the number of patients who have the disease and how it can affect their quality of life, the project team felt that focusing on this area of care had the potential to have a positive impact on the lives of a large number of patients.

The Cholecystectomy Quality Improvement Collaborative (Chole-QulC) was subsequently set up and the programme ran from October 2016 to January 2018.¹ Thirteen sites were recruited to take part in the project: twelve NHS trusts from England and one health board from Wales.

The QI goal of the project was that 80% of eligible, admitted patients* should receive their cholecystectomy within 8 days of presentation at hospital. This goal was in line with guidance from [NICE](#).²

*Eligible patients defined as: patients with acute biliary pain/cholecystitis or gallstone pancreatitis who are assessed as medically fit for surgery and choose to have surgery on an urgent basis

Chole-QulC outcomes

Two evaluation papers were published. The first, titled *Effectiveness of a quality improvement collaborative in reducing time to surgery for patients requiring emergency cholecystectomy*, was published in [BJS Open](#).¹⁰ In this paper, we demonstrated that the cohort of participating hospitals substantially improved outcomes for patients by significantly reducing time to surgery for those needing an urgent cholecystectomy. Our linked paper, *Understanding the influences on successful quality improvement in emergency general surgery: learning from the RCS Chole-QulC project*, was published in [Implementation Science](#).¹¹ This paper discusses the results of a process evaluation and outlines some of the influences on success.

CholeQulC-ER

Our Chole-QulC evaluation was crucial in providing evidence that a collaborate approach was a conducive and effective model to improve care for patients with gallstone disease by reducing time to surgery for this patient group. This improvement was dependent on surgical teams dedicating time on a short-term basis to plan and test solutions to improve their gallstone service.

The Cholecystectomy Quality Improvement Collaborative – Extended Reach ([CholeQulC-ER](#)) project, the second iteration of our collaborative focusing on gallstone disease, was set up to build on the success of Chole-QulC and expand its reach throughout the UK.^{1,12} When designing the CholeQulC-ER programme, we applied the lessons we learnt from Chole-QulC. The project was the first subscription-based QI collaborative run by RCS England, with participating organisations paying a one-off fee of £8,000 to cover the cost of running the project. A total of 23 sites from 22 trusts/health boards from across England, Wales and Northern Ireland participated in CholeQulC-ER.

The programme launched in July 2019 and was due to close in June 2020. However, we adapted the timeline in response to the COVID-19 pandemic and the temporary suspension of laparoscopic surgery. Planned in-person meetings were moved online and the project was extended to December 2020 so we could continue to support the cohort as they restarted their gallstone service.

CholeQulC-ER outcomes

Our [CholeQulC-ER learning report](#) shows that the CholeQulC-ER cohort overall improved its 8-day surgery rates and mean time to surgery during the collaborative period despite the considerable challenges posed by the pandemic.¹² The majority of CholeQulC-ER sites saw an increase in their national ranking for 8-day surgery rates. One site increased its ranking by 81 places, and the top two 8-day rates in England and Wales are now held by CholeQulC-ER sites. These findings, along with positive participant feedback, led us to conclude that a subscription model is an effective approach for enhancing care for patients with gallstone disease.

Chole-QulC3

Given the success of the Chole-QulC and CholeQulC-ER programmes, the decision was made to run a third collaborative round to continue to work with sites across the UK to improve their gallstone service.

2. Design and delivery

Process followed

Project aim: reduce variation and improve the quality of care for patients with acute gallstone disease

Project goal: 80% of eligible, admitted patients* receive their cholecystectomy within 8 days of presentation at hospital, in line with guidance from [NICE](#).²

RCS England invited all NHS trusts and health boards across the UK to join the Chole-QulC3 programme. Given the success of the subscription-based model employed for CholeQulC-ER, we followed this model again. When registering to join the project, trusts/health boards needed to pay a one-off subscription fee of £8,000 to cover RCS England's costs of running the collaborative. Participating sites agreed to cover the costs of their travel to and expenses resulting from any in-person meetings. In addition, we required the site's senior management team to confirm that they supported the changes needed to improve the pathway of care for patients with acute gallstone disease.

Twelve sites from eleven trusts/health boards registered to join the programme: six returning sites that had been part of the CholeQulC-ER cohort and six new sites with which we had not worked previously. There were nine NHS trusts from England, one health board from Wales, and one health and social care trust from Northern Ireland. See **Table 1** for a full list of the Chole-QulC3 sites.

Table 1: Sites participating in the Chole-QulC3 programme

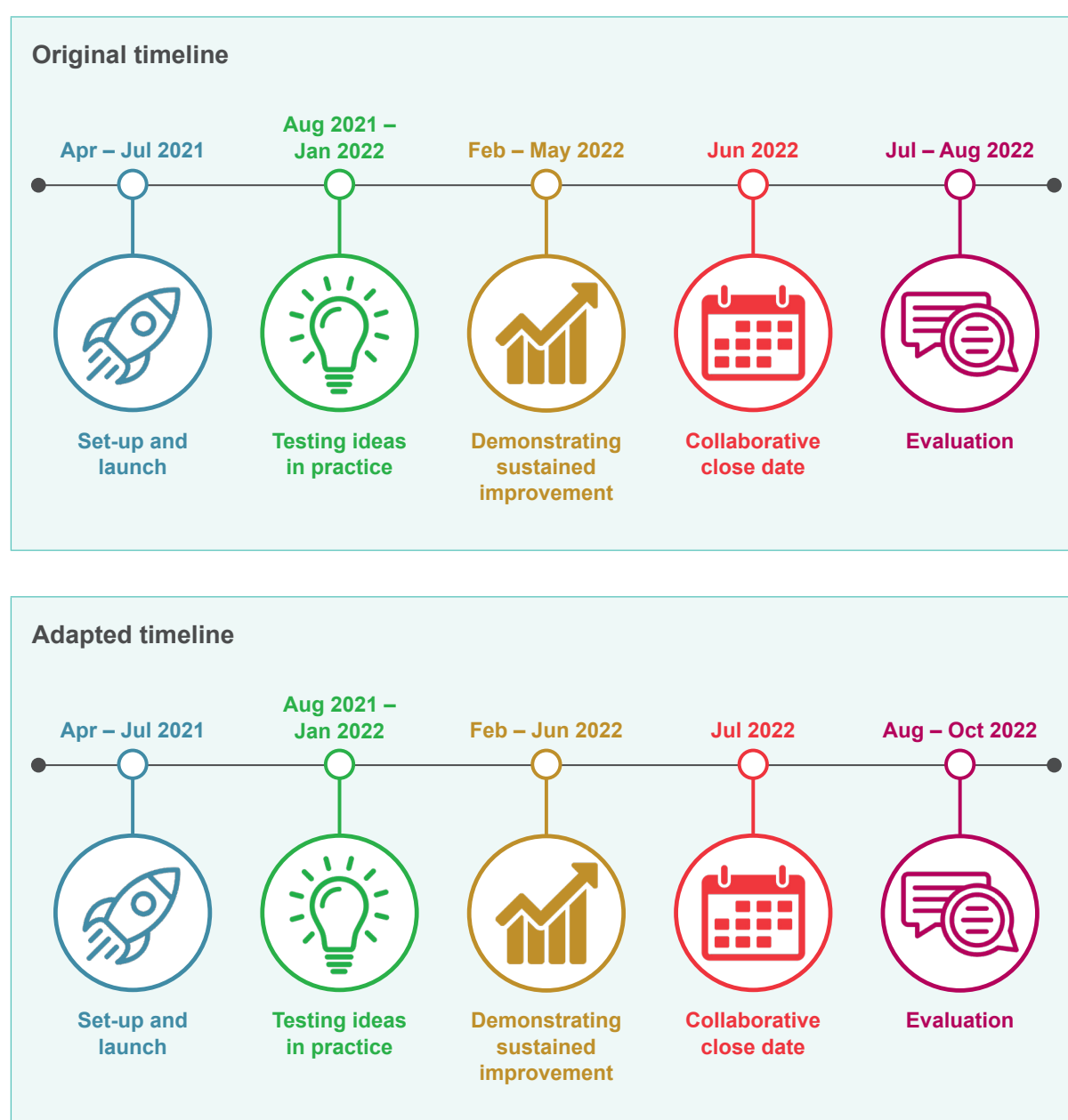
1	Cwm Taf Morgannwg University Health Board	Returning (3rd round)
2	Dudley Group NHS Foundation Trust	Returning (2nd round)
3	Belfast Health and Social Care Trust	Returning (2nd round)
4	North Cumbria Integrated Care NHS Foundation Trust	Returning (2nd round)
5	Royal Free London NHS Foundation Trust	Returning (2nd round)
6	East Lancashire Hospitals NHS Trust	Returning (2nd round)
7	James Paget University Hospitals NHS Foundation Trust	New
8	Bedfordshire Hospitals NHS Foundation Trust	New
9	University Hospitals Bristol and Weston NHS Foundation Trust	New
10	Mid and South Essex NHS Foundation Trust	New
11	Liverpool University Hospitals NHS Foundation Trust a) Aintree University Hospital b) Royal Liverpool University Hospital	New

*Eligible patients defined as: patients with acute biliary pain/cholecystitis or gallstone pancreatitis who are assessed as medically fit for surgery and choose to have surgery on an urgent basis

Project timeline

The project launched in April 2021 and was scheduled to close in May 2022. During the course of the programme, it became clear that surgical teams were facing extremely challenging times, and capacity in terms of personnel and theatre slots continued to be an issue. Many teams had been unable to implement changes they had planned owing to the continuing impact of the COVID-19 pandemic. The RCS England project team agreed to extend the project, giving local QI teams more time to introduce changes and improve patient pathways. These changes had the potential not only to improve patient care for this patient group but also to relieve pressure on the system more widely. The decision was therefore taken to extend the project and to close in July 2022, rather than May as originally planned. **Figure 1** displays the original and adapted Chole-QulC3 timelines.

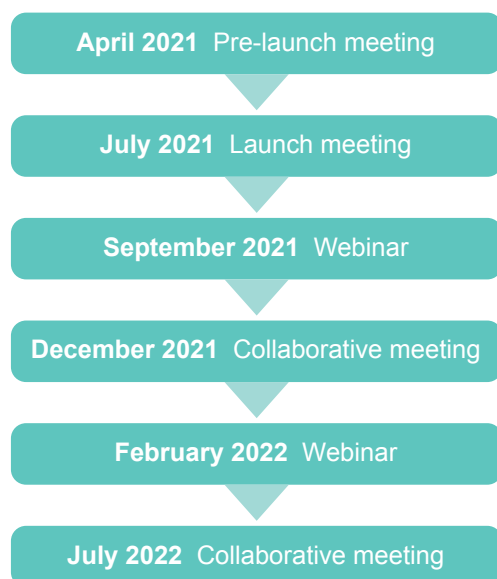
Figure 1: The original Chole-QulC3 project timeline and the adapted timeline



2. Design and delivery

Sites attended four national meetings (the pre-launch meeting, the launch meeting and two other collaborative meetings) and two webinars (**Figure 2**). These meetings allowed sites to share successes and challenges associated with making changes to their gallstone service. Each site received two site reports: a mid-project report and a final site report. Both reports gave an outline of the whole cohort's achievements, including a bespoke section detailing each site's progress and suggested improvement actions. In addition, sites had ongoing telephone and email support as well as coaching from QI consultants and the project's clinical lead. Throughout the collaborative, teams designed and implemented change ideas, and then tested the impact of these changes on their gallbladder service.

