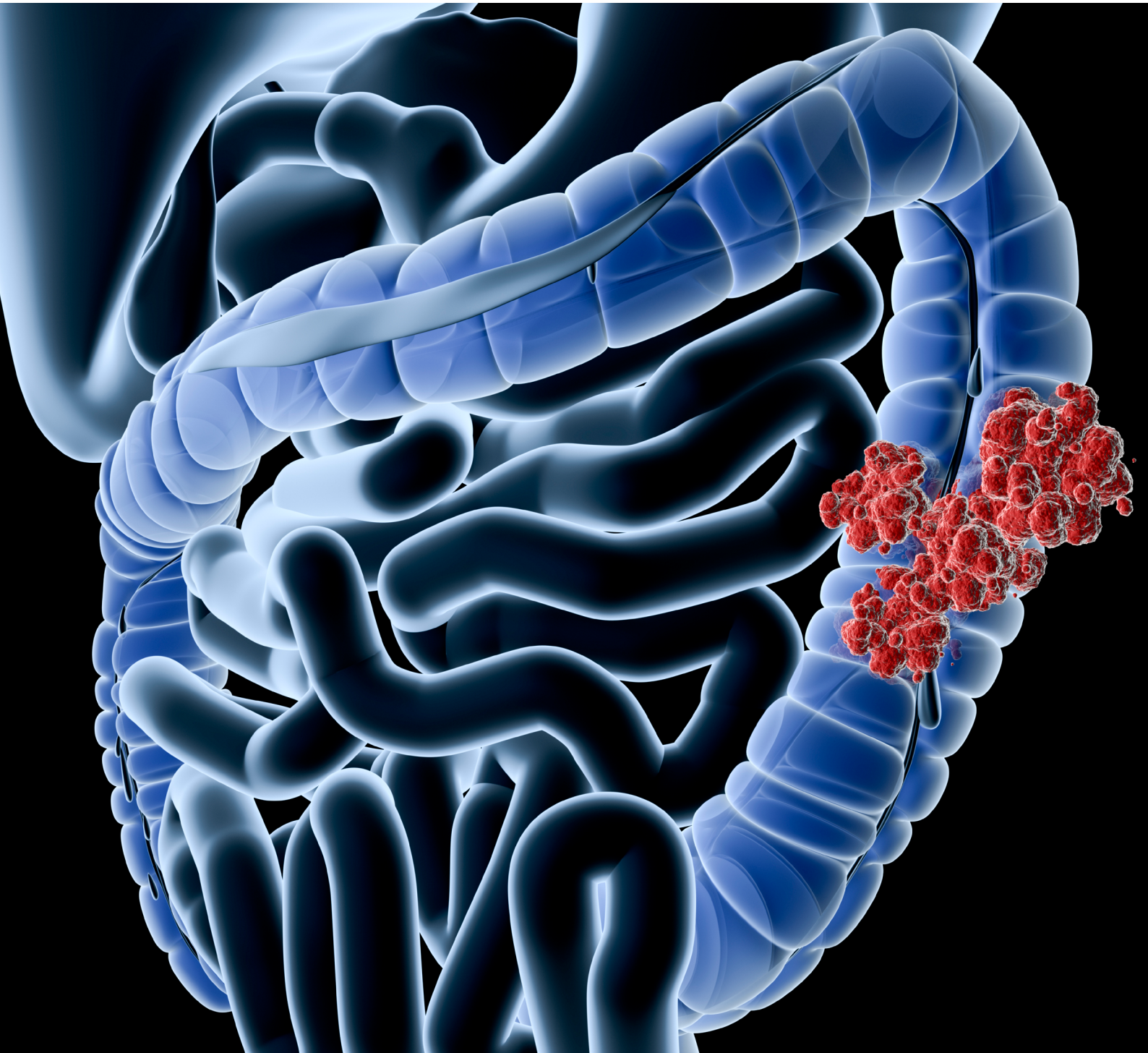
National Bowel Cancer Audit

Annual Report 2017 Version 2



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This 2017 Annual Report contains data from the 2016/2017 reporting period which covers patients in England and Wales with a date of diagnosis from 1 April 2015 to 31 March 2016.

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The Association of Coloproctology of Great Britain and Ireland (ACPGBI) is the professional body that represents UK colorectal surgeons. ACPGBI assisted in the clinical interpretation of the data presented in the 2017 Annual Report.

The Royal College of Surgeons of England (RCS) is an independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. The project team based in the Clinical Effectiveness Unit (CEU) at the RCS carried out the analysis of the data for the 2017 Annual Report.

NHS Digital is the trading name for the Health and Social Care Information Centre (HSCIC). They provide 'Information and Technology for better health and care'. The Clinical Audit and Registries Management Service of NHS Digital manages a number of national clinical audits in the areas of cancer, diabetes and heart disease. It manages the audit on behalf of the RCS.

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. It aims is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands. www.hqip.org.uk/national-programmes

National Bowel Cancer Audit

Annual Report 2017

Version 2

An audit of the care received by people with Bowel Cancer in England and Wales
2017 Annual Report

Version 2 note:
Figure 3.1 (page 20) text has been amended and the figure revised to correct an error

Contents

Acknowledgements

The National Bowel Cancer Audit (NBOCA), commissioned by the Healthcare Quality Improvement Partnership (HQIP), has been developed by the Association of Coloproctology of Great Britain and Ireland (ACPGBI) and is managed by the Clinical Audit and Registries Management Service within NHS Digital on behalf of the Clinical Effectiveness Unit (CEU) of the Royal College of Surgeons of England (RCS).

The data for Wales has been supplied by the Cancer Information System Cymru (CaNISC).

The analyses and writing for this report were carried out by the Clinical Effectiveness Unit of the Royal College of Surgeons of England with support from NHS Digital and Jim Hill and Michael Braun from the ACPGBI.

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Foreword

This eighth annual report from the National Bowel Cancer Audit is the most up to date information from England and Wales regarding the care and outcomes of bowel cancer patients. The report reflects an enormous amount of hard work in collecting, analysing and interpreting a mass of data and I am extremely grateful to all those individuals involved – trusts, Welsh health boards, NHS Digital and the Clinical Effectiveness Unit at the Royal College of Surgeons of England.

It is clear that outcomes from colorectal cancer are improving. Data obtained by Cancer Research UK has shown that bowel cancer mortality rates have decreased by 42% in the UK since the early 1970s. Over the last decade in the UK (between 2003-2005 and 2012-2014), bowel cancer age-standardised mortality rates have decreased by 12% overall, with a similar decrease in males (15%) and females (11%). This year's audit report also contains some encouraging trends; mortality rates following both elective and emergency surgery are falling and there are increased numbers of operations being performed laparoscopically.

It is positive to see that almost one quarter of eligible patients were diagnosed through the Bowel Cancer Screening Programme. However, diagnoses via screening services vary considerably across the country and work to promote the NHS Bowel Cancer Screening Programme needs to continue.

The audit has continued to widen its scope and now links to the Systemic Anti-Cancer Therapy (SACT) dataset. This is in the early stages of analysis but has enabled more accurate information regarding the use of chemotherapy to be presented.

Complete and accurate data remain the key requirement to describe processes and outcomes of care for all patients with bowel cancer. The clinical ownership and oversight of the data submitted by each trust is crucial. It remains our responsibility to provide accurate and up to date information to those diagnosed and undergoing treatment for bowel cancer. The value of the annual report remains dependent on the quality of data submitted by the contributing multidisciplinary teams.

To improve accessibility of the 2017 Annual Report to patients, an individual patient report has again been produced. The report summarises the key results in a patient-friendly format.

The National Bowel Cancer Audit is now embedded as part of the National Clinical Audit and Patient Outcome Programme (NCAPOP). This enables further work to be done to fully describe the quality of care and outcomes for patients with bowel cancer in England and Wales.

Professor James Hill
President,
Association of Coloproctology of Great Britain and Ireland

1. Executive summary

Audit background

Bowel cancer is a major cause of illness, disability and death in the United Kingdom (UK). The National Bowel Cancer Audit (NBOCA) describes and compares the care and outcomes of patients diagnosed with bowel cancer in England and Wales. The audit is now well established and has collected data in its professional form since 2005.

The NBOCA is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and funded by NHS England and Welsh Government. The audit is carried out by the Clinical Effectiveness Unit (CEU) of the Royal College of Surgeons of England in partnership with the Association of Coloproctology of Great Britain and Ireland (ACPGBI), and NHS Digital.

The 2017 Annual Report is the eighth report produced by the above collaborative and includes data on over 30,000 patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016. The overall case ascertainment for England and Wales was 95%.

The key audience of the Annual Report and the Patient Report include those who deliver care to bowel cancer patients, commission bowel cancer services and patients.

Audit aims

The aim of the audit is to measure the quality of care and outcomes of patients with bowel cancer in England and Wales.

Audit values

Our values define what is important in the way we deliver the National Bowel Cancer Audit. In carrying out our work, we aim to:

- Produce accurate and reliable information for clinicians, patients, hospital staff and the public by ensuring that the data we collect is as complete and accurate as possible and by ensuring the information is produced using appropriate statistical methods.
- Deliver the National Bowel Cancer Audit in a way that supports bowel cancer services to improve the quality of the care delivered to patients.
- Ensure the confidentiality of patient information supplied by hospitals is protected.

What the audit measures

The NBOCA collects data on items which have been identified and generally accepted as measures of good care. It compares the variation in these between Cancer Alliances and trusts/hospital sites. A summary of the performance indicators measured in patients with bowel cancer is available at https://www.nboca.org.uk/resources/performance-indicators-description/ The majority of data items are collected by NHS trusts in England as part of the Cancer Outcomes and Services Dataset (COSD). Risk-adjusted outcomes reported include: 90-day post-operative mortality, 30-day unplanned readmission rate, two-year mortality for patients having major resection and 18-month stoma rate.

Clinical Outcome Publication

The NBOCA publishes data at individual surgeon level and trust level for English NHS trusts. This information is available on the ACPGBI, NHS Choices and MyNHS websites as part of the Clinical Outcomes Publication (COP) programme. The COP programme represents an ambitious endeavour aimed to improve transparency around clinical outcomes.

The total number of cases and the 90-day post-operative mortality rate, for patients undergoing elective/scheduled major surgery following a diagnosis of bowel cancer between 1 April 2010 and 31 March 2016, are currently reported at both surgeon and trust level.

Additional trust/hospital level outcomes will be reported for all patients with bowel cancer (emergency and elective) treated in the corresponding audit period. The reporting schedule is shown in Table 1.1.

Table 1.1
Schedule of additional trust outcomes according to COP reporting year

COP Reporting Year	Additional Trust Outcomes	Notes
2016	Rate of major resection	Crude rates with no outlier reporting
	Case ascertainment	Including patients who do not undergo surgery
2017	30 day unplanned readmission	Outlier reporting; risk-adjusted
	Percentage length of stay >5 days	Risk-adjusted
2018	Positive circumferential rectal resection margin rates	
	Proportion of colonic resections with >12 lymph nodes reported	
2019	Unplanned rates of return to theatre	Outlier reporting; risk-adjusted

These results will be available at http://www.acpgbi.org.uk/surgeon-outcomes/

Key findings and recommendations

Chapter 3 – Care pathways

- **9% of all patients with bowel cancer and 23% of patients aged 60-74 years and therefore eligible were diagnosed via the Bowel Cancer Screening Programme**
  These patients were more likely to be treated with curative intent than patients diagnosed via other means. Diagnoses via screening services varied from 16% to 29% across Cancer Alliances.

- **75% of all patients diagnosed with bowel cancer were treated with curative intent**
  93% of these patients underwent a major resection and 7% underwent endoscopic or minimally invasive local excision.

- **25% of patients were treated with palliative intent**
  18% of these patients underwent a major resection of the bowel cancer primary. A further 14% of patients underwent a palliative surgical procedure or stent.

- **There are large differences in the administration of adjuvant (post-surgical) chemotherapy between geographical regions**
  The use of adjuvant chemotherapy in patients with stage III disease ranged from 41% to 68% across Cancer Alliances.

Recommendations

3(a). Healthcare professionals must continue to promote bowel cancer screening and address the significant geographical variation in the uptake of screening

3(b). More evidence is required to determine the role of surgery of the primary tumour with few or absent symptoms in patients with synchronous unresectable metastases of colorectal cancer. Results from the several randomised controlled trials currently underway will be invaluable in this regard.

3(c). The geographical disparity in the use of adjuvant chemotherapy needs to be explored further.

Chapter 4 – Surgical care

- **90-day mortality after major resection has continued to fall and was 3.2% for 2015/16**
  The change was seen in both elective patients and those undergoing emergency surgery. In patients having urgent or emergency surgery it decreased from 13.9% in 2011/12 to 10.3% in 2015/16.

- **Median length of stay following major bowel cancer resection is unchanged at 7 days in elective patients and 11 days in emergency patients**
  Over a third of patients undergoing an emergency major resection remain in hospital for more than 2 weeks post-operatively.

- **The use of laparoscopic surgery for colorectal cancer resection continues to grow with 54% of major resections completed laparoscopically this audit period**
  Patients with advanced cancer, high ASA (American Society of Anesthesiologists) grade and advanced age were also more likely to have an open resection. Around a quarter of patients undergoing urgent or emergency resection had this performed laparoscopically.

- **83% of patients have more than 12 lymph nodes examined**
  The observed proportion of major resections with more than 12 lymph nodes examined varied considerably by trust, from 37% to 98%. This does not take into account variation in patient and tumour characteristics.

Recommendations

4(a). Bowel cancer care teams should be congratulated for achieving a continued reduction in postoperative mortality which has taken place without any reduction in resection rates. There should be a continued effort in the delivery of high quality care with a view to further improvements in outcomes.

Chapter 5 – Survival

- **Two-year survival rates for all patients diagnosed with bowel cancer have remained stable at 67% since 2011**
  Whilst the two-year survival in those undergoing major resection has remained relatively stable at 82% in 2011/12 and 83% in 2013/14, the two-year survival in patients who do not undergo tumour excision has decreased from 35% in 2011/12 to 29% in 2013/14.

- **There remains significantly more variation in two-year survival by trust/multidisciplinary team (MDT) than would be expected by chance alone**

Recommendations

5(a). Action is required nationally to reduce risk exposures, support healthy behaviours and mitigate the effects of socioeconomic deprivation in an attempt to reduce regional variation in cancer survival.

Chapter 6 – Rectal cancer

- **52% of rectal cancer patients underwent major resection and 7% underwent a local excision.**
  Just 5% of rectal cancer patients are managed with a stoma alone.

- **38% of rectal cancer patients undergoing major resection received neo-adjuvant (pre-surgical) treatment.**
  The use of neo-adjuvant treatment ranged widely between Cancer Alliances, from 23% to 58% of patients. This varied within both the use of long course radiotherapy (18-43%) and short-course radiotherapy (0-29%).

- **83% of rectal cancer patients had a stoma formed at the time of surgical resection.**
  Half of rectal cancer patients undergoing major resection had a stoma at 18 months. There was substantial variation in rates across trusts/sites with 18% of trusts/sites having an adjusted rate above 60% and 9% of trusts/sites having an adjusted rate below 40%.

Recommendations

6(a). The presence of a stoma is well recognised to decrease quality of life. Priority should be given to actively managing patients with a defunctioning stoma following anterior resection and planning early closure whenever possible.

6(b). Better understanding of the regional difference in the use of pre-operative treatment for rectal cancer patients is required.

NBOCA news for 2017

Chemotherapy dataset

The audit now links to the Systemic Anti-Cancer Therapy (SACT) dataset. This is in the early stages of analysis but has enabled more accurate information regarding the use of chemotherapy to be presented, identifying a larger number of patients receiving chemotherapy than was collected in the audit dataset.

Website

The NBOCA now has its own dedicated website. Users can access individual trust results, annual reports and short reports, as well as information regarding data entry and contact details. The website can be accessed at https://www.nboca.org.uk/.

Patient Reported Outcome Measures

NHS England's National Cancer PROMs Programme of the National Survivorship Initiative collected patient reported outcome measures (PROMs) for bowel cancer patients in a one-off study in 2013. This report can be accessed at https://www.england.nhs.uk/wp-content/uploads/2015/03/colorectal-cancer-proms-report-140314.pdf.

The PROMs data have been linked to the National Bowel Cancer Audit (NBOCA) dataset in order to carry out a study to assess the feasibility of reporting PROMs as part of a national audit of bowel cancer patients. The feasibility was assessed according to i) the characteristics of responders versus non-responders ii) the representativeness of the responders at different points along their pathway from diagnosis, iii) regional variation in responses, and iv) the validity of the measures in comparison to NBOCA clinical measures expected to impact upon patient experience. The NBOCA PROMs feasibility report can be accessed at https://www.nboca.org.uk/reports.

Supplementary short reports

The NBOCA published a short report in July 2017 investigating optimal timing between radiotherapy and surgery in rectal cancer patients:

https://www.nboca.org.uk/reports/short-report-1-2017/

The results of this are summarised on page 47.

A further report was published in October 2017 on cancer specific mortality (https://www.nboca.org.uk/reports/short-report-2-2017/). In 2018 the audit will publish two further supplementary reports on chemotherapy and end of life care.

Patient Episode Database for Wales

The audit now links to Patient Episode Database for Wales (PEDW). The database contains all inpatient and day case activity undertaken in NHS Wales plus data on Welsh residents treated in English trusts. This allows more accurate information to be presented for Welsh patients. See http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&pid=40977 for more information.

Organisational audit

The results of the organisational audit of NHS sites in England and Wales treating bowel cancer patients has been updated for this year. This details the facilities available at each trust/MDT and can be accessed at https://www.nboca.org.uk/reports/organisational-survey-results-2017/. The services available at each trust are also listed under each trust within the Trust Results section of the website which can be accessed at https://www.nboca.org.uk/trust-results/.

Reporting according to Cancer Alliance

Regional results across England, previously reported according to Strategic Clinical Network are now reported according to 19 Cancer Alliances in England and the Wales Cancer Alliance. Cancer Alliances have been introduced to bring together local senior clinical and managerial leaders representing the whole cancer patient pathway across a specific geography. See https://www.england.nhs.uk/cancer/strategy/alliance-guidance/ and http://www.walescanceralliance.org/ for more information.

Twitter

We now have a twitter page. Follow @NBOCA_CEU for regular updates.

2. Methods

Methods – NBOCA 2017

- All data for patients diagnosed with colorectal cancer from 1 April 2013 was submitted via NHS Digital's Clinical Audit Platform (CAP). Data is collected at the trust level in England and centrally from the Cancer Network Information System Cymru (CaNISC) system in Wales. Only patients with a new primary diagnosis of bowel cancer are included.
- Historic data submitted via the Open Exeter system has been uploaded into the CAP system.
- Case ascertainment is calculated for English Cancer Alliances and trusts, using Hospital Episode Statistics (HES) data to estimate the denominators and for Wales and Welsh MDTs using Patient Episode Data Wales (PEDW).
- The Audit dataset is linked to HES data at the patient level to obtain further information on patient care and follow-up for patients treated in England and PEDW for patients treated in Wales.
- Funnel plots are used to compare the following four outcomes: 90-day mortality after major resection; 30-day emergency readmission after major resection; two-year mortality after major resection and 18-month stoma rate after major resection for rectal cancer. Comparisons are made between Cancer Alliances and between trusts/sites. All outcomes are adjusted for patient case-mix.
- Potential outliers on these four risk-adjusted outcomes are reported back to trusts/hospital sites in advance of the report being published in order that the results can be validated.

2.1 Data collection

All but one of the eligible NHS trusts/hospital sites in England and Health Boards in Wales submitted data to the audit for inclusion in the 2017 Annual Report. The focus of this report is patients in England and Wales submitted to the audit who were diagnosed between 1 April 2015 and 31 March 2016. Data is also available from the previous four audits and comparisons are made across years for certain outcomes.

Since March 2014, patient data has been collected via NHS Digital's Clinical Audit Platform (CAP) system. This can be accessed at http://content.digital.nhs.uk/clinicalauditplatform. This allows only one treatment record to be listed per patient and patients identified as being submitted to the audit in a previous year are excluded from subsequent audits. The dataset has been redesigned to contain fewer items, some of which are mandatory, which has succeeded in improving data completeness across all patients, not just those having surgery. For example, pre-treatment staging is now complete in 73% of patients compared to 40% in 2011/12. Performance status and curative intent were not collected until 2013 and these are now complete in 83% and 89% of patients respectively. All participating trusts in England individually submitted their data for this annual report to this system. The Welsh data was submitted centrally from CaNISC.

Historic audit data from Open Exeter was transferred to the CAP system and is available for review and editing if required. Further information about Open Exeter and the data transfer are available in Section 1.1 of the 2015 supportive document, found at https://www.nboca.org.uk/reports/annual-report-2015/

2.2 Data linkage

a) HES/PEDW

Audit data linked to HES/PEDW data allows the possibility of exploiting HES/PEDW data for items not available in the audit. In particular HES/PEDW is useful for analysing certain patient outcomes including emergency readmissions and stoma provision. The mode of admission (elective or emergency) is recorded in HES/PEDW, as is the number of co-morbidities, which is defined according to the Charlson co-morbidity score.

Patients treated at hospitals in England were linked to HES records using their NHS numbers, date of birth, sex and postcode. 95% of patients undergoing major surgery at English trusts in the audit could be linked to HES; the equivalent for Welsh patients and PEDW was 91%. Estimates for 30-day unplanned readmissions or 18-month stoma rates exclude those patients not linked to HES/PEDW. Risk-adjusted mortality estimates for patients not linked to HES/PEDW relied on imputed data for comorbidities and mode of admission. See Section 2.6 for more details of the imputation methods.

b) Office for National Statistics

Linking audit data to mortality data from the Office for National Statistics (ONS) allows the audit to analyse patient mortality across England and Wales without increasing the data entry burden for sites. In addition to date of death, the audit has access to place and cause of death and plans to produce reports using this information in the near future. Linkage to ONS is performed using patient NHS number, date of birth, sex and postcode.

c) Radiotherapy Dataset

The National Radiotherapy Dataset (RTDS) contains information about radiotherapy treatment received by patients in England, such as primary cancer site, curative intent, dose, number of attendances, first appointment date, and reason for treatment.

Patients treated at hospitals in England were linked to RTDS records using their NHS numbers, date of birth, sex and postcode. In general, treatment episodes were grouped into long course, short course or other based on the number of attendances; however, an additional small number of records with a prescribed radiation dose between 44-46 Gy were classified as long course. The audit date of surgery was used to distinguish between radiotherapy only, pre-operative and post-operative (not used in this report) treatment. RTDS data was used as the basis of the first definitive non-surgical treatment; if no RTDS data was available for a patient this information was updated from SACT data (see 2.2 d) below) and then finally from the audit pre-operative treatment variable (capturing audit-only radiotherapy and chemotherapy patients).

For the last three months of the audit reporting period (January to March 2016) the linkage to RTDS is poorer, therefore the results using RTDS for rectal cancer patients are presented for patients diagnosed between January and December 2015. This is due to timing of treatment in relation to diagnosis i.e. patients diagnosed in the last 3 months of the audit year were unlikely to have received their radiotherapy in time to be recorded in the extract of RTDS linked to the audit. RTDS data is not available for Welsh patients unless they received the radiotherapy in England. Therefore the pre-operative treatment variable recorded in audit data is presented for Welsh patients.

d) Systemic Anti-Cancer Therapy

The Systemic Anti-Cancer Therapy (SACT) dataset contains information about chemotherapy treatment received by patients in England, such as primary cancer site, chemotherapy type, planned and actual number of treatments, dose, route of administration and reasons for stopping or reducing treatment.

Patients treated at hospitals in England were linked to SACT records using their NHS numbers, date of birth, sex and postcode. Regimen start dates were compared to the audit dates of diagnosis and surgery to determine whether chemotherapy was given alone, prior to surgery or after surgery. Similarly to RTDS data, the SACT dataset is not available for Welsh patients. Therefore audit data on pre-operative and post-operative chemotherapy are presented for Welsh patients.

2.3 Data processing – Type 2 objections

Patients in England who do not want their personal confidential information to be shared outside of NHS Digital, for purposes other than for their direct care, can register a type 2 opt-out with their GP practice. The audit could not receive HES or ONS data for patients who have registered a type 2 opt-out so their records could not be linked. Table 2.1 shows the number of records that could be linked to HES/ONS over the past five years.

According to NHS Digital, across England as a whole the proportion of patients who have requested type 2 opt-out was 2.3% in June 2017, with variation by region. The proportion of audit patients who have opted out has increased over the last five years. More information about Type 2 opt-out is available from http://content.digital.nhs.uk/article/7092/Information-on-type-2-opt-outs

Table 2.1
HES/ONS linkage by audit year

	2011-12		2012-13		2013-14		2014-15		2015-16	
	Total	Not linked N (%)	Total	Not linked N (%)	Total	Not linked N (%)	Total	Not linked N (%)	Total	Not linked N (%)
All patients	30,354	581 (1.9)	31,398	636 (2.0)	30,713	766 (2.5)	31,076	947 (3.1)	30,710	1,437 (4.7)
Patients undergoing Major Resection	19,319	458 (2.4)	20,074	488 (2.4)	19,687	542 (2.8)	19,575	612 (3.1)	19,232	880 (4.6)

2.4 Case ascertainment

Case ascertainment is expressed as a ratio of the number of bowel cancer patients reported to the audit compared to the total number of patients admitted for the first time to the participating units with a date of diagnosis of bowel cancer within the audit period, according to Hospital Episode Statistics (HES) data for patients diagnosed in England and Patient Episode Database for Wales (PEDW) for patients diagnosed in Wales. These are administrative databases containing records of all admissions to NHS trusts and were used to estimate the denominator of this proportion. Patients who requested a type 2 opt-out did not have HES data and therefore the denominator for England is an under-estimate and consequently, case ascertainment is over-estimated. Because of the variation in rates of type 2 opt-outs by region, this will affect regional and trust/site estimates differently.

In HES/PEDW, a patient was considered to be diagnosed with primary bowel cancer when admitted to hospital for the first time with a diagnosis of bowel cancer (C18, C19 or C20 according to the International Classification of Diseases 10th Revision) in the first diagnosis field. It was assumed to be a first bowel cancer admission if no previous bowel cancer diagnosis could be identified in any of the diagnostic fields since 1 April 2010.

Case ascertainment by year is given in Table 2.2. Overall case ascertainment is 95% this year for England and Wales as a whole. Case ascertainment at Cancer Alliance/Wales and trust/site level is given in Table 7.1.

Table 2.2
Case ascertainment by year

	2011-12	2012-13	2013-14	2014-15	2015-16
Patients identified in HES/PEDW	33,640	32,849	31,796	31,979	32,335
Patients identified in audit	30,354	31,397	30,712	31,075	30,710
% case ascertainment	**90**	**96**	**97**	**97**	**95**

2.5 Data completeness

Data completeness is defined as the proportion of patients with complete data items on all seven of the variables: age, sex, ASA grade, pathological TNM stage (tumour, node, metastasis staging) and site of cancer, as these audit variables are used for risk adjustment. Mode of admission and number of co-morbidities are also used in the risk adjustment model but as these variables are collected from HES data they are not included in the assessment of data completeness. Data completeness is only assessed in patients who underwent major surgery, because only in these patients could all seven data items be expected to be complete.

Where pathological M-stage is submitted as 'not assessed' (Mx) or 'not recorded' (M9) it is updated from pre-operative tumour staging where recorded as M0 or M1. Dukes' staging is no longer in the audit dataset and therefore can no longer be used to update missing values of M-stage. For the purposes of the audit, the following recorded tumour stages are considered to be missing data: Tx, T9, Nx, N9, Mx, M9.

Data completeness reports have been sent to each NHS trust both to provide feedback on the data submitted and to point to areas for improvement. The removal of Duke's staging from the dataset and subsequent change in handling of pathological M-stage data led to a significant drop in overall data completeness in 2013/14 (Table 2.3). Data completeness by Cancer Alliance/trust/MDT is shown in Table 7.1.

Table 2.3
Percentage of patients undergoing major surgery with complete data on the 7 items from the audit used in risk adjustment, by audit year

	2011-12		2012-13		2013-14		2014-15		2015-16	
	N	%	N	%	N	%	N	%	N	%
Total patients undergoing major resection	19,319		20,074		19,687		19,575		19,232	
Complete data on 7 key items	16,087	83.3	17,825	88.8	15,751	80.0	16,149	82.5	15,564	80.9
Data completeness if TNM M-stage recorded	17,587	91.0	18,826	93.8	18,084	91.9	17,930	91.6	16,821	87.5

2.6 Handling missing data

Multiple imputation using chained equations was used to fill in any missing risk factor information for the four adjusted outcomes reported at trust and Cancer Alliance level. This method uses a patient's other risk-factors to predict their missing information, whilst taking into account the uncertainty due to their missing information.

In addition to the variables in the risk adjustment model, and the outcomes, the following variables were included in the imputation model: surgical urgency, mode of admission according to the audit, surgical procedure, number of lymph nodes extracted, number of positive lymph nodes extracted, Index of Multiple Deprivation (national ranking of residential area measuring it's relative deprivation across seven domains), length of hospital stay, and days from diagnosis to surgery.

Amongst patients undergoing major surgery, 5.8 per cent were missing ASA grade, 8.5 per cent were missing TNM T-stage, 8.7 per cent were missing TNM N-stage and 14.3 per cent were missing TNM M-stage. Mode of admission and Charlson comorbidity score came from HES/PEDW and were missing in patients who were not linked to HES/PEDW. Virtually all patients had complete data on sex, age, and site of cancer.

2.7 Definition of outcomes derived from HES/PEDW

Length of hospital stay was calculated for patients undergoing major surgery and was defined as the number of days between either discharge or death and the date of surgical procedure as recorded in HES/PEDW.

Emergency readmission within 30-days of surgery was derived for patients undergoing major surgery, and was defined as an emergency admission to any hospital for any cause within 30-days of surgery. Emergency admissions include: admission via Accident and Emergency, general practitioner, bed bureau, or consultant outpatient clinic.

18-month stoma rate was estimated for rectal cancer patients undergoing major surgery. Patients undergoing an abdomino-perineal excision of the rectum (APER) (operation to remove the entire rectum and anal canal) or Hartmann's procedure (operation to remove area of bowel on left hand side with part of rectum, leaving a colostomy) according to the audit were assumed to have had a stoma at the time of their primary procedure. This was classified as permanent in patients having an APER.

HES/PEDW data was used to capture whether anterior resection (AR) (operation to remove all of part of the rectum) patients received a stoma and the type of stoma that was created. In patients having an AR or Hartmann's procedure, information on subsequent stoma reversal was also obtained from HES/PEDW. A procedure code for reversal of ileostomy or colostomy within 18 months of surgery was assumed to mean that the patient had their stoma reversed. To make comparisons between Cancer Alliances and between trusts/hospitals, 18-month stoma rates for all resectional surgery (APER, Hartmann's and anterior resection) were adjusted for case-mix using the same risk factors as for 90-day mortality (except cancer site). Data were pooled over three years to ensure sufficient numbers of operations per trusts to make comparisons. It is only the 2014 and 2017 Annual Report which have no overlap in the data reported.

2.8 Definition of Surgical Urgency

The audit uses the pre-2004 National Confidential Enquiry into Patient Outcomes and Death (NCEPOD) classification of surgical urgency (below):

Elective: Operation at a time to suit both patient and surgeon e.g. after an elective admission.

Scheduled: An early operation (usually within three weeks) but not immediately life-saving.

This category often includes patients treated on cancer pathways with targets.

Urgent: As soon as possible after resuscitation and usually within 24 hours.

Emergency: Immediate and life-saving operation, resuscitation simultaneous with surgical treatment. Operation usually within two hours.

2.9 Statistical Analysis

Most results reported in this audit report are descriptive. The results of categorical data items are reported as percentages (%). The denominator of these proportions is in most cases the number of patients for whom the value of the data item was not missing. Results are typically grouped by Cancer Alliances and/or trust/hospital/MDT. England's 13 Cancer Alliances were used in the analyses, and compared to Wales as a whole. The results for Wales are reported according to where the multidisciplinary team who discussed the patients' management were located, rather than by trust/hospital.