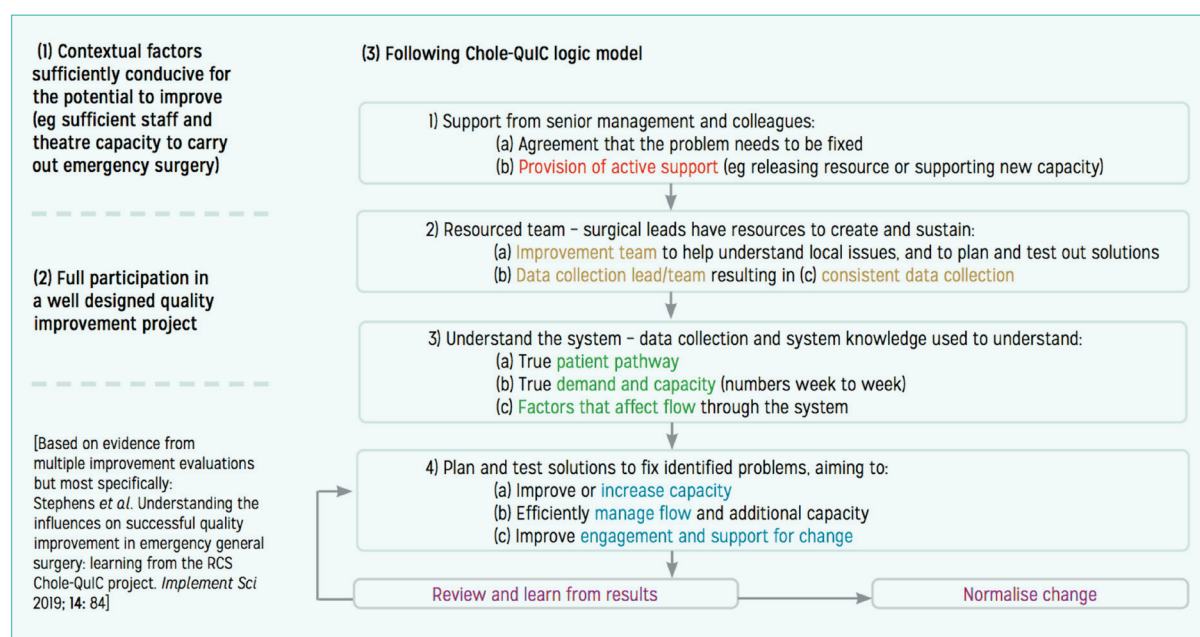
Figure 2: Schedule of whole-collaborative events for Chole-QulC3



Theory of change

The Chole-QulC3 project followed the theory of change that was developed, tested and refined during the first collaborative, Chole-QulC, and redefined during CholeQulC-ER (**Figure 3**).

Figure 3: Chole-QulC theory of change



Study design

Informed consent that data from the QI collaborative could be used for evaluation of the project was obtained from all participants at the point of registration to Chole-QulC3. These data are intended to be used as self-evaluation to share learning from the collaborative process.

All participants were asked to complete an end-of-project questionnaire. We received responses from 10 sites out of a possible 12. Participants' feedback and perspectives have been used in this report, and will also be used to improve future RCS England QI collaboratives.

Data collection

The project used one data source: [CaseCapture](#), a local data platform run by Net Solving. (now [Athera Healthcare](#)). The platform could be used on smartphones, tablets, laptops and desktops. We tweaked the data capture fields compared with those of the CholeQulC-ER programme¹² based on feedback from our sites. An extra category was added for the 'cholecystectomy decision' field so that there was a distinction between patients discharged on an emergency or urgent pathway and those discharged on an elective pathway (**Figure 4**). Output graphs presenting data for the decision category were updated to show these new options. Two new optional fields were also added for sites to use if they wished: a diagnosis box and a free-text comments box. If sites chose to enter data in those fields, only they would be able to see the related information collected.

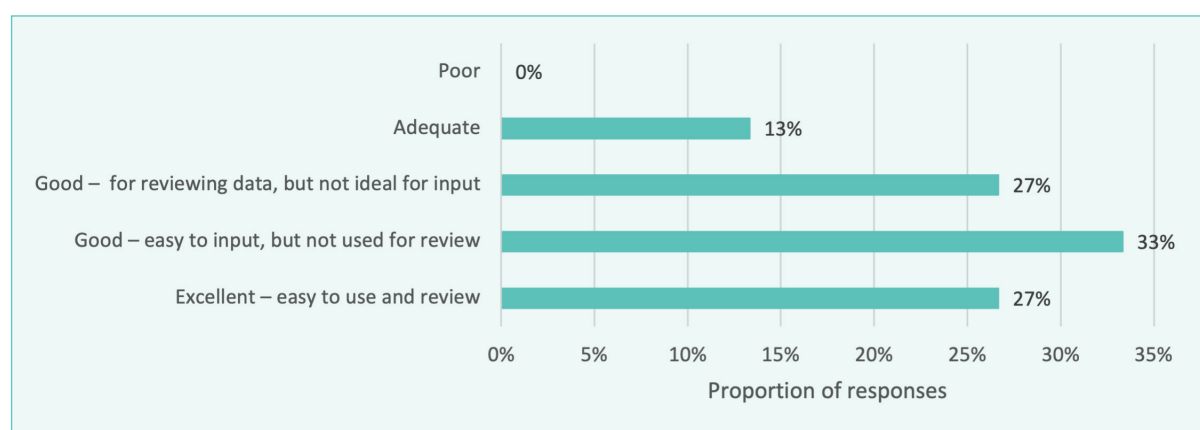
Figure 4: Data collected during the Chole-QulC3 project on the CaseCapture platform

1. Patient hospital number
2. Date of emergency admission
3. Cholecystectomy decision
a. Fit and consenting for cholecystectomy – AS INPATIENT
b. Fit and consenting for cholecystectomy – discharged before surgery ON URGENT PATHWAY
c. Fit and consenting for cholecystectomy – discharged before surgery ON ELECTIVE PATHWAY
d. Common bile duct stones present
e. Temporarily not fit (e.g. pregnancy, patient choice)
f. Permanently not fit (e.g. comorbidities)
g. Not a gallstone admission (e.g. no gallstones)
4. Cholecystectomy date
5. Diagnosis (optional)
a. Cholecystitis/biliary pain
b. Gallstone pancreatitis
6. Additional comments (optional)

The CaseCapture platform automatically produced a number of graphs in real time, including time-series data for mean time to surgery, as well as weekly rates for 8, 14 and 31 days to surgery. Sites were able to view their own data and the data of the cohort as a whole, and also compare their data against another site. **These data, collected by sites on CaseCapture, are referred to as QI data throughout this report.**

In our end-of-project questionnaire, sites were asked: “What has been your experience of using the CaseCapture platform?” 87% of those who answered found it “excellent” or “good” (**Figure 5**). One respondent stated: “We’ve benefitted from seeing the evolution and improvement. The data gathering is simple; this must continue.”

Figure 5: Responses to the question “What has been your experience of using CaseCapture?”



Project benefits

Figure 6 outlines the benefits of joining the Chole-QulC3 programme.

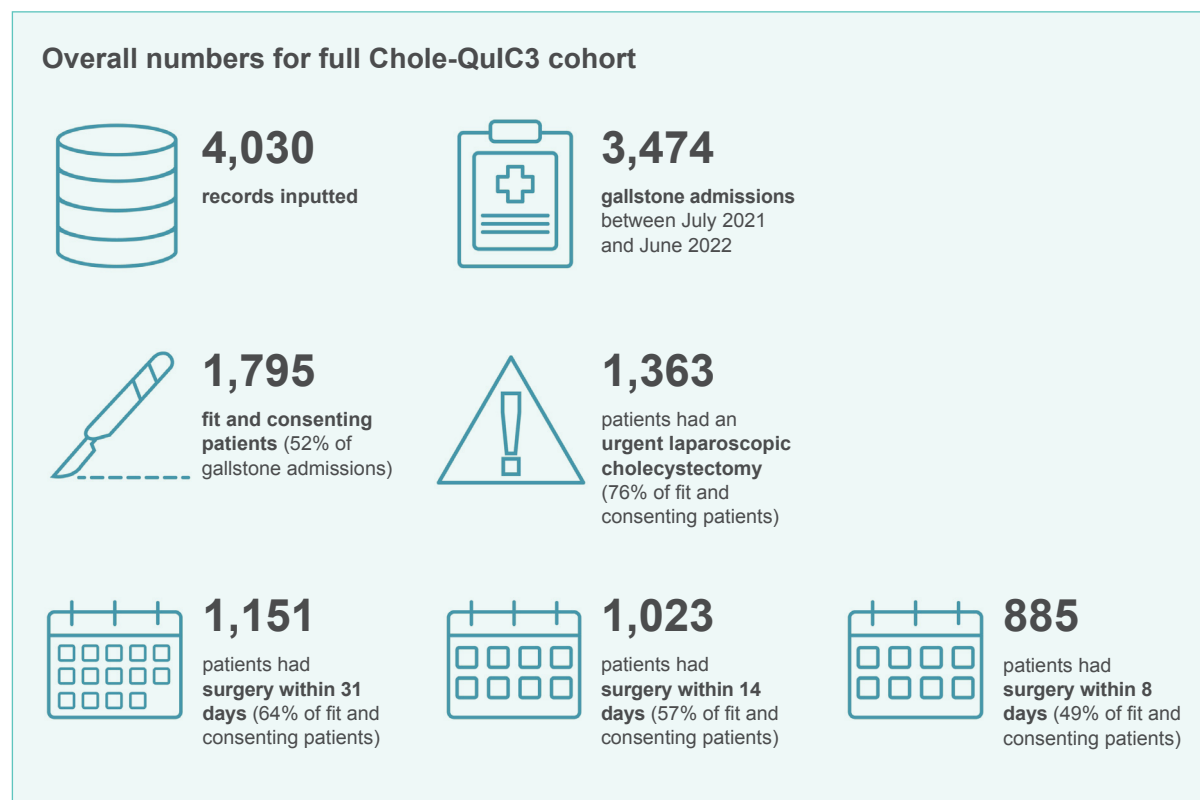
Figure 6: Specific benefits for sites joining the Chole-QulC3 project

- The opportunity to **improve outcomes for patients** with gallstone disease
- **Support from clinical and QI experts** through coaching sessions, email support and teleconferences
- Access to a **local data platform**
- **Peer collaboration** with colleagues at participating sites
- Attendance at **webinars** and **collaborative events**
- A **specially designed programme** to meet each site’s specific needs
- The opportunity to improve patient pathways, **relieve pressure on the system** and **save the service money**
- The invitation to **spread learning and improvements at scale** (within organisations and nationally)



3. Results analysis

Overview of participation



The Chole-QulC3 programme launched on 7 July 2021 and closed on 1 July 2022. Twelve sites signed up to join the project: ten from England, one from Wales and one from Northern Ireland. Six of the trusts/health boards were returning sites that had participated in the CholeQulC-ER programme. Two of these (sites 1 and 2) have an EGS service managed in a single hospital, site 3 manages its service across three hospitals and the other three sites (sites 4–6) manage their service across two hospitals (one taking emergency admissions and the other handling some elective cholecystectomies).