Funnel plots

Funnel plots are used to make comparisons between cancer alliances or between trusts/hospitals on the following outcomes: 90-day mortality after major surgery; 30-day emergency readmission after major surgery; two-year mortality after major surgery; and 18-month stoma rates for rectal cancer patients undergoing major surgery. The rate for each Cancer Alliance or for each trust or hospital is plotted against the total number of patients used to estimate the rate. The 'target' is specified as the average rate across all Cancer Alliances/trusts/hospitals.

The funnel limits depend on the target rate and the number of patients included in the estimate; rate estimates have greater uncertainty when estimated from fewer patients. Results fall outside the inner limits if they are statistically significantly different from the target at a 0.05 level, and outside the outer limits if they are statistically significantly different from the target at a 0.002 level. The inner funnel limit is the threshold for an "alert" and the outer funnel level is the threshold for an "alarm". This implies that 95 per cent of the trusts or hospitals are expected to be within the inner funnel limits and 99.8 per cent within the outer funnel limits, if they are all performing according to the target.

If all trusts/hospitals in this report had the same underlying rate for a particular outcome, four would be expected to lie above and four below the inner limits, and 0.2 above and 0.2 below the outer limits by chance alone.

Cancer Alliances, trusts or hospitals with results outside the outer (99.8%) funnel limit are considered as potential outliers and have been contacted according to the recommended HQIP procedure.

Adjusted outcomes

A previously peer-reviewed model for risk adjustment of post-operative mortality in bowel cancer patients was used. Multivariable logistic regression was carried out to estimate risk-adjusted 90-day post-operative mortality, 30-day emergency readmission, and 18-month stoma rates for rectal cancer patients undergoing major surgery. A Poisson model was fitted to estimate risk-adjusted two-year mortality after major surgery. Unlike the 90-day mortality, 30-day emergency readmission rate and 18-month stoma rate, the two-year mortality rate takes into account the length of time each patient was followed up for. The observed two-year mortality is the number of patients who died within two years divided by the sum of the amount of time each patient is followed for. For example, in two trusts/hospitals with the same proportion of patients dying within two years, the trust in which patients die earlier will have a higher two-year mortality rate.

Multivariable Regression Model Variables	
Patient Characteristics	Age (modelled as age plus age-squared) Sex
Morbidity and Presentation	ASA grade; Charlson co-morbidity score (according to HES). Mode of admission (according to HES)
Cancer	T-stage (pathological), N-stage (pathological), M-stage (pathological), Site of tumour

An interaction between age and distant metastases was also included in the models to allow age to have a different effect in patients with and without metastases.
Once patients have metastatic disease the effect of age is found to be far less important than in patients without metastases. The model for two-year survival additionally included interactions between epoch (0-3 months after surgery vs. 3-24 months after surgery) and all of the risk factors. This allows risk factors to have a different effect shortly after surgery and in the longer term. For example, the effect of ASA grade is much larger peri-operatively than in the longer-term, whilst cancer stage has a much larger impact on longer-term than short-term mortality.
The model for 18-month stoma rate did not include cancer site as it was for rectal cancer patients only.

Patients with missing date of surgery were excluded, and multiple imputation was used to fill in any missing information on the risk factors. The following trusts were excluded from the listed analysis because overall data completeness was less than 20% or ASA grade and/or TNM stage was missing in more than 80% patients included in the analysis:

90-day mortality:

- Frimley Health NHS Foundation Trust – Frimley Park Hospital
- Mid Essex Hospital Services NHS Trust
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
- University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital

30-day emergency readmission:

- East and North Hertfordshire NHS Trust
- Frimley Health NHS Foundation Trust – Frimley Park Hospital
- Mid Essex Hospital Services NHS Trust
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
- University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital
- University Hospitals Birmingham NHS Foundation Trust

Two-year survival:

- Bradford Teaching Hospitals NHS Foundation Trust
- Colchester Hospital University NHS Foundation Trust
- Luton and Dunstable University Hospital NHS Foundation Trust
- University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital

The individual trusts and the CQC have been made aware of this. This is the third consecutive year that The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust has been excluded from 90 day mortality and 30 day emergency readmission (previously 90 day readmission) analyses.

Walsall Healthcare NHS Trust did not submit any data.

The adjusted outcomes were estimated using indirect standardisation. The observed number of events for a trust or hospital was divided by the number expected on the basis of the multivariable regression model. The adjusted rate was then estimated by multiplying this ratio by the average rate in all patients included in the analysis.

All statistical analyses were performed using Stata version 14.1.

3. Care pathways

Care pathways - NBOCA 2017

- 55% of patients were diagnosed with bowel cancer following GP referral and around 9% of patients were diagnosed through The National Bowel Cancer Screening Programme.
- Almost one quarter of patients aged 60-74, and therefore eligible, were diagnosed via screening. There is wide geographical variation in the proportion of patients diagnosed through screening in those of eligible age.
- Treatment with curative intent varied depending on mode of presentation. Only 53% of patients presenting as an emergency were treated with curative intent compared to 71% of patients diagnosed following GP referral and 90% of patients diagnosed through screening.
- 37% of patients did not undergo major resection. The reasons behind this have been subdivided in to four categories: too little cancer (4%), too much cancer (12%), too frail (5%) or unknown/ other reason (16%).

3.1 Where are patients diagnosed with bowel cancer presenting?

Referral source

The majority of patients (55%) were diagnosed with bowel cancer following a GP referral, as shown in Table 3.1. The proportion of patients diagnosed following a referral from screening services has been unchanged for the last three years, at just under 10%. Patients diagnosed following an emergency admission had more advanced disease, poorer performance status and were comparatively older than patients diagnosed from GP or screening services. Only half of these patients had curative treatment intent, compared to 70% and 90% in those diagnosed via GP and screening services respectively.

Table 3.1
Description of the 30,710 patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016, by Referral Source

		Emergency Admission		GP Referral		Screening Referral		Other/ Not Known	
		Number	%	Number	%	Number	%	Number	%
Total no. patients		**6,057**		**16,707**		**2,970**		**4,976**	
Sex	**Male**	3,214	53.1	9,330	55.9	1,938	65.3	2,826	56.8
	Female	2,843	46.9	7,375	44.1	1,031	34.7	2,149	43.2
	Missing (% of total)	0	0.0	2	0.0	1	0.0	1	0.0
Age-group	**<50 yrs**	527	8.7	869	5.2	2	0.1	402	8.1
	50-64 yrs	1,093	18.0	3,659	21.9	957	32.2	1,056	21.2
	65-74 yrs	1,365	22.5	4,344	26.0	1,905	64.1	1,374	27.6
	75-84 yrs	1,858	30.7	5,693	34.1	102	3.4	1,544	31.0
	85+ yrs	1,214	20.0	2,142	12.8	4	0.1	600	12.1
Cancer site	**Caecum/ascending colon**	2,128	35.1	4,277	25.6	500	16.8	1,501	30.2
	Hepatic flexure	296	4.9	624	3.7	103	3.5	190	3.8
	Transverse colon	491	8.1	975	5.8	166	5.6	354	7.1
	Splenic flexure/descending colon	578	9.5	797	4.8	162	5.5	288	5.8
	Sigmoid colon	1,497	24.7	3,480	20.8	962	32.4	1,082	21.7
	Rectosigmoid	259	4.3	989	5.9	174	5.9	246	4.9
	Rectal	808	13.3	5,565	33.3	903	30.4	1,315	26.4
Pre-treatment TNM T-stage	**T1**	112	1.8	653	3.9	357	12.0	379	7.6
	T2	460	7.6	2,746	16.4	785	26.4	882	17.7
	T3	2,019	33.3	7,635	45.7	1,114	37.5	1,906	38.3
	T4	1,779	29.4	2,930	17.5	141	4.7	726	14.6
	Tx	555	9.2	1,129	6.8	286	9.6	484	9.7
	T9	1,132	18.7	1,614	9.7	287	9.7	599	12.0
Pre-treatment TNM N-stage	**N0**	1,912	31.6	6,492	38.9	1,607	54.1	2,205	44.3
	N1	1,523	25.1	4,965	29.7	731	24.6	1,249	25.1
	N2	1,007	16.6	2,830	16.9	228	7.7	597	12.0
	Nx	473	7.8	795	4.8	114	3.8	316	6.4
	N9	1,142	18.9	1,624	9.7	290	9.8	609	12.2
Pre-treatment TNM M-stage	**M0**	3,171	52.4	11,355	68.0	2,338	78.7	3,358	67.5
	M1	1,637	27.0	3,080	18.4	198	6.7	765	15.4
	Mx	416	6.9	1,031	6.2	173	5.8	353	7.1
	M9	833	13.8	1,241	7.4	261	8.8	500	10.0
Performance Status	**Normal activity**	1,412	29.0	6,410	45.1	1,631	66.2	1,790	43.6
	Walk & light work	1,475	30.3	4,562	32.1	664	26.9	1,366	33.3
	Walk & all self care: up >50%	991	20.4	2,144	15.1	144	5.8	626	15.2
	Ltd self care: confined >50%	787	16.2	953	6.7	19	0.8	289	7.0
	Completely disabled	200	4.1	132	0.9	6	0.2	35	0.9
	Missing (% of total)	1,192	19.7	2,506	15.0	506	17.0	870	17.5
Care Plan Intent	**Curative**	3,183	52.6	11,867	71.0	2,672	90.0	3,632	73.0
	Non Curative	1,881	31.1	3,127	18.7	124	4.2	764	15.4
	No Cancer Treatment	506	8.4	845	5.1	58	2.0	284	5.7
	Not Known	487	8.0	868	5.2	116	3.9	296	5.9
ASA grade*	**1**	435	12.1	1,503	13.5	434	18.2	467	14.0
	2	1,596	44.4	6,184	55.6	1,558	65.2	1,835	54.9
	3	1,277	35.5	3,206	28.8	375	15.7	961	28.8
	4 or 5	286	8.0	233	2.1	21	0.9	79	2.4
	Missing/Not Known (% of total)	2,463	40.7	5,581	33.4	582	19.6	1,634	32.8
Surgical Treatment	**Major Resection**	3,290	54.3	10,585	63.4	2,274	76.6	3,082	61.9
	Local Excision	47	0.8	589	3.5	304	10.2	326	6.6
	Stoma	242	4.0	515	3.1	9	0.3	88	1.8
	Stent	89	1.5	158	0.9	6	0.2	28	0.6
	Other	318	5.3	329	2.0	50	1.7	132	2.7
	None Reported	2,071	34.2	4,531	27.1	327	11.0	1,320	26.5

* ASA grade only required if patient undergoes surgical treatment

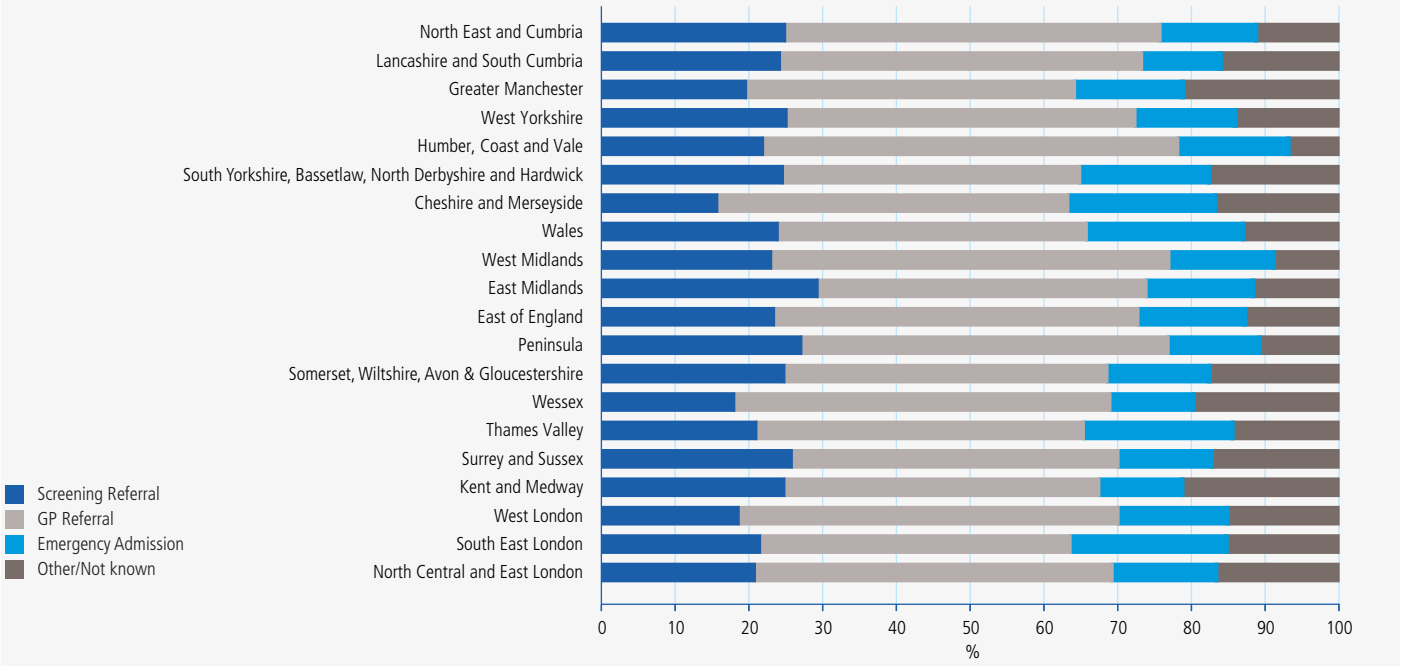
Diagnosis from screening

The proportion of patients at screen eligible age (60-74 years) diagnosed following a referral from screening services is 23%. Patients referred from screening services tended to have earlier cancers and were more likely to be treated with curative intent than patients diagnosed via other referral means.

Geographical variation in screening diagnoses in eligible patients

Figure 3.1 demonstrates wide variation in screening diagnoses amongst patients aged 60-74 years, and therefore eligible for screening. This ranged from 16% in Cheshire and Merseyside to 29% in East Midlands.

Figure 3.1
Referral source of the 12,089 patients aged 60 to 74 years diagnosed with bowel cancer between 1 April 2015 and 31 March 2016 by Cancer Alliance/Nation



Invited commentary from Dr Suzanne Wright, Head of Implementation and Training, The NHS Bowel Cancer Screening Programme

The 2017 Annual Report from the National Bowel Cancer Audit finds that around 9% of colorectal cancer patients are diagnosed through screening services in England and around 12% in Wales. This proportion is higher (23%) when only patients of eligible age are considered. The NBOCA results clearly show the advantages of participating in screening, with these patients being diagnosed with less advanced bowel cancers, and being more likely to be treated with curative intent.

The Bowel Cancer Screening Programme commenced in 2006 in England and 2008 in Wales, inviting men and women (aged 60-69 years) to take part in a faecal occult blood testing programme. In 2010 the programme extended the screening age range to include people up to 74 years old. For the year 2015-2016 there were 4.3 million people invited to take part in the Bowel Cancer Screening Programme, with 56% of those invited participating.

Although participation compares well with most other guaiac-based faecal occult blood test (gFOBt) programmes; it is the lowest participation of the 3 English cancer screening programmes. There are marked differences in the male, deprived and previous non-responders populations each showing lower participation rates. Within Wales, 284 400 patients were invited to participate in the 2015-2016 period, with a 54% uptake.

In 2014 the Bowel Cancer Screening Programme commissioned a pilot to evaluate the move to a new faecal immunochemical test (FIT). The results of this pilot demonstrated markedly improved participation rates particularly in men and previous non-respondents due to better usability. As a result, FIT will be introduced in England in spring/summer 2018 and rolled out in Wales in early 2019. In addition, a one-off test called bowel scope screening is being introduced in England which involves telescopic examination of the bowel and will be offered to men and women aged 55.

We hope to see the positive impact of the introduction of the FIT, as well as bowel scope screening, reflected in future NBOCA Annual Reports.

3.2 How are patients treated following diagnosis?

Care pathways

76% of patients diagnosed with bowel cancer who have a care plan intent recorded were treated with curative intent (Table 3.2). Surgical removal of a locally confined cancer remains the most certain modality of cure but patient suitability and disease characteristics have a profound influence on treatment. Patient characteristics according to care pathway are shown in Table 3.2.

Treatment intent appeared to change at the extremes of age. 60% of patients under the age of 50 years were treated with curative intent, 70% of patients between the ages of 50 and 74, 62% of patients 75 to 84 years and 37% of those over the age of 85 years. This most likely relates to more advanced disease in younger patients and the increased fragility of very elderly patients in whom further active treatment may not be in their best interests.

Similarly, performance status was a clear discriminator of treatment. 85% of patients treated with curative intent were performance status 1 or 2, compared to 45% of those treated with non-curative intent

A significant proportion of patients (37%) did not undergo major resection. These patients are subdivided into three broad categories:

Too little cancer (stage I):

- Those undergoing a local resection or polypectomy OR
- Those with rectal cancer and pre-treatment M0 undergoing long course radiotherapy with curative monitoring intent (to represent those with complete response)

Too much cancer (stage IV):

- No excision and reason for no treatment included advanced stage cancer OR
- No excision and non-curative intent and metastatic disease

Too frail:

- Not in 'too much cancer' group AND:
- No excision and reason for no treatment includes significant comorbidity OR
- No excision and performance status 3 or 4

There remains a substantial group of patients (16%) whom it was not possible to classify. More complete information is required on the data items: reason for no treatment, performance status, care plan intent and pre-treatment M-stage to reduce this proportion.

Table 3.2
Description of the 30,710 patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016, by NBOCA Treatment Pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		Too little		Major Resection		Too much		Too frail		Other*	
		N	%	N	%	N	%	N	%	N	%	N	%
Total patients		**18,086**		**1,332**		**1,148**		**3,590**		**1,515**		**5,039**	
Gender	**Male**	10,168	56.2	823	61.8	624	54.4	2,074	57.8	791	52.2	2,828	56.1
	Female	7,916	43.8	508	38.2	524	45.6	1,516	42.2	724	47.8	2,210	43.9
	Missing (% of total)	2	0.0	1	0.1	0	0.0	0	0.0	0	0.0	1	0.0
Age	**<50**	1,018	5.6	62	4.7	89	7.8	218	6.1	13	0.9	400	7.9
	50-64	4,439	24.5	331	24.8	267	23.3	680	18.9	60	4.0	988	19.6
	65-74	5,899	32.6	483	36.3	314	27.4	856	23.8	195	12.9	1,241	24.6
	75-84	5,380	29.7	353	26.5	344	30.0	1,098	30.6	563	37.2	1,459	29.0
	85+	1,350	7.5	103	7.7	134	11.7	738	20.6	684	45.1	951	18.9
Cancer site	**Caecum/ascending colon**	5,357	29.6	41	3.1	434	37.8	967	26.9	432	28.5	1,175	23.3
	Hepatic flexure	786	4.3	7	0.5	56	4.9	153	4.3	69	4.6	142	2.8
	Transverse colon	1,307	7.2	22	1.7	70	6.1	239	6.7	119	7.9	229	4.5
	Splenic flexure/ descending colon	1,153	6.4	41	3.1	77	6.7	234	6.5	92	6.1	228	4.5
	Sigmoid colon	4,168	23.0	478	35.9	304	26.5	799	22.3	303	20.0	969	19.2
	Rectosigmoid	975	5.4	66	5.0	53	4.6	254	7.1	80	5.3	240	4.8
	Rectal	4,340	24.0	677	50.8	154	13.4	944	26.3	420	27.7	2,056	40.8
Pre-treatment TNM T-stage	**T1**	740	4.1	523	39.3	12	1.0	21	0.6	18	1.2	187	3.7
	T2	3,680	20.3	191	14.3	74	6.4	170	4.7	186	12.3	572	11.4
	T3	8,494	47.0	70	5.3	399	34.8	1,372	38.2	548	36.2	1,791	35.5
	T4	2,642	14.6	21	1.6	435	37.9	1,190	33.1	275	18.2	1,013	20.1
	Tx	1,130	6.2	267	20.0	73	6.4	462	12.9	170	11.2	352	7.0
	T9	1,400	7.7	260	19.5	155	13.5	375	10.4	318	21.0	1,124	22.3
Pre-treatment TNM N-stage	**N0**	8,381	46.3	855	64.2	266	23.2	644	17.9	537	35.4	1,533	30.4
	N1	5,318	29.4	69	5.2	351	30.6	1,128	31.4	386	25.5	1,216	24.1
	N2	2,325	12.9	26	2.0	302	26.3	995	27.7	141	9.3	873	17.3
	Nx	644	3.6	120	9.0	74	6.4	441	12.3	134	8.8	285	5.7
	N9	1,418	7.8	262	19.7	155	13.5	381	10.6	317	20.9	1,132	22.5
Pre-treatment TNM M-stage	**M0**	14,753	81.6	960	72.1	392	34.1	299	8.3	977	64.5	2,841	56.4
	M1	1,013	5.6	13	1.0	573	49.9	3,139	87.4	164	10.8	778	15.4
	Mx	1,259	7.0	117	8.8	73	6.4	40	1.1	129	8.5	355	7.0
	M9	1,061	5.9	242	18.2	110	9.6	112	3.1	245	16.2	1,065	21.1
Performance Status	**Normal activity**	7,965	51.6	599	56.4	324	34.1	771	25.3	26	1.9	1,558	41.2
	Walk & light work	5,148	33.4	305	28.7	352	37.1	858	28.2	71	5.2	1,333	35.2
	Walk & all self care:up >50%	1,839	11.9	118	11.1	170	17.9	715	23.5	178	13.0	885	23.4
	Ltd self care: confined >50%	433	2.8	38	3.6	84	8.9	580	19.0	910	66.3	3	0.1
	Completely disabled	41	0.3	2	0.2	19	2.0	121	4.0	187	13.6	3	0.1
	Not recorded (% of total)	2,660	14.7	270	20.3	199	17.3	545	15.2	143	9.4	1,257	24.9

Table 3.2 continued
Description of the 30,710 patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016, by NBOCA Treatment Pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		Too little		Major Resection		Too much		Too frail		Other*	
		N	%	N	%	N	%	N	%	N	%	N	%
Missing pathology record†		1,376	7.6	346	26.0	108	9.4	3,409	95.0	1,446	95.4	4,262	84.6
Final pathology T-stage	**T0**	245	1.5	17	1.7	9	0.9	30	16.6	0	0.0	58	7.5
	T1	1,113	6.7	680	69.0	19	1.8	3	1.7	5	7.2	80	10.3
	T2	2,679	16.0	97	9.8	68	6.5	3	1.7	0	0.0	72	9.3
	T3	8,695	52.0	27	2.7	327	31.4	19	10.5	8	11.6	210	27.0
	T4	3,836	23.0	4	0.4	601	57.8	32	17.7	9	13.0	166	21.4
	Tx	23	0.1	33	3.3	2	0.2	16	8.8	4	5.8	18	2.3
	T9	119	0.7	128	13.0	14	1.3	78	43.1	43	62.3	173	22.3
Final pathology N-stage	**N0**	9,867	59.0	490	49.7	323	31.1	48	26.5	10	14.5	345	44.4
	N1	4,237	25.4	21	2.1	277	26.6	19	10.5	4	5.8	109	14.0
	N2	2,443	14.6	3	0.3	419	40.3	15	8.3	3	4.3	88	11.3
	Nx	30	0.2	226	22.9	7	0.7	19	10.5	9	13.0	40	5.1
	N9	133	0.8	246	24.9	14	1.3	80	44.2	43	62.3	195	25.1
Final pathology M-stage	**M0**	14,610	87.4	841	85.3	479	46.1	67	37.0	58	84.1	522	67.2
	M1	937	5.6	7	0.7	483	46.4	110	60.8	2	2.9	110	14.2
	Mx	1,075	6.4	64	6.5	64	6.2	3	1.7	4	5.8	92	11.8
	M9	88	0.5	74	7.5	14	1.3	1	0.6	5	7.2	53	6.8

*Other includes pathways with small numbers of cases,for example, the 307 patients who are recorded as declining treatment. In addition, there are patients with data inconsistencies, such as Curative Care Plan Intent but no recorded treatment.

† For Major resection and Too little pathways this data should be recorded. For Too much, Too frail and Not known/ Other pathways this data would not be expected unless patient had surgery

Curative intent

93% of patients treated with curative intent underwent a major resection (Table 3.3). Linkage to SACT data shows that around 34% patients received post-operative chemotherapy. The use of radiotherapy in the rectal cancer patients included in this group is further explored in Chapter 6.

Non-curative intent

18% of patients treated with non-curative intent underwent a major resection of primary tumour, of whom 60% subsequently underwent chemotherapy. Nearly half of these procedures were performed on an urgent or emergency basis (compared to 14% of major resection procedures performed in patients treated with curative intent). A further 14% of patients treated with non-curative intent underwent a palliative surgical procedure (stoma formation or stent) (Table 3.3).

Of patients who did not undergo a major resection, 30% of those with advanced disease underwent chemotherapy, and almost no patients deemed too frail for major resection received chemotherapy.

Unknown/other

There were over 5,000 patients who do not readily fit into one of the pathways described above. These patients appear to be a varied cohort and their characteristics are not directly comparable to those patients in any particular pathway.

Table 3.3
Description of management of the 30,710 patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016, by NBOCA treatment pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		Too little		Major Resection		Too much		Too frail		Other*	
		N	%	N	%	N	%	N	%	N	%	N	%
Total patients		**18,086**		**1,331**		**1,148**		**3,590**		**1,515**		**5,040**	
Planned treatment†	**Surgery**	16,632	92.0	1,177	88.4	698	60.8	475	13.2	191	12.6	2,033	40.3
	Radiotherapy	1,208	6.7	58	4.4	56	4.9	276	7.7	161	10.6	988	19.6
	Chemotherapy	2,111	11.7	46	3.5	334	29.1	1,423	39.6	59	3.9	1,214	24.1
	Specialist Palliative Care	11	0.1	8	0.6	87	7.6	1,208	33.6	503	33.2	596	11.8
	Brachytherapy	9	0.0	2	0.2	0	0.0	2	0.1	6	0.4	24	0.5
	None	422	2.3	104	7.8	161	14.0	543	15.1	664	43.8	954	18.9
Reason for no treatment	**Patient declined**	2	0.0	5	0.4	10	0.9	17	0.5	65	4.3	307	6.1
	Unfit: co-morbidity	4	0.0	4	0.3	23	2.0	58	1.6	734	48.4	0	0.0
	Unfit: advanced disease	6	0.0	39	2.9	140	12.2	1,186	33.0	0	0.0	1	0.0
	Multiple	0	0.0	0	0.0	5	0.4	134	3.7	39	2.6	0	0.0
	NK	319	1.8	47	3.5	199	17.3	255	7.1	100	6.6	454	9.0
	Missing	17,755	98.2	1,236	92.9	771	67.2	1,940	54.0	577	38.1	4,278	84.9
Active monitoring intent	**Curative**	2,368	13.1	183	13.7	21	1.8	24	0.7	19	1.3	259	5.1
	Palliative	51	0.3	8	0.6	150	13.1	583	16.2	255	16.8	242	4.8
	Unknown or uncertain future intent	243	1.3	25	1.9	58	5.1	104	2.9	79	5.2	270	5.4
	None	10,530	58.2	810	60.9	592	51.6	1,889	52.6	765	50.5	2,777	55.1
	Missing	4,894	27.1	305	22.9	327	28.5	990	27.6	397	26.2	1,492	29.6
First definitive non-surgical treatment	**Long Course RT**	1,066	5.9	59	4.4	40	3.5	62	1.7	16	1.1	498	9.9
	Short Course RT	388	2.1	24	1.8	19	1.7	172	4.8	96	6.3	292	5.8
	Other/Brachy	10	0.1	2	0.2	1	0.1	59	1.6	24	1.6	72	1.4
	Chemotherapy	780	4.3	2	0.2	136	11.8	1,006	28.0	22	1.5	955	18.9
	None Recorded	15,842	87.6	1,244	93.5	952	82.9	2,291	63.8	1,357	89.6	3,223	63.9
Surgical Urgency	**Elective/Scheduled**	2,571	14.2	49	3.9	545	47.6	281	52.1	86	55.8	524	43.6
	Emergency/Urgent	15,487	85.8	1,210	96.1	599	52.4	258	47.9	68	44.2	679	56.4
	Missing (% of total)	28	0.2	72	5.4	4	0.3	3,051	85.0	1,361	89.8	3,837	76.1
Type of Surgery	**Major Resection**	18,086	100.0	0	0.0	1,148	100.0	0	0.0	0	0.0	186	3.7
	Local Excision	0	0.0	1,292	97.1	0	0.0	0	0.0	0	0.0	0	0.0
	Stoma	0	0.0	5	0.4	0	0.0	294	8.2	74	4.9	481	9.5
	Stent	0	0.0	0	0.0	0	0.0	123	3.4	46	3.0	112	2.2
	Other	0	0.0	1	0.1	0	0.0	130	3.6	35	2.3	448	8.9
	None recorded	0	0.0	33	2.5	0	0.0	3,043	84.8	1,360	89.8	3,813	75.7
Treatment Aim following surgery	**Palliative**	373	2.1	28	2.2	646	56.3	485	88.7	121	78.1	461	37.6
	Curative	17,277	95.5	1,185	91.3	406	35.4	40	7.3	31	20.0	486	39.6
	Uncertain	436	2.4	85	6.5	96	8.4	22	4.0	3	1.9	280	22.8
	Missing	0	0.0	33	2.5	0	0.0	3,043	84.8	1,360	89.8	3,813	75.7
Post-operative Destination	**Standard ward**	6,201	54.5	627	94.6	276	43.5	262	80.1	71	73.2	438	67.5
	High Care Area	1,474	13.0	21	3.2	104	16.4	27	8.3	9	9.3	59	9.1
	HDU Level 2	2,554	22.4	14	2.1	146	23.0	24	7.3	7	7.2	100	15.4
	ITU Level 3	1,153	10.1	1	0.2	108	17.0	14	4.3	10	10.3	52	8.0
	Missing (% of total)	6,704	37.1	668	50.2	514	44.8	3,263	90.9	1,418	93.6	4,391	87.1
Post-operative Chemotherapy	**Yes**	6,201	34.3	87	6.7	484	42.2	225	41.1	5	3.2	383	31.2
	No	11,885	65.7	1,211	93.3	664	57.8	322	58.9	150	96.8	844	68.8
	N/A	0	0.00	33	2.5	0	0.00	3,043	84.8	1,360	89.8	3,813	75.7

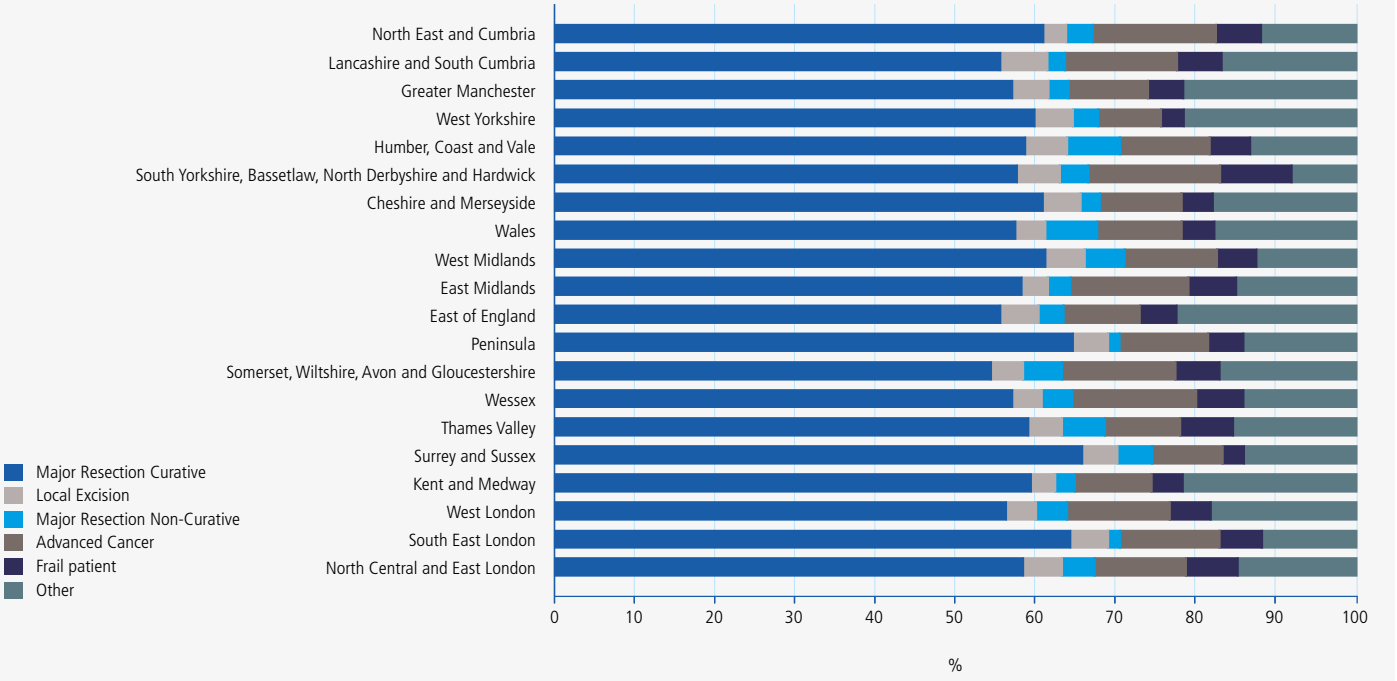
* Other includes pathways with small numbers of cases,for example, the 307 patients who are recorded as declining treatment. In addition, there are patients with data inconsistencies, such as Curative Care Plan Intent but no recorded treatment.

† Patients can have more than one planned treatment recorded therefore the percentage total may be greater than 100

Geographical variation in care pathways

As shown in Figure 3.2 the proportion of patients undergoing curative major resection ranged from 55%-66%. Some of this variability still present may represent differences in data completeness.

Figure 3.2
Treatment pathway according to Cancer Alliance/Wales for patients diagnosed with bowel cancer between 1 April 2015 and 31 March 2016



3.3 How often was adjuvant chemotherapy used in patients with stage III colon and rectal cancer?

National Institute for Health and Care Excellence (NICE) guidance recommends that systemic chemotherapy should be offered post-operatively to all patients with stage III colorectal cancer who are fit enough to tolerate it.

This is the first year data has been available for the administration of adjuvant chemotherapy via linkage with the SACT database. This has enabled more accurate information regarding the use of chemotherapy to be presented. One year of data is currently available and therefore assessment of trends in chemotherapy use over time has not been possible.

Out of the 3,765 patients identified from the audit as undergoing major resection with stage III colonic or rectal cancer (N1 or N2 disease on post-operative staging), 1,987 (53%) underwent adjuvant treatment with chemotherapy within 3 months of major resection. An additional 155 (4%) patients commenced chemotherapy 3-6 months from major resection.

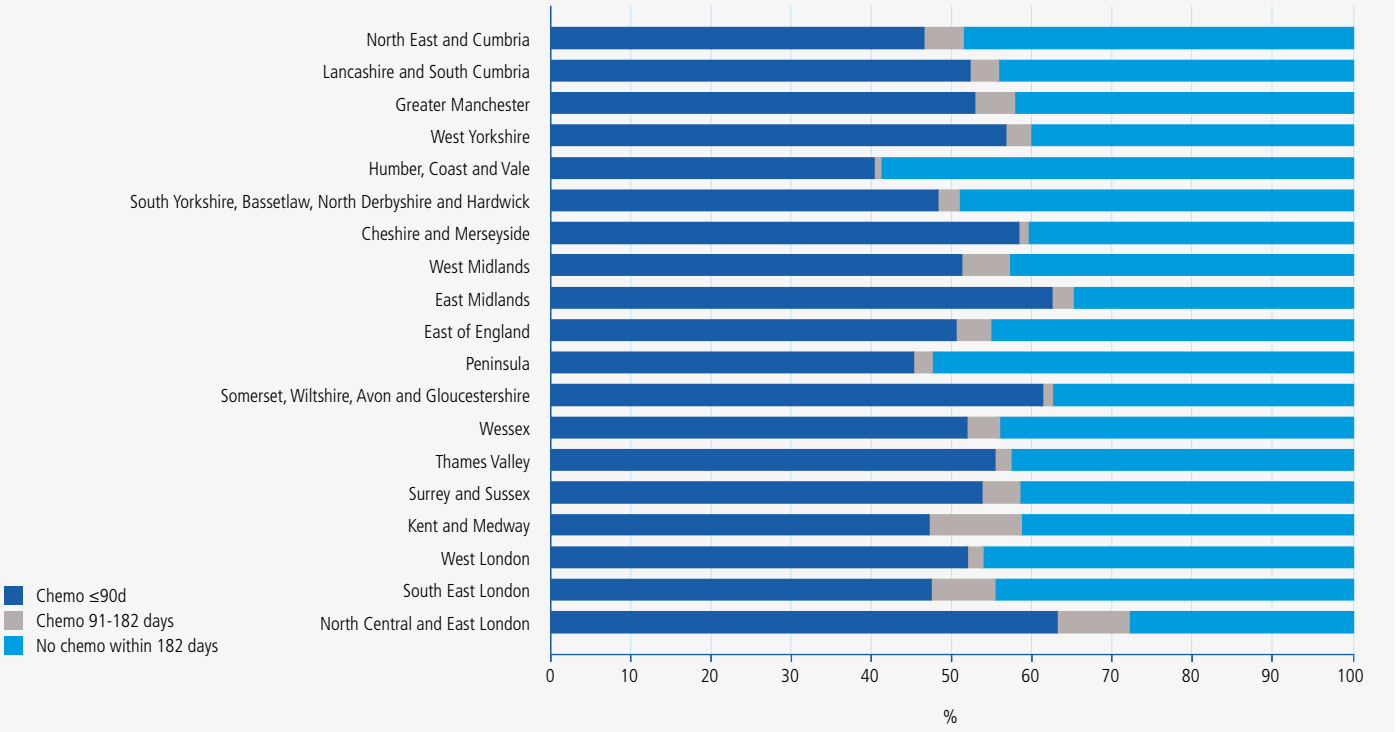
Patients receiving chemotherapy tended to be performance status 0/1 and be ASA grade 1/2. Patients also tended to be younger with 30% of patients over the age of 75 years old receiving chemotherapy compared to 72% of patients under the age of 75 years. There was no major difference in administration of chemotherapy based on tumour site or surgical urgency.

Geographical variation in adjuvant treatment

The use of adjuvant chemotherapy in patients with stage III disease ranged from 41% in Humber, Coast and Vale to 68% in North Central and East London, as displayed in Figure 3.3. Wales is not presented because the Systemic Anti-Cancer Therapy dataset is not available for patients.

The audit has shown considerable national variation in the administration of post-operative chemotherapy. Possible explanations for this variation include age and co-morbidity. If there is significant variation in the use of adjuvant chemotherapy after correcting for these factors that would be very clinically significant. We know the use of adjuvant chemotherapy is associated with an improved chance of cure so optimising its use could result in improved outcomes.

Figure 3.3
Adjuvant chemotherapy in patients with stage III colon and rectal cancer by Cancer Alliance



Recommendations – Care pathways:

3(a). Healthcare professionals must continue to promote bowel cancer screening and address the significant geographical variation in the uptake of screening.

3(b). More evidence is required to determine the role of major resection of asymptomatic primary colorectal tumours in the context of synchronous inoperable metastatic disease. Results from the several randomised controlled trials currently underway will be invaluable in this regard.

3(c). The geographical disparity in the use of adjuvant chemotherapy needs to be explored further.

4. Surgical care

Surgical care – NBOCA 2017

- Overall 90-day mortality after major surgery has steadily reduced over five years from 4.7% in 2011/12 to 3.2% in 2015/16.
- 90-day mortality following elective or scheduled surgery for bowel cancer was 1.9% in contrast to 10.3% in patients who had surgery on an urgent or emergency basis.
- The median length of hospital stay following elective major surgery is 7 days and following emergency major surgery is 11 days.
- Overall, one in ten patients had an emergency readmission within 30-days of major resection.
- The proportion of major resections performed laparoscopically is increasing year on year with no increase in the rate of conversion to open.
- 83% of patients undergoing major resection have more than 12 lymph nodes examined.

4.1 How many patients die within 90-days of major surgery?

90-day post-operative mortality over time

Over the past five years the proportion of patients undergoing major resection has remained relatively constant, while unadjusted post-operative mortality has decreased (Table 4.1). In 2015/16 3.2% patients died within 90-days of major resection.

Table 4.1
Patients undergoing major surgery and chance of death after major surgery, by audit year

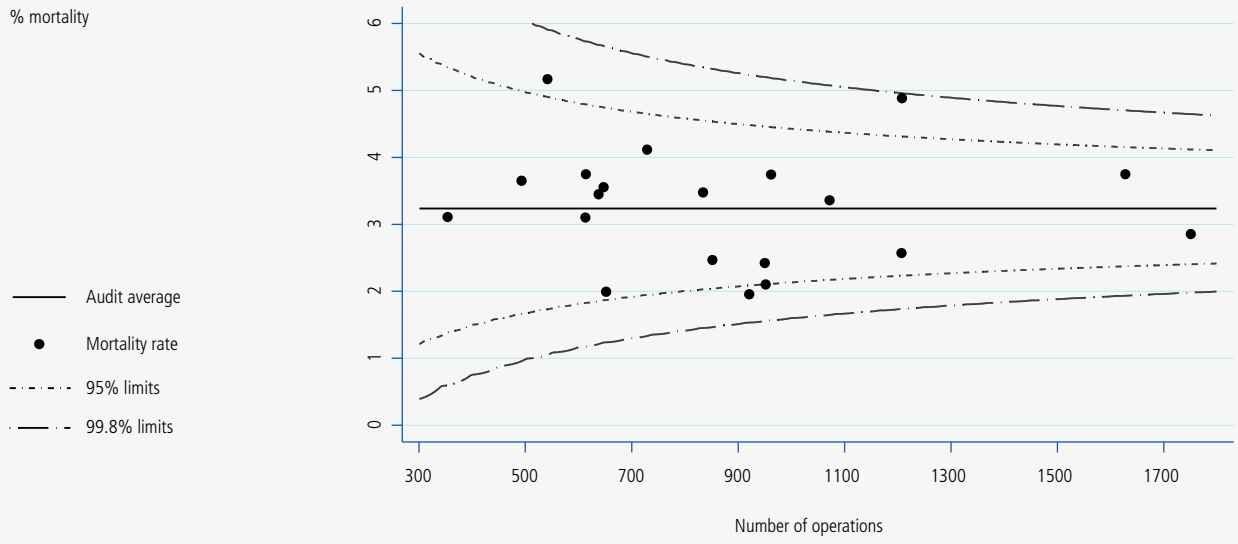
	2011-12		2012-13		2013-14		2014-15		2015-16	
	Number	%	Number	%	Number	%	Number	%	Number	%
Total patients	30,354		31,398		30,713		31,076		30,710	
Undergoing major resection	19,319	63.6	20,067	63.9	19,686	64.1	19,575	63.0	19,231	62.6
Dead at 90 days after surgery, out of those undergoing major resection	891	4.7	933	4.8	758	4.0	716	3.8	593	3.2
Missing mortality	459	2.4	490	2.4	548	2.8	619	3.2	896	4.6

Variation in 90-day post-operative mortality between care providers

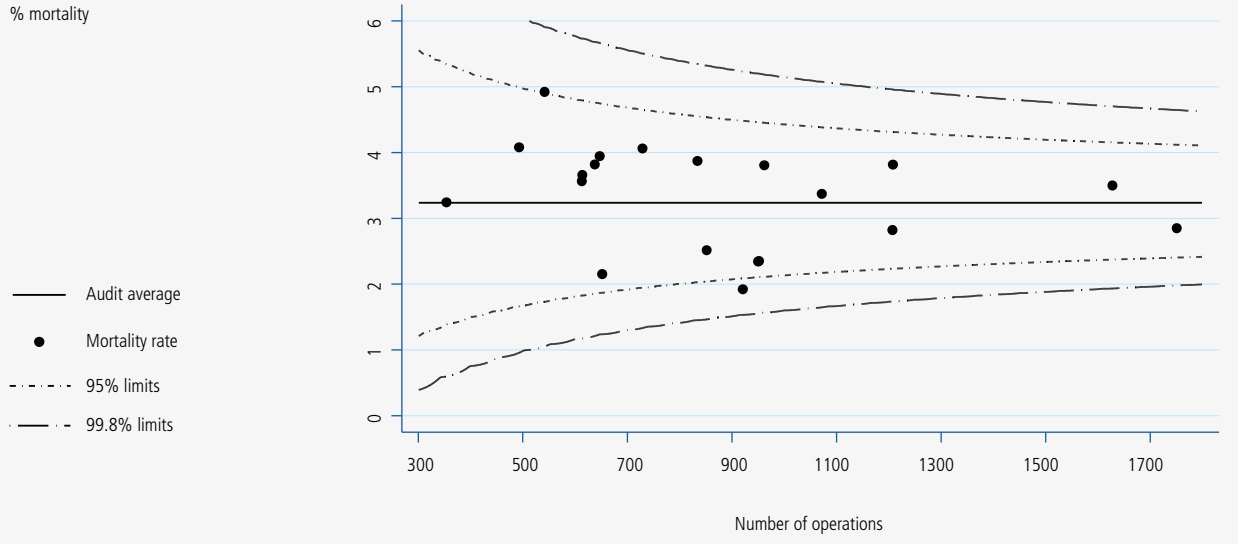
The variation in 90-day post-operative mortality across Cancer Alliances is shown in Figure 4.1. When making comparisons between Cancer Alliances and between trusts/hospitals, 90-day mortality was adjusted for the 9 risk factors listed on page 17. After risk adjustment there were two Cancer Alliances outside the inner limits.

Figure 4.1
Observed and adjusted 90-day post-operative mortality (elective and emergency admissions) by English Cancer Alliances/Wales for patients diagnosed between 1 April 2015 and 31 March 2016

Observed 90-day mortality by Cancer Alliance/Wales



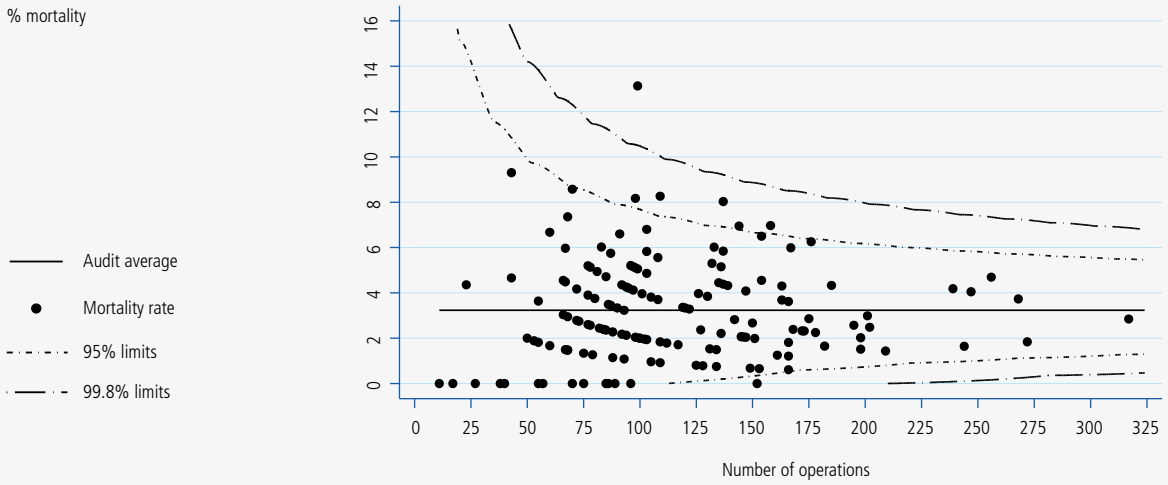
Adjusted 90-day mortality by Cancer Alliance/Wales



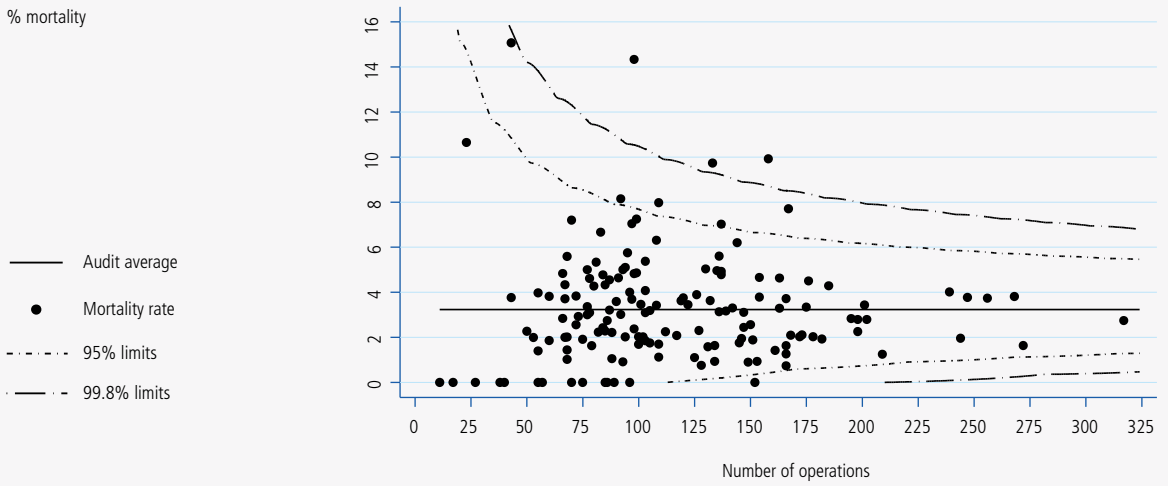
Funnel plots for 90-day post-operative mortality by trust/hospital, both observed and risk-adjusted, are presented in Figure 4.2. This year there are three trusts outside the outer limits for 90-day mortality. This is more than would be expected by chance.

Figure 4.2
Observed and adjusted 90-day post-operative mortality (elective and emergency admissions) by trust/hospital with more than ten operations for patients diagnosed between 1 April 2015 and 31 March 2016

Observed 90-day mortality by trust/site with more than 10 operations



Adjusted 90-day mortality by trust/site with more than 10 operations



90-day post-operative mortality according to operative urgency

21% of patients were diagnosed with bowel cancer following an emergency admission (Table 4.2). This varied according to trust/hospital site and less than 10% of major resections were classified as urgent/emergency in 25 trusts and over 20% were classified as urgent/emergency in 35 trusts (Table 7.3).

Table 4.2
Emergency admissions in England & Wales from HES/PEDW, by audit year

	2011-12		2012-13		2013-14		2014-15		2015-16	
Total patients	30,354		31,406		30,726		31,077		30,711	
Emergency admission	5,606	20.8	5,898	21.2	5,744	21.3	5,579	20.6	5,159	20.5
Elective admission	21,313	79.2	21,874	78.8	21,182	78.7	21,519	79.4	20,055	79.5
Missing (% of total)	3,435	11.3	3,634	11.6	3,800	12.4	3,979	12.8	5,497	17.9

The 90-day mortality following elective or scheduled surgery for bowel cancer was 1.8% (Table 4.3). Post-operative mortality has decreased over the last four years in both elective patients and emergency patients. In those undergoing elective or scheduled surgery 90-day mortality has dropped form 2.9% in 2011/12 to 1.9% in 2015/16, and in those undergoing urgent or emergency surgery, 13.9% in 2014/15 to 10.3% in 2015/16. The National Emergency Laparotomy Audit (NELA) has also reported a decrease in postoperative mortality amongst all patients undergoing emergency laparotomy, a large proportion of whom are bowel cancer patients.

Table 4.3
Mortality in patients who had major surgery by surgical urgency

		2011-12		2012-13		2013-14		2014-15		2015-16	
		Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Total patients undergoing major resection		19,319		20,067		19,686		19,575		19,231	
Overall 90-day mortality*		891/18,861	4.7	933/19,578	4.8	757/19,139	4.0	716/18,958	3.8	591/18,338	3.2
90-day mortality by urgency of operation	**Elective**	354/12,321	2.9	362/12,645	2.9	277/12,471	2.2	250/12,224	2.0	210/11,383	1.8
	Scheduled	104/3,360	3.1	121/3,814	3.2	91/3,595	2.5	86/3,678	2.3	74/3,938	1.9
	Urgent	150/1,291	11.6	169/1,300	13.0	132/1,254	10.5	110/1,218	9.0	89/1,157	7.7
	Emergency	262/1,681	15.6	277/1,698	16.3	254/1,788	14.2	268/1,807	14.8	218/1,828	11.9
	Missing urgency of operation	21/208	10.1	4/121	3.3	3/31	9.7	2/31	6.5	0/32	0.0

*some patients are missing mortality data due to Type 2 objections (section 2.3), others due to ONS date of death occurring prior to the reported date of surgery or a valid date of surgery could not be transferred to CAP from Open Exeter.

Invited commentary from Dr Dave Murray, Clinical Lead, National Emergency Laparotomy Audit

For some years now, there has been concern over the number of patients with bowel cancer who require surgery as an urgent or emergency procedure. This latest NBOCA report shows that 90-day mortality has fallen from 12.5% in 2014-15 to 10.3% in 2015-16. This reduction in mortality reflects a similar drop seen in the National Emergency Laparotomy Audit (NELA), with 30-day mortality for all patients undergoing emergency laparotomy falling to 10.6% in the latest NELA report (covering December 2015 to November 2016), compared to 11.8% when NELA commenced three years ago.

A key aspect of the published standards against which NELA audits is that emergency laparotomy is time-pressured high risk surgery, and as such warrants appropriate resource, such as consultant delivered care and access to critical care beds. These resources are more often than not automatically provided for patients undergoing elective surgery with lower mortality rates (elective cancer surgery is a good example). However, NELA has demonstrated improvement in some of these areas; risk assessment before surgery has improved from 56% to 71% of patients, and consultant presence in theatre has improved from 70% to 79% of patients. However, there is still some way to go, especially in areas dependent on sufficient hospital "infrastructure" to meet standards; the proportion of the most urgent patients arriving in theatre within two hours has remained around 75% since NELA commenced. Similarly, the proportion of high-risk patients admitted directly to critical care after surgery has also remained around 75%.

In theory, all patients requiring an emergency laparotomy for bowel cancer should be included in both NELA and NBOCA, which provides a valuable opportunity for linkage between the two Audits. There are some disparities between the both Audits' findings, which may in part be due to differences between the respective datasets. Unlike NBOCA, NELA does not record pathological diagnosis. Despite NELA's >80% case ascertainment rate, only 1,735 patients had "colorectal cancer" as an operative finding, significantly fewer than the 2,985 patients in NBOCA who had urgent/emergency surgery. 25% of cases were completed laparoscopically in NBOCA, but 12% in NELA. At a methodological level, linkage will allow us to assess data quality and make judgements on the robustness of conclusions drawn.

Patients undergoing emergency laparotomy for bowel cancer will fall into three groups: 1) those with known cancer who return to theatre for an emergency laparotomy following an elective resection, 2) those with known cancer whose emergency laparotomy pre-empts their elective treatment, 3) those with unknown cancer where the diagnosis of cancer is made during their admission for the emergency laparotomy. The pathways of care for each of these groups will be different, and outcomes may also vary. Linkage will provide a richer source of information from which to better understand the quality of care received by patients undergoing emergency surgery for bowel cancer.

Whilst it may not be possible to shift all patients from an emergency to elective procedure, a greater understanding of the factors that impact emergency outcomes, coupled with improvements in those areas, should produce a continued fall in mortality.

4.2 How long do patients stay in hospital after major bowel cancer resection?

Trends in length of stay over time

Median length of stay following major resection was 7 days, which is unchanged over the last 5 years. Median length of stay varied according to patient age (7 days in patients less than 75 years old and 10 days in patients 85 years or older) and operative urgency (7 days in elective major resection and 11 days in emergency major resection).

Over one third of patients undergoing emergency major resection remained in hospital more than 2 weeks following major resection, compared to 15% of elective patients.

Geographical variation in length of stay

There was substantial variation between Cancer Alliances in length of stay following both elective and emergency major resection, as shown in Figure 4.3.

Amongst elective patients geographical variation was mainly seen in the proportion of patients staying less than 7 days, while in emergency patients there was variation across all time periods.

Figure 4.3a
Length of hospital stay after elective major surgery in HES/PEDW by Cancer Alliance/Nation

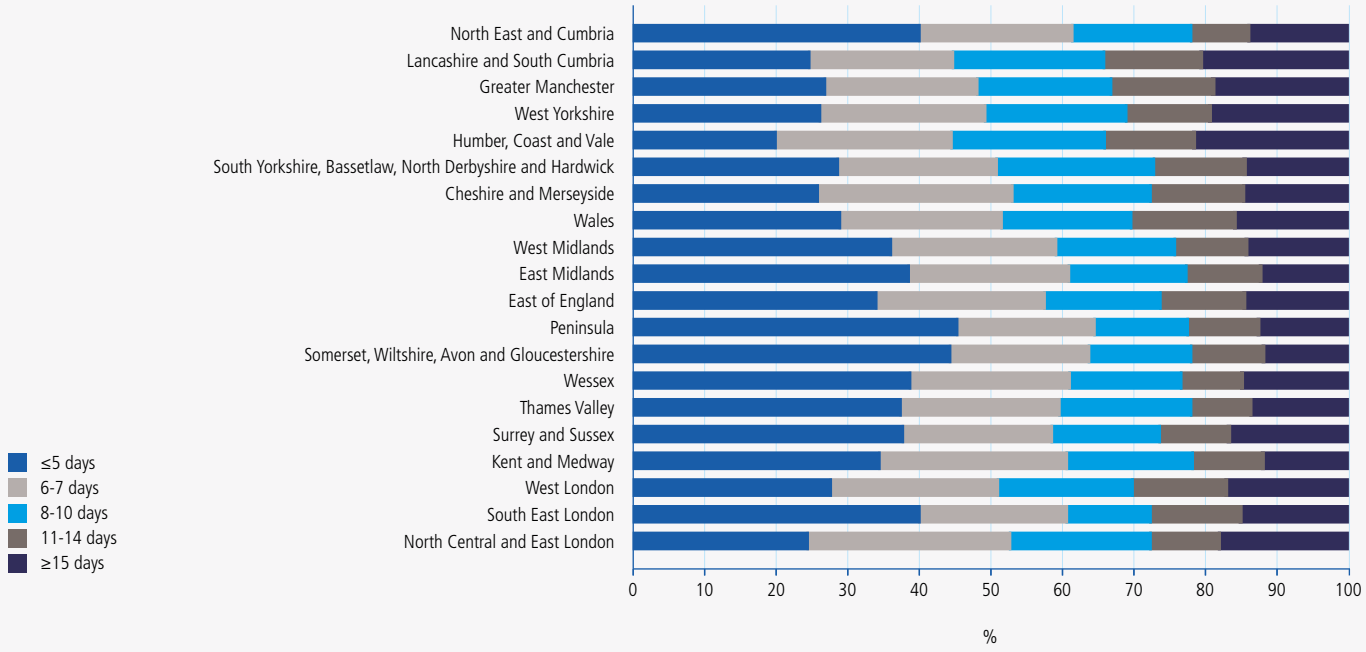
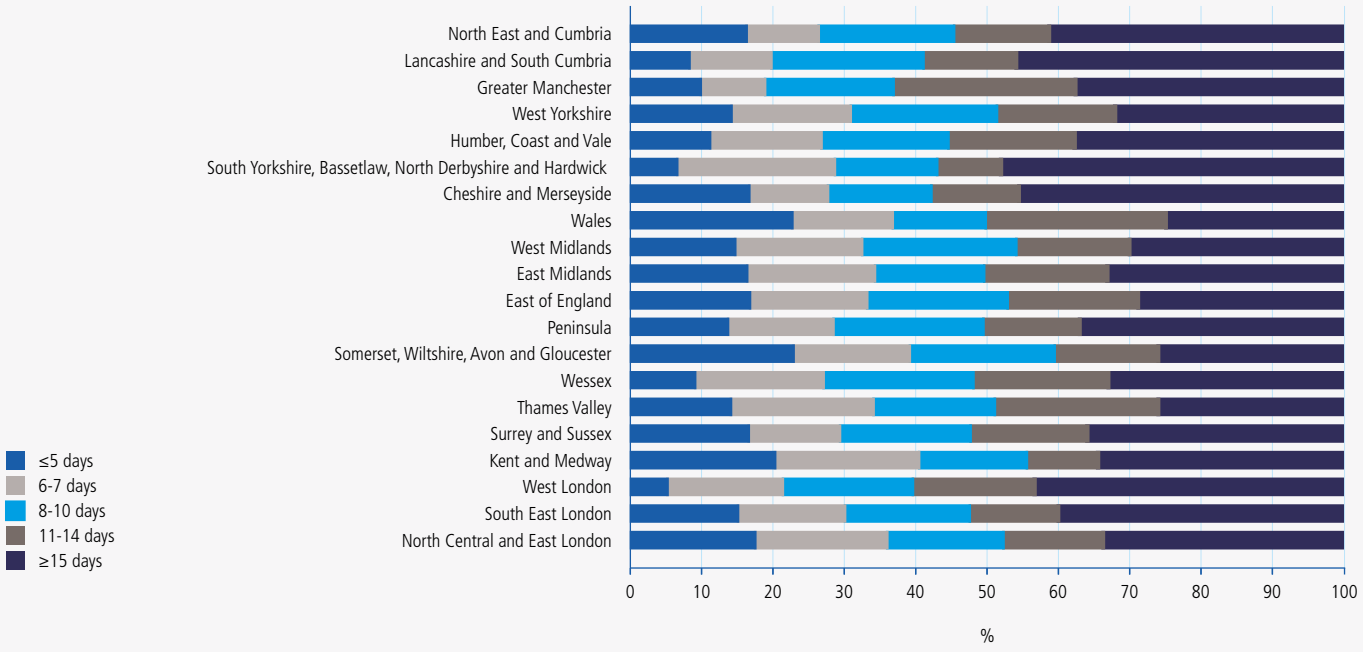


Figure 4.3b
Length of hospital stay after emergency major surgery in HES/PEDW by Cancer Alliance/Nation



4.3 How many patients have an unplanned readmission within 30-days of discharge from hospital after major bowel cancer surgery?

Trends in emergency readmissions within 30-days

Overall, 10% of patients had an emergency readmission within 30-days of surgery. This has remained stable over the last five years.