The remaining six sites had not been part of previous Chole-QulC cohorts. During the collaborative period, four of the new sites (sites 7–10) managed their emergency gallstone service in a single hospital. The final two sites (Aintree University Hospital and Royal Liverpool University Hospital, referred to in this report as sites 11a and 11b) were part of a recently merged trust that managed the EGS service as two separate systems in each hospital during the project period. QI data for these two hospitals were also collected separately. **Figure 7** summarises how the EGS service was managed at each of the 12 sites in the Chole-QulC3 cohort.

Figure 7: How the EGS service was managed at each of the 12 sites in the Chole-QulC3 cohort

Site	Context	
1	Returning	EGS service managed at a single hospital
2		
3		Three hospitals in trust; EGS service managed together
4		
5		EGS service is managed between two units (one with emergency intake)
6		
7	New	EGS service managed at a single hospital
8		
9		
10		
11a		Two sites with separate EGS service at each hospital; two QI team leads working in close partnership but with separate QI strategy
11b		

All 12 sites participated fully in the project, entering data into [CaseCapture](#), our real-time data monitoring system. Sites attended four national collaborative meetings and two webinars, and regularly took up telephone and email support offered as part of the programme. The online and face-to-face meetings enabled the teams to share progress and challenges, receive QI training and collaboratively develop improvement plans to test. All sites were offered site visits to provide expert support in their units. All of the new sites accepted the offer of site visits and two of the returning sites also had visits.

Following guidance from the RCS England project team, the sites followed the Chole-QulC [theory of change](#) (**Figure 3**). Sites created a number of improvement plans, and implemented a wide range of interventions to improve engagement and support, develop and implement new pathways and processes, create capacity (personnel, theatre slots, lists etc) and demonstrate improvement. The cohort was encouraged to review the effectiveness of interventions and tweak them as necessary. The project goal was that 80% of eligible, admitted patients* should receive their cholecystectomy within 8 days of presentation at hospital, in line with guidance from [NICE](#).²

QI data collected

There was regular data capture from all sites from July 2021 until early June 2022, with some sites collecting good baseline data before the project launch in July 2021 (**Table 2**). By looking at historical hospital episode data (HES for NHS trusts in England, PEDW for health boards in Wales and previous QI data from the CholeQulC-ER programme for the site in Northern Ireland), it is possible to estimate whether data collection is likely to be capturing all patients with gallstone disease admitted as an emergency.

*Eligible patients defined as: patients with acute biliary pain/cholecystitis or gallstone pancreatitis who are assessed as medically fit for surgery and choose to have surgery on an urgent basis

Table 2: Data capture with regard to the number of patients with gallstone disease admitted as an emergency for each of the 12 Chole-QulC3 sites by month

		Pre Jul-21 mthly mean	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Historical estimated* mthly mean
Returning	Site 1				15	15	13	5	11	17	11	9	6		~20
	Site 2	55	60	29	24	41	40	16	35	42	44	35	39	49	~40
	Site 3		38	47	42	42	47	56	56	80	68	56	52	13	~60
	Site 4	24	22	19	18	32	28	34	29	22	40	44	40	27	~40
	Site 5		17	18	15	14	9	13	3	3	18	14	16	10	~20
	Site 6		40	38	24	35	30	6	36	41	36	32	58	33	~50
New	Site 7	39	23	27	34	30	21	22	18	25	36	31	35	19	~30
	Site 8	6	6	28	8	15	9	6	11		2		7	12	~35
	Site 9	9	5	3	17	11	9	4	14	7	13	7			~40
	Site 10	11	5	16	10	15	34	18	8	7	2	6	4	2	~40
	Site 11a		40	26	38	27	56	46	50	29	34	21	15	16	~40
	Site 11b	7	25	17	19	10	3	10	22	13	6	10	10	9	~20

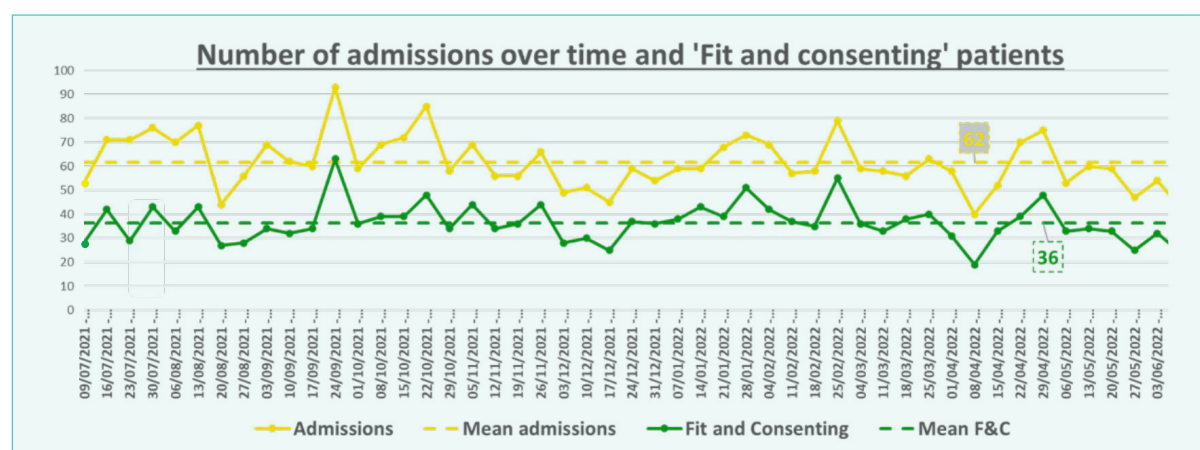
Key: ≥2/3 of historical estimate*
≥1/3 of historical estimate*

*Source: HES/PEDW/Northern Ireland data

All six continuing sites (sites 1–6) and two out of six new sites (sites 7 and 11a) had consistent data collection that was within two-thirds of the numbers estimated from historical data. Given that the historical data will include some patients who do not go through the EGS service or who have other pre-existing conditions, this would suggest that there was complete data collection for these sites. (See the highlighted fields in **Table 2**.)

Looking at a graph of the data for the full Chole-QulC3 cohort (**Figure 8**), the week-to-week spread was very consistent, with the exception of the second week of April and the final weeks in June 2022. As the data dropped off in June 2022 and this was an incomplete month, these data are not included in data analysis.

Figure 8: Mean number of emergency gallstone admissions and mean number of fit and consenting patients across the full Chole-QulC3 cohort by week



A proportion of emergency gallstone admissions will be deemed fit for surgery and consent to urgent surgery. The ratio between all gallstone admissions (yellow line in **Figure 8**) and patients deemed fit and consenting (green line) was relatively consistent at 52% (weekly range: 43–60%). Previous Chole-QulC cohorts have had similar ratios.

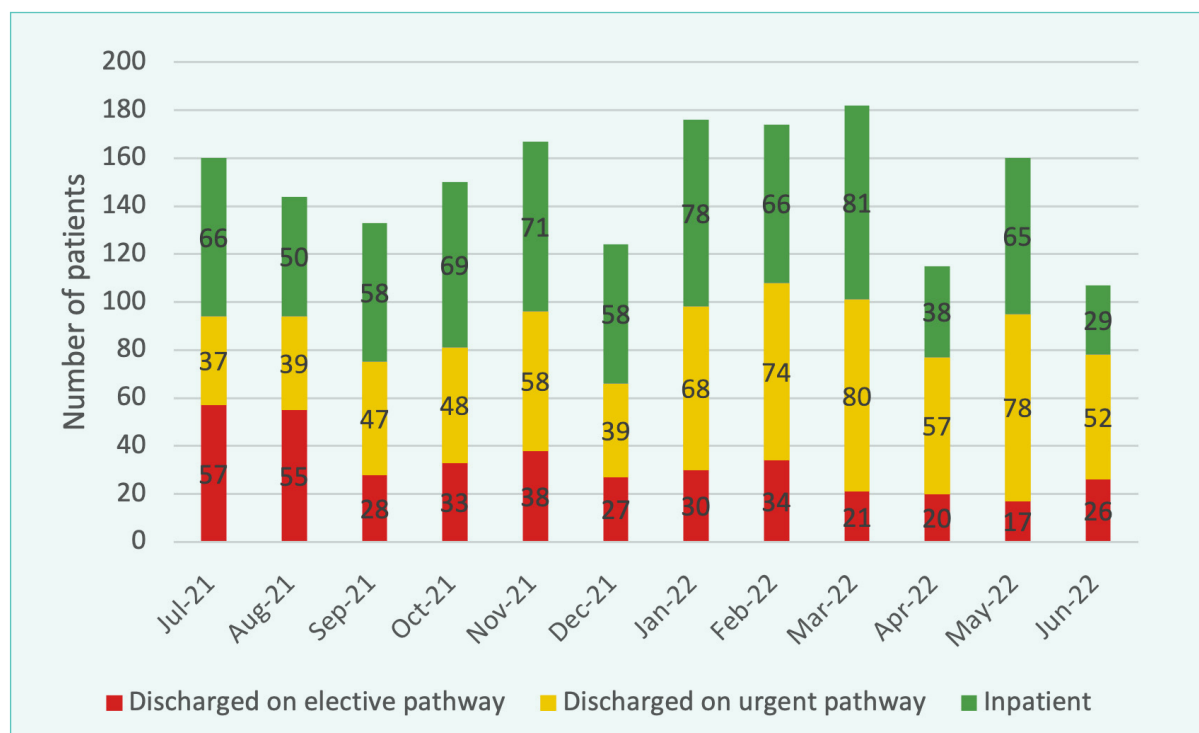
3. Results analysis

Pathway decisions for fit and consenting patients comprised the following categories:

- Cholecystectomy as an inpatient
- Discharge on an urgent pathway (virtual ward or equivalent) with a surgery date within approximately a week
- Discharge on an elective pathway (due to insufficient capacity or ineffective processes)

Ideally, no fit and consenting patient should be discharged on an elective pathway. **Figure 9** shows the pathway decision breakdown for the full Chole-QulC3 cohort for fit and consenting patients. The number and proportion of inpatient cholecystectomies was largely consistent from month to month whereas the number and proportion of patients who were discharged on an urgent pathway increased over time from 28% (41 per month) in the first quarter of the project to 49% (62 per month) in the final quarter. For patients who were discharged on an elective pathway, there was a corresponding reduction in the number and proportion from 32% (47 per month) to 16% (21 per month). These figures would preferably reduce to near zero over time.