Table 4.4
Emergency hospital readmission rate within 30-days of surgery for patients undergoing major resection in England and Wales, by audit year

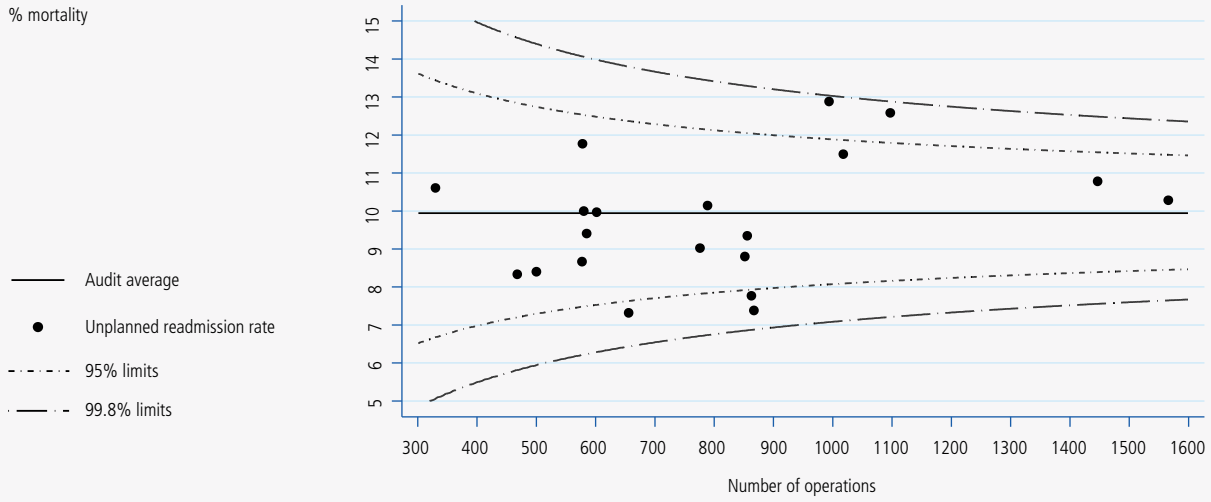
		2011-12		2012-13		2013-14		2014-15		2015-16	
		Number	%	Number	%	Number	%	Number	%	Number	%
Total patients undergoing major resection		**19,319**		**20,074**		**19,687**		**19,575**		**19,232**	
Emergency readmission within 30 days	Yes	1,869	10.5	1,878	10.1	1,859	10.3	1,822	10.1	1,675	10.0
	No	15,981	89.5	16,680	89.9	16,236	89.7	16,161	89.9	15,048	90.0
	Missing (% of total)	1,469	7.6	1,516	7.6	1,592	8.1	1,592	8.1	2,509	13.0

Geographical variation in 30-day emergency readmission

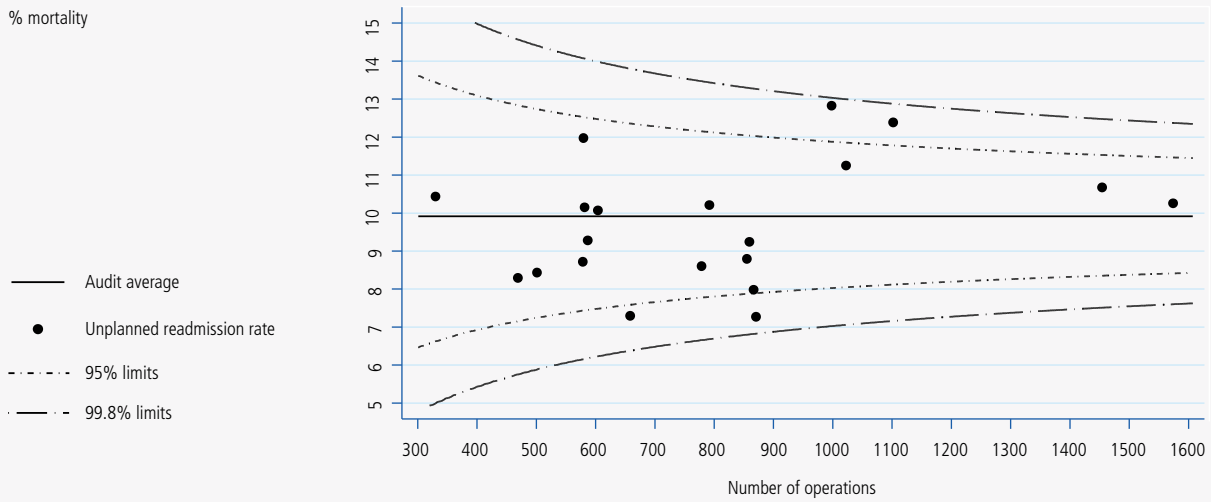
As shown in Figure 4.4 and 4.5, no Cancer Alliances or trust/hospital fell outside the outer limits for observed or adjusted readmission rate.

Figure 4.4
Observed and adjusted 30-day emergency readmission rate by Cancer Alliance/Wales for patients diagnosed between 1 April 2015 and 31 March 2016

Observed 30-day unplanned readmission rate by Cancer Alliance/Wales



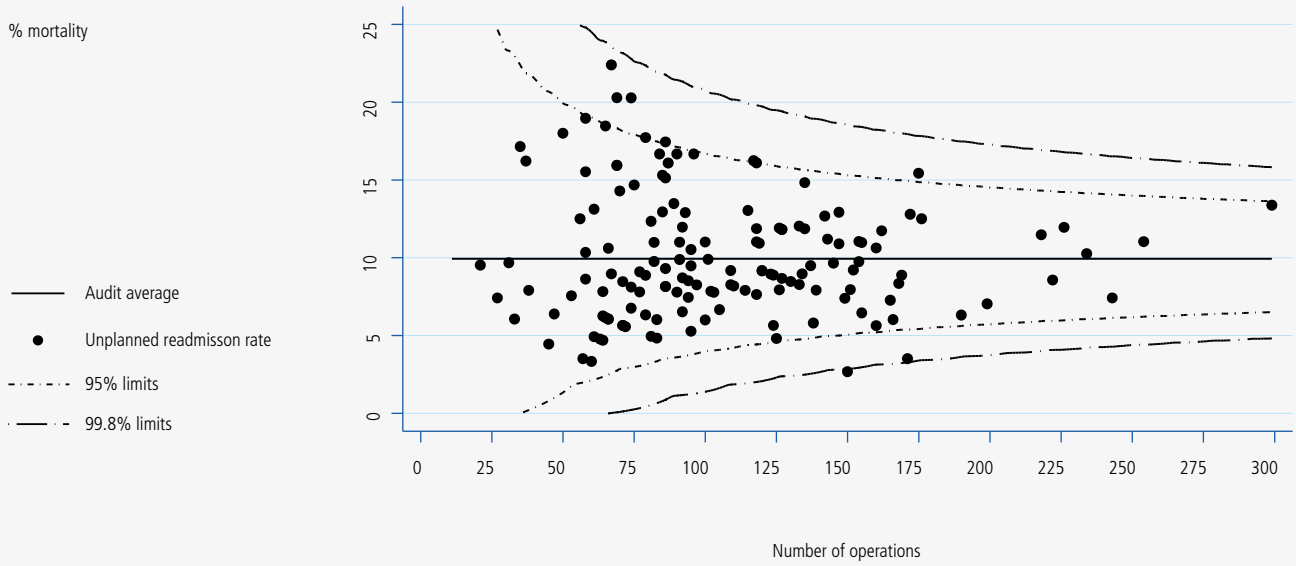
Adjusted 30-day unplanned readmission rate by Cancer Alliance/Wales



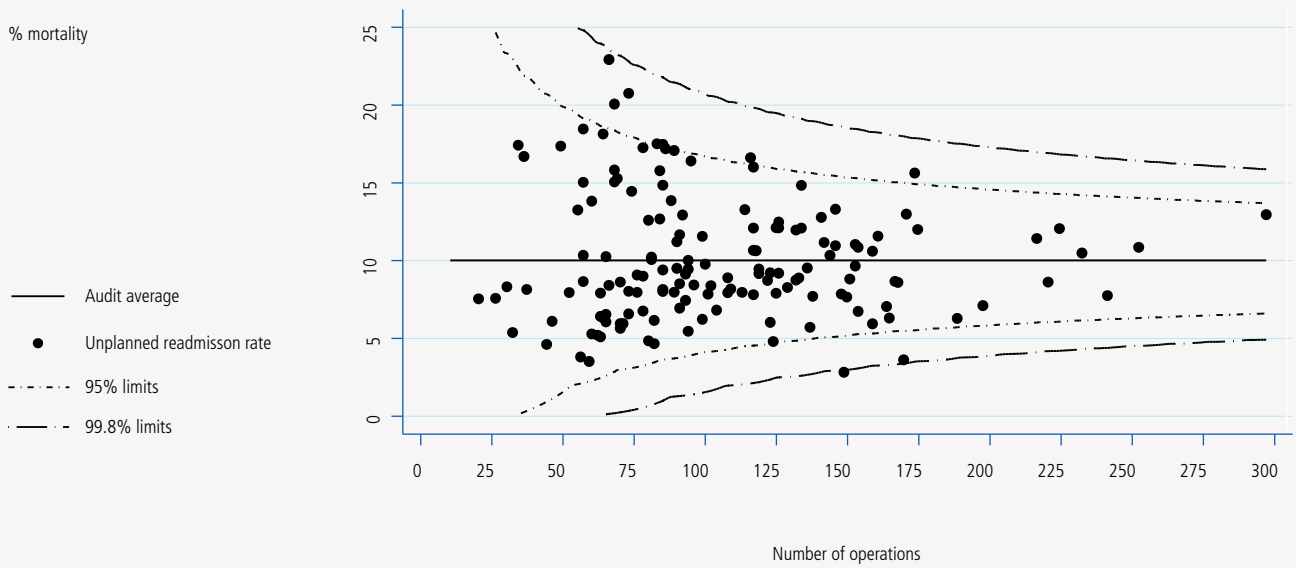
As seen in Figure 4.5, seven trusts fell above the inner limit on adjusted readmission rate. This is no more than would be expected by chance alone.

Figure 4.5
Observed and adjusted 30-day emergency readmission rate by trust/site for patients diagnosed between 1 April 2015 and 31 March 2016

Observed 30-day unplanned readmission rate by trust/site with more than 10 operations



Adjusted 30-day unplanned readmission rate by trust/site with more than 10 operations



4.4 How many patients have laparoscopic surgery?

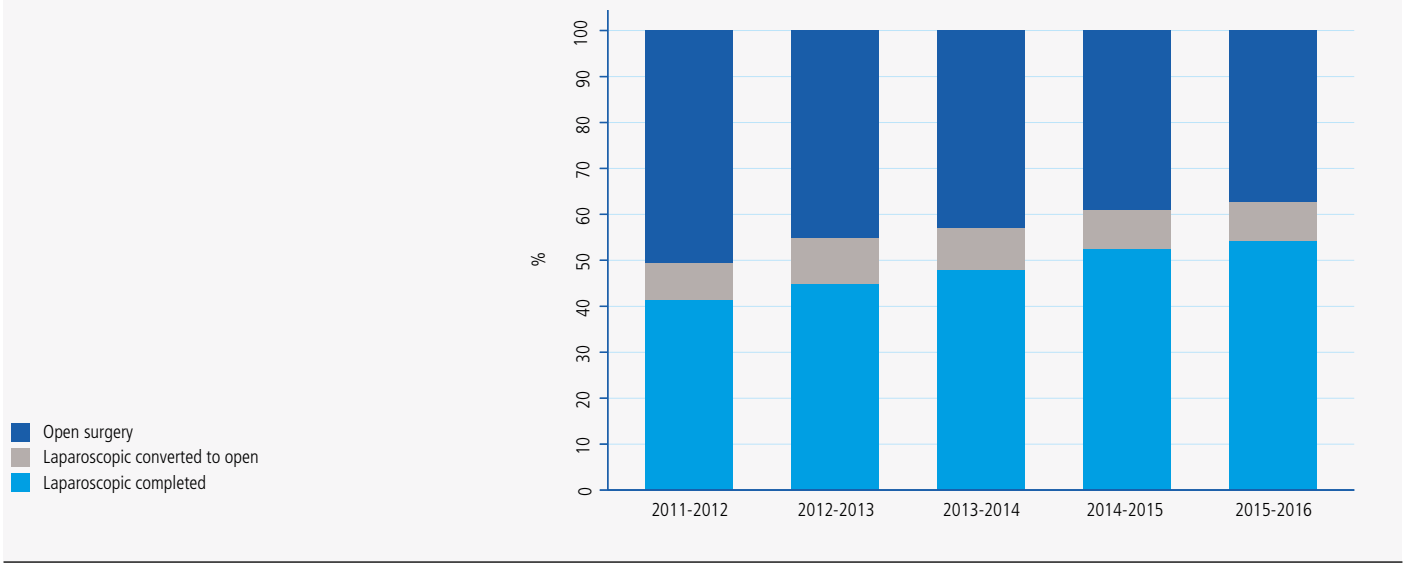
The audit subdivides surgical access into three categories:

- open resection
- laparoscopic converted to open resection
- completed laparoscopic resection

Trends in the use of laparoscopic surgery

As shown in Figure 4.6, the proportion of major resections performed laparoscopically has continued to increase and for the second year more than half of major resections were completed laparoscopically. There was no rebound increase in unplanned conversion (currently 8%).

Figure 4.6
Surgical access by audit year

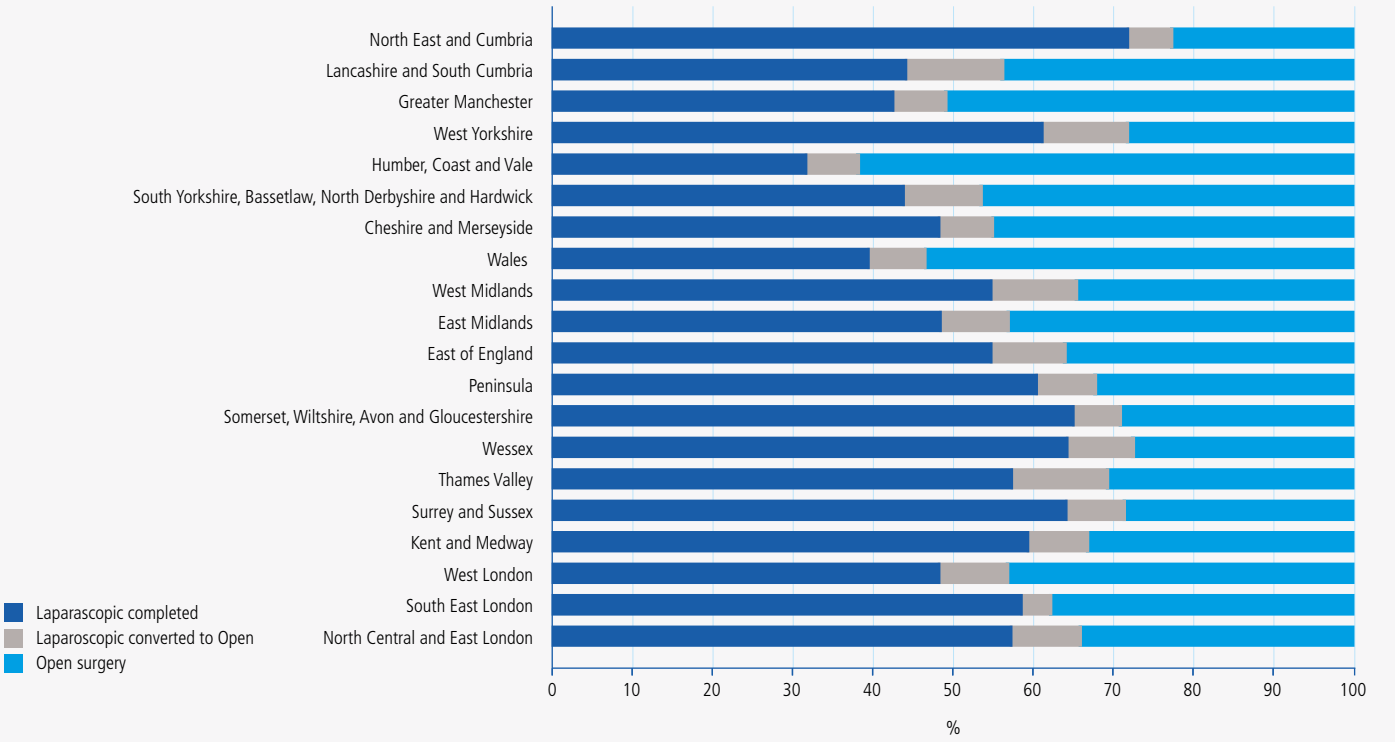


The use of laparoscopic surgery according to cancer site was highest in patients with rectal cancer (68% started laparoscopically) and caecal cancer (64% started laparoscopically) and was lowest in patients with cancer of the splenic flexure/descending colon (49% started laparoscopically). Patients with advanced cancer, high ASA grade and advanced age were also more likely to have an open resection. Around a quarter of patients undergoing urgent or emergency resection had this performed laparoscopically. The rate of conversion in these cases was low at 4%.

Geographical variation in laparoscopic surgery

The proportion of patients with laparoscopic completed resections ranged from 32% to 72% across Cancer Alliances as shown in Figure 4.7. Rates of unplanned conversion to open ranged from 4% to 12%. The use of laparoscopic surgery also varied widely between hospitals/MDTs (Table 7.3).

Figure 4.7
Surgical access by Cancer Alliance/Wales



4.5 How many patients have more than twelve lymph nodes examined?

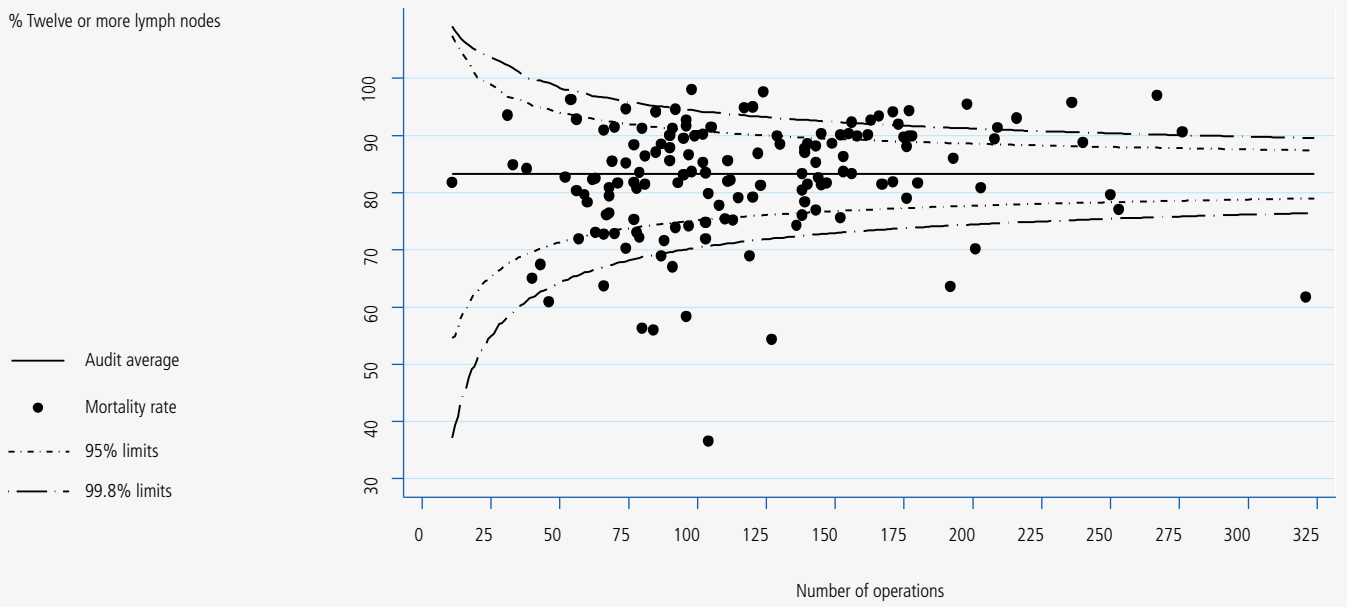
From 2018 the proportion of patients undergoing major resection who have more than 12 lymph nodes examined will be reported according to trust/MDT. This year 83% of patients had more than 12 lymph nodes examined.

Geographical variation in lymph node yield

As shown in Figure 4.8, the proportion of patients undergoing major resection with more than 12 lymph nodes examined varied considerably by trust, from 37% to 98%. These should be interpreted with caution because they are not adjusted for differences in case-mix between trusts, such as the use of neoadjuvant radiotherapy, which may impact upon the lymph node yield.

Figure 4.8
Observed proportion patients undergoing major resection with >12 lymph nodes examined by English NHS trust/Welsh MDT for patients diagnosed between 1 April 2015 and 31 March 2016

Proportion of cases with >12 lymph nodes examined by trust/site with more than 10 operations



*trusts/ MDT with more than 20% incomplete data for lymph node yield excluded

Recommendations – Surgical care

4(a). Bowel cancer care teams should be congratulated for achieving a continued reduction in postoperative mortality which has taken place without any reduction in resection rates. There should be a continued effort in the delivery of high quality care with a view to further improvements in outcomes.

5. Survival

Survival – NBOCA 2017

- Two-year survival rates for all patients diagnosed with bowel cancer has remained stable at 67%.
- Two-year survival rates in patients undergoing major resection has remained relatively stable at 82% in 2012/13 and 83% in 2013/14
- Two-year survival in patients who do not undergo tumour excision has decreased from 35% in 2011/12 to 29% in 2013/14.
- No Cancer Alliance/nation fell above the outer limit for adjusted two-year mortality amongst patients undergoing a major resection.

5.1 What is the two-year survival of patients with bowel cancer?

Trends in two-year survival over time

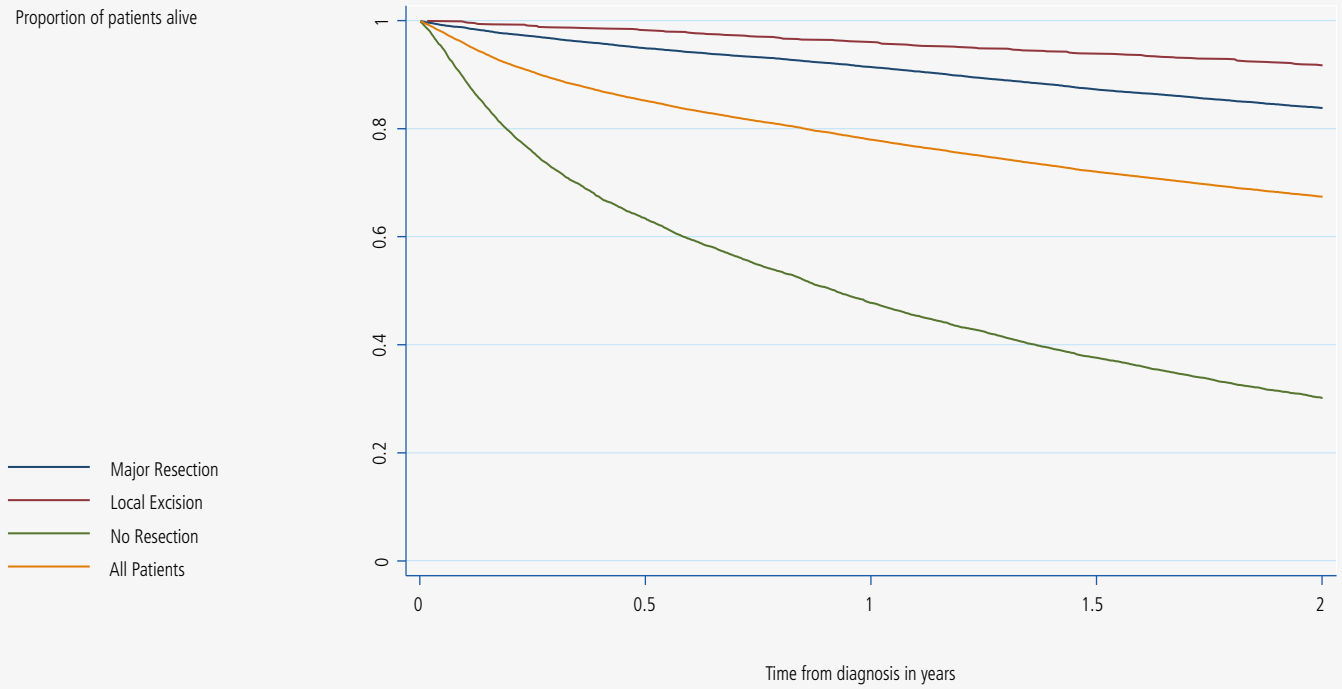
Two-year survival rates for all patients diagnosed with bowel cancer have remained stable at around 67% since 2011/12.

Two-year survival rates in patients undergoing major resection has slightly increased to 83% (Table 5.1). Two-year survival in patients who do not undergo tumour excision has decreased from 35% in 2011/12 to 29% in 2013/14. The reasons behind this are not clear, particularly as the proportion of patients who do not undergo primary tumour resection has remained unchanged and some newer chemotherapy treatments have become more widely funded. Patients who do not undergo resection are often very frail with comorbidities, and with an ageing population the frailty of patients who are not resected may have increased over time.

Table 5.1
Two-year survival over time for all patients diagnosed between 1 April 2011 and 31 March 2014

		2011-12		2012-13		2013-14	
		N	%	N	%	N	%
All patients		**30,024**		**31,056**		**30,310**	
Died within 24 months of diagnosis	**Yes**	9,826	33.4	10,231	33.7	9,859	33.4
	No	19,553	66.6	20,145	66.3	19,627	66.6
	Missing (% of total)	645	2.1	680	2.2	824	2.7
Underwent Major Resection		**19,194**	63.9	**19,927**	64.2	**19,550**	64.5
Died within 24 months of diagnosis	**Yes**	3,455	18.5	3,420	17.6	3,155	16.6
	No	15,243	81.5	15,992	82.4	15,814	83.4
	Missing (% of total)	496	1.7	515	1.7	581	1.9
Underwent Local Excision		**1,098**	3.7	**1,417**	4.6	**1,283**	4.2
Died within 24 months of diagnosis	**Yes**	104	9.7	107	7.8	106	8.5
	No	972	90.3	1,269	92.2	1,137	91.5
	Missing (% of total)	22	0.1	41	0.1	40	0.1
No Excision of Tumour		**9,732**	32.4	**9,712**	31.3	**9,477**	31.3
Died within 24 months of diagnosis	**Yes**	6,267	65.2	6,704	69.9	6,598	71.1
	No	3,338	34.8	2,884	30.1	2,676	28.9
	Missing (% of total)	127	0.4	124	0.4	203	0.7

Figure 5.1
Kaplan-Meier survival curve over 2 years for all patients diagnosed between 1 April 2013 and 31 March 2014 (England and Wales)



Geographical variation in two-year survival in all patients

Variation in two-year mortality is likely to reflect, at least in part, differences in the quality of surgery, patient characteristics and provision of neo-adjuvant and adjuvant chemotherapy and radiotherapy. Due to the proportion of missing pre-treatment staging data on patients who do not undergo major resection, the estimates are not adjusted for differences in patient case-mix.

There was a large variation in two-year patient survival according to Cancer Alliance/nation as shown in Figure 5.2. This variation is more than would be expected by chance alone, with one Cancer Alliance falling above and three falling below the outer limits.

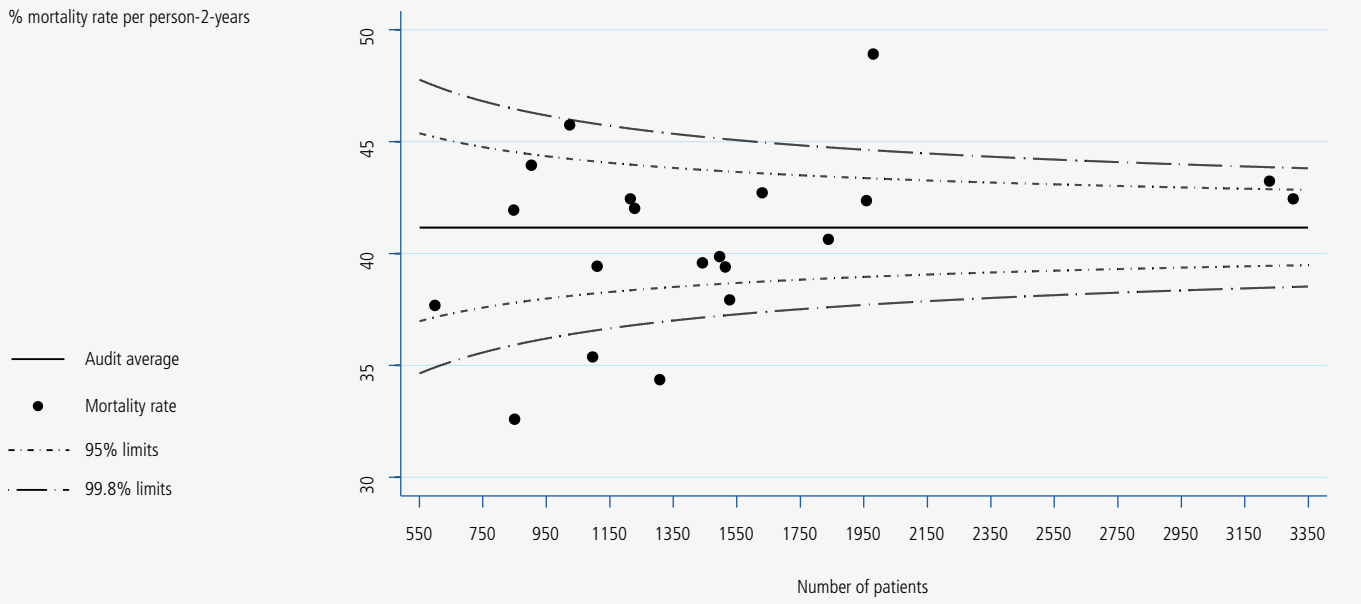
Some of the regional variation in two-year mortality may reflect the marked health inequalities known to exist between the least deprived and most deprived areas.

A further important factor to take into account is the cause of death. As a proportion of deaths at two years will likely be secondary to diseases other than bowel cancer, data on cause of death may help to understand some of the regional variation in all-cause mortality. The audit has recently received cause of death data, results surrounding which will form part of a short report in the future.

Figure 5.2
Observed two-year mortality for all patients diagnosed between 1 April 2013 and 31 March 2014, by Cancer Alliance/Wales, including trusts/MDTs with more than ten operations

The results cannot be used for regional comparisons

Observed two-year mortality by Cancer Alliance/Wales



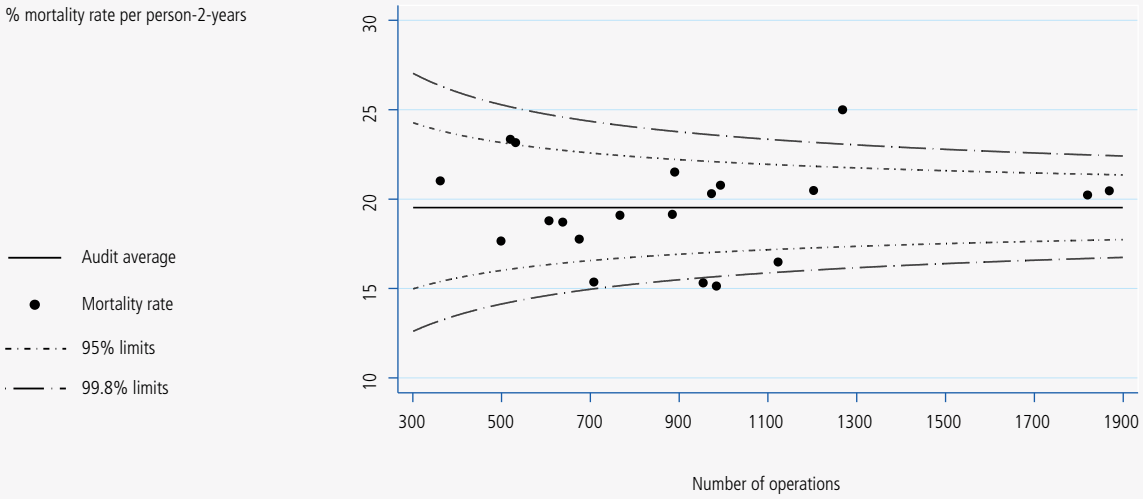
Geographical variation in two-year survival in patients undergoing major resection

Figures 5.3 and 5.4 show observed and adjusted two-year mortality amongst patients undergoing a major resection by Cancer Alliance and by trust/MDT. No Cancer Alliances fell above the outer limits. Two Cancer Alliances fell below the outer limits.

Although there remains significantly more variation by trust/MDT than would be expected by chance alone, the number of trusts above the inner limits this year reduced from 20 to 13. This year, four trust/MDTs fell above the outer limits, two of which have previously been an outlier for two-year mortality (when only non-overlapping time periods are considered). A further 9 trusts/hospitals fell above the inner limits.