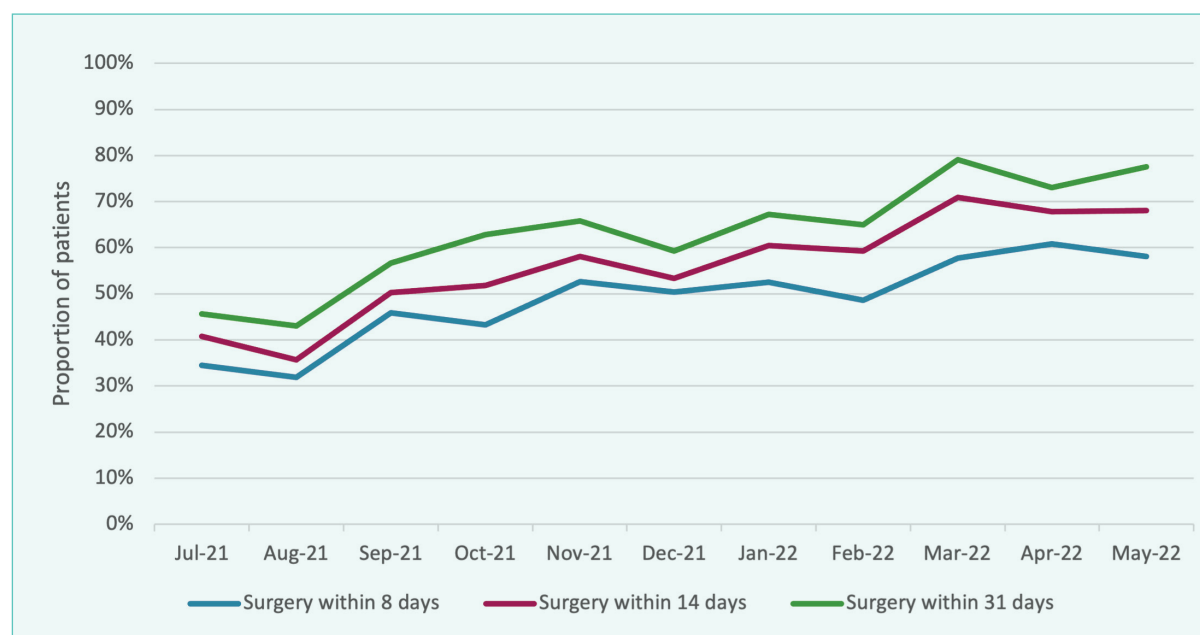
Figure 9: Breakdown of pathway decisions for the full Chole-QulC3 cohort by month



Results from QI data

The proportion of patients receiving their cholecystectomy within 8 days of presentation at hospital – referred to throughout this report as the 8-day surgery rate – increased for the full Chole-QulC3 cohort from 33% in the first quarter (July – September 2021) to 60% in the final quarter (March – May 2022). While the primary programme measure was the 8-day rate, some sites were focusing on longer times to surgery, particularly if they were introducing new processes for discharging on an urgent pathway. There were comparable increases for the whole cohort in 14- and 31-day surgery rates (**Figure 10**).

Figure 10: Proportion of fit and consenting patients receiving cholecystectomy within 8, 14 and 31 days of presentation at hospital



As Table 3 indicates, some sites (sites 1, 2, 3 and 7) were demonstrating sustained high quality in terms of 8-day surgery rates with near complete data. Site 4 showed sustained high quality over many months but not for the full patient group. Other sites (sites 5 and 9) displayed pockets of high quality sustained over 5–6 weeks.

Table 3: 8-day surgery rates for each of the 12 Chole-QulC3 sites by month

		Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
Returning	Site 1			64%	80%	91%		86%	91%	90%	83%	80%
	Site 2	21%	17%	46%	33%	61%	93%	76%	36%	58%	65%	70%
	Site 3	79%	39%	57%	67%	61%	58%	63%	52%	55%	60%	59%
	Site 4	33%			100%	83%	100%		91%	100%	100%	100%
	Site 5	83%	75%	27%	67%		33%			91%	71%	80%
	Site 6	23%	18%	38%	64%	20%		33%	21%	39%	23%	33%
New	Site 7	53%	67%	88%	55%	100%	83%	89%	71%	63%	86%	74%
	Site 8	60%	30%		25%	71%		57%				
	Site 9			14%	56%	33%		29%		58%	80%	
	Site 10		0%	11%	23%	12%	13%	13%	0%		0%	
	Site 11a	22%	14%	39%	7%	39%	34%	46%	36%	30%	43%	44%
	Site 11b	31%	50%	55%	20%		0%	18%	13%	0%	75%	25%

Key: ≥80%
≥50%

Note: Months with fewer than 5 fit and consenting patients have been excluded (left blank)

Inpatient numbers and proportions were consistently high, with a mean of 87% of fit and consenting patients receiving surgery within 8 days of presentation at hospital, and 56% receiving surgery within 3 days (**Figure 11**). With regard to patients discharged on an urgent pathway, not only did the number of these patients increase over time but the number and proportion receiving surgery within 8, 14 or 31 days also increased (**Figure 12**).

Figure 11: Number and proportion of patients on inpatient pathway receiving cholecystectomy within 3, 8 and 14 days of presentation at hospital

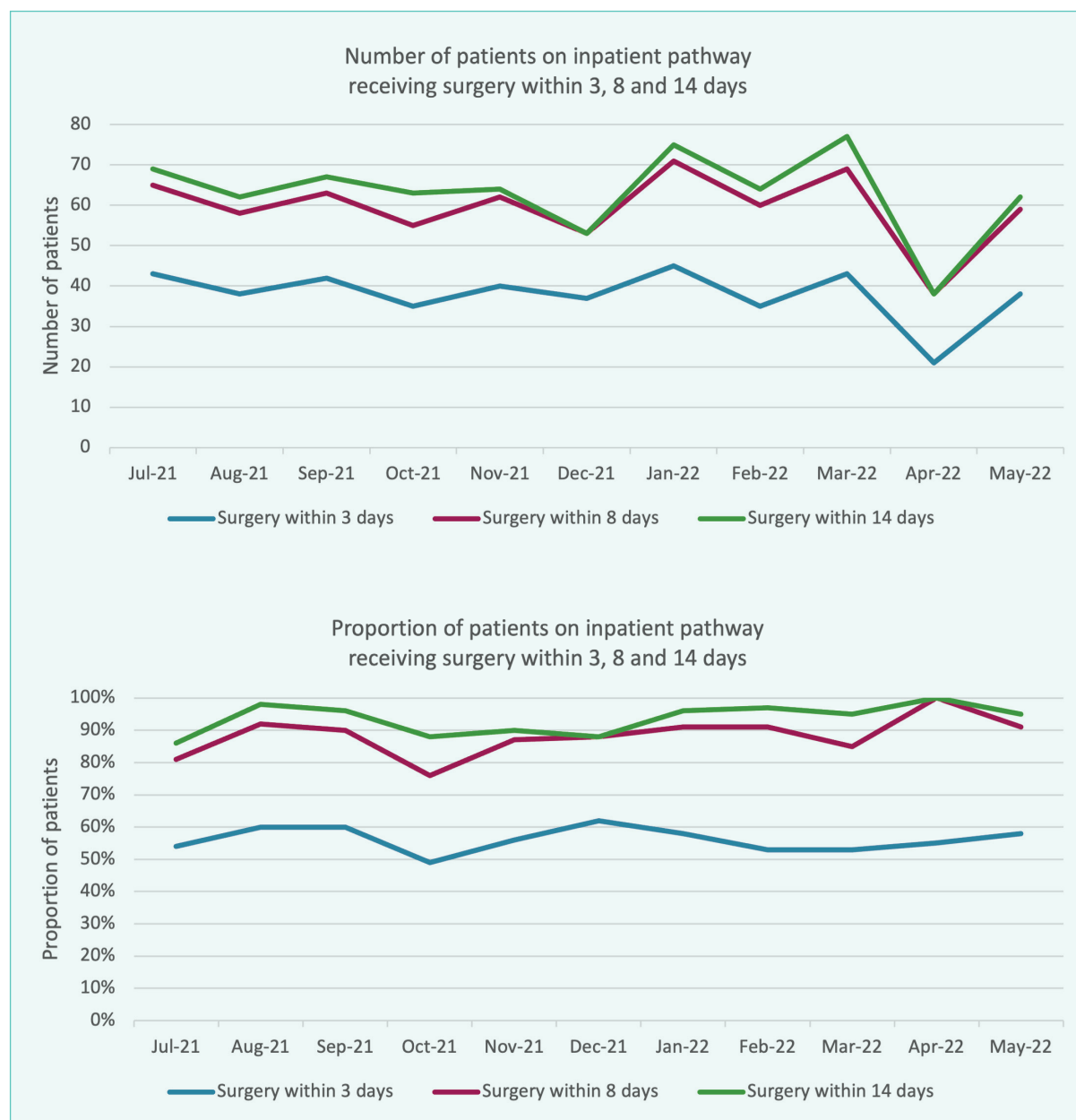
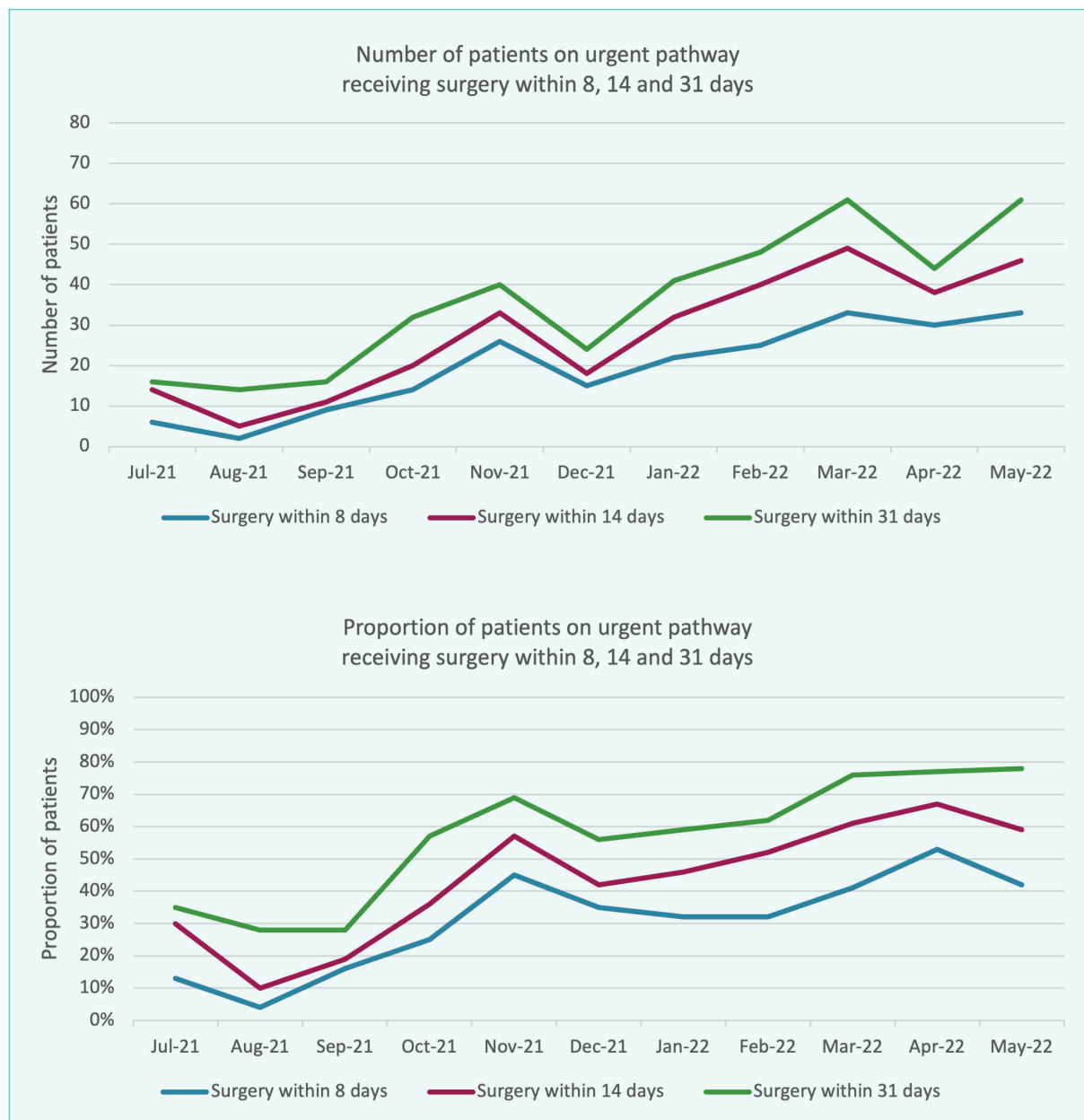
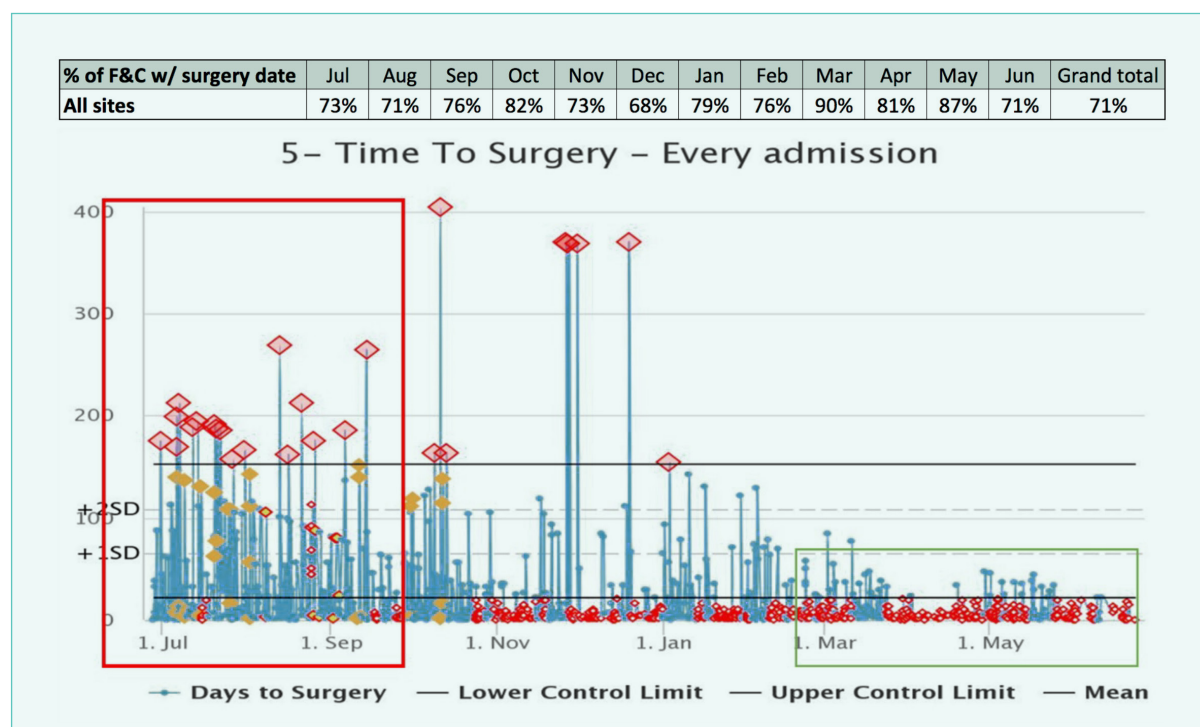


Figure 12: Number and proportion of patients on urgent pathway receiving cholecystectomy within 8, 14 and 31 days of presentation at hospital



It is also important to consider the mean time to surgery as a key measure in identifying meaningful reductions in waiting times that are not captured by the 8-day metric. The statistical process control chart in **Figure 13** illustrates that the mean time to surgery during the first quarter of the Chole-QulC3 project was over 30 days. This reduced steadily to under 8 days during the final quarter.

Figure 13: Statistical process control chart showing mean time to surgery at all sites by date of admission



In QI terms, the clear reduction in variation in time to surgery over the project period is equally as meaningful as the reduction in mean time to surgery. A vital aspect of successful QI is to reduce unwarranted variation and the Chole-QulC3 programme was able to support teams to reduce this variation across the whole cohort.

Feedback from Chole-QulC3 sites

Figure 14 gives some examples of feedback received from participating sites on the collaborative process for the Chole-QulC3 project.

Figure 14: Feedback from Chole-QulC3 sites

“There has been a 40% reduction in our waiting list as we deal with many cases at an early stage now.”

“We’ve collected some data on patient experience. Our senior medical student repeated a study done in the first Chole-QulC collaborative looking at patients’ views on the surface, and we were pleased to see that despite the tribulations and challenges of the COVID-19 pandemic etc, the positive patient experience seems to have been sustained.”

“While we have had problems, we have produced a pathway and are putting patients through this. We have achieved this without any additional resource in terms of theatre or nursing support to run the service long term, so I think it is a good achievement. Slowly, things are changing in my hospital.”

“It’s extremely difficult to make the changes sustainable in the long term.”

“It would be great to know the patient satisfaction outcomes, and also the impact on elective service and number of readmissions.”

4. New processes tested and reviewed

Across the 12 Chole-QulC3 sites, work took place to understand their current systems and support mechanisms mapped against the [theory of change](#) (**Figure 3**). Teams then developed and tested numerous change ideas, and in some cases, embedded them into normal practice. Across the cohort, these included: a concerted focus to improve data collection in order to develop a deeper understanding of their system; a range of measures to create additional capacity; introduction of new patient pathways; and building new relationships. Examples of these interventions are outlined below.

Gaining a deeper understanding of the hospital system

All of the Chole-QulC3 sites worked to embed data collection, with all of the returning sites managing to have consistent and complete data across the whole project. All of the new sites had data collection for most of the programme but only two managed to achieve near complete data (**Table 2**). However, the sites with partial data were still able to notice variation in patient flow. For example, site 8 became aware of variation between successive on-call teams, leading to targeted efforts to reduce this variation.

Creating additional capacity

Some sites created (e.g. sites 4 and 8) or reinstated (e.g. sites 1, 3 and 6) dedicated emergency gallbladder lists, either for inpatients or for patients who are discharged before returning for their cholecystectomy on these dedicated emergency lists. Others negotiated and tested ringfenced slots at the start of existing theatre lists. Some sites also created further surgical capacity by gaining commitment from surgeons to carry out an urgent cholecystectomy as part of their usual list when the opportunity arises (e.g. site 9) or by recruiting new surgeons (e.g. site 4).

Developing new patient pathways/processes

New or refined patient pathways were developed by a number of sites (e.g. sites 3 and 8), and these were promoted through meetings and posters. Changes to improve pathways included:

- combining management of patients on an inpatient pathway and those discharged on an urgent pathway so as to manage these patients within a single pathway
- development of a 2–3-day virtual ward
- improved access and reduced time to ultrasonography (either on the same day or the following morning)
- development of a same-day emergency care service
- development of an ambulatory emergency surgical unit
- a streamlined or new e-referral service

New processes were developed, including:

- clearer criteria for patient eligibility for surgery
- a new grading form to allocate cases appropriately

Building new relationships and ownership of the programme

Engagement with senior management was highlighted by various teams. For example, site 3 acknowledged that engagement with senior staff members and colleagues had been challenging at times. Nevertheless, with concerted interventions, they achieved strong leadership and specialty lead support as well as improved engagement with colleagues.

All sites worked on engagement with colleagues (including surgeons, trainees, anaesthetists, emergency department radiologists, nursing staff and theatre staff) in both formal and informal settings. This included promoting the QI project in team meetings, consultant meetings, divisional management meetings and audits.

Site 1 continued to use patient stories to embed ownership and urgency for the programme, particularly for new staff. Successful sites had regular meetings to review data and discuss change processes (e.g. sites 2, 3 and 7).

5. Case studies

Dudley Group NHS Foundation Trust

The Dudley Group NHS Foundation Trust is the main provider of hospital and adult community services to the population of Dudley as well as to the surrounding area of the West Midlands. Emergency and elective surgical services are run out of Russells Hall Hospital. There are approximately 40 gallstone admissions every month, making demand average compared with other units across the country.

CholeQuIC-ER

The Dudley Group had already participated in the CholeQuIC-ER project.¹² The team engaged well, and worked hard to develop, test, review and revise improvements in line with the programme's [theory of change](#). They implemented a new pathway (**Figure 15**) based on the suggested pathway from RCS England¹⁰ and a new referral process. They also tested an initial virtual ward system, and improved capacity by introducing an additional half-day theatre list per week and gaining more regular access to CEPD lists. Data capture between November 2019 and October 2020 appears near complete, and aligns with both historical HES data and CholeQuIC-ER numbers (**Figure 16**).

Figure 15: New pathway implemented for patients with severe symptomatic gallstone disease at the Dudley Group NHS Foundation Trust