Figure 5.3
Observed and adjusted two-year surgical outcomes for patients undergoing a major surgical resection between 1 April 2013 and 31 March 2014, by Cancer Alliance/ Wales, including trusts/MDTs with more than ten operations

Observed two-year mortality by Cancer Alliance/Wales



Adjusted two-year mortality by Cancer Alliance/Wales

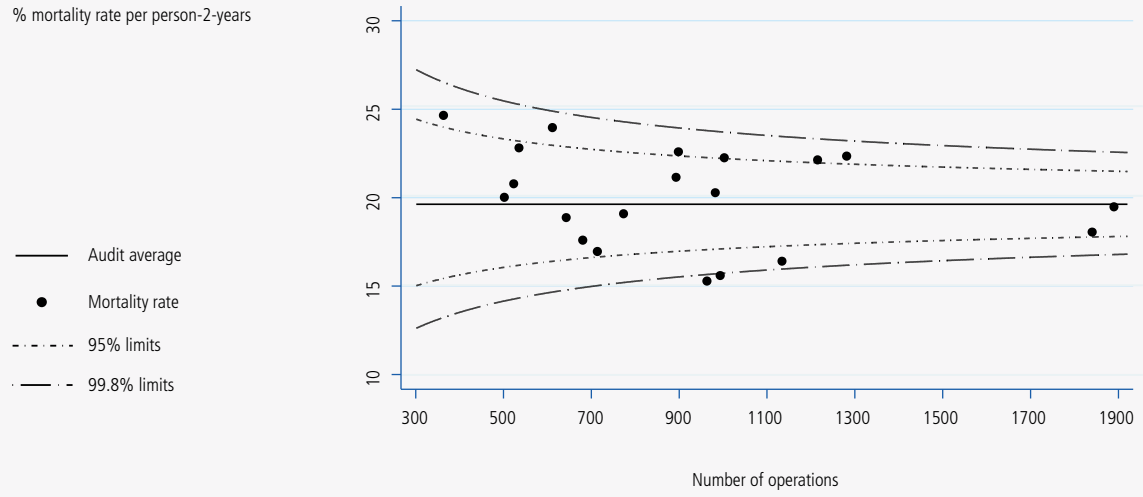
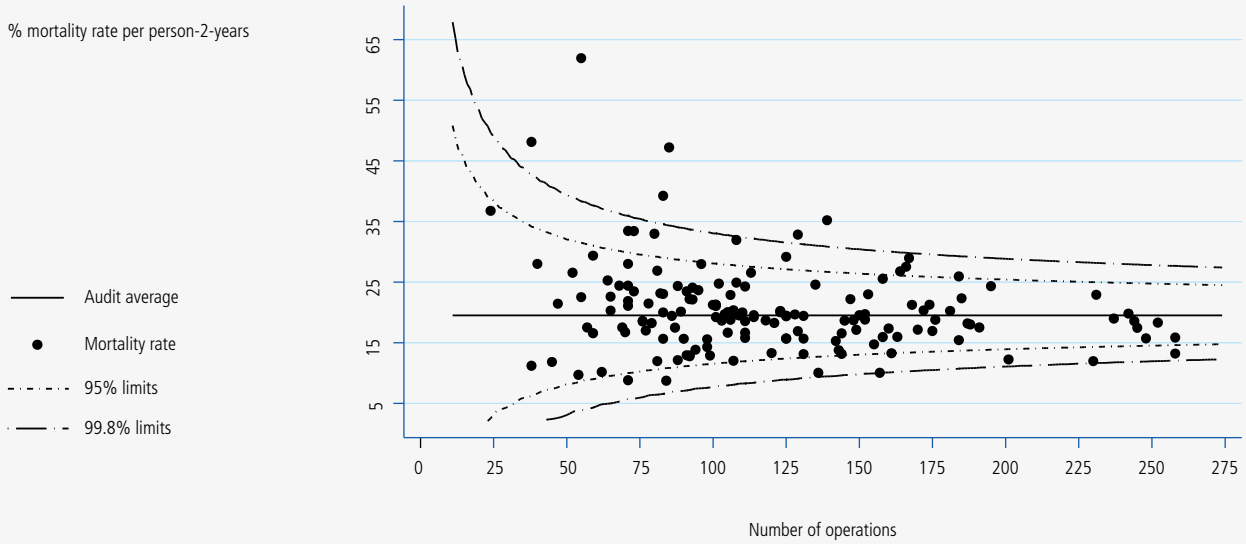
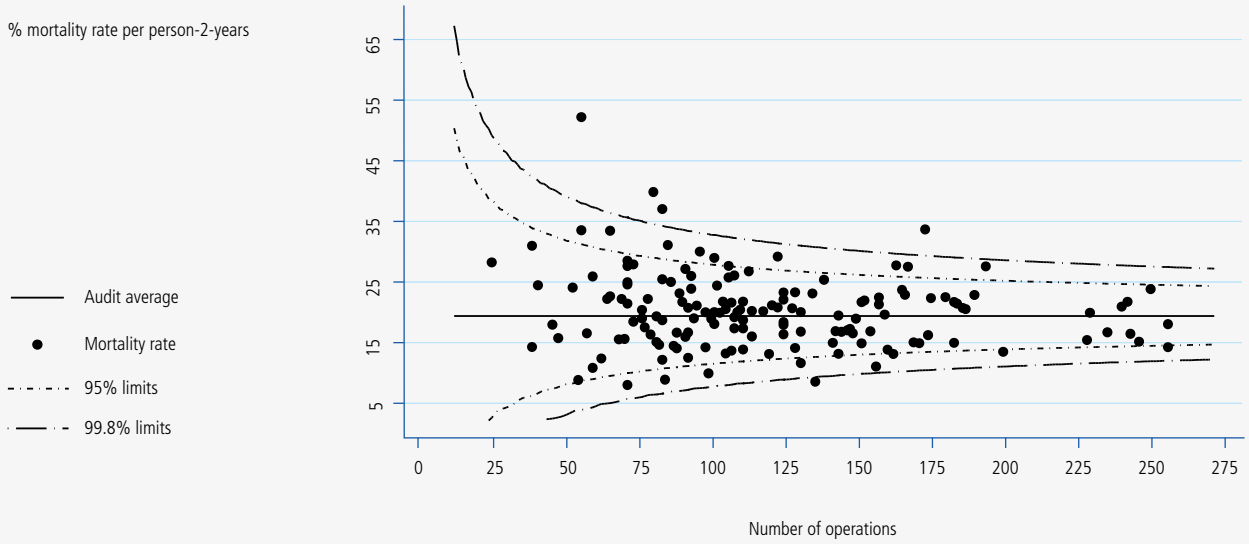


Figure 5.4
Observed and adjusted two-year mortality for patients undergoing a major resection between 1 April 2013 and 31 March 2014, by trust/hospital with more than 10 operations

Observed two-year mortality by trust/site with more than 10 operations



Adjusted two-year mortality by trust/site with more than 10 operations



Recommendations – Survival

5(a). Action is required nationally to reduce risk exposures, support healthy behaviours and mitigate the effects of socioeconomic deprivation in an attempt to reduce regional variation in cancer survival.

6. Rectal Cancer

Rectal cancer – NBOCA 2017

- 52% of rectal cancer patients underwent major resection and 7% underwent a local excision. Just 5% of rectal cancer patients are managed with a stoma alone.
- 38% of rectal cancer patients undergoing major resection received neo-adjuvant treatment.
- The use of neo-adjuvant treatment ranged widely between Cancer Alliances from 23% to 58% of patients.
- 83% of rectal cancer patients had a stoma formed at the time of surgical resection.
- 50% of rectal cancer patients undergoing major resection had a stoma at 18 months. There was substantial variation in rates across trusts/sites.

6.1 How are patients with rectal cancer treated?

Trends over time

Surgical resection of the rectum remains the foremost intervention for the treatment of rectal cancer, with 52% of rectal cancer patients undergoing major resection (Table 6.1). 7% of patients undergo local excision of rectal cancer. The proportion of patients undergoing no procedure (either resectional or non-resectional), increased slightly this year from 32% in 2014/15 to 34% in 2015/16. This may be due to an increase in the number of patients with a complete pathological response to chemoradiotherapy (CRT) and therefore not undergoing resection. Of the 4,164 patients who did not undergo major resection, 15% underwent a local excision, 10% stoma, 4% 'other' surgery (such as stenting) and 71% no procedure.

Table 6.1
Management of rectal cancer patients, by audit year

	2011-12		2012-13		2013-14		2014-15		2015-16	
	N	%	N	%	N	%	N	%	N	%
Total	**8,933**		**9,196**		**9,058**		**9,127**		**8,592**	
Major resection	4,871	54.5	4,995	54.3	5,062	55.9	4,955	54.3	4,474	52.1
Local excision	511	5.7	687	7.5	643	7.1	615	6.7	613	7.1
Non-resectional surgery	876	9.8	816	8.9	667	7.4	685	7.5	621	7.2
No Surgery	2,675	29.9	2,698	29.3	2,686	29.7	2,872	31.5	2,884	33.6

Use of radiotherapy

Of all rectal cancer patients undergoing a major resection, 38% received pre-operative treatment. 26% patients received long-course radiotherapy and 8% patients received short-course radiotherapy. Patient characteristics according to pre-surgical treatment type are shown in Table 6.2. Patients receiving long-course radiotherapy tended to be younger and have less comorbidities than those receiving short-course radiotherapy or no neo-adjuvant treatment and, as would be expected, a greater proportion had a higher T-stage and nodal involvement.

For the first time this year we are able to show the time from completing radiotherapy to surgery whereas in previous years only the time from diagnosis to surgery has been available. This is helpful in interpreting the data. In particular we find that 76% of patients have surgery within 14 days of completing short-course radiotherapy. The findings of a short report investigating the timing between long-course radiotherapy and surgery is detailed in the box overleaf.

Table 6.2
Patient characteristics by treatment type, for 4,622 rectal cancer patients diagnosed between 1 January 2015 and 31 December 2015 who underwent a major resection

		No preop treatment recorded		Long-course RT pre-surgery		Short-course RT pre-surgery		Other treatment pre-surgery *	
		Number	%	Number	%	Number	%	Number	%
Total rectal cancer patients		**2,817**		**1,231**		**386**		**188**	
Sex	**Male**	1,811	64.3	788	64.0	253	65.5	122	64.9
	Female	1,006	35.7	443	36.0	133	34.5	66	35.1
Age-group	**<50 yrs**	152	5.4	136	11.0	20	5.2	24	12.8
	50-64 yrs	838	29.7	458	37.2	106	27.5	75	39.9
	65-74 yrs	981	34.8	398	32.3	146	37.8	65	34.6
	75-84 yrs	715	25.4	232	18.8	102	26.4	23	12.2
	85+ yrs	131	4.7	7	0.6	12	3.1	1	0.5
Pre-treatment TNM T-stage	**T1**	167	5.9	4	0.3	6	1.6	1	0.5
	T2	1,056	37.5	127	10.3	86	22.3	30	16.0
	T3	1,240	44.0	860	69.9	257	66.6	110	58.5
	T4	149	5.3	201	16.3	22	5.7	37	19.7
	TX	88	3.1	5	0.4	4	1.0	2	1.1
	T9	117	4.2	34	2.8	11	2.8	8	4.3
Pre-treatment TNM N-stage	**N0**	1,631	57.9	254	20.6	141	36.5	58	30.9
	N1	774	27.5	492	40.0	146	37.8	67	35.6
	N2	219	7.8	433	35.2	78	20.2	52	27.7
	Nx	60	2.1	14	1.1	9	2.3	2	1.1
	N9	133	4.7	38	3.1	12	3.1	9	4.8
Pre-treatment TNM M-stage	**M0**	2,314	82.1	1,042	84.6	312	80.8	108	57.4
	M1	121	4.3	67	5.4	23	6.0	60	31.9
	Mx	222	7.9	78	6.3	41	10.6	9	4.8
	M9	160	5.7	44	3.6	10	2.6	11	5.9
Time to surgery from final RT	**Within 7 days**			0	0.0	195	61.3		
	8-14 days			2	0.2	48	15.1		
	3-8 weeks			34	3.1	22	6.9		
	9-12 weeks			375	33.8	16	5.0		
	13-16 weeks			409	36.8	21	6.6		
	17-20 weeks			155	14.0	6	1.9		
	21+ weeks			135	12.2	10	3.1		
	Missing (% of total)			121	9.8	68	17.6		
Mode of admission (from HES)	**Elective**	2,463	95.3	1,091	96.2	344	97.7	166	96.0
	Emergency	122	4.7	43	3.8	8	2.3	7	4.0
	Missing (% of total)	232	8.2	97	7.9	34	8.8	15	8.0
Comorbidities (from HES)	**0**	1,569	60.7	723	63.7	201	57.1	115	66.5
	1	749	29.0	311	27.4	110	31.3	45	26.0
	2+	268	10.4	101	8.9	41	11.6	13	7.5
	Missing (% of total)	231	8.2	96	7.8	34	8.8	15	8.0

* Chemotherapy, brachytherapy or radiotherapy that cannot be classified into our definitions of long/short-course

NBOCA Short Report 2017

The optimal timing between long-course radiotherapy and surgery in rectal cancer patients

A short report investigating the impact of time to surgery after long-course radiotherapy on circumferential margin status, tumour downstaging, rate of complete response, 18-month stoma presence and 24 month mortality in patients with rectal cancer has been published. This included 4,164 patients with rectal cancer who finished long-course radiotherapy 28-182 days before undergoing surgery.

Key findings:

- Median time from CRT to surgery was approximately 12 weeks (85 days (IQR 71-100 days))
- <10% of patients had surgery within 8 weeks of finishing radiotherapy
- Patients who waited longer tended to be older and less healthy (more co-morbidities and higher ASA grade)
- Patients who waited longer were more likely to have a stoma 18 months after surgery and:
    - were more likely to have a surgical procedure leading to a permanent stoma (44% at 4-10 weeks vs 60% at 14-26 weeks)
    - were less likely to have a stoma reversed after an anterior resection (72% at 4-10 weeks vs 60% at 14-26 weeks)
- The lowest rate of positive circumferential margins occurred between 4-14 weeks
- The highest rates of complete response and downstaging occurred between 10-14 weeks
- There was no evidence that time to surgery had an effect on mortality at 24 months after starting CRT (p=0.46)

In conclusion the median time to surgery within our cohort is longer than that previously reported. The best tumour response appears to occur between 10-14 weeks. A longer delay to surgery is associated with an increased risk of having a stoma 18 months after surgery.

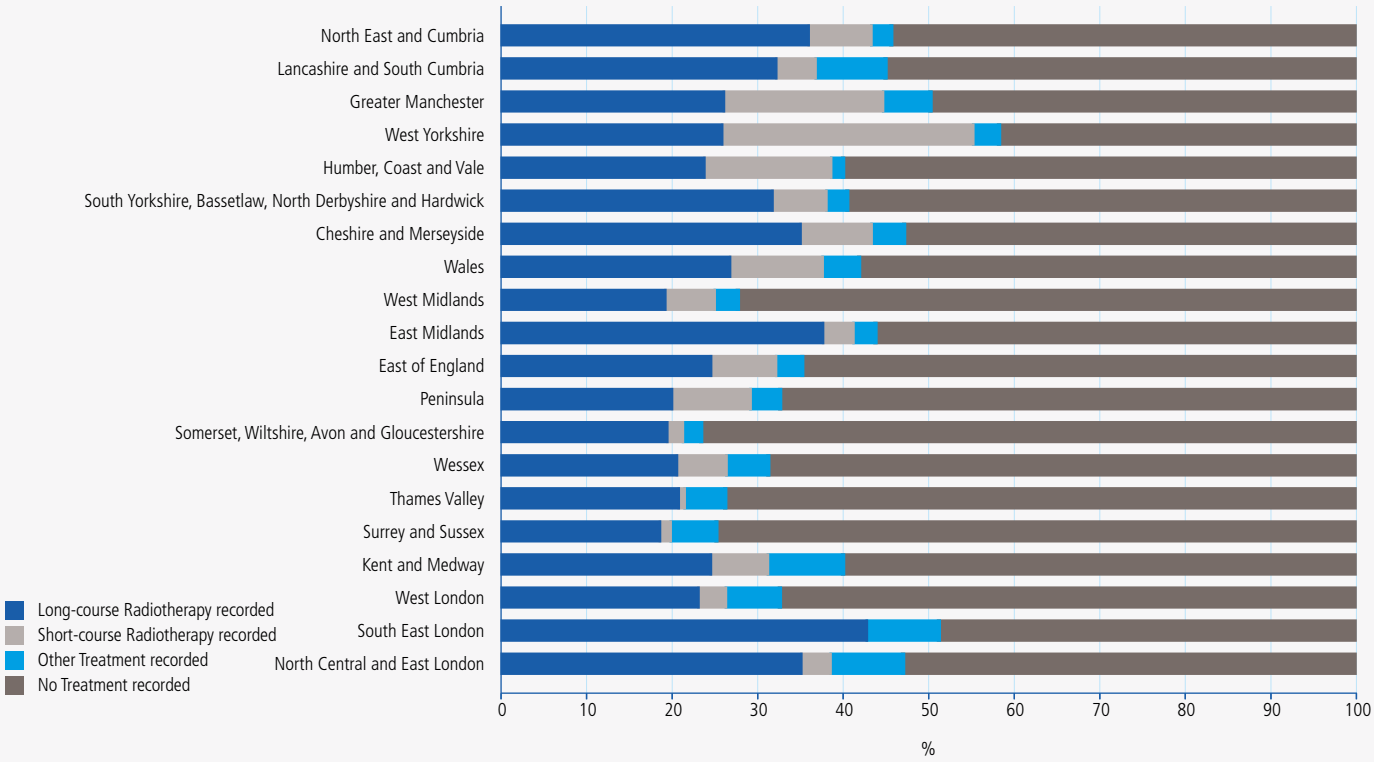
The full report can be accessed at https://www.nboca.org.uk/reports/short-report-1-2017/

Geographical variation in the use of neo-adjuvant radiotherapy

The use of neo-adjuvant treatment according to Cancer Alliance is presented in Figure 6.1. The use of neo-adjuvant treatment ranged from 23% of patients in Somerset, Wiltshire, Avon and Gloucestershire to 58% of patients in West Yorkshire. This varied within both the use of long course radiotherapy (18-43%) and short-course radiotherapy (0-29%).

RTDS was only linked to English data and therefore the reported use of radiotherapy in Wales is from audit data alone, which could contribute to the observed differences between Cancer Alliances in England and Wales.

Figure 6.1
Treatment pathways of the 4,612 rectal cancer patients undergoing major resection by Cancer Alliance performing surgery, for patients diagnosed between 1 January 2015 and 31 December 2015



6.2 How are stomas used in rectal cancer surgery and how often are 'temporary' stomas reversed?

Formation of stoma and stoma reversal

From 2012-2015, 84% of rectal cancer patients had a stoma formed at the time of surgical resection (Table 6.3). In addition to all patients undergoing APER and Hartmann's, around 77% of anterior resections were covered by a stoma.

Overall, 52% of rectal cancer patients undergoing major resection had a stoma at 18 months. Within 18 months 65% of patients with a stoma following anterior resection had undergone stoma reversal.

Table 6.3
Description of stoma types by procedure for 14,204 rectal cancer patients linked to HES/PEDW having a major resection between 1 April 2012 and 31 March 2015, by procedure

		AR		APER		Hartmann's		Other	
		Number	%	Number	%	Number	%	Number	%
Total rectal cancer patients undergoing major resection		**8,946**		**3,667**		**1,230**		**361**	
Any stoma	**No**	2,032	22.7	0	0.0	0	0.0	256	70.9
	Yes	6,914	77.3	3,667	100.0	1,230	100.0	105	29.1
Stoma at 18 months, ignoring deaths	**No**	6,515	72.8	0	0.0	89	7.2	276	76.5
	Yes	2,431	27.2	3,667	100.0	1,141	92.8	85	23.5

Geographical variation in 18-month stoma rates

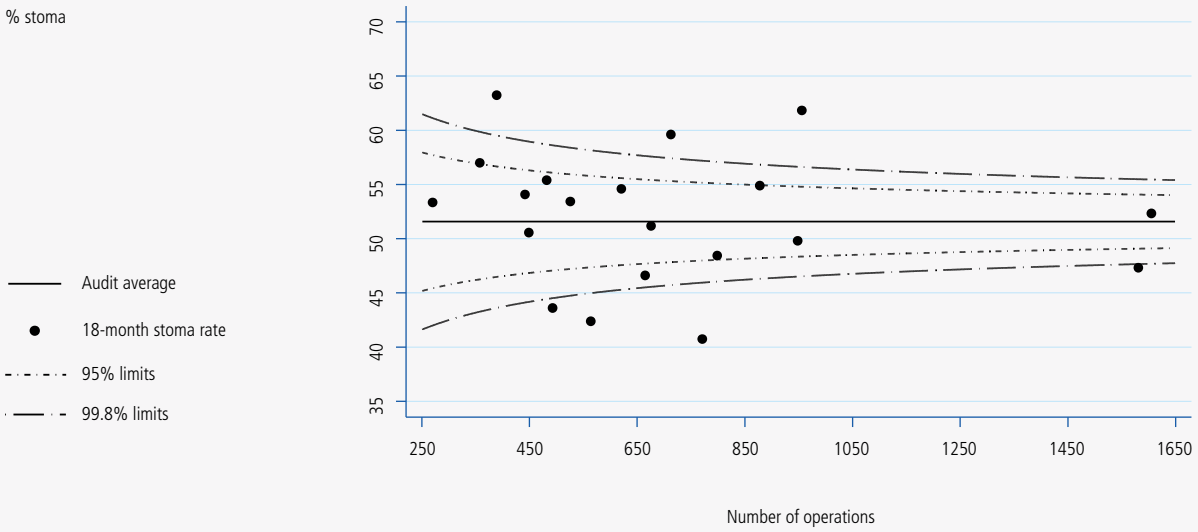
There was considerable variation in adjusted 18-month stoma rates between Cancer Alliances, with three falling above the outer limits. There were also three alliances below the outer limits (Figure 6.2).

The variation by trust/hospital site was also large, with six falling above the outer limits, of which one was also an outlier in 2014, and eight falling below the outer limits. A further 16 trusts/MDTs fell above the inner limits (Figure 6.3).

This analysis of stoma at 18 months includes all surgical resections for rectal cancer (abdominoperineal excision of the rectum, Hartmann's and anterior resection). Therefore variation is likely to reflect differences in practice with respect to patient selection for permanent stoma, use of adjuvant chemotherapy and local service prioritisation of stoma closure.

Figure 6.2
Observed and adjusted 18-month stoma rate by Cancer Alliance/Wales for rectal cancer patients undergoing a major resection between 1 April 2012 and 31 March 2015

Observed 18-month stoma rate by Cancer Alliance/Wales



Adjusted 18-month stoma rate by Cancer Alliance/Wales

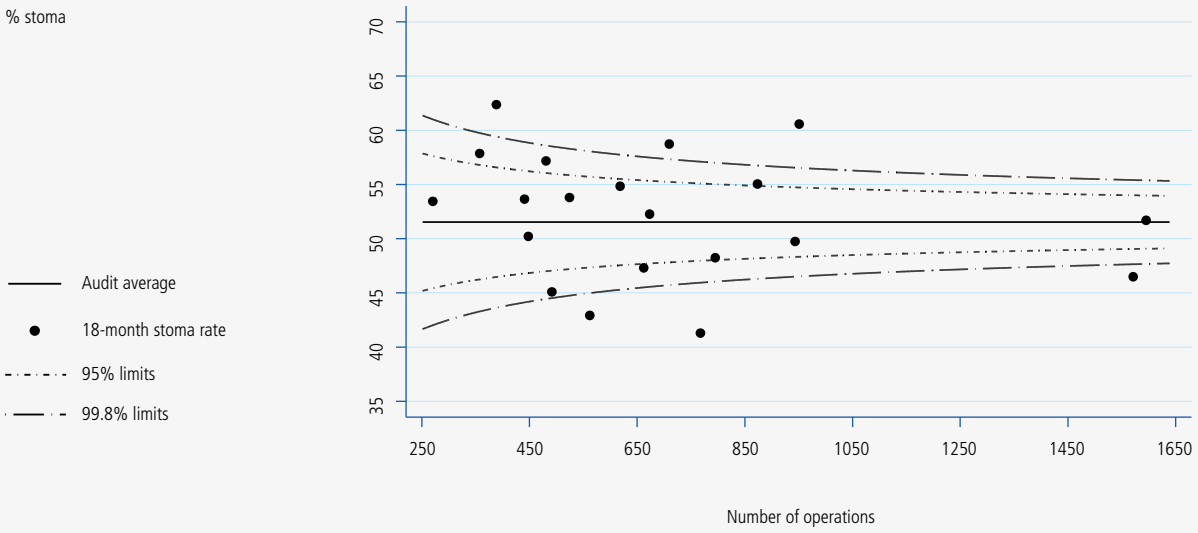
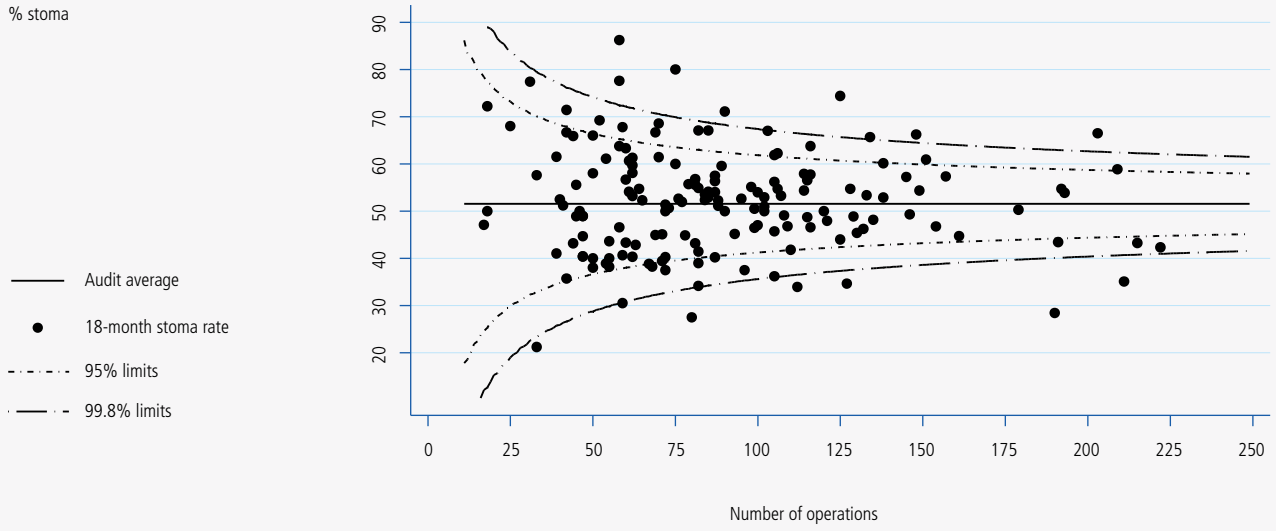
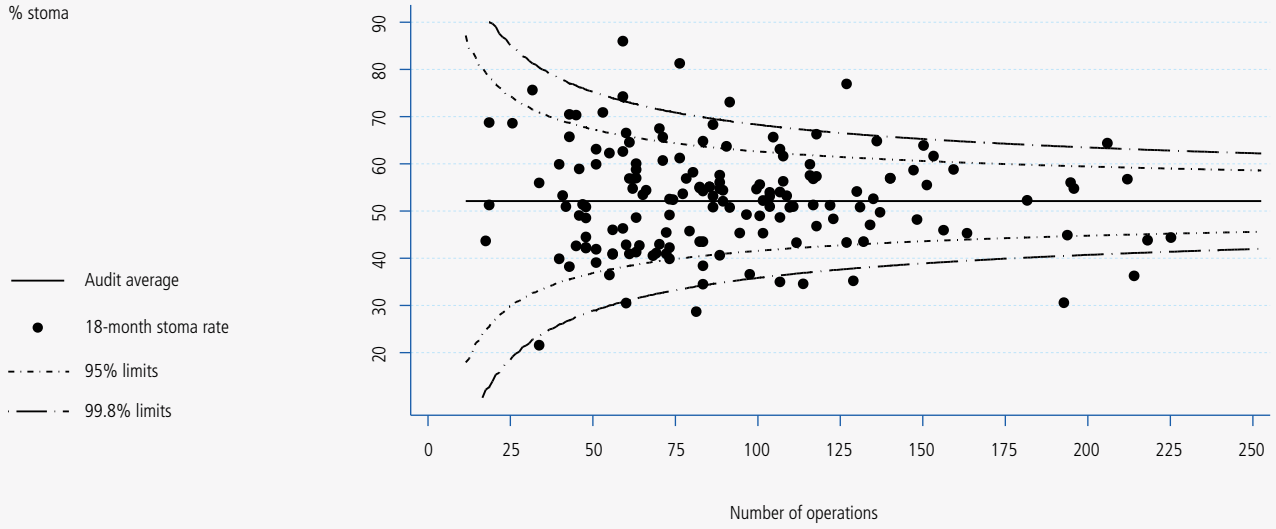


Figure 6.3
Observed and adjusted 18-month stoma rate by trust/hospital for rectal cancer patients undergoing a major resection between 1 April 2012 and 31 March 2015

Observed 18-month stoma rate by trust/site with more than 10 operations



Adjusted 18-month stoma rate by trust/site with more than 10 operations



Recommendations – Rectal cancer

6(a). The presence of a stoma is well recognised to decrease quality of life. Priority should be given to actively managing patients with a defunctioning stoma following anterior resection and planning early closure whenever possible.

6(b). Better understanding of the regional difference in the use of pre-operative treatment for rectal cancer patients is required.

7. Bowel Cancer Management – trust by trust

The Royal Marsden, Clatterbridge Centre for Oncology NHS Foundation trust and The Christie Hospital NHS Foundation trust are tertiary cancer centres that mainly provide oncological treatment for bowel cancer patients. The Royal Marsden and The Christie Hospital NHS Foundation trust have been excluded from Case Ascertainment in this table. Clatterbridge Centre for Oncology NHS Foundation trust has been excluded from all data in this table

Key

Audit year
- ● >80% case ascertainment or data completeness
- ■ 50-80% case ascertainment or data completeness
- ▲ <50% case ascertainment or data completeness

Please note grades were assigned to case ascertainment and data completeness before the figures were rounded to whole numbers.