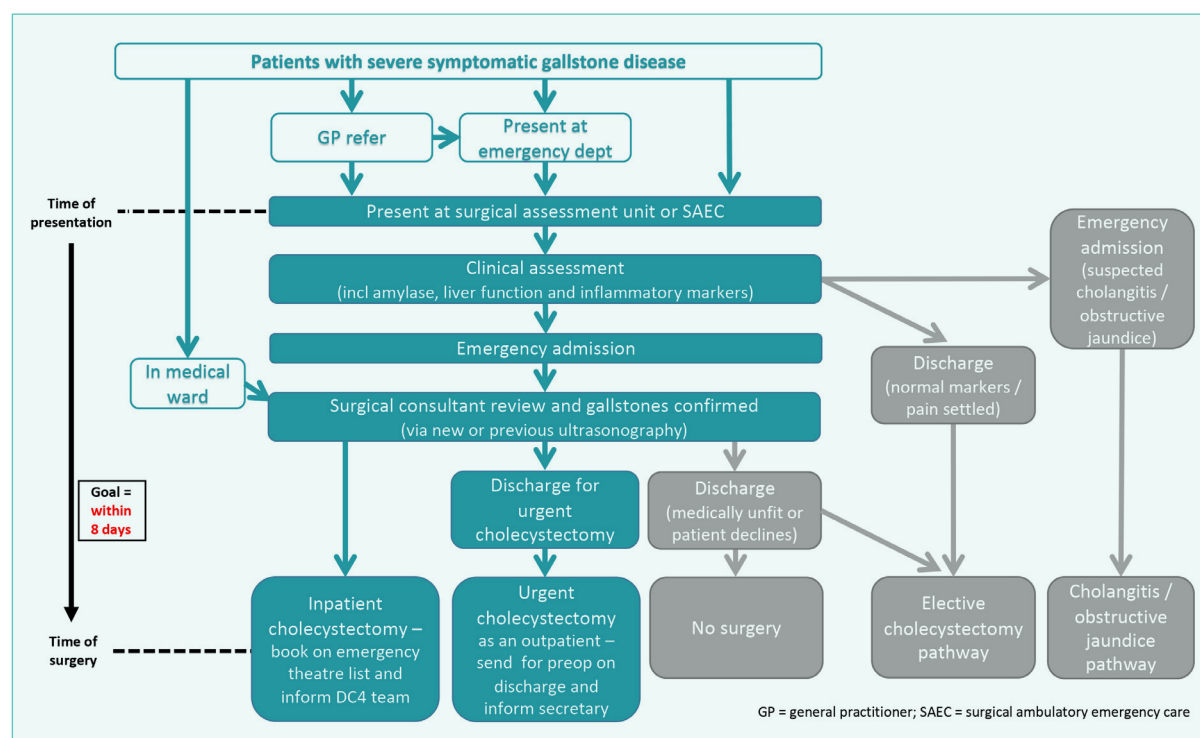
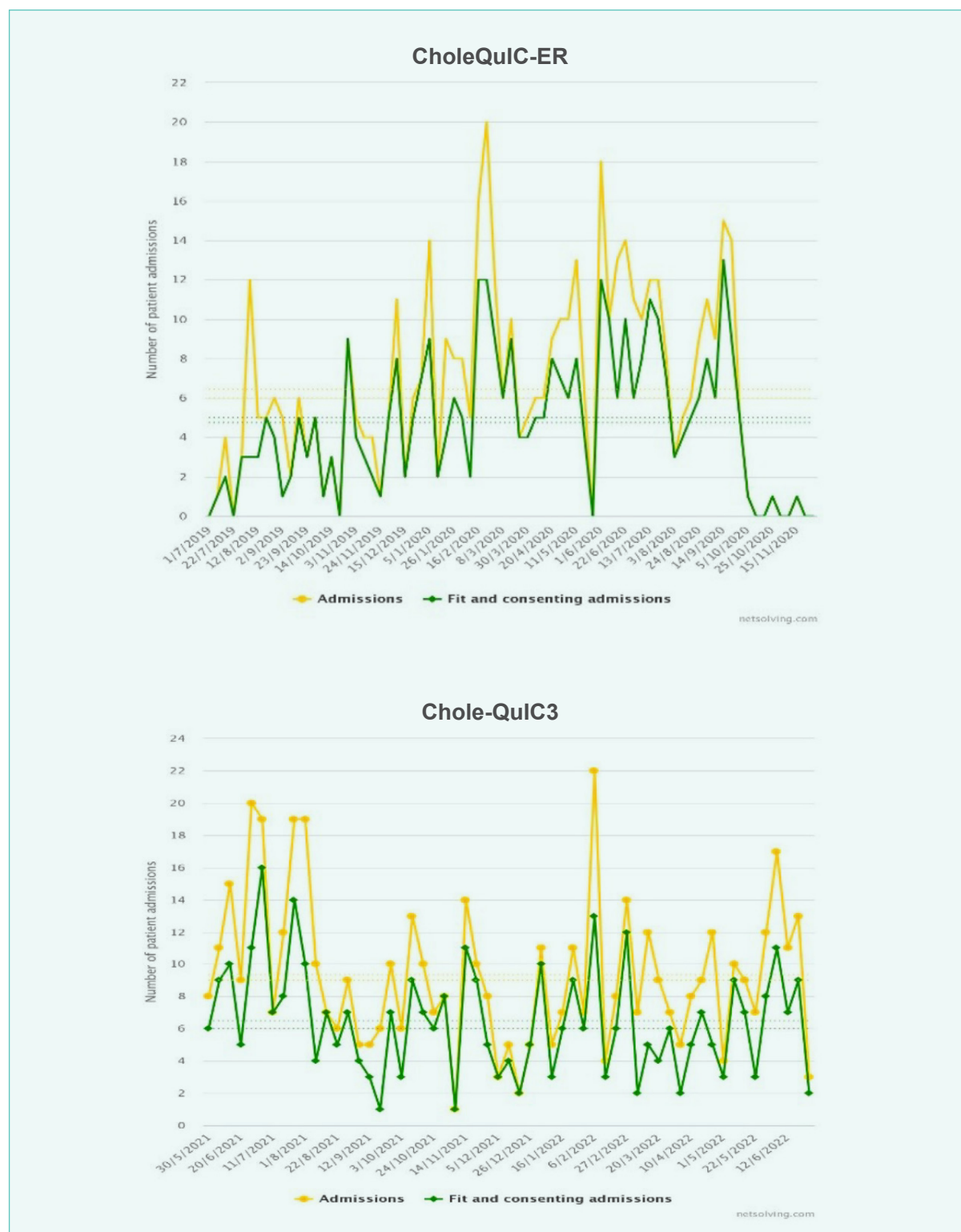


Figure 16: Number of gallstone admissions and number of fit and consenting patients at the Dudley Group NHS Foundation Trust by week



There were certain challenges for the Dudley Group team during the CholeQuIC-ER project. For example, a planned second half-day theatre list was postponed owing to the outbreak of the COVID-19 pandemic, and the consultant capacity of four was reduced to three when a staff member left the trust. At the final collaborative meeting, the team articulated clear sustainability plans, which included increasing capacity and improving engagement with colleagues. They joined Chole-QuIC3 to deliver these plans, building on previous improvement successes and subsequently achieving sustained quality.

Chole-QulC3

The Dudley Group have had good consistency in terms of their QI team, which met regularly. The same consultant, Mr Chaminda Sellaheewa, led across both collaborative rounds, and there was good representation from management, nursing, registrar and consultant staff groups. Mr Sellaheewa and colleagues continued to stay highly engaged and reflective throughout the Chole-QulC3 project, attending all meetings, developing appropriate improvement plans, collecting good data and working hard to improve their gallstone service.

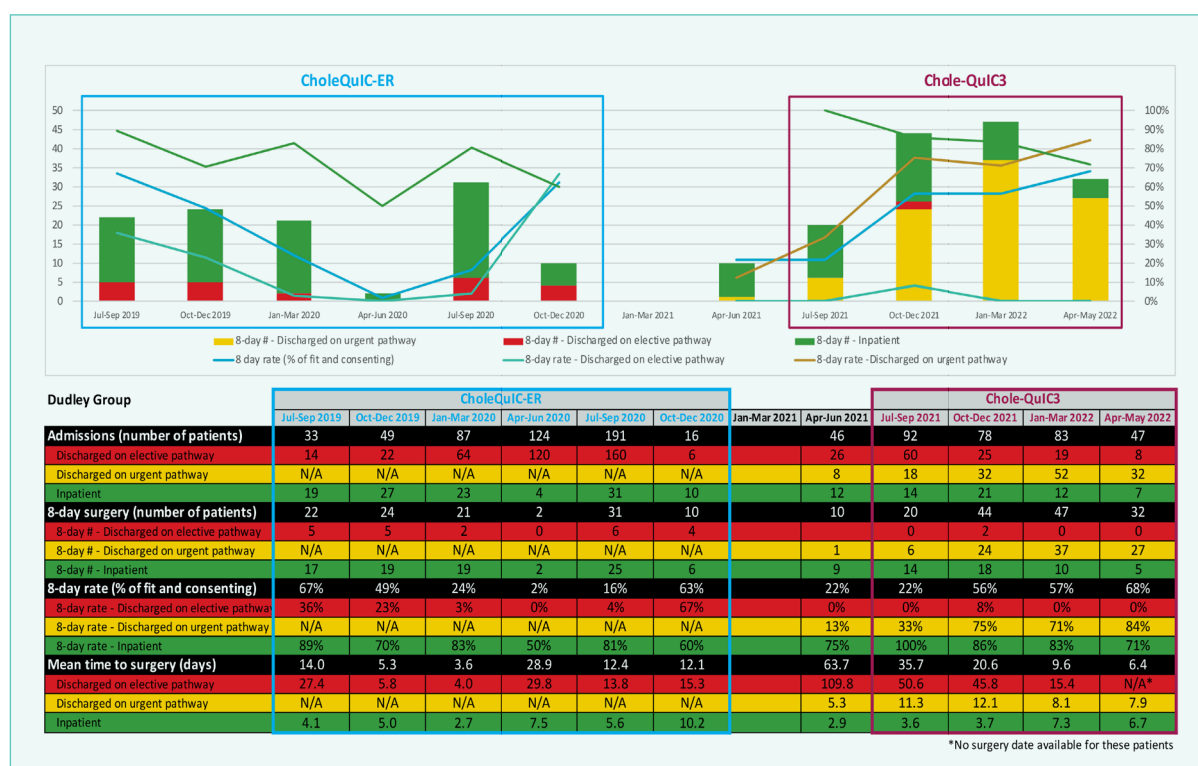
They built on their successes from the CholeQulC-ER programme, carrying out engagement work with colleagues (including anaesthetists) and increasing capacity to three half-day lists per week. An 'amber' pathway (2–3-day virtual ward) was developed and implemented, moving discharged patients from the elective to the urgent pathway. Surgical capacity had dropped from four consultants at the start of the CholeQulC-ER initiative to two at the start of Chole-QulC3. Capacity increased to three consultants during Chole-QulC3.

Results

The continued involvement in the Chole-QulC3 cohort has enabled the Dudley Group to deliver consistency in its emergency gallstone service. During CholeQulC-ER, 73% of fit and consenting patients were discharged on an elective pathway. An average of 6 patients per month were kept in hospital to be operated on as an inpatient, with 5 patients per month receiving their cholecystectomy within 8 days of presentation. These inpatient numbers continued during Chole-QulC3.

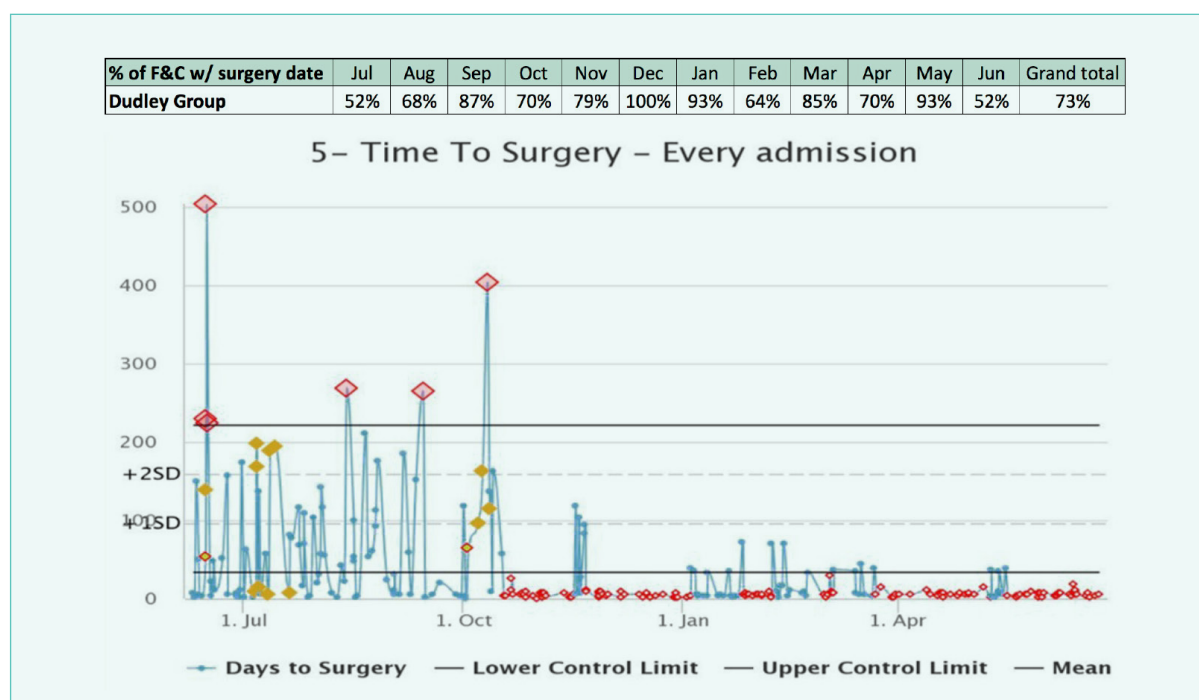
The introduction of a high-functioning urgent pathway at the Dudley Group meant that more than 15 patients per month (44 per quarter [October 2021 – May 2022]) received surgery within 8 days of presentation at hospital. This represents a consistent rate of over 80% for both inpatients and patients discharged on the urgent pathway (**Figure 17**).

Figure 17: CholeQulC-ER and Chole-QulC3 data showing 8-day surgery patient numbers and 8-day surgery rates for different patient pathways at the Dudley Group NHS Foundation Trust



The mean time to surgery at the Dudley Group for all patients with gallstone disease dropped from over a month until the end of September 2021 to 11 days from mid-November 2021 onwards (**Figure 18**). Looking at just those on the inpatient pathway, the mean time to surgery was consistently below 8 days, and for patients discharged on the urgent pathway, it was below 14 days (**Figure 17**). This latter group had surgery within 8 days for the final five months of the Chole-QulC3 programme. Given that this is a complete dataset (**Table 2**), that over 70% had a surgery date (**Figure 18**) and that over 85% of those patients had been discharged before surgery (**Figure 17**), these are extraordinary results, indicating sustained excellent quality care for patients.

Figure 18: Statistical process control chart showing time to surgery for every patient with gallstone disease at the Dudley Group NHS Foundation Trust by date of admission



James Paget University Hospitals NHS Foundation Trust

James Paget University Hospitals NHS Foundation Trust is a medium-sized university trust serving Great Yarmouth and the surrounding area. The single hospital has approximately 30 gallstone admissions per month. The gallstone service improved considerably in 2019 with a series of changes to the service, including the introduction of a 'hot and warm' on-call service, hiring of new staff and a change in culture of treatment. This led to a year where the 8-day surgery rate was over 25% for all gallstone admissions logged on the HES database (compared with a national average of 15%). With the COVID-19 pandemic, these rates dropped slightly.

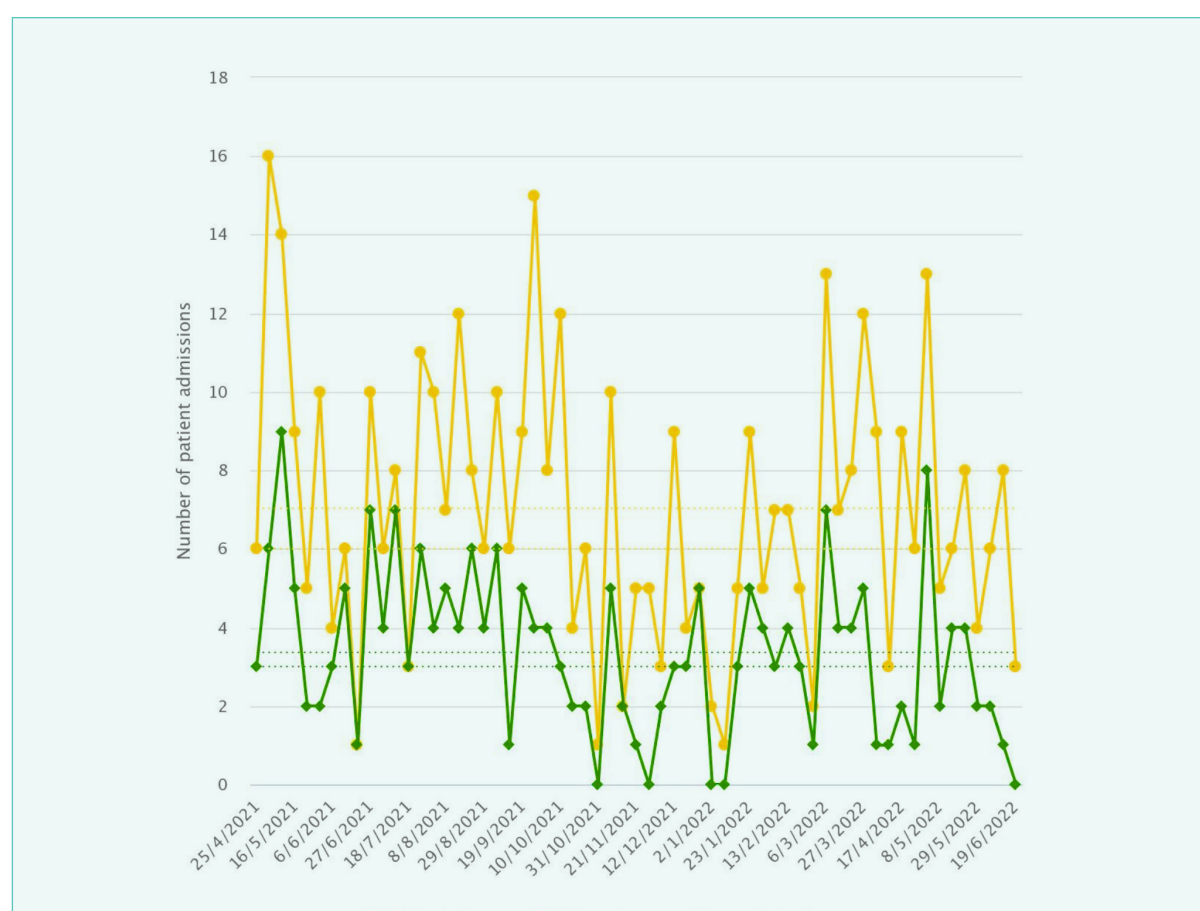
Chole-QulC3

James Paget had not participated in previous rounds of the collaborative and was a new site in Chole-QulC3. The QI team was led by a consultant upper gastrointestinal surgeon, Mr Bence Atkari, who engaged well with the programme, attending meetings and online calls, and who developed solid improvement plans. Good engagement with colleagues led to the smooth reintroduction of previous changes as well as testing of new ideas. The initial improvement plan articulated the gallstone pathway and the trust's intention to transition from using the CEPOD list to two half-day dedicated emergency laparoscopic cholecystectomy lists per week. This was initially problematic to implement but is now in place.

The team at James Paget successfully introduced a system of discharging patients with gallstone disease on an urgent pathway for planned surgery: patients return at 7am on their allocated day for surgery, with surgery starting from 8am. Efforts were made to ensure good anaesthetic engagement in this process, including the drafting of and agreement on a standard operating procedure document for anaesthetic assessment as well as review for these discharged patients. This contributed to the smooth running of this system (a process that has proved challenging in other hospitals).

Data collection was excellently led by a staff-grade surgeon with support from a consultant surgeon, resulting in admission numbers that align well with historical HES data (**Table 2**). Numbers for fit and consenting patients are slightly lower than might be expected but not unusual when compared with other sites that have taken part in a Chole-QulC project (**Figure 19**).

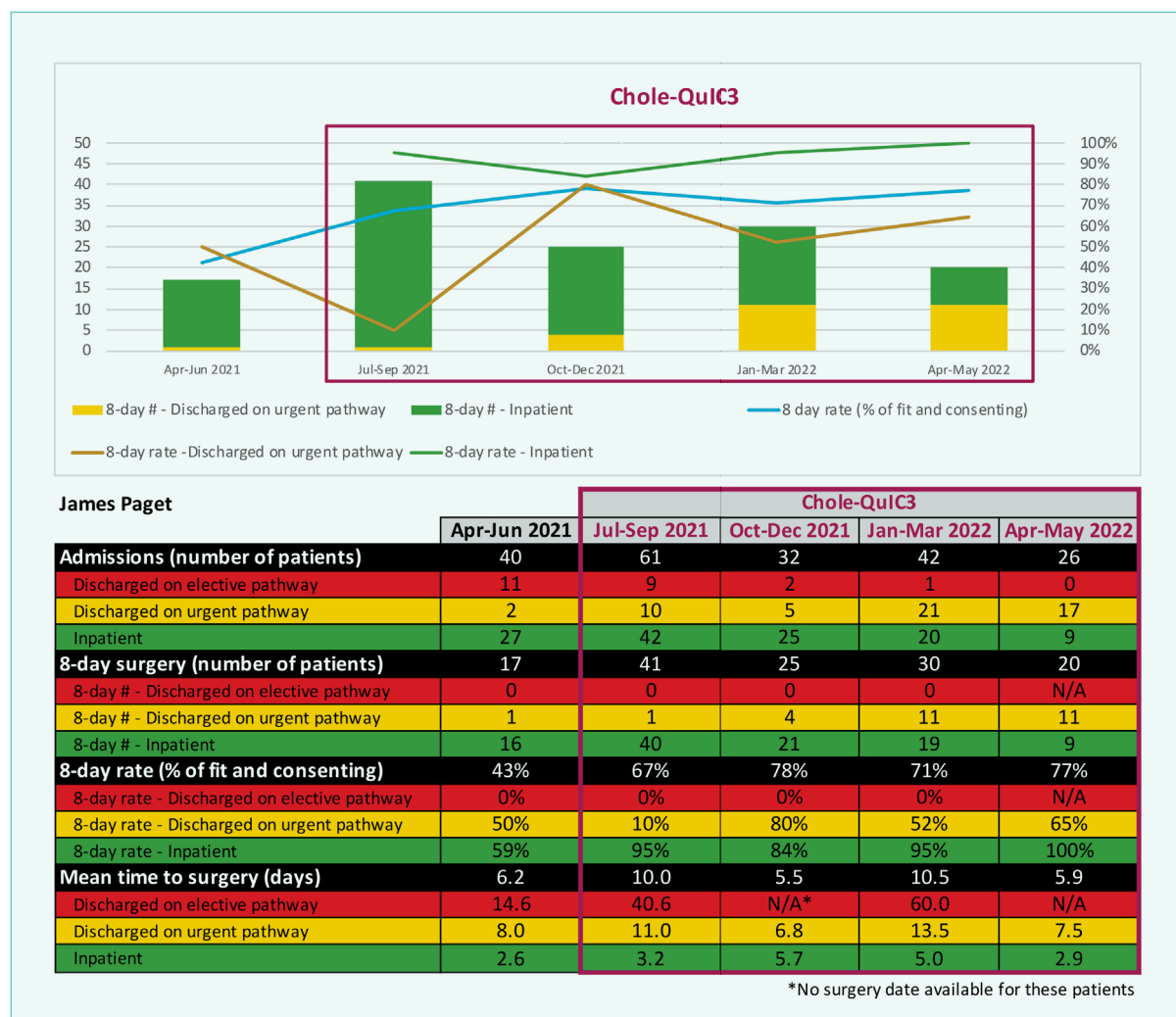
Figure 19: Number of gallstone admissions and number of fit and consenting patients at James Paget University Hospitals NHS Foundation Trust by week



Results

Once the new inpatient service was in place in August 2021, a consistently high proportion of patients were receiving their cholecystectomy within 8 days of emergency admission: an average of over 10 patients per month (74% of fit and consenting patients). This short time to surgery held for 11 months, seemingly unaffected by the introduction of a new discharge process for urgent surgery (**Figure 20**).