Table 7.1
Case ascertainment and data completeness according to trust/hospital site

Cancer Alliance/Trust Name	No. cases reported to the Audit	No. cases identified in HES/PEDW	Case ascertainment %	Patients with complete pre-treatment staging (%)*	Patients with recorded performance status (%)	No. cases having major surgery according to the Audit	Data completeness for patients having major surgery %	Patients having major surgery recorded as ASA 1 (%)	Patients having major surgery recorded as ASA 2 (%)	Patients having major surgery recorded as ASA 3 (%)	Patients having major surgery recorded as ASA 4/5 (%)	Patients having major surgery with no ASA recorded (%)
Overall	**30,710**	**32,335**	**95** ●	**76** ■	**83** ●	**19,231**	**81** ●	**12**	**53**	**27**	**3**	**6**
North East and Cumbria	**1,785**	**1,865**	**96** ●	**76** ■	**83** ●	**1,155**	**91** ●	**11**	**51**	**32**	**3**	**3**
City Hospitals Sunderland NHS Foundation Trust	167	187	89 ●	71 ■	100 ●	92	67 ■	13	55	27	4	0
County Durham and Darlington NHS Foundation Trust	296	288	103 ●	69 ■	96 ●	153	99 ●	8	59	29	2	1
Gateshead Health NHS Foundation Trust	161	157	103 ●	53 ■	19 ▲	98	90 ●	14	50	31	5	0
North Cumbria University Hospitals NHS Trust	118	169	70 ■	84 ●	51 ■	84	62 ■	0	55	42	1	2
North Tees and Hartlepool NHS Foundation Trust	228	221	103 ●	86 ●	94 ●	140	94 ●	14	50	29	2	5
Northumbria Healthcare NHS Foundation Trust	280	284	99 ●	83 ●	84 ●	171	99 ●	16	50	30	2	1
South Tees Hospitals NHS Foundation Trust	239	230	104 ●	38 ▲	81 ●	181	88 ●	17	46	24	2	10
South Tyneside NHS Foundation Trust	93	105	89 ●	90 ●	100 ●	69	100 ●	3	45	45	7	0
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	203	224	91 ●	90 ●	98 ●	167	99 ●	7	51	38	4	0
Lancashire and South Cumbria	**913**	**921**	**99** ●	**88** ●	**89** ●	**509**	**89** ●	**17**	**48**	**27**	**2**	**6**
Blackpool Teaching Hospitals NHS Foundation Trust	237	209	113 ●	93 ●	97 ●	104	83 ●	11	65	15	1	8
East Lancashire Hospitals NHS Trust	221	226	98 ●	88 ●	99 ●	149	99 ●	19	53	25	2	1
Lancashire Teaching Hospitals NHS Foundation Trust	211	268	79 ■	91 ●	100 ●	104	86 ●	14	44	26	1	14
University Hospitals of Morecambe Bay NHS Foundation Trust	244	218	112 ●	74 ■	61 ■	152	84 ●	20	34	38	3	5
Greater Manchester	**1,468**	**1,478**	**99** ●	**62** ■	**88** ●	**906**	**94** ●	**13**	**52**	**30**	**3**	**2**
Bolton NHS Foundation Trust	210	198	106 ●	95 ●	100 ●	130	93 ●	5	49	36	4	6
Central Manchester University Hospitals NHS Foundation Trust	180	145	124 ●	74 ■	98 ●	115	99 ●	36	45	15	3	1
Pennine Acute Hospitals NHS Trust	361	327	110 ●	80 ●	87 ●	187	91 ●	8	58	27	5	2
Salford Royal NHS Foundation Trust	116	113	103 ●	71 ■	88 ●	63	89 ●	14	56	25	5	0
Stockport NHS Foundation Trust	181	184	98 ●	90 ●	80 ●	112	97 ●	9	60	29	2	0
Tameside and Glossop Integrated Care NHS Foundation Trust	127	127	100 ●	79 ■	91 ●	78	96 ●	10	41	45	3	1
The Christie NHS Foundation Trust	~	~	~	~	~	59	95 ●	17	64	17	2	0
University Hospital of South Manchester NHS Foundation Trust	123	141	87 ●	66 ■	55 ■	87	95 ●	13	45	40	1	1
Wrightington, Wigan and Leigh NHS Foundation Trust	158	141	112 ●	85 ●	92 ●	75	85 ●	8	49	39	4	0
West Yorkshire	**1,364**	**1,333**	**102** ●	**83** ●	**64** ■	**865**	**62** ■	**25**	**40**	**22**	**2**	**11**
Airedale NHS Foundation Trust	140	130	108 ●	99 ●	100 ●	98	96 ●	72	21	2	0	4
Bradford Teaching Hospitals NHS Foundation Trust	153	156	98 ●	96 ●	89 ●	106	82 ●	15	45	25	2	13
Calderdale and Huddersfield NHS Foundation Trust	271	237	114 ●	27 ▲	24 ▲	144	24 ▲	15	52	25	2	6
Harrogate and District NHS Foundation Trust	171	131	131 ●	67 ■	88 ●	95	95 ●	12	56	26	3	3
Leeds Teaching Hospitals NHS Trust	348	396	88 ●	56 ■	39 ▲	250	55 ■	14	44	35	4	3
Mid Yorkshire Hospitals NHS Trust	281	283	99 ●	66 ■	89 ●	172	56 ■	34	24	6	2	34
Humber, Coast and Vale	**852**	**842**	**101** ●	**75** ■	**93** ●	**566**	**64** ■	**10**	**32**	**27**	**2**	**30**
Hull and East Yorkshire Hospitals NHS Trust	282	282	100 ●	74 ■	93 ●	173	25 ▲	12	14	10	0	64
Northern Lincolnshire and Goole NHS Foundation Trust	244	238	103 ●	77 ■	94 ●	183	63 ■	4	31	30	3	32
York Teaching Hospital NHS Foundation Trust - The York Hospital	213	226	94 ●	71 ■	92 ●	139	99 ●	19	55	26	0	0
York Teaching Hospital NHS Foundation Trust - Scarborough Hospital	113	96	118 ●	80 ●	92 ●	71	99 ●	1	30	61	8	0
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**1,039**	**1,040**	**100** ●	**82** ●	**74** ■	**630**	**91** ●	**15**	**56**	**25**	**2**	**2**
Barnsley Hospital NHS Foundation Trust	130	124	105 ●	69 ■	96 ●	74	86 ●	18	58	11	3	11
Chesterfield Royal Hospital NHS Foundation Trust	199	194	103 ●	77 ■	76 ■	111	94 ●	19	55	23	1	3
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	252	251	100 ●	48 ▲	15 ▲	158	82 ●	20	53	25	3	0
Sheffield Teaching Hospitals NHS Foundation Trust	319	338	94 ●	85 ●	100 ●	207	94 ●	11	59	28	2	0
The Rotherham NHS Foundation Trust	139	133	105 ●	87 ●	97 ●	80	100 ●	10	55	31	4	0

Table 7.1 Continued
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Cheshire and Merseyside	**1,602**	**1,560**	**103**	**72**	**95**	**1,006**	**76**	**9**	**57**	**26**	**3**	**4**
Aintree University Hospital NHS Foundation Trust	220	207	106	87	91	118	75	11	59	25	2	3
Countess of Chester Hospital NHS Foundation Trust	137	157	87	90	100	102	92	8	89	1	2	0
East Cheshire NHS Trust	132	128	103	96	100	88	66	11	44	40	5	0
Mid Cheshire Hospitals NHS Foundation Trust	180	161	112	87	100	93	94	4	73	23	0	0
Royal Liverpool and Broadgreen University Hospitals NHS Trust	215	207	104	87	97	134	85	13	60	23	4	0
Southport and Ormskirk Hospital NHS Trust	133	117	114	81	79	89	31	7	53	33	3	4
St Helens and Knowsley Hospital Services NHS Trust	199	194	103	94	99	135	93	7	49	39	4	1
Warrington and Halton Hospitals NHS Foundation Trust	134	165	81	75	83	92	30	5	40	12	11	32
Wirral University Teaching Hospital NHS Foundation Trust	251	210	120	92	100	155	94	12	51	37	1	0
Wales	**1,911**	**1,606**	**119**	**73**	**74**	**1,214**	**91**	**10**	**53**	**32**	**4**	**1**
Bronglais MDT	57	39	146	63	81	11	27	9	36	18	18	18
Cardiff MDT	218	166	131	73	6	120	72	9	57	28	0	6
Nevill Hall Hospital MDT	110	79	139	79	98	68	87	4	50	41	3	1
Prince Charles Hospital MDT	100	83	120	96	100	68	99	0	41	51	7	0
Princess of Wales MDT	137	127	108	93	98	77	99	13	65	19	3	0
Royal Glamorgan Hospital MDT	131	109	120	92	98	78	96	8	51	33	8	0
Royal Gwent Hospital MDT	230	139	165	86	83	147	99	22	52	24	2	0
Swansea MDT	199	178	112	94	26	156	96	12	56	28	4	0
West Wales General and Prince Phillip MDT	164	163	101	83	85	103	84	7	62	25	4	2
Withybush General MDT	91	85	107	81	99	70	84	10	51	33	6	0
Ysbwyty Glan Clwydd MDT	152	150	101	79	100	103	92	6	50	37	5	2
Ysbwyty Gwynedd MDT	153	135	113	73	100	110	95	2	49	45	3	2
Ysbwyty Maelor MDT	168	153	110	86	67	103	98	11	52	35	2	0
West Midlands	**2,954**	**3,331**	**89**	**76**	**77**	**1,956**	**67**	**10**	**52**	**27**	**2**	**9**
Burton Hospitals NHS Foundation Trust	158	158	100	97	99	109	98	9	52	34	5	0
George Eliot Hospital NHS Trust	108	113	96	95	100	74	100	1	53	46	0	0
Heart of England NHS Foundation Trust	438	407	108	80	100	275	95	12	60	24	3	0
Sandwell and West Birmingham Hospitals NHS Trust	225	199	113	47	17	141	47	10	52	28	3	7
Shrewsbury and Telford Hospital NHS Trust	305	332	92	65	100	186	47	10	41	27	2	19
South Warwickshire NHS Foundation Trust	143	153	93	64	3	104	92	8	51	37	1	4
The Dudley Group NHS Foundation Trust	192	225	85	83	84	158	64	8	42	34	1	15
The Royal Wolverhampton NHS Trust	244	276	88	85	85	166	84	8	55	28	2	6
University Hospitals Birmingham NHS Foundation Trust	78	217	36	78	37	50	0	14	52	12	0	22
University Hospitals Coventry and Warwickshire NHS Trust	202	235	86	27	70	121	66	7	55	31	2	5
University Hospitals of North Midlands NHS Trust – County Hospital	71	†	84	92	93	▲	▲	▲	▲	▲	▲	▲
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	260	†	84	88	92	238	8	11	43	19	2	25
Walsall Healthcare NHS Trust	•	143		•	•	•	•	•	•	•	•	•
Worcestershire Acute Hospitals NHS Trust	400	359	111	93	66	250	92	10	63	25	2	0
Wye Valley NHS Trust	130	122	107	71	88	82	66	10	48	22	0	21
East Midlands	**2,005**	**2,085**	**96**	**86**	**68**	**1,253**	**85**	**11**	**56**	**28**	**3**	**2**
Derby Teaching Hospitals NHS Foundation Trust	282	282	100	59	96	175	92	15	57	25	3	1
Kettering General Hospital NHS Foundation Trust	186	207	90	65	100	142	88	38	41	20	1	0
Northampton General Hospital NHS Trust	158	211	75	54	83	101	65	8	44	33	4	12
Nottingham University Hospitals NHS Trust	390	362	108	90	99	201	100	4	66	26	4	0
Sherwood Forest Hospitals NHS Foundation Trust	210	200	105	20	16	122	50	11	61	24	0	5
University Hospitals of Leicester NHS Trust	491	479	103	74	24	322	100	4	56	35	4	0
United Lincolnshire Hospitals NHS Trust - Lincoln and Grantham	176	235	75	33	72	104	80	13	63	20	0	5
United Lincolnshire Hospitals NHS Trust - Pilgrim Hospital Boston	112	109	103	35	91	86	60	2	57	38	2	0

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East of England	**3,629**	**3,608**	**101** ●	**81** ●	**86** ●	**2,094**	**74** ■	**9**	**52**	**30**	**3**	**7**
Basildon and Thurrock University Hospitals NHS Foundation Trust	260	223	117 ●	69 ■	91 ●	104	93 ●	10	60	24	4	3
Bedford Hospital NHS Trust	159	148	107 ●	30 ▲	100 ●	81	73 ■	12	57	19	0	12
Cambridge University Hospitals NHS Foundation Trust	278	327	85 ●	65 ■	100 ●	216	98 ●	5	60	31	4	0
Colchester Hospital University NHS Foundation Trust	272	240	113 ●	74 ■	84 ●	131	79 ■	13	58	28	1	0
East and North Hertfordshire NHS Trust	254	240	106 ●	11 ▲	1 ▲	87	2 ▲	16	60	23	0	1
Hinchingbrooke Health Care NHS Trust	127	99	128 ●	77 ■	96 ●	70	83 ●	6	57	27	4	6
Ipswich Hospital NHS Trust	237	238	100 ●	78 ■	97 ●	143	48 ▲	6	28	16	0	50
James Paget University Hospitals NHS Foundation Trust	139	130	107 ●	83 ●	98 ●	87	87 ●	8	37	53	2	0
Luton and Dunstable University Hospital NHS Foundation Trust	144	138	104 ●	84 ●	98 ●	92	83 ●	14	57	22	4	3
Mid Essex Hospital Services NHS Trust	186	179	104 ●	63 ■	100 ●	113	4 ▲	8	35	35	3	19
Milton Keynes University Hospital NHS Foundation Trust	128	154	83 ●	66 ■	92 ●	91	73 ■	18	45	32	2	3
Norfolk and Norwich University Hospitals NHS Foundation Trust	458	419	109 ●	57 ■	100 ●	253	95 ●	8	57	30	1	4
Peterborough and Stamford Hospitals NHS Foundation Trust	210	213	99 ●	49 ▲	100 ●	148	88 ●	9	47	34	8	1
Southend University Hospital NHS Foundation Trust	160	165	97 ●	18 ▲	56 ■	106	96 ●	7	66	23	2	3
The Princess Alexandra Hospital NHS Trust	105	151	70 ■	98 ●	34 ▲	44	66 ■	7	41	39	2	11
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	111	158	70 ■	45 ▲	97 ●	80	3 ▲	0	35	60	4	1
West Hertfordshire Hospitals NHS Trust	242	218	111 ●	85 ●	100 ●	140	81 ●	9	51	33	4	2
West Suffolk NHS Foundation Trust	159	168	95 ●	40 ▲	99 ●	108	94 ●	2	60	33	5	0
Peninsula	**1,186**	**1,161**	**102** ●	**61** ■	**75** ■	**747**	**94** ●	**16**	**55**	**25**	**3**	**2**
Northern Devon Healthcare NHS Trust	143	136	105 ●	76 ■	100 ●	84	96 ●	7	62	29	2	0
Plymouth Hospitals NHS Trust	217	285	76 ■	83 ●	70 ■	178	89 ●	11	50	30	2	7
Royal Cornwall Hospitals NHS Trust	308	289	107 ●	85 ●	72 ■	194	97 ●	20	48	25	6	1
Royal Devon and Exeter NHS Foundation Trust	309	275	112 ●	90 ●	100 ●	192	100 ●	15	62	22	2	0
Torbay and South Devon NHS Foundation Trust	209	176	119 ●	88 ●	32 ▲	99	81 ●	24	56	18	2	0
Somerset, Wiltshire, Avon and Gloucestershire	**1,696**	**1,674**	**101** ●	**60** ■	**94** ●	**1,011**	**89** ●	**10**	**55**	**28**	**2**	**4**
Gloucestershire Hospitals NHS Foundation Trust	438	433	101 ●	70 ■	88 ●	280	83 ●	11	57	30	2	0
North Bristol NHS Trust	264	234	113 ●	97 ●	100 ●	155	100 ●	9	53	37	1	0
Royal United Hospitals Bath NHS Foundation Trust	231	263	88 ●	95 ●	82 ●	180	97 ●	10	53	31	4	2
Salisbury NHS Foundation Trust	176	157	112 ●	89 ●	94 ●	80	85 ●	11	65	20	0	4
Taunton and Somerset NHS Foundation Trust	183	184	99 ●	61 ■	99 ●	97	67 ■	6	47	21	0	26
University Hospitals Bristol NHS Foundation Trust	218	199	110 ●	86 ●	99 ●	111	100 ●	15	62	21	2	0
Weston Area Health NHS Trust	96	99	97 ●	98 ●	99 ●	63	100 ●	8	52	35	5	0
Yeovil District Hospital NHS Foundation Trust	90	105	86 ●	76 ■	99 ●	45	67 ■	11	44	24	0	20
Wessex	**1,633**	**1,540**	**106** ●	**83** ●	**82** ●	**991**	**92** ●	**10**	**59**	**25**	**2**	**4**
Dorset County Hospital NHS Foundation Trust	133	133	100 ●	89 ●	100 ●	91	82 ●	15	43	35	0	7
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	113	183	62 ■	84 ●	100 ●	79	99 ●	4	78	16	0	1
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	149	148	101 ●	100 ●	100 ●	102	95 ●	13	57	28	2	0
Isle of Wight NHS Trust	116	95	122 ●	70 ■	83 ●	69	88 ●	13	58	26	3	0
Poole Hospital NHS Foundation Trust	179	173	103 ●	79 ■	94 ●	96	97 ●	11	56	29	3	0
Portsmouth Hospitals NHS Trust	371	319	116 ●	62 ■	30 ▲	208	89 ●	7	61	25	1	6
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	247	207	119 ●	99 ●	100 ●	143	95 ●	8	59	30	3	0
University Hospital Southampton NHS Foundation Trust	325	282	115 ●	99 ●	99 ●	203	90 ●	11	62	16	1	10
Thames Valley	**1,015**	**1,054**	**96** ●	**82** ●	**93** ●	**679**	**93** ●	**16**	**54**	**24**	**3**	**3**
Buckinghamshire Healthcare NHS Trust	240	220	109 ●	97 ●	100 ●	157	99 ●	25	52	21	2	0
Great Western Hospitals NHS Foundation Trust	201	218	92 ●	68 ■	76 ■	142	82 ●	8	44	34	3	12
Oxford University Hospitals NHS Foundation Trust	321	348	92 ●	74 ■	95 ●	209	91 ●	22	56	19	2	0
Royal Berkshire NHS Foundation Trust	253	268	94 ●	91 ●	98 ●	171	99 ●	9	61	27	4	0
Surrey and Sussex	**1,631**	**1,791**	**91** ●	**85** ●	**88** ●	**1,132**	**69** ■	**10**	**61**	**20**	**4**	**5**
Ashford and St Peter's Hospitals NHS Foundation Trust	86	151	57 ■	94 ●	100 ●	71	79 ■	17	48	32	3	0
Brighton and Sussex University Hospitals NHS Trust	239	195	123 ●	54 ■	95 ●	165	47 ▲	4	91	4	1	1
East Sussex Healthcare NHS Trust	255	290	88 ●	31 ▲	30 ▲	167	63 ■	11	63	16	2	9
Frimley Health NHS Foundation Trust - Frimley Park Hospital	133	225	59 ■	78 ■	98 ●	125	2 ▲	10	61	24	2	2
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	216	189	114 ●	94 ●	100 ●	101	89 ●	24	55	18	2	1
Royal Surrey County Hospital NHS Foundation Trust	152	161	94 ●	97 ●	99 ●	83	55 ■	10	42	8	0	40
Surrey and Sussex Healthcare NHS Trust	162	217	75 ■	98 ●	99 ●	162	100 ●	6	62	26	6	0
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	193	185	104 ●	73 ■	100 ●	145	97 ●	5	54	30	9	2
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	195	178	110 ●	78 ■	100 ●	113	95 ●	14	46	29	5	5

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Kent and Medway	**1,029**	**1,057**	**97** ●	**73** ■	**87** ●	**652**	**84** ●	**12**	**54**	**25**	**2**	**7**
Dartford and Gravesham NHS Trust	145	167	87 ●	90 ●	100 ●	99	100 ●	8	73	18	1	0
East Kent Hospitals University NHS Foundation Trust	429	431	100 ●	82 ●	87 ●	272	87 ●	12	54	32	3	0
Maidstone and Tunbridge Wells NHS Trust	292	286	102 ●	85 ●	79 ■	184	73 ■	10	38	26	3	24
Medway NHS Foundation Trust	163	173	94 ●	77 ■	89 ●	97	78 ■	19	66	13	1	1
West London	**1,270**	**1,846**	**69** ■	**82** ●	**97** ●	**792**	**75** ■	**13**	**50**	**24**	**3**	**10**
Chelsea and Westminster Hospital NHS Foundation Trust	154	160	96 ●	88 ●	100 ●	97	84 ●	16	59	22	3	0
Croydon Health Services NHS Trust	108	117	92 ●	95 ●	100 ●	52	96 ●	4	60	37	0	0
Epsom and St Helier University Hospitals NHS Trust	199	202	99 ●	82 ●	99 ●	84	21 ▲	4	15	4	0	77
Imperial College Healthcare NHS Trust	213	233	91 ●	90 ●	100 ●	133	97 ●	10	48	36	6	0
Kingston Hospital NHS Foundation Trust	158	163	97 ●	82 ●	93 ●	99	91 ●	14	57	23	6	0
London North West Hospitals NHS Trust	226	286	79 ■	73 ■	97 ●	137	61 ■	24	50	16	1	9
St George's University Hospitals NHS Foundation Trust	99	173	57 ■	74 ■	94 ●	81	94 ●	22	53	20	5	0
The Hillingdon Hospitals NHS Foundation Trust	95	93	102 ●	72 ■	86 ●	66	44 ▲	8	59	33	0	0
The Royal Marsden NHS Foundation Trust	~	~	~	~	~	43	84 ●	5	58	30	0	7
South East London	**550**	**732**	**75** ■	**86** ●	**80** ●	**377**	**80** ●	**14**	**53**	**21**	**2**	**9**
Guy's and St Thomas' NHS Foundation Trust	112	195	57 ■	31 ▲	12 ▲	93	29 ▲	6	39	20	1	33
King's College Hospital NHS Foundation Trust - King's College Hospital	94	126	75 ■	86 ●	100 ●	80	95 ●	20	58	19	0	4
King's College Hospital NHS Foundation Trust - Princess Royal University Hospital	102	172	59 ■	83 ●	95 ●	61	93 ●	21	44	30	3	2
Lewisham and Greenwich NHS Trust	242	239	101 ●	90 ●	98 ●	143	100 ●	13	64	20	3	0
North Central and East London	**1,071**	**1,242**	**86** ●	**84** ●	**100** ●	**672**	**82** ●	**21**	**52**	**22**	**2**	**4**
Barking, Havering and Redbridge University Hospitals NHS Trust	277	267	104 ●	73 ■	100 ●	152	64 ■	14	47	25	4	10
Barts Health NHS Trust	133	302	44 ▲	96 ●	100 ●	94	73 ■	17	52	24	2	4
Homerton University Hospital NHS Foundation Trust	89	92	97 ●	96 ●	100 ●	56	95 ●	7	54	30	4	5
North Middlesex University Hospital NHS Trust	69	89	78 ■	59 ■	100 ●	46	70 ■	33	52	15	0	0
Royal Free London NHS Foundation Trust	290	275	105 ●	97 ●	100 ●	182	96 ●	15	57	25	2	1
Whittington Health NHS Trust	74	74	100 ●	46 ▲	100 ●	56	88 ●	48	48	4	0	0
University College London Hospitals NHS Foundation Trust	139	143	97 ●	85 ●	99 ●	86	88 ●	36	49	15	0	0

• No cases submitted
▲ Too few cases to report (<10)
† Combined case ascertainment for Trust. Denominator 392

The Royal Marsden, The Christie Hospital and The Clatterbridge Cancer Centre NHS Foundation Trusts are tertiary cancer centres that mainly provide oncological treatment for bowel cancer patients therefore have been excluded from Treatment Pathways, but included in Cancer Alliance totals.

Table 7.2
Management of all patients reported to the audit according to trust/hospital site

Diagnosing Cancer Alliance/Trust Name	Number of patients reported to the audit	Seen by clinical nurse specialist (%)	Curative Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Non-Curative Major Resection Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
Overall	**30,710**	**91**	**59**	**4**	**4**	**17**	**16**
North East and Cumbria	**1,785**	**93**	**61**	**3**	**3**	**21**	**12**
City Hospitals Sunderland NHS Foundation Trust	167	76	52	2	4	22	21
County Durham and Darlington NHS Foundation Trust	296	100	55	1	1	33	10
Gateshead Health NHS Foundation Trust	161	99	59	3	5	18	15
North Cumbria University Hospitals NHS Trust	118	96	62	3	0	14	21
North Tees and Hartlepool NHS Foundation Trust	228	84	70	7	4	14	5
Northumbria Healthcare NHS Foundation Trust	280	91	58	4	4	26	8
South Tees Hospitals NHS Foundation Trust	239	97	61	1	5	14	19
South Tyneside NHS Foundation Trust	93	100	60	5	3	22	10
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	203	98	72	1	3	18	5
Lancashire and South Cumbria	**913**	**95**	**56**	**6**	**2**	**20**	**17**
Blackpool Teaching Hospitals NHS Foundation Trust	237	99	52	8	1	20	19
East Lancashire Hospitals NHS Trust	221	94	57	3	1	21	18
Lancashire Teaching Hospitals NHS Foundation Trust	211	86	48	7	1	32	12
University Hospitals of Morecambe Bay NHS Foundation Trust	244	99	64	6	5	8	17
Greater Manchester	**1,468**	**97**	**57**	**5**	**3**	**14**	**22**
Bolton NHS Foundation Trust	210	96	63	3	4	14	16
Central Manchester University Hospitals NHS Foundation Trust	180	98	67	11	2	13	8
Pennine Acute Hospitals NHS Trust	361	100	52	1	2	12	33
Salford Royal NHS Foundation Trust	116	100	51	5	1	16	27
Stockport NHS Foundation Trust	181	94	57	8	3	17	15
Tameside and Glossop Integrated Care NHS Foundation Trust	127	98	56	6	4	20	14
University Hospital of South Manchester NHS Foundation Trust	123	97	60	3	4	11	22
Wrightington, Wigan and Leigh NHS Foundation Trust	158	92	51	4	1	16	28
West Yorkshire	**1,364**	**78**	**60**	**5**	**3**	**11**	**22**
Airedale NHS Foundation Trust	140	94	65	1	5	10	19
Bradford Teaching Hospitals NHS Foundation Trust	153	8	66	5	1	5	24
Calderdale and Huddersfield NHS Foundation Trust	271	84	58	5	2	3	31
Harrogate and District NHS Foundation Trust	171	96	67	6	4	15	8
Leeds Teaching Hospitals NHS Trust	348	82	60	5	4	12	19
Mid Yorkshire Hospitals NHS Trust	281	90	51	6	4	17	23
Humber, Coast and Vale	**852**	**97**	**59**	**5**	**7**	**16**	**13**
Hull and East Yorkshire Hospitals NHS Trust	282	98	62	6	5	13	13
Northern Lincolnshire and Goole NHS Foundation Trust	244	93	65	4	3	11	17
York Teaching Hospital NHS Foundation Trust - The York Hospital	213	98	49	7	12	25	7
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	113	100	55	3	7	18	18
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**1,039**	**90**	**58**	**5**	**3**	**25**	**8**
Barnsley Hospital NHS Foundation Trust	130	99	58	5	2	23	12
Chesterfield Royal Hospital NHS Foundation Trust	199	88	50	6	3	30	12
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	252	90	62	8	4	17	9
Sheffield Teaching Hospitals NHS Foundation Trust	319	90	59	4	4	27	5
The Rotherham NHS Foundation Trust	139	88	58	4	3	30	6
Cheshire and Merseyside	**1,602**	**95**	**61**	**5**	**2**	**14**	**18**
Aintree University Hospital NHS Foundation Trust	220	98	52	7	1	15	25
Countess of Chester Hospital NHS Foundation Trust	137	100	66	0	3	14	18
East Cheshire NHS Trust	132	87	65	4	4	23	5
Mid Cheshire Hospitals NHS Foundation Trust	180	93	58	6	0	11	24
Royal Liverpool and Broadgreen University Hospitals NHS Trust	215	95	60	8	5	17	11
Southport and Ormskirk Hospital NHS Trust	133	100	65	3	2	7	23
St Helens and Knowsley Hospital Services NHS Trust	199	87	62	6	5	14	13
Warrington and Halton Hospitals NHS Foundation Trust	134	99	68	4	0	10	19
Wirral University Teaching Hospital NHS Foundation Trust	251	95	60	3	2	14	22

Table 7.2 continued

Management of all patients reported to the audit according to trust/hospital site

Diagnosing Cancer Alliance/Trust Name	Number of patients reported to the audit	Seen by clinical nurse specialist (%)	Curative Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Non-Curative Major Resection Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
Wales	**1,911**	**89**	**57**	**4**	**7**	**15**	**18**
Bronglais MDT	57	86	53	0	7	21	19
Cardiff MDT	218	95	51	4	5	11	29
Nevill Hall Hospital MDT	110	100	54	3	11	15	17
Prince Charles Hospital MDT	100	94	66	3	2	19	10
Princess of Wales MDT	137	89	61	4	5	18	12
Royal Glamorgan Hospital MDT	131	63	54	8	4	23	11
Royal Gwent Hospital MDT	230	85	59	3	4	11	22
Swansea MDT	199	84	61	1	11	4	23
West Wales General and Prince Phillip MDT	164	85	55	4	4	19	18
Withybush General MDT	91	96	65	0	3	19	13
Ysbwyty Glan Clwydd MDT	152	97	53	6	14	13	13
Ysbwyty Gwynedd MDT	153	90	61	4	8	17	10
Ysbwyty Maelor MDT	168	98	57	7	5	14	17
West Midlands	**2,954**	**94**	**61**	**5**	**5**	**16**	**12**
Burton Hospitals NHS Foundation Trust	158	99	63	3	6	27	2
George Eliot Hospital NHS Trust	108	90	61	1	8	19	10
Heart of England NHS Foundation Trust	438	96	56	6	7	24	6
Sandwell and West Birmingham Hospitals NHS Trust	225	94	60	4	2	20	13
Shrewsbury and Telford Hospital NHS Trust	305	96	59	6	2	21	11
South Warwickshire NHS Foundation Trust	143	93	64	6	8	17	6
The Dudley Group NHS Foundation Trust	192	97	67	2	6	13	13
The Royal Wolverhampton NHS Trust	244	97	76	4	1	10	9
University Hospitals Birmingham NHS Foundation Trust	78	100	56	3	5	4	32
University Hospitals Coventry and Warwickshire NHS Trust	202	99	58	1	2	21	17
University Hospitals of North Midlands NHS Trust – County Hospital	71	98	63	6	11	13	7
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	260	100	67	3	6	8	16
Walsall Healthcare NHS Trust	•	•	•	•	•	•	•
Worcestershire Acute Hospitals NHS Trust	400	83	58	9	5	12	16
Wye Valley NHS Trust	130	95	49	6	8	6	30
East Midlands	**2,005**	**93**	**58**	**3**	**3**	**21**	**15**
Derby Teaching Hospitals NHS Foundation Trust	282	92	60	3	2	20	15
Kettering General Hospital NHS Foundation Trust	186	98	79	2	3	3	13
Northampton General Hospital NHS Trust	158	99	56	5	1	20	17
Nottingham University Hospitals NHS Trust	390	82	49	5	2	29	14
Sherwood Forest Hospitals NHS Foundation Trust	210	100	52	0	7	15	25
University Hospitals of Leicester NHS Trust	491	93	63	3	1	26	6
United Lincolnshire Hospitals NHS Trust - Lincoln and Grantham	176	96	44	2	6	19	29
United Lincolnshire Hospitals NHS Trust - Pilgrim Hospital Boston	112	96	65	4	3	13	15
East of England	**3,629**	**89**	**56**	**5**	**3**	**14**	**22**
Basildon and Thurrock University Hospitals NHS Foundation Trust	260	92	52	7	3	26	12
Bedford Hospital NHS Trust	159	87	50	6	3	19	21
Cambridge University Hospitals NHS Foundation Trust	278	100	69	5	4	17	5
Colchester Hospital University NHS Foundation Trust	272	98	58	7	1	18	17
East and North Hertfordshire NHS Trust	254	91	34	0	2	0	64
Hinchingbrooke Health Care NHS Trust	127	87	53	9	4	20	14
Ipswich Hospital NHS Trust	237	100	52	5	5	15	24
James Paget University Hospitals NHS Foundation Trust	139	88	58	2	3	19	17
Luton and Dunstable University Hospital NHS Foundation Trust	144	92	61	3	2	18	15
Mid Essex Hospital Services NHS Trust	186	99	53	4	2	11	30
Milton Keynes University Hospital NHS Foundation Trust	128	100	70	2	1	2	24
Norfolk and Norwich University Hospitals NHS Foundation Trust	458	67	52	7	5	6	31
Peterborough and Stamford Hospitals NHS Foundation Trust	210	78	68	0	5	12	15
Southend University Hospital NHS Foundation Trust	160	95	54	6	4	30	6
The Princess Alexandra Hospital NHS Trust	105	70	42	1	1	5	51
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	111	69	63	5	3	9	21
West Hertfordshire Hospitals NHS Trust	242	99	58	7	2	19	13
West Suffolk NHS Foundation Trust	159	97	63	4	6	13	14

Table 7.2 continued

Management of all patients reported to the audit according to trust/hospital site

Diagnosing Cancer Alliance/Trust Name	Number of patients reported to the audit	Seen by clinical nurse specialist (%)	Curative Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Non-Curative Major Resection Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
Peninsula	**1,186**	**95**	**65**	**4**	**1**	**15**	**14**
Northern Devon Healthcare NHS Trust	143	98	58	5	1	17	20
Plymouth Hospitals NHS Trust	217	94	79	2	2	9	8
Royal Cornwall Hospitals NHS Trust	308	93	64	4	1	19	12
Royal Devon and Exeter NHS Foundation Trust	309	94	61	6	2	18	14
Torbay and South Devon NHS Foundation Trust	209	100	62	4	2	12	20
Somerset, Wiltshire, Avon and Gloucestershire	**1,696**	**93**	**54**	**4**	**5**	**20**	**17**
Gloucestershire Hospitals NHS Foundation Trust	438	91	60	4	4	18	13
North Bristol NHS Trust	264	88	45	3	7	31	14
Royal United Hospitals Bath NHS Foundation Trust	231	92	58	3	7	6	26
Salisbury NHS Foundation Trust	176	96	55	4	2	17	22
Taunton and Somerset NHS Foundation Trust	183	94	49	4	3	21	23
University Hospitals Bristol NHS Foundation Trust	218	96	52	7	6	22	12
Weston Area Health NHS Trust	96	96	65	1	1	23	10
Yeovil District Hospital NHS Foundation Trust	90	97	48	3	8	22	19
Wessex	**1,633**	**93**	**57**	**4**	**4**	**21**	**14**
Dorset County Hospital NHS Foundation Trust	133	95	65	2	3	18	11
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	113	95	64	3	4	18	12
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	149	95	66	5	1	12	15
Isle of Wight NHS Trust	116	89	58	3	0	24	15
Poole Hospital NHS Foundation Trust	179	88	51	4	4	19	22
Portsmouth Hospitals NHS Trust	371	100	49	4	6	31	9
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	247	100	54	5	3	22	15
University Hospital Southampton NHS Foundation Trust	325	80	61	2	5	17	15
Thames Valley	**1,015**	**96**	**59**	**4**	**5**	**16**	**15**
Buckinghamshire Healthcare NHS Trust	240	97	61	4	4	19	12
Great Western Hospitals NHS Foundation Trust	201	89	51	2	9	11	27
Oxford University Hospitals NHS Foundation Trust	321	95	60	5	6	9	20
Royal Berkshire NHS Foundation Trust	253	100	62	5	4	25	4
Surrey and Sussex	**1,631**	**70**	**66**	**4**	**4**	**11**	**14**
Ashford and St Peter's Hospitals NHS Foundation Trust	86	100	77	2	5	6	10
Brighton and Sussex University Hospitals NHS Trust	239	93	73	9	3	4	11
East Sussex Healthcare NHS Trust	255	98	56	3	3	13	25
Frimley Health NHS Foundation Trust - Frimley Park Hospital	133	100	68	2	13	4	14
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	216	10	44	5	7	21	23
Royal Surrey County Hospital NHS Foundation Trust	152	100	72	1	3	10	15
Surrey and Sussex Healthcare NHS Trust	162	78	93	2	2	1	1
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	193	25	70	7	3	13	7
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	195	71	57	5	3	24	11
Kent and Medway	**1,029**	**93**	**59**	**3**	**3**	**13**	**22**
Dartford and Gravesham NHS Trust	145	92	57	5	0	13	26
East Kent Hospitals University NHS Foundation Trust	429	92	60	3	4	10	22
Maidstone and Tunbridge Wells NHS Trust	292	100	60	3	1	11	25
Medway NHS Foundation Trust	163	85	58	2	3	26	10
West London	**1,270**	**96**	**56**	**4**	**4**	**18**	**18**
Chelsea and Westminster Hospital NHS Foundation Trust	154	95	55	5	6	19	16
Croydon Health Services NHS Trust	108	100	49	9	5	26	11
Epsom and St Helier University Hospitals NHS Trust	199	99	46	2	2	29	22
Imperial College Healthcare NHS Trust	213	97	59	4	3	16	18
Kingston Hospital NHS Foundation Trust	158	89	62	4	3	16	15
London North West Hospitals NHS Trust	226	96	57	2	4	12	25
St George's University Hospitals NHS Foundation Trust	99	98	69	3	6	8	14
The Hillingdon Hospitals NHS Foundation Trust	95	99	64	4	6	12	14

Table 7.2 continued

Management of all patients reported to the audit according to trust/hospital site

Diagnosing Cancer Alliance/Trust Name	Number of patients reported to the audit	Seen by clinical nurse specialist (%)	Curative Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Non-Curative Major Resection Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
South East London	**550**	**99**	**64**	**5**	**1**	**18**	**12**
Guy's and St Thomas' NHS Foundation Trust	112	100	68	4	2	8	19
King's College Hospital NHS Foundation Trust - King's College Hospital	94	100	67	6	2	14	11
King's College Hospital NHS Foundation Trust - Princess Royal University Hospital	102	97	68	8	2	11	12
Lewisham and Greenwich NHS Trust	242	100	60	3	1	26	9
North Central and East London	**1,071**	**98**	**58**	**5**	**4**	**18**	**15**
Barking, Havering and Redbridge University Hospitals NHS Trust	277	94	51	5	4	18	21
Barts Health NHS Trust	133	98	68	5	2	8	17
Homerton University Hospital NHS Foundation Trust	89	100	63	2	2	21	11
North Middlesex University Hospital NHS Trust	69	99	58	3	6	23	10
Royal Free London NHS Foundation Trust	290	99	57	4	4	18	16
Whittington Health NHS Trust	74	99	69	3	7	12	9
University College London Hospitals NHS Foundation Trust	139	100	58	8	4	25	5

• No cases submitted

Table 7.3
Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance /Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
Overall	**19,295**	**9**	**16**	**18**	**92**	**84**	**63**	**15,949**	**69**
North East and Cumbria	**1,159**	**9**	**18**	**18**	**96**	**86**	**77**	**1,018**	**64**
City Hospitals Sunderland NHS Foundation Trust	92	19	16	16	73	83	92	85	71
County Durham and Darlington NHS Foundation Trust	153	5	18	16	100	84	71	143	67
Gateshead Health NHS Foundation Trust	98	14	18	18	100	84	86	96	67
North Cumbria University Hospitals NHS Trust	84	8	21	15	79	79	75	37	80
North Tees and Hartlepool NHS Foundation Trust	140	12	16	18	99	87	91	123	60
Northumbria Healthcare NHS Foundation Trust	171	5	13	16	100	82	55	155	57
South Tees Hospitals NHS Foundation Trust	185	9	16	20.5	98	89	76	162	59
South Tyneside NHS Foundation Trust	69	10	19	16	100	86	86	66	60
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	167	5	22	21	99	93	81	151	67
Lancashire and South Cumbria	**510**	**6**	**14**	**15**	**96**	**69**	**56**	**468**	**79**
Blackpool Teaching Hospitals NHS Foundation Trust	104	4	10	14	92	62	70	97	71
East Lancashire Hospitals NHS Trust	150	10	17	18	100	89	29	134	91
Lancashire Teaching Hospitals NHS Foundation Trust	104	3	13	10	100	37	71	100	77
University Hospitals of Morecambe Bay NHS Foundation Trust	152	5	13	16	91	78	64	137	75
Greater Manchester	**911**	**9**	**18**	**16**	**97**	**77**	**49**	**775**	**76**
Bolton NHS Foundation Trust	130	6	24	12	98	55	20	118	86
Central Manchester University Hospitals NHS Foundation Trust	115	10	25	15	100	79	30	83	82
Pennine Acute Hospitals NHS Trust	187	8	19	20	95	90	59	165	71
Salford Royal NHS Foundation Trust	63	5	11	14	100	73	65	58	80
Stockport NHS Foundation Trust	112	10	18	16	100	82	39	109	87
Tameside and Glossop Integrated Care NHS Foundation Trust	78	8	9	17.5	100	81	73	67	75
The Christie NHS Foundation Trust	64	26	0	15	97	67	28	33	84
University Hospital of South Manchester NHS Foundation Trust	87	7	23	20	100	89	71	79	72
Wrightington, Wigan and Leigh NHS Foundation Trust	75	3	19	13	88	68	72	63	39
West Yorkshire	**871**	**12**	**11**	**19**	**97**	**84**	**72**	**788**	**76**
Airedale NHS Foundation Trust	99	8	7	29	100	98	82	86	71
Bradford Teaching Hospitals NHS Foundation Trust	106	6	0	19	90	91	91	95	79
Calderdale and Huddersfield NHS Foundation Trust	144	28	7	18	96	84	49	130	88
Harrogate and District NHS Foundation Trust	95	10	15	17	100	83	82	91	67
Leeds Teaching Hospitals NHS Trust	255	16	16	18	100	78	78	226	72
Mid Yorkshire Hospitals NHS Trust	172	10	13	17	97	82	57	160	78

Table 7.3 continued

Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance / Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
Humber, Coast and Vale	**570**	**8**	**10**	**18**	**93**	**81**	**38**	**500**	**80**
Hull and East Yorkshire Hospitals NHS Trust	174	10	13	17	78	80	32	149	86
Northern Lincolnshire and Goole NHS Foundation Trust	186	10	5	19	98	82	44	160	88
York Teaching Hospital NHS Foundation Trust - The York Hospital	139	2	12	19	99	81	36	126	73
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	71	11	11	17	100	82	45	65	63
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**634**	**10**	**13**	**17**	**98**	**84**	**53**	**574**	**75**
Barnsley Hospital NHS Foundation Trust	75	15	19	15	100	71	12	69	94
Chesterfield Royal Hospital NHS Foundation Trust	111	17	9	16	100	82	41	105	78
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	158	8	15	15	96	91	87	136	60
Sheffield Teaching Hospitals NHS Foundation Trust	210	8	11	28	96	95	42	190	78
The Rotherham NHS Foundation Trust	80	6	18	12.5	100	56	71	74	72
Cheshire and Merseyside	**1,008**	**9**	**17**	**17**	**81**	**87**	**55**	**865**	**76**
Aintree University Hospital NHS Foundation Trust	118	8	13	18	77	93	50	100	74
Countess of Chester Hospital NHS Foundation Trust	102	17	18	18	93	84	30	92	66
East Cheshire NHS Trust	88	2	18	15	67	86	61	79	79
Mid Cheshire Hospitals NHS Foundation Trust	93	3	19	14.5	95	73	62	81	79
Royal Liverpool and Broadgreen University Hospitals NHS Trust	135	8	10	18.5	87	96	37	109	80
Southport and Ormskirk Hospital NHS Trust	89	3	25	18	37	94	76	71	80
St Helens and Knowsley Hospital Services NHS Trust	135	12	20	19	96	90	59	124	67
Warrington and Halton Hospitals NHS Foundation Trust	93	9	24	16	60	88	46	85	77
Wirral University Teaching Hospital NHS Foundation Trust	155	9	12	16.5	98	76	71	124	82
Wales	**1,218**	**14**	**20**	**16**	**100**	**78**	**46**	**979**	**71**
Bronglais MDT	11	25	80	16	100	82	27	7	82
Cardiff MDT	120	15	20	16	100	79	72	90	61
Nevill Hall Hospital MDT	68	13	19	16	100	79	32	58	75
Prince Charles Hospital MDT	68	9	15	14.5	100	76	84	58	55
Princess of Wales MDT	77	8	9	17	100	82	32	68	67
Royal Glamorgan Hospital MDT	78	13	17	15	100	73	51	64	79
Royal Gwent Hospital MDT	147	14	23	17	100	82	46	117	80
Swansea MDT	158	18	23	17	100	84	31	130	72
West Wales General and Prince Phillip MDT	103	17	24	15	100	72	51	86	79
Withybush General MDT	70	6	14	15	100	73	59	65	77
Ysbwyty Glan Clwydd MDT	103	22	30	19	100	83	34	83	59
Ysbwyty Gwynedd MDT	110	14	14	16	100	75	31	63	86
Ysbwyty Maelor MDT	105	8	18	17	100	73	53	90	58

Table 7.3 continued
Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance / Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
West Midlands	**1,959**	**11**	**18**	**21**	**80**	**92**	**65**	**1,443**	**67**
Burton Hospitals NHS Foundation Trust	109	19	16	16	99	78	63	93	60
George Eliot Hospital NHS Trust	74	12	15	22.5	100	95	68	67	68
Heart of England NHS Foundation Trust	275	7	23	35	97	97	68	217	69
Sandwell and West Birmingham Hospitals NHS Trust	141	3	18	26	60	96	53	117	64
Shrewsbury and Telford Hospital NHS Trust	187	11	19	17	82	89	39	168	60
South Warwickshire NHS Foundation Trust	104	14	23	15	99	75	72	90	63
The Dudley Group NHS Foundation Trust	159	16	14	19	91	86	63	133	70
The Royal Wolverhampton NHS Trust	166	16	16	18	98	93	48	152	86
University Hospitals Birmingham NHS Foundation Trust	50	0	29	9	2	98	60	†	†
University Hospitals Coventry and Warwickshire NHS Trust	121	11	16	24	99	95	63	114	75
University Hospitals of North Midlands NHS Trust – County Hospital	▲	▲	▲	▲	▲	▲	▲	▲	▲
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	239	21	18	18	11	98	82	†	†
Walsall Healthcare NHS Trust	•	•	•	•	•	•	•	•	•
Worcestershire Acute Hospitals NHS Trust	250	9	18	27.5	94	96	83	222	58
Wye Valley NHS Trust	82	6	1	17	99	87	76	68	68
East Midlands	**1,256**	**10**	**18**	**17**	**99**	**78**	**57**	**1,097**	**66**
Derby Teaching Hospitals NHS Foundation Trust	175	7	14	21	100	90	50	154	69
Kettering General Hospital NHS Foundation Trust	142	8	37	20	98	88	73	127	61
Northampton General Hospital NHS Trust	102	5	15	15	91	75	69	91	63
Nottingham University Hospitals NHS Trust	201	7	22	15	100	70	76	176	56
Sherwood Forest Hospitals NHS Foundation Trust	122	10	11	20	100	87	43	115	76
University Hospitals of Leicester NHS Trust	324	12	15	13	100	62	44	299	71
United Lincolnshire Hospitals NHS Trust - Lincoln and Grantham	104	17	16	20.5	98	86	38	70	79
United Lincolnshire Hospitals NHS Trust - Pilgrim Hospital Boston	86	17	14	21	99	94	76	65	48

Table 7.3 continued
Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance / Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
East of England	**2,104**	**8**	**17**	**17**	**84**	**85**	**64**	**1,563**	**67**
Basildon and Thurrock University Hospitals NHS Foundation Trust	104	11	16	15	100	80	53	92	70
Bedford Hospital NHS Trust	83	9	15	17	84	84	48	21	91
Cambridge University Hospitals NHS Foundation Trust	216	16	20	17	100	93	50	199	72
Colchester Hospital University NHS Foundation Trust	131	8	24	16	91	72	90	120	51
East and North Hertfordshire NHS Trust	87	0	7	13	3	100	69	†	†
Hinchingbrooke Health Care NHS Trust	70	14	11	18.5	94	91	84	58	60
Ipswich Hospital NHS Trust	143	4	20	16	100	77	56	126	72
James Paget University Hospitals NHS Foundation Trust	88	9	18	16	100	68	85	76	62
Luton and Dunstable University Hospital NHS Foundation Trust	92	7	17	19	98	90	65	85	56
Mid Essex Hospital Services NHS Trust	115	0	14	14	3	99	87	†	†
Milton Keynes University Hospital NHS Foundation Trust	91	12	24	16	87	86	74	74	78
Norfolk and Norwich University Hospitals NHS Foundation Trust	255	3	4	16	100	76	47	234	72
Peterborough and Stamford Hospitals NHS Foundation Trust	149	5	23	16	98	81	60	142	62
Southend University Hospital NHS Foundation Trust	106	10	14	21	99	92	83	89	67
The Princess Alexandra Hospital NHS Trust	44	6	16	19	70	95	41	27	73
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	81	0	23	12	4	99	35	†	†
West Hertfordshire Hospitals NHS Trust	141	8	18	19	100	81	72	120	74
West Suffolk NHS Foundation Trust	108	3	21	17	94	91	69	100	56
Peninsula	**752**	**5**	**13**	**16**	**98**	**78**	**68**	**600**	**60**
Northern Devon Healthcare NHS Trust	84	5	12	16	96	82	75	77	59
Plymouth Hospitals NHS Trust	179	4	12	18	99	88	47	101	68
Royal Cornwall Hospitals NHS Trust	197	5	9	17	99	85	86	174	46
Royal Devon and Exeter NHS Foundation Trust	193	8	18	14	100	63	67	166	63
Torbay and South Devon NHS Foundation Trust	99	2	17	14	92	70	62	82	71
Somerset, Wiltshire, Avon and Gloucestershire	**1,014**	**7**	**15**	**20**	**97**	**89**	**71**	**856**	**59**
Gloucestershire Hospitals NHS Foundation Trust	280	8	12	23	99	91	58	254	63
North Bristol NHS Trust	156	6	10	21	100	90	94	139	52
Royal United Hospitals Bath NHS Foundation Trust	180	4	17	23	98	94	78	138	60
Salisbury NHS Foundation Trust	81	8	27	17	93	85	83	74	43
Taunton and Somerset NHS Foundation Trust	97	2	29	15	93	87	78	61	43
University Hospitals Bristol NHS Foundation Trust	112	4	4	17.5	100	85	66	95	68
Weston Area Health NHS Trust	63	21	6	18	100	83	30	57	71
Yeovil District Hospital NHS Foundation Trust	45	8	31	18	84	87	73	38	71

Table 7.3 continued

Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance / Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
Wessex	**994**	**7**	**13**	**18**	**99**	**83**	**73**	**850**	**65**
Dorset County Hospital NHS Foundation Trust	92	5	21	20	99	89	69	83	61
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	79	3	10	15	100	72	80	71	76
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	103	7	16	14.5	95	76	64	94	74
Isle of Wight NHS Trust	69	6	7	19	100	86	59	60	66
Poole Hospital NHS Foundation Trust	97	6	15	20	100	92	91	86	37
Portsmouth Hospitals NHS Trust	208	16	14	19	100	89	87	169	67
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	143	3	6	14	97	79	56	117	75
University Hospital Southampton NHS Foundation Trust	203	6	12	19	100	81	69	170	63
Thames Valley	**683**	**7**	**17**	**20**	**100**	**92**	**69**	**576**	**68**
Buckinghamshire Healthcare NHS Trust	157	10	18	22	99	92	72	124	61
Great Western Hospitals NHS Foundation Trust	143	5	17	19	99	89	32	134	86
Oxford University Hospitals NHS Foundation Trust	212	5	14	20	100	91	85	172	68
Royal Berkshire NHS Foundation Trust	171	8	19	18	100	94	79	146	57
Surrey and Sussex	**1,135**	**5**	**18**	**18**	**84**	**89**	**71**	**861**	**69**
Ashford and St Peter's Hospitals NHS Foundation Trust	71	15	21	15	87	85	73	63	74
Brighton and Sussex University Hospitals NHS Trust	168	5	31	18	86	85	93	118	64
East Sussex Healthcare NHS Trust	167	7	13	20	95	90	24	150	87
Frimley Health NHS Foundation Trust - Frimley Park Hospital	125	0	14	26.5	2	100	83	†	†
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	101	8	26	17.5	91	95	80	86	77
Royal Surrey County Hospital NHS Foundation Trust	83	5	18	23	93	89	96	71	27
Surrey and Sussex Healthcare NHS Trust	162	2	20	16	100	90	60	145	70
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	145	3	7	21	100	90	79	126	71
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	113	3	17	15	100	75	77	102	62
Kent and Medway	**654**	**7**	**21**	**18**	**93**	**91**	**67**	**577**	**69**
Dartford and Gravesham NHS Trust	100	3	7	18	100	90	61	94	77
East Kent Hospitals University NHS Foundation Trust	272	10	26	18	88	90	76	243	60
Maidstone and Tunbridge Wells NHS Trust	184	5	19	18	94	92	51	154	81
Medway NHS Foundation Trust	98	8	27	19	99	93	77	86	61

Table 7.3 continued
Management of patients who had major surgery according to trust/hospital site

Diagnosing Cancer Alliance / Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Proportion of patients with recorded number of lymph nodes (%)	Proportion cases ≥12 nodes (%)	Laparoscopic surgery attempted (%)	No. patients included in risk-adjusted length of stay	Risk-adjusted length of stay >5 days (%)
West London	**811**	**9**	**16**	**19**	**93**	**83**	**57**	**651**	**76**
Chelsea and Westminster Hospital NHS Foundation Trust	97	21	27	21	93	89	60	80	74
Croydon Health Services NHS Trust	52	6	12	17	100	83	40	45	68
Epsom and St Helier University Hospitals NHS Trust	84	4	5	12	100	56	10	70	73
Imperial College Healthcare NHS Trust	134	2	10	23	97	89	84	110	72
Kingston Hospital NHS Foundation Trust	99	8	21	18	98	87	45	92	82
London North West Hospitals NHS Trust	153	7	13	27	92	97	80	117	73
St George's University Hospitals NHS Foundation Trust	82	12	40	16	95	76	52	59	74
The Hillingdon Hospitals NHS Foundation Trust	66	17	6	14	61	79	64	47	90
The Royal Marsden NHS Foundation Trust	44	13	0	17	100	68	23	31	98
South East London	**379**	**6**	**12**	**18**	**100**	**86**	**62**	**329**	**65**
Guy's and St Thomas' NHS Foundation Trust	95	18	12	18	100	82	55	81	73
King's College Hospital NHS Foundation Trust - King's College Hospital	80	8	11	19	100	91	78	66	76
King's College Hospital NHS Foundation Trust - Princess Royal University Hospital	143	3	18	19	100	88	58	126	65
Lewisham and Greenwich NHS Trust	61	3	2	15	98	79	63	56	41
North Central and East London	**673**	**11**	**16**	**17**	**91**	**85**	**66**	**579**	**80**
Barking, Havering and Redbridge University Hospitals NHS Trust	152	5	34	15	81	85	57	133	79
Barts Health NHS Trust	94	12	11	19	74	94	84	75	76
Homerton University Hospital NHS Foundation Trust	56	4	9	18.5	100	93	75	53	61
North Middlesex University Hospital NHS Trust	46	3	15	13	100	61	63	35	102
Royal Free London NHS Foundation Trust	182	14	13	16	97	80	67	155	80
Whittington Health NHS Trust	57	18	9	22	96	95	63	49	62
University College London Hospitals NHS Foundation Trust	86	18	9	19	99	87	57	79	101

▲ Too few cases to report (<10)
• No cases submitted
† Adjusted estimates not reported due to poor completeness of risk adjustment variables

Table 7.4

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
Overall	**17,643**	**3.2**	**3.2**	**16,001**	**9.9**	**9.9**	**18,270**	**19.5**	**19.5**
North East and Cumbria	**1,072**	**3.4**	**3.4**	**1,018**	**11.5**	**11.3**	**1,123**	**16.5**	**16.3**
City Hospitals Sunderland NHS Foundation Trust	87	3.4	3.2	85	15.3	15.7	83	23.0	25.6
County Durham and Darlington NHS Foundation Trust	147	2.0	2.4	143	11.2	11.1	158	15.9	21.4
Gateshead Health NHS Foundation Trust	96	5.2	4.0	96	16.7	16.4	76	18.6	20.5
North Cumbria University Hospitals NHS Trust	38	0.0	0.0	37	16.2	16.6	121	18.3	21.3
North Tees and Hartlepool NHS Foundation Trust	135	4.4	5.0	123	8.9	8.6	145	18.7	16.9
Northumbria Healthcare NHS Foundation Trust	163	4.3	4.6	155	11.0	10.8	184	15.4	15.0
South Tees Hospitals NHS Foundation Trust	175	2.9	3.3	162	11.7	11.5	163	16.0	13.2
South Tyneside NHS Foundation Trust	68	1.5	1.0	66	10.6	10.2	57	17.5	16.6
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	163	3.7	3.3	151	7.9	7.6	136	10.0	8.6
Lancashire and South Cumbria	**493**	**3.7**	**4.1**	**468**	**8.3**	**8.3**	**499**	**17.7**	**19.9**
Blackpool Teaching Hospitals NHS Foundation Trust	98	8.2	14.3	97	8.2	8.3	94	13.8	19.1
East Lancashire Hospitals NHS Trust	142	2.8	3.3	134	9.0	8.8	131	19.4	20.2
Lancashire Teaching Hospitals NHS Foundation Trust	103	1.9	1.8	100	6.0	6.1	114	19.2	20.3
University Hospitals of Morecambe Bay NHS Foundation Trust	150	2.7	2.6	137	9.5	9.4	160	17.4	19.7
Greater Manchester	**852**	**2.5**	**2.5**	**776**	**9.0**	**8.6**	**890**	**21.5**	**22.4**
Bolton NHS Foundation Trust	126	4.0	3.9	118	11.0	10.6	123	20.2	29.4
Central Manchester University Hospitals NHS Foundation Trust	102	2.0	2.0	83	4.8	4.5	100	21.2	19.1
Pennine Acute Hospitals NHS Trust	173	2.3	2.1	165	7.3	7.0	195	24.3	27.8
Salford Royal NHS Foundation Trust	60	1.7	1.9	58	8.6	8.6	76	18.5	19.1
Stockport NHS Foundation Trust	109	0.9	1.1	109	9.2	8.8	108	19.7	17.5
Tameside and Glossop Integrated Care NHS Foundation Trust	68	1.5	1.4	67	9.0	8.3	69	17.5	22.3
The Christie NHS Foundation Trust	57	0.0	0.0	33	6.1	5.3	55	22.5	33.8
University Hospital of South Manchester NHS Foundation Trust	85	4.7	4.3	79	17.7	17.2	83	20.0	18.8
Wrightington, Wigan and Leigh NHS Foundation Trust	72	4.2	3.8	64	6.3	6.3	81	26.9	19.5
West Yorkshire	**834**	**3.5**	**3.9**	**789**	**10.1**	**10.2**	**675**	**17.8**	**17.5**
Airedale NHS Foundation Trust	92	4.3	8.1	87	16.1	17.1	59	29.3	26.1
Bradford Teaching Hospitals NHS Foundation Trust	100	2.0	2.0	95	9.5	9.4	122	23.0	††
Calderdale and Huddersfield NHS Foundation Trust	134	0.7	0.9	130	8.5	8.2	143	13.8	17.0
Harrogate and District NHS Foundation Trust	94	2.1	2.0	91	11.0	11.1	88	12.1	14.1
Leeds Teaching Hospitals NHS Trust	247	4.0	3.8	226	11.9	12.0	237	19.0	16.8
Mid Yorkshire Hospitals NHS Trust	167	6.0	7.7	160	5.6	5.8	148	18.7	17.4

Table 7.4 continued

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
Humber, Coast and Vale	**542**	**5.2**	**4.9**	**500**	**8.4**	**8.5**	**532**	**23.2**	**22.7**
Hull and East Yorkshire Hospitals NHS Trust	166	3.6	3.7	149	7.4	7.8	185	22.3	21.6
Northern Lincolnshire and Goole NHS Foundation Trust	176	6.3	4.5	160	10.6	10.5	166	27.5	23.9
York Teaching Hospital NHS Foundation Trust - The York Hospital	133	6.0	9.7	126	7.9	7.8	181	20.2	22.6
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	67	4.5	3.7	65	6.2	6.2	▲	▲	▲
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**613**	**3.1**	**3.6**	**585**	**9.4**	**9.3**	**607**	**18.8**	**23.8**
Barnsley Hospital NHS Foundation Trust	73	2.7	2.9	69	20.3	20.0	62	10.2	12.4
Chesterfield Royal Hospital NHS Foundation Trust	108	5.6	6.3	105	6.7	6.7	109	19.5	20.2
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	153	0.7	0.9	147	10.9	10.9	174	21.2	33.9
Sheffield Teaching Hospitals NHS Foundation Trust	201	3.0	3.4	190	6.3	6.2	176	18.8	22.5
The Rotherham NHS Foundation Trust	78	5.1	4.6	74	8.1	7.9	86	19.4	25.2
Cheshire and Merseyside	**950**	**2.4**	**2.3**	**867**	**7.4**	**7.3**	**973**	**20.3**	**20.2**
Aintree University Hospital NHS Foundation Trust	112	1.8	2.2	101	9.9	9.7	131	15.7	16.9
Countess of Chester Hospital NHS Foundation Trust	96	0.0	0.0	92	8.7	8.4	105	20.0	20.6
East Cheshire NHS Trust	86	3.5	2.7	79	6.3	6.7	87	17.5	14.5
Mid Cheshire Hospitals NHS Foundation Trust	89	0.0	0.0	81	4.9	4.7	91	12.9	16.0
Royal Liverpool and Broadgreen University Hospitals NHS Trust	128	0.8	0.8	109	8.3	7.8	123	20.0	20.9
Southport and Ormskirk Hospital NHS Trust	82	2.4	2.2	71	5.6	5.8	92	22.2	20.9
St Helens and Knowsley Hospital Services NHS Trust	132	5.3	3.6	125	4.8	4.7	139	35.2	25.5
Warrington and Halton Hospitals NHS Foundation Trust	91	6.6	4.6	85	12.9	12.6	98	15.6	20.1
Wirral University Teaching Hospital NHS Foundation Trust	134	1.5	1.6	124	5.6	5.9	107	20.3	21.7
Wales	**1,208**	**4.9**	**3.8**	**994**	**12.9**	**12.8**	**1,268**	**25.0**	**22.2**
Bronglais MDT	11	0.0	0.0	▲	▲	▲	24	36.8	28.4
Cardiff MDT	120	3.3	3.7	95	10.5	9.9	150	19.5	19.1
Nevill Hall Hospital MDT	68	2.9	2.0	58	15.5	15.0	73	23.5	18.6
Prince Charles Hospital MDT	68	7.4	5.6	58	19.0	18.4	71	21.1	25.1
Princess of Wales MDT	77	3.9	5.0	69	15.9	15.0	108	31.9	26.3
Royal Glamorgan Hospital MDT	77	5.2	3.0	64	7.8	7.8	73	33.4	28.1
Royal Gwent Hospital MDT	146	2.1	1.9	118	16.1	16.0	167	28.9	23.0
Swansea MDT	154	6.5	4.7	135	14.8	14.8	125	29.1	23.4
West Wales General and Prince Phillip MDT	103	4.9	3.1	86	8.1	8.0	102	24.7	24.6
Withybush General MDT	70	8.6	7.2	66	6.1	6.4	47	21.4	15.8
Ysbwyty Glan Clwydd MDT	103	6.8	4.1	84	16.7	17.5	108	24.9	19.3
Ysbwyty Gwynedd MDT	108	3.7	3.4	64	4.7	5.0	113	26.6	27.0
Ysbwyty Maelor MDT	103	5.8	5.4	90	16.7	17.0	107	12.0	13.7

Table 7.4 continued

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
West Midlands	**1,628**	**3.7**	**3.5**	**1,447**	**10.8**	**10.7**	**1,820**	**20.2**	**18.0**
Burton Hospitals NHS Foundation Trust	99	13.1	7.2	93	12.9	12.9	88	24.4	16.7
George Eliot Hospital NHS Trust	72	2.8	2.6	67	22.4	22.9	59	16.6	10.9
Heart of England NHS Foundation Trust	268	3.7	3.8	218	11.5	11.3	244	18.6	21.9
Sandwell and West Birmingham Hospitals NHS Trust	137	4.4	4.9	119	10.9	10.6	129	32.8	23.4
Shrewsbury and Telford Hospital NHS Trust	178	2.2	2.0	168	8.3	8.6	201	12.2	13.5
South Warwickshire NHS Foundation Trust	100	2.0	1.7	90	7.8	7.9	105	16.7	13.3
The Dudley Group NHS Foundation Trust	151	2.0	1.9	133	12.0	11.9	111	15.8	13.9
The Royal Wolverhampton NHS Trust	166	1.8	1.6	152	9.2	8.7	114	19.5	16.1
University Hospitals Birmingham NHS Foundation Trust	17	0.0	0.0	17	17.6	†	111	18.6	18.8
University Hospitals Coventry and Warwickshire NHS Trust	119	3.4	3.6	114	7.9	7.9	152	19.7	15.0
University Hospitals of North Midlands NHS Trust – County Hospital	▲	▲	▲	▲	▲	▲	68	24.4	15.6
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	230	3.9	†	221	16.7	†	214	25.8	††
Walsall Healthcare NHS Trust	•	•	•	•	•	•	85	47.2	31.4
Worcestershire Acute Hospitals NHS Trust	239	4.2	4.0	222	8.6	8.5	242	19.8	21.1
Wye Valley NHS Trust	80	3.8	4.3	69	15.9	15.8	111	16.7	17.5
East Midlands	**1,207**	**2.6**	**2.8**	**1,097**	**12.6**	**12.4**	**1,203**	**20.5**	**22.0**
Derby Teaching Hospitals NHS Foundation Trust	166	0.6	0.7	154	9.7	9.6	153	23.0	22.1
Kettering General Hospital NHS Foundation Trust	136	2.2	3.1	127	11.8	12.4	128	19.7	20.8
Northampton General Hospital NHS Trust	94	4.3	5.1	91	9.9	9.4	129	16.9	14.2
Nottingham University Hospitals NHS Trust	195	2.6	2.8	176	12.5	11.9	252	18.3	24.0
Sherwood Forest Hospitals NHS Foundation Trust	117	1.7	2.1	115	13.0	13.2	104	19.7	21.9
University Hospitals of Leicester NHS Trust	317	2.8	2.7	299	13.4	12.9	258	15.9	18.2
United Lincolnshire Hospitals NHS Trust - Lincoln and Grantham	98	5.1	4.8	70	14.3	15.2	96	28.0	30.2
United Lincolnshire Hospitals NHS Trust - Pilgrim Hospital Boston	84	2.4	2.4	65	18.5	18.1	83	39.2	37.3