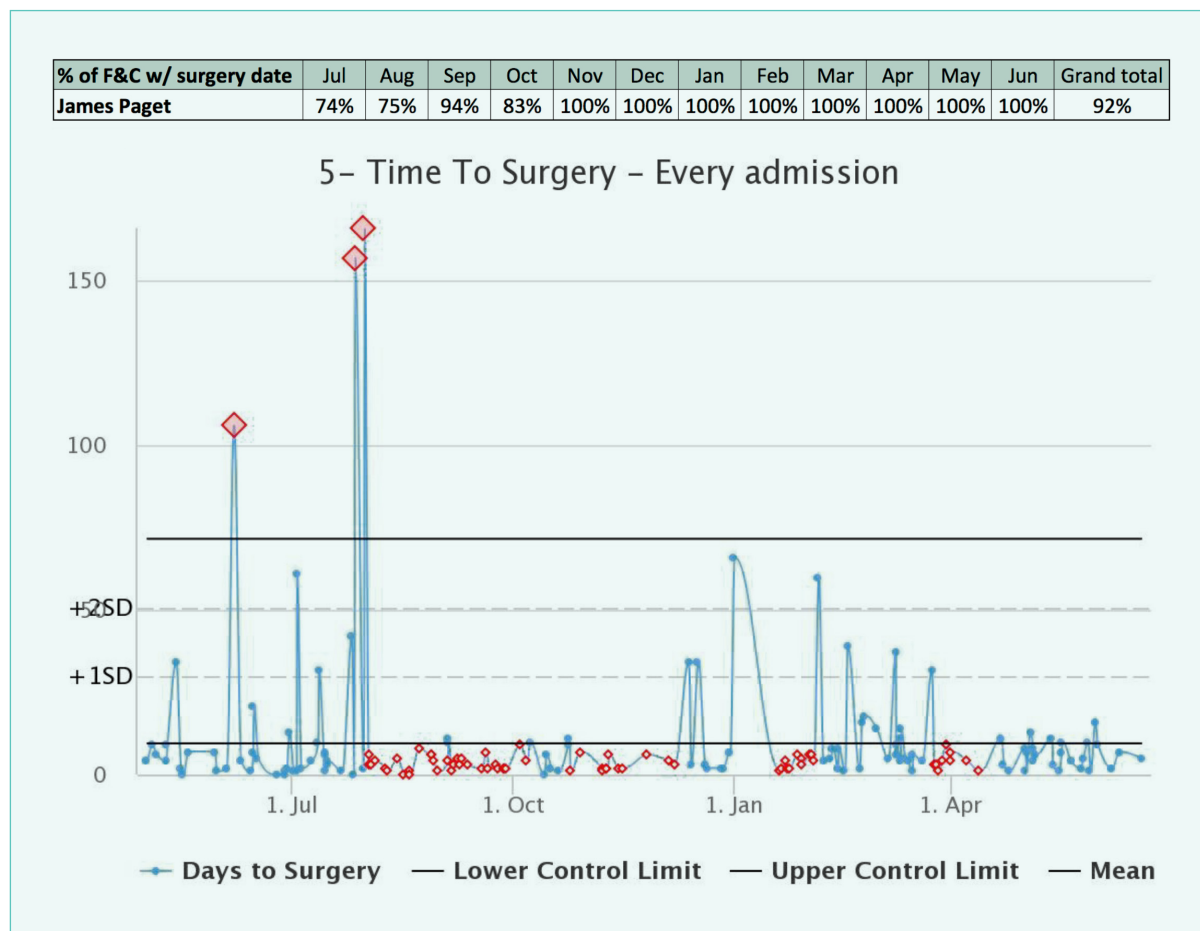
Figure 20: Chole-QulC3 data showing 8-day surgery patient numbers and 8-day surgery rates for different patient pathways at James Paget University Hospitals NHS Foundation Trust



Over 80% of inpatients had 8-day surgery, at a mean time to surgery of 3.2 days. The majority of patients discharged on the urgent pathway also received their cholecystectomy within 8 days of presentation at hospital; the mean time to surgery for this patient group was 10.1 days. In the three months between March and May 2022, 28 (93%) of 30 patients discharged on the urgent pathway had surgery within 14 days of presentation.

Overall, the initial mean time to surgery of 27 days reduced to 7 days from August 2021. This remained consistent (**Figure 21**).

Figure 21: Statistical process control chart showing time to surgery for every patient with gallstone disease at James Paget University Hospitals NHS Foundation Trust by date of admission



6. Conclusions

QI data from the Chole-QulC3 project indicate that the 12 participating sites have similarly positive results to previous Chole-QulC rounds. 8-day surgery rates increased from 33% in the first quarter to 60% in the final quarter and the mean time to surgery reduced from over 30 days to under 8 days. In conjunction with positive feedback from participants, these results lead us to conclude that this subscription model for improvement in gallstone services continues to be a successful approach to improve the care for patients with gallstone disease across England, Wales and Northern Ireland.

Analysing data from all three collaborative cohorts gives further insight into how teams achieved (or did not achieve) improvement. This has enabled the identification of cross-cutting structural, behavioural and process factors that appear to be key in successfully introducing improvements to emergency gallstone care.^{10,11} (See the Chole-QulC [theory of change](#) as illustrated in **Figure 3**.)

To begin with, without an appropriately conducive environment, the potential for improvement was stifled. Little can be achieved without close to sufficient operating theatres and staff to perform EGS cases. Full participation in the project (including willingness to test ideas and involvement of key clinical stakeholders) also matters. Finally, the sites that followed the theory of change were more successful.

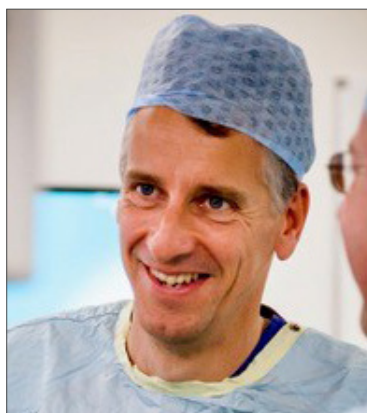
As numerous other QI programmes have discovered, achieving and sustaining significant improvements in care after a project finishes can be challenging.^{13,14} Luckily, CholeQulC-ER and Chole-QulC3 provide important insights into sustaining high-quality gallstone care.

The two CholeQulC-ER sites with the best national 8-day surgery rates met the three criteria outlined in the theory of change. Nevertheless, this was not their first concerted attempt to improve their emergency gallstone service: Cwm Taf Morgannwg University Health Board was a member of the first Chole-QulC cohort and the Royal Surrey NHS Foundation Trust had also worked on improving its urgent gallstone service in the years before taking part in the CholeQulC-ER programme.¹²

As six of the twelve Chole-QulC3 sites were returning sites that had also participated in CholeQulC-ER, it is possible to gain insights into whether improvements can be sustained and embedded. Findings are provisional until hospital episode data (HES for England and PEDW for Wales) are analysed but while most of the sites improved their gallstone service, the returning sites had higher 8-day rates and managed to sustain them for longer than the new sites. Returning sites were able to successfully implement changes that they had struggled with during the CholeQulC-ER project, and they were also able to embed and normalise changes that were successful previously. Improving services takes time and focus, and being involved in more than one round of Chole-QulC appears to lead to greater success.

For instance, the Dudley Group NHS Foundation Trust was able to introduce a new pathway, create inpatient capacity and have periods of improved outcomes during the CholeQulC-ER programme. However, its continued involvement in Chole-QulC3 has enabled the trust to demonstrate that more than 15 patients per month (over an 8-month period) received surgery within 8 days of presentation at hospital, representing a consistent rate of over 80% of eligible patients. During this time, the trust successfully implemented a new virtual ward pathway, where patients are discharged and then return within a short timeframe for their cholecystectomy (over 80% within 8 days of emergency admission, at a mean time to surgery of 10.5 days).

Project team



Mr Ian Beckingham
Clinical Lead



Jonathan Bamber
Quality Improvement Lead



Dr Tim Stephens
Quality Improvement Advisor



Ralph Tomlinson
Director of Research
and Quality Improvement,
RCS England



Sheena MacSween
Quality Improvement
Programme Manager,
RCS England

For more information, please visit: www.rcseng.ac.uk/cholequic

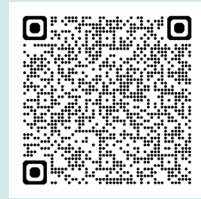
References

1. Royal College of Surgeons of England. Cholecystectomy Quality Improvement Collaborative (Chole-QulC). <https://www.rcseng.ac.uk/cholequic> (cited October 2025).
2. National Institute for Health and Care Excellence. *Gallstone Disease (QS104)*. London: NICE; 2015. Available at: <https://www.nice.org.uk/guidance/qs104/> (cited October 2025).
3. Royal College of Surgeons of England. About our mission. <https://www.rcseng.ac.uk/about-the-rcs/about-our-mission/> (cited October 2025).
4. Royal College of Surgeons of England. *Annual Report and Accounts for the Year Ended 30 June 2015*. London: RCS England; 2015. Available at: https://www.rcseng.ac.uk/-/media/Files/RCS/Library-and-publications/Non-journal-publications/rcs_annual_report_2015.pdf (cited October 2025).
5. Royal College of Surgeons of England. Quality improvement in surgery. <https://www.rcseng.ac.uk/qi> (cited October 2025).
6. Royal College of Surgeons of England. Quality improvement network in surgery. <https://www.rcseng.ac.uk/standards-and-research/support-for-surgeons-and-services/quality-improvement-in-surgery/quality-improvement-network-in-surgery> (cited October 2025).
7. Institute for Healthcare Improvement. The Breakthrough Series: IHI's collaborative model for achieving breakthrough improvement. <https://www.ihl.org/resources/white-papers/breakthrough-series-ihis-collaborative-model-achieving-breakthrough> (cited October 2025).
8. Getting It Right First Time. General surgery. <https://www.gettingitrightfirsttime.co.uk/surgical-specialty/general-surgery> (cited October 2025).
9. Association of Upper Gastrointestinal Surgery of Great Britain and Ireland. *Pathway for the Management of Acute Gallstone Diseases*. London: AUGIS; 2015. Available at: <https://www.augis.org/Portals/0/Guidelines/Acute-Gallstones-Pathway-Final-Sept-2015.pdf> (cited October 2025).
10. Bamber JR, Stephens TJ, Cromwell DA *et al*. Effectiveness of a quality improvement collaborative in reducing time to surgery for patients requiring emergency cholecystectomy. *BJS Open* 2019; **3**: 802–811.
11. Stephens TJ, Bamber JR, Beckingham IJ *et al*. Understanding the influences on successful quality improvement in emergency general surgery: learning from the RCS Chole-QulC project. *Implement Sci* 2019; **14**: 84.
12. Royal College of Surgeons of England. *CholeQulC-ER Learning Report*. London: RCS England; 2022. Available at: <https://www.rcseng.ac.uk/-/media/Files/RCS/Standards-and-research/Standards-and-policy/Service-standards/EGS/CholeQulCER-report-April-2022.pdf> (cited October 2025).
13. Wiltsey Stirman S, Kimberly J, Cook N *et al*. The sustainability of new programs and innovations: a review of the empirical literature and recommendations for future research. *Implement Sci* 2012; **7**: 17.
14. Ament SM, de Groot JJ, Maessen JM *et al*. Sustainability of professionals' adherence to clinical practice guidelines in medical care: a systematic review. *BMJ Open* 2015; **5**: e008073.

Join future RCS England QI collaboratives

For more information on how you can get involved in our upcoming QI collaboratives and other QI initiatives, please scan this QR code or visit:

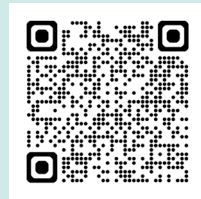
www.rcseng.ac.uk/qicollaboratives



Become a member of RCS England

For detailed information on membership benefits and how to join RCS England, please scan this QR code or visit:

www.rcseng.ac.uk/membership





Royal College
of Surgeons
of England

ADVANCING SURGICAL CARE

The Royal College of Surgeons of England

RCS England produces a wide range of standards and guidance to support the surgical profession in the areas of teamworking and leadership, legal and ethical concerns, personal development and service improvement. To find out more about our work, please visit:

www.rcseng.ac.uk/standardsandguidance

The Royal College of Surgeons of England
38–43 Lincoln's Inn Fields
London WC2A 3PE



The Royal College of Surgeons of England



The Royal College of Surgeons of England



@royalcollegeofsurgeons