Table 7.4 continued

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
East of England	**1,751**	**2.9**	**2.9**	**1,566**	**10.3**	**10.3**	**1,869**	**20.5**	**19.4**
Basildon and Thurrock University Hospitals NHS Foundation Trust	101	4.0	3.5	92	12.0	11.6	118	18.7	20.3
Bedford Hospital NHS Trust	23	4.3	10.6	21	9.5	7.4	71	21.9	21.6
Cambridge University Hospitals NHS Foundation Trust	209	1.4	1.2	199	7.0	7.0	170	17.2	15.1
Colchester Hospital University NHS Foundation Trust	125	0.8	1.1	120	9.2	9.1	119	15.4	††
East and North Hertfordshire NHS Trust	86	0.0	0.0	80	10.0	†	110	20.0	20.5
Hinchingbrooke Health Care NHS Trust	66	3.0	2.8	58	10.3	10.3	70	16.7	15.7
Ipswich Hospital NHS Trust	137	8.0	7.0	127	11.8	12.0	164	26.8	27.9
James Paget University Hospitals NHS Foundation Trust	85	2.4	2.3	77	7.8	7.9	95	23.7	21.2
Luton and Dunstable University Hospital NHS Foundation Trust	90	3.3	3.6	86	15.1	14.8	67	27.3	†††
Mid Essex Hospital Services NHS Trust	107	1.9	†	104	6.7	†	93	24.1	26.2
Milton Keynes University Hospital NHS Foundation Trust	81	4.9	5.3	74	6.8	6.5	71	24.4	28.7
Norfolk and Norwich University Hospitals NHS Foundation Trust	244	1.6	2.0	234	10.3	10.4	248	15.7	15.2
Peterborough and Stamford Hospitals NHS Foundation Trust	147	4.1	3.1	142	12.7	12.7	155	14.7	17.0
Southend University Hospital NHS Foundation Trust	98	2.0	2.4	89	13.5	13.8	103	18.7	20.0
The Princess Alexandra Hospital NHS Trust	27	0.0	0.0	27	7.4	7.5	71	33.4	27.8
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	77	2.6	†	74	5.4	†	82	23.1	14.7
West Hertfordshire Hospitals NHS Trust	127	2.4	2.3	120	9.2	9.4	147	22.2	17.1
West Suffolk NHS Foundation Trust	105	3.8	3.2	100	11.0	11.5	101	21.3	18.2
Peninsula	**647**	**3.6**	**3.9**	**602**	**10.0**	**10.1**	**767**	**19.1**	**19.0**
Northern Devon Healthcare NHS Trust	79	1.3	1.6	77	9.1	9.0	92	12.9	12.5
Plymouth Hospitals NHS Trust	109	8.3	8.0	102	7.8	7.7	191	17.5	23.0
Royal Cornwall Hospitals NHS Trust	185	4.3	4.3	175	15.4	15.6	184	25.9	21.8
Royal Devon and Exeter NHS Foundation Trust	182	1.6	1.9	166	6.0	6.2	175	17.0	16.3
Torbay and South Devon NHS Foundation Trust	92	2.2	3.0	82	9.8	10.1	125	19.4	18.5
Somerset, Wiltshire, Avon and Gloucestershire	**921**	**2.0**	**1.9**	**856**	**9.3**	**9.3**	**954**	**15.3**	**15.2**
Gloucestershire Hospitals NHS Foundation Trust	272	1.8	1.6	254	11.0	10.8	245	17.5	16.6
North Bristol NHS Trust	152	0.0	0.0	139	7.9	7.6	142	15.3	15.0
Royal United Hospitals Bath NHS Foundation Trust	145	2.1	1.8	138	5.8	5.6	161	13.3	13.9
Salisbury NHS Foundation Trust	77	2.6	3.4	74	20.3	20.7	71	8.8	8.0
Taunton and Somerset NHS Foundation Trust	67	1.5	2.0	61	13.1	13.8	120	13.3	13.2
University Hospitals Bristol NHS Foundation Trust	105	1.0	1.7	95	5.3	5.3	90	15.6	21.8
Weston Area Health NHS Trust	60	6.7	3.8	57	3.5	3.7	71	28.0	24.8
Yeovil District Hospital NHS Foundation Trust	43	4.7	3.8	38	7.9	8.1	54	9.7	8.8

Table 7.4 continued

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
Wessex	**952**	**2.1**	**2.3**	**852**	**8.8**	**8.8**	**984**	**15.1**	**15.5**
Dorset County Hospital NHS Foundation Trust	88	1.1	1.1	83	6.0	6.1	93	22.1	24.0
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	75	0.0	0.0	71	5.6	5.5	83	15.6	12.2
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	99	5.1	4.9	94	8.5	9.0	84	8.7	8.9
Isle of Wight NHS Trust	66	4.5	4.8	61	4.9	5.2	64	25.3	22.3
Poole Hospital NHS Foundation Trust	93	1.1	0.9	86	17.4	17.4	99	12.9	10.0
Portsmouth Hospitals NHS Trust	202	2.5	2.8	169	8.9	8.5	230	12.0	15.5
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	131	1.5	1.6	117	16.2	16.6	144	13.1	13.2
University Hospital Southampton NHS Foundation Trust	198	1.5	2.3	171	3.5	3.5	187	18.2	20.8
Thames Valley	**652**	**2.0**	**2.2**	**578**	**11.8**	**12.0**	**708**	**15.4**	**16.9**
Buckinghamshire Healthcare NHS Trust	149	0.7	0.9	124	8.9	9.1	157	10.0	11.1
Great Western Hospitals NHS Foundation Trust	139	4.3	3.2	135	11.9	12.0	125	19.5	18.1
Oxford University Hospitals NHS Foundation Trust	198	2.0	2.8	172	12.8	12.9	258	13.2	14.3
Royal Berkshire NHS Foundation Trust	166	1.2	1.3	147	12.9	13.2	168	21.2	27.7
Surrey and Sussex	**962**	**3.7**	**3.8**	**863**	**7.8**	**8.0**	**993**	**20.8**	**22.1**
Ashford and St Peter's Hospitals NHS Foundation Trust	70	0.0	0.0	63	4.8	5.1	106	22.9	25.9
Brighton and Sussex University Hospitals NHS Trust	158	7.0	9.9	118	11.9	12.0	65	22.6	33.7
East Sussex Healthcare NHS Trust	161	1.2	1.4	150	2.7	2.7	152	18.8	21.8
Frimley Health NHS Foundation Trust - Frimley Park Hospital	116	2.6	†	112	8.9	†	131	13.1	11.7
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	95	4.2	5.8	86	8.1	7.9	135	24.6	23.3
Royal Surrey County Hospital NHS Foundation Trust	78	2.6	3.1	71	8.5	8.5	91	23.5	27.4
Surrey and Sussex Healthcare NHS Trust	154	4.5	3.8	145	9.7	10.3	101	19.2	29.2
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	137	5.8	4.8	127	8.7	9.1	111	24.3	21.9
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	109	1.8	1.7	103	7.8	8.3	101	21.0	20.2
Kent and Medway	**614**	**3.7**	**3.7**	**577**	**8.7**	**8.8**	**520**	**23.3**	**20.7**
Dartford and Gravesham NHS Trust	97	4.1	7.0	94	7.4	7.4	79	18.2	16.4
East Kent Hospitals University NHS Foundation Trust	256	4.7	3.7	243	7.4	7.7	231	22.9	20.0
Maidstone and Tunbridge Wells NHS Trust	168	2.4	2.1	154	11.0	11.0	158	25.6	22.6
Medway NHS Foundation Trust	93	3.2	5.0	86	9.3	9.3	52	26.5	24.2

Table 7.4 continued

Outcomes of patients who had major surgery according to trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1 (Malignant neoplasm of appendix)

Cancer Alliance/Trust Name	No. patients having major surgery	Observed 90-day mortality (%)	Adjusted 90-day mortality (%)	No. patients having major surgery linked to HES/PEDW	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 13 - 31 Mar 14	Observed 2-year mortality rate (% per person-2-years)	Adjusted 2-year mortality rate (% per person-2-years)
West London	**729**	**4.1**	**4.1**	**656**	**7.3**	**7.3**	**885**	**19.1**	**21.0**
Chelsea and Westminster Hospital NHS Foundation Trust	87	5.7	4.5	81	12.3	12.5	77	17.0	17.6
Croydon Health Services NHS Trust	50	2.0	2.3	45	4.4	4.5	65	20.3	22.8
Epsom and St Helier University Hospitals NHS Trust	83	6.0	6.7	72	5.6	5.8	92	12.8	16.8
Imperial College Healthcare NHS Trust	122	3.3	3.4	110	8.2	8.1	149	17.1	16.6
Kingston Hospital NHS Foundation Trust	97	5.2	3.7	92	6.5	6.8	89	20.1	23.3
London North West Hospitals NHS Trust	130	3.8	5.0	118	7.6	7.7	188	18.0	20.7
St George's University Hospitals NHS Foundation Trust	67	6.0	4.3	60	3.3	3.4	125	15.7	16.5
The Hillingdon Hospitals NHS Foundation Trust	53	1.9	2.0	47	6.4	6.0	55	61.9	52.6
The Royal Marsden NHS Foundation Trust	40	0.0	0.0	31	9.7	8.2	45	11.8	18.1
South East London	**354**	**3.1**	**3.2**	**330**	**10.6**	**10.5**	**362**	**21.0**	**24.5**
Guy's and St Thomas' NHS Foundation Trust	88	2.3	2.2	82	11.0	10.0	106	18.8	27.8
King's College Hospital NHS Foundation Trust - King's College Hospital	75	1.3	1.9	66	6.1	6.0	80	33.0	40.2
King's College Hospital NHS Foundation Trust - Princess Royal University Hospital	136	5.1	5.6	126	11.9	12.0	98	14.3	14.3
Lewisham and Greenwich NHS Trust	55	1.8	1.4	56	12.5	13.2	78	21.5	22.3
North Central and East London	**638**	**3.4**	**3.8**	**580**	**10.0**	**10.2**	**638**	**18.7**	**18.8**
Barking, Havering and Redbridge University Hospitals NHS Trust	144	6.9	6.2	133	8.3	8.6	144	16.6	19.6
Barts Health NHS Trust	85	0.0	0.0	75	14.7	14.4	125	15.7	22.2
Homerton University Hospital NHS Foundation Trust	55	3.6	4.0	53	7.5	7.8	38	48.1	31.2
North Middlesex University Hospital NHS Trust	43	9.3	15.1	35	17.1	17.4	38	11.2	14.3
Royal Free London NHS Foundation Trust	172	2.3	2.0	155	6.5	6.6	172	20.3	15.0
Whittington Health NHS Trust	55	0.0	0.0	50	18.0	17.3	40	28.0	24.6
University College London Hospitals NHS Foundation Trust	84	2.4	4.8	79	8.9	8.9	81	12.0	15.2

† Adjusted estimates not reported because most patients missing pathological TNM staging (also not included in associated Network totals)
†† Adjusted estimates not reported because most patients missing pathological M stage (also not included in associated Network totals)
††† Adjusted estimates not reported because most patients missing ASA grade (also not included in associated Network totals)
▲ Too few cases to report (<10)
• No cases submitted

Table 7.5

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Overall	**4,468**	**7**	**26**	**25**	**4,613**	**35**	**14,186**	**52**	**52**
North East and Cumbria	**285**	**4**	**22**	**27**	**287**	**43**	**948**	**50**	**50**
City Hospitals Sunderland NHS Foundation Trust	17	0	35	18	24	42	114	58	59
County Durham and Darlington NHS Foundation Trust	40	3	10	25	36	36	149	54	55
Gateshead Health NHS Foundation Trust	24	4	4	21	24	58	58	47	46
North Cumbria University Hospitals NHS Trust	12	0	42	17	16	75	85	53	53
North Tees and Hartlepool NHS Foundation Trust	39	3	8	36	36	39	127	35	35
Northumbria Healthcare NHS Foundation Trust	41	2	0	29	41	32	132	46	47
South Tees Hospitals NHS Foundation Trust	48	2	90	35	50	44	128	55	54
South Tyneside NHS Foundation Trust	19	16	0	21	15	33	39	62	59
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	45	7	0	20	45	47	116	47	46
Lancashire and South Cumbria	**110**	**3**	**69**	**32**	**109**	**38**	**389**	**63**	**62**
Blackpool Teaching Hospitals NHS Foundation Trust	27	0	100	37	24	42	58	64	62
East Lancashire Hospitals NHS Trust	29	0	45	31	26	38	134	66	64
Lancashire Teaching Hospitals NHS Foundation Trust	20	15	10	25	26	31	90	71	72
University Hospitals of Morecambe Bay NHS Foundation Trust	34	0	100	32	33	39	107	53	53
Greater Manchester	**230**	**9**	**10**	**26**	**231**	**55**	**713**	**60**	**59**
Bolton NHS Foundation Trust	31	13	16	45	29	66	100	54	52
Central Manchester University Hospitals NHS Foundation Trust	31	6	3	6	35	23	82	55	54
Pennine Acute Hospitals NHS Trust	52	13	8	23	49	47	151	61	61
Salford Royal NHS Foundation Trust	15	0	7	33	16	63	60	63	64
Stockport NHS Foundation Trust	26	8	15	27	27	52	75	60	61
Tameside and Glossop Integrated Care NHS Foundation Trust	20	5	25	30	20	65	64	55	53
The Christie NHS Foundation Trust	20	10	5	45	26	77	75	80	80
University Hospital of South Manchester NHS Foundation Trust	22	0	5	18	18	67	62	60	58
Wrightington, Wigan and Leigh NHS Foundation Trust	13	15	0	0	11	73	44	43	42
West Yorkshire	**215**	**10**	**10**	**26**	**225**	**55**	**621**	**55**	**55**
Airedale NHS Foundation Trust	25	4	0	16	28	46	50	58	59
Bradford Teaching Hospitals NHS Foundation Trust	24	8	38	21	27	44	85	54	50
Calderdale and Huddersfield NHS Foundation Trust	45	7	18	44	45	67	102	50	53
Harrogate and District NHS Foundation Trust	22	14	0	27	25	52	72	38	40
Leeds Teaching Hospitals NHS Trust	58	19	5	22	57	56	203	67	64
Mid Yorkshire Hospitals NHS Trust	41	5	2	20	43	56	109	47	50

Table 7.5 continued

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Humber, Coast and Vale	**124**	**15**	**38**	**31**	**135**	**46**	**442**	**54**	**54**
Hull and East Yorkshire Hospitals NHS Trust	31	55	32	35	40	60	161	45	45
Northern Lincolnshire and Goole NHS Foundation Trust	41	0	88	15	42	38	148	66	63
York Teaching Hospital NHS Foundation Trust - The York Hospital	37	0	3	41	36	36	115	49	51
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	15	13	0	47	17	53	18	72	68
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**163**	**4**	**4**	**39**	**158**	**42**	**482**	**55**	**57**
Barnsley Hospital NHS Foundation Trust	20	0	0	45	16	25	54	61	62
Chesterfield Royal Hospital NHS Foundation Trust	25	0	4	32	28	54	88	52	54
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	37	3	8	32	35	37	138	53	56
Sheffield Teaching Hospitals NHS Foundation Trust	56	5	5	43	52	42	157	57	58
The Rotherham NHS Foundation Trust	25	12	0	40	27	44	45	56	58
Cheshire and Merseyside	**219**	**8**	**63**	**21**	**229**	**44**	**676**	**51**	**52**
Aintree University Hospital NHS Foundation Trust	18	22	78	11	16	50	46	50	51
Countess of Chester Hospital NHS Foundation Trust	36	3	69	17	37	24	87	56	57
East Cheshire NHS Trust	16	0	19	13	23	70	61	54	54
Mid Cheshire Hospitals NHS Foundation Trust	23	0	100	13	24	58	77	52	56
Royal Liverpool and Broadgreen University Hospitals NHS Trust	33	0	100	27	34	56	99	51	55
Southport and Ormskirk Hospital NHS Trust	18	0	89	6	20	30	47	40	42
St Helens and Knowsley Hospital Services NHS Trust	32	25	19	41	33	52	105	56	53
Warrington and Halton Hospitals NHS Foundation Trust	19	5	95	11	18	6	87	54	54
Wirral University Teaching Hospital NHS Foundation Trust	24	17	0	38	24	42	67	39	40
Wales	**273**	**4**	**5**	**36**	**296**	**38**	**956**	**62**	**61**
Bronglais MDT	▲▲	▲	▲	▲	▲	▲	17	47	43
Cardiff MDT	31	0	0	29	26	35	102	51	53
Nevill Hall Hospital MDT	12	8	0	42	15	40	58	78	73
Prince Charles Hospital MDT	18	6	6	28	21	24	76	53	53
Princess of Wales MDT	24	0	0	21	31	35	103	67	65
Royal Glamorgan Hospital MDT	16	6	0	38	15	27	42	67	65
Royal Gwent Hospital MDT	31	3	3	13	40	30	138	60	56
Swansea MDT	39	3	0	54	44	30	115	57	56
West Wales General and Prince Phillip MDT	19	5	42	47	19	53	58	86	85
Withybush General MDT	15	7	27	20	17	53	42	71	70
Ysbwyty Glan Clwydd MDT	24	8	0	63	21	57	70	69	65
Ysbwyty Gwynedd MDT	19	5	0	37	18	61	62	58	59
Ysbwyty Maelor MDT	23	4	0	35	27	30	73	51	52

Table 7.5 continued

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
West Midlands	**477**	**4**	**48**	**20**	**502**	**26**	**1,605**	**52**	**52**
Burton Hospitals NHS Foundation Trust	21	5	0	29	23	17	81	56	54
George Eliot Hospital NHS Trust	14	7	0	50	14	36	41	51	50
Heart of England NHS Foundation Trust	80	1	3	21	83	37	191	43	44
Sandwell and West Birmingham Hospitals NHS Trust	34	3	85	9	34	24	105	36	35
Shrewsbury and Telford Hospital NHS Trust	37	3	84	22	47	23	192	55	55
South Warwickshire NHS Foundation Trust	22	9	9	32	21	14	82	39	38
The Dudley Group NHS Foundation Trust	46	2	80	17	45	24	82	67	64
The Royal Wolverhampton NHS Trust	48	0	94	10	46	33	95	53	49
University Hospitals Birmingham NHS Foundation Trust	15	0	100	33	14	50	89	60	63
University Hospitals Coventry and Warwickshire NHS Trust	24	4	4	21	30	10	116	58	57
University Hospitals of North Midlands NHS Trust – County Hospital	▲	▲	▲	▲	▲	▲	31	77	75
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	53	0	100	23	60	38	145	57	58
Walsall Healthcare NHS Trust	•	•	•	•	▲	▲	60	43	41
Worcestershire Acute Hospitals NHS Trust	58	7	21	12	55	9	193	54	54
Wye Valley NHS Trust	24	17	4	17	26	8	102	53	50
East Midlands	**331**	**7**	**7**	**25**	**338**	**42**	**878**	**55**	**55**
Derby Teaching Hospitals NHS Foundation Trust	49	14	6	29	50	66	106	55	56
Kettering General Hospital NHS Foundation Trust	33	6	3	24	30	13	99	46	48
Northampton General Hospital NHS Trust	29	3	59	14	33	6	90	50	50
Nottingham University Hospitals NHS Trust	53	2	0	21	67	25	179	50	52
Sherwood Forest Hospitals NHS Foundation Trust	27	4	4	22	29	34	84	52	55
University Hospitals of Leicester NHS Trust	97	7	1	35	80	66	209	59	56
United Lincolnshire Hospitals NHS Trust - Lincoln and Grantham	21	10	0	5	27	44	52	69	70
United Lincolnshire Hospitals NHS Trust - Pilgrim Hospital Boston	22	9	0	27	22	50	59	68	66

Table 7.5 continued

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
East of England	**468**	**5**	**23**	**28**	**474**	**33**	**1,581**	**47**	**46**
Basildon and Thurrock University Hospitals NHS Foundation Trust	27	15	4	52	24	33	87	57	55
Bedford Hospital NHS Trust	20	25	30	45	19	21	72	51	52
Cambridge University Hospitals NHS Foundation Trust	54	2	0	31	50	54	154	47	45
Colchester Hospital University NHS Foundation Trust	36	3	36	22	27	26	110	42	43
East and North Hertfordshire NHS Trust	15	0	93	20	22	27	70	61	60
Hinchingbrooke Health Care NHS Trust	14	0	14	7	15	33	33	21	21
Ipswich Hospital NHS Trust	28	14	0	14	29	24	96	38	36
James Paget University Hospitals NHS Foundation Trust	22	5	14	32	19	26	62	53	48
Luton and Dunstable University Hospital NHS Foundation Trust	28	11	7	46	33	24	61	61	56
Mid Essex Hospital Services NHS Trust	17	0	100	29	19	32	68	38	41
Milton Keynes University Hospital NHS Foundation Trust	27	4	89	37	31	26	72	50	49
Norfolk and Norwich University Hospitals NHS Foundation Trust	68	4	4	16	63	21	211	35	36
Peterborough and Stamford Hospitals NHS Foundation Trust	39	3	13	38	42	48	106	62	61
Southend University Hospital NHS Foundation Trust	25	0	4	24	24	50	84	54	55
The Princess Alexandra Hospital NHS Trust	▲	▲	▲	▲	▲	▲	39	41	39
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	18	0	100	28	24	42	62	61	56
West Hertfordshire Hospitals NHS Trust	▲	▲	▲	▲	▲	▲	125	44	43
West Suffolk NHS Foundation Trust	21	0	0	19	20	40	69	45	43
Peninsula	**195**	**14**	**8**	**26**	**196**	**29**	**526**	**53**	**54**
Northern Devon Healthcare NHS Trust	22	5	32	18	21	24	63	43	42
Plymouth Hospitals NHS Trust	45	16	16	38	47	60	116	64	66
Royal Cornwall Hospitals NHS Trust	54	9	0	26	58	21	133	53	52
Royal Devon and Exeter NHS Foundation Trust	48	4	0	25	41	15	135	48	49
Torbay and South Devon NHS Foundation Trust	26	46	8	12	29	21	79	56	58
Somerset, Wiltshire, Avon and Gloucestershire	**236**	**3**	**33**	**19**	**269**	**22**	**799**	**48**	**48**
Gloucestershire Hospitals NHS Foundation Trust	75	4	17	16	83	24	215	43	43
North Bristol NHS Trust	35	3	23	23	46	24	130	45	43
Royal United Hospitals Bath NHS Foundation Trust	48	0	77	6	46	22	129	49	50
Salisbury NHS Foundation Trust	18	0	22	22	17	12	72	40	42
Taunton and Somerset NHS Foundation Trust	17	0	59	41	18	33	85	67	68
University Hospitals Bristol NHS Foundation Trust	24	4	4	29	29	14	71	45	45
Weston Area Health NHS Trust	▲	▲	▲	▲	▲	▲	50	66	62
Yeovil District Hospital NHS Foundation Trust	10	20	50	30	16	13	47	45	44

Table 7.5 continued

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Wessex	**257**	**12**	**27**	**16**	**259**	**26**	**771**	**41**	**41**
Dorset County Hospital NHS Foundation Trust	23	0	100	4	23	4	71	39	41
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	23	9	4	17	23	26	80	28	28
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	14	7	7	21	18	11	59	31	30
Isle of Wight NHS Trust	11	9	0	0	11	45	50	40	41
Poole Hospital NHS Foundation Trust	25	12	8	12	27	30	62	40	41
Portsmouth Hospitals NHS Trust	69	3	9	16	70	31	222	42	44
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	31	23	68	19	33	30	81	43	43
University Hospital Southampton NHS Foundation Trust	61	26	26	21	54	26	146	49	48
Thames Valley	**146**	**11**	**16**	**26**	**145**	**22**	**493**	**44**	**45**
Buckinghamshire Healthcare NHS Trust	30	10	0	23	29	34	108	49	50
Great Western Hospitals NHS Foundation Trust	37	22	46	27	40	10	81	57	54
Oxford University Hospitals NHS Foundation Trust	50	6	14	22	43	30	190	28	30
Royal Berkshire NHS Foundation Trust	29	7	0	34	33	15	114	54	57
Surrey and Sussex	**235**	**6**	**54**	**26**	**238**	**20**	**665**	**47**	**47**
Ashford and St Peter's Hospitals NHS Foundation Trust	▲	▲	▲	▲	▲	▲	47	49	50
Brighton and Sussex University Hospitals NHS Trust	31	0	100	32	27	19	69	67	67
East Sussex Healthcare NHS Trust	47	0	43	40	44	32	82	41	43
Frimley Health NHS Foundation Trust - Frimley Park Hospital	34	0	100	12	40	10	112	34	34
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	24	25	50	46	28	14	88	51	52
Royal Surrey County Hospital NHS Foundation Trust	18	0	100	22	22	27	55	44	46
Surrey and Sussex Healthcare NHS Trust	24	13	4	0	22	27	59	41	42
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	33	6	3	27	35	14	93	45	45
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	15	13	7	20	10	10	60	57	56
Kent and Medway	**140**	**8**	**11**	**32**	**135**	**33**	**358**	**57**	**58**
Dartford and Gravesham NHS Trust	25	16	4	28	28	57	47	40	42
East Kent Hospitals University NHS Foundation Trust	44	5	20	36	36	33	125	74	76
Maidstone and Tunbridge Wells NHS Trust	47	9	6	34	46	26	121	48	48
Medway NHS Foundation Trust	24	4	8	25	25	20	65	52	54

Table 7.5 continued

Results for patients with rectal cancer who had major surgery according to trust/hospital site

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2015 undergoing major surgery	Short or long-course Pre-operative radiotherapy (%)	Number of patients in HES 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
West London	**180**	**7**	**23**	**14**	**187**	**27**	**564**	**42**	**43**
Chelsea and Westminster Hospital NHS Foundation Trust	21	10	33	10	23	35	54	39	36
Croydon Health Services NHS Trust	▲	▲	▲	▲	▲	▲	50	38	39
Epsom and St Helier University Hospitals NHS Trust	11	18	18	0	▲	▲	55	40	40
Imperial College Healthcare NHS Trust	35	3	31	9	28	18	87	40	40
Kingston Hospital NHS Foundation Trust	19	11	5	5	19	21	42	36	38
London North West Hospitals NHS Trust	32	3	47	9	39	10	105	46	48
St George's University Hospitals NHS Foundation Trust	13	0	15	23	20	45	82	34	34
The Hillingdon Hospitals NHS Foundation Trust	15	0	20	27	16	13	45	49	49
The Royal Marsden NHS Foundation Trust	25	16	4	32	24	67	44	66	70
South East London	**77**	**10**	**0**	**23**	**82**	**44**	**270**	**53**	**53**
Guy's and St Thomas' NHS Foundation Trust	28	18	0	32	36	53	105	62	62
King's College Hospital NHS Foundation Trust - King's College Hospital	11	9	0	27	▲	▲	40	53	53
King's College Hospital NHS Foundation Trust - Princess Royal University Hospital	24	4	0	17	30	30	78	45	45
Lewisham and Greenwich NHS Trust	14	7	0	14	▲	▲	47	49	48
North Central and East London	**107**	**10**	**41**	**19**	**117**	**40**	**449**	**51**	**50**
Barking, Havering and Redbridge University Hospitals NHS Trust	26	0	100	12	27	70	98	55	54
Barts Health NHS Trust	20	20	45	15	25	32	100	47	45
Homerton University Hospital NHS Foundation Trust	▲	▲	▲	▲	▲	▲	33	58	55
North Middlesex University Hospital NHS Trust	▲	▲	▲	▲	▲	▲	25	68	68
Royal Free London NHS Foundation Trust	27	15	7	26	28	25	120	50	51
Whittington Health NHS Trust	11	9	64	27	12	42	18	50	51
University College London Hospitals NHS Foundation Trust	13	8	0	15	15	27	55	38	41

▲ Too few cases to report (<10)

Appendix 1 – Potential outlier responses

24 Month Mortality			
NHS Trusts	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
The Hillingdon Hospitals NHS Foundation Trust	Thank you for your letter dated 1st August 2017 with regards to the National Bowel Cancer Audit and that The Hillingdon Hospital's NHS Foundation Trust was a potential outlier. We have reviewed the statistics that you kindly provided along with the letter. Unfortunately although we requested additional data the NBCA team were only able to provide limited information i.e. the NHS numbers of the patients who had died within 2 years. This meant it was difficult to assess if there were any gaps in data fields not included in the statistical information provided that may have affected the risk adjustment calculations. The Trust has undertaken a review of patients who underwent major surgical resections during the period in question (1st April 2013 to 31st March 2014). The findings are as follows: The Trust submitted data for 64 patients in total for this period and not 55 patients as stated in the NBCA statistics. A comparison was undertaken of the list provided by NBCA of patients who had died within 2yrs of surgery. • 1x data error by THH - patient was incorrectly entered as a primary colorectal cancer but was a secondary cancer and therefore not eligible for inclusion. • 1x error by NBCA - patient did not have a major resection so should not have been included in the surgical mortality statistics. This leaves a total of 62 patients which is 7 more than the NBCA statistics and all 7 patients did not die within 2 years so would have had a marked effect on the denominator used to calculate the Trust's mortality figures. Of these 62 patients, 23 patients died within 2 years. The figures show an average of 308 days between date of surgery and the patient's death; this indicates that the trusts 30 and 90 day mortality figures are within the national average. of the 23 patients who died within 2 years, 22 were clinically reviewed and the key findings were: • All of the deaths were not directly related to surgical treatment, were expected and unavoidable with the exception of 2 cases. The Trust was already aware of these two cases and separate formal reviews were undertaken at the time. • The MDT decision agreed with the treatment undertaken in 100% of these cases. • A higher than average number of patients over the age of 85 underwent surgery [THH 12.73%, Nat. Ave 7.54%] • A higher than average number of patients with Metastases underwent surgery [THH 16.36%, Nat. Ave 9.03%] • A higher than average number of patients with a high ASA score underwent surgery [ASA=3 THH 34.55%, Nat. Ave 26.93%; ASA=4/5 THH 5.45%, Nat Ave 2.89%] As the Trust is undertaking surgery on patients in a poorer state of health, older and with more metastases than the national average, we would expect to see a higher 2 year mortality rate than that of the national average. The 30 and 90 day mortality rates are within national average supporting the decision to offer surgical treatment, the MDT feels strongly that the patients informed choice, appropriate palliation and adjuvant treatment should not be influenced by estimated 'long term' mortality. The colorectal team has strong links with the local major oncology centre which offers trials for advanced stage malignancies. This is reflected in the fact that three of the patients who died had more than one primary malignancy. Finally it needs to be noted that mortality reviews have not identified any issues with the decision making or the way clinical care was delivered. The unit has taken steps to strengthen the validation of all data submitted to NBCA, HES and trust IT systems, and will continue to work with the NBCA which provides useful benchmarking and helps signpost to best practice and care as well as potential concerns. Finally, we have several awareness projects in conjunction with primary care to reduce the late presentation and advanced stage bowel cancer within local population.		

24 Month Mortality			
NHS Trusts	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
King's College Hospital (Denmark Hill)	Thank you for your letter of 1 August 2017 providing us with advance information of the National Bowel Cancer Audit (NBOCA) findings. The audit data identified King's College Hospital Denmark Hill (KCH DH) as having adjusted 2 year mortality of 40.2% after major resection, compared to England and Wales adjusted rate of 19.5%, and KCH DH's previous year when it was 25.4% and within expected range. KCH DH crude mortality was 26.25% (21/80). In response to your letter we immediately initiated an internal investigation and casenote review. NBOCA identified 21 deaths during 2013-14. One set of casenotes were not available and the remaining 20 cases were reviewed by consultant colorectal surgeons, with a final review undertaken by the Clinical Director for Cancer & End of Life Care and the Corporate Medical Director for Patient Outcomes. Our conclusions were: **1. Is there a quality of care issue?** Case reviewers did not identify any quality of care issues in any of the cases assessed. There was not a high rate of procedure-related complications. 19/20 (95%) of deaths were classed as 'definitely not avoidable' and one as 'slight evidence of avoidability'; this was a case where a tumour perforation occurred. **2. Is there something about KCH casemix that influences adjusted mortality rates?** Ninety percent of the patients in our cohort had stage 3 or 4 cancer (i.e. locally advanced or metastatic) at presentation; 50% had stage 4 disease, which is particularly associated with a lower survival (NHS England data show that 1-year survival for patients diagnosed with stage 4 disease is 40%). Death within 2 years of diagnosis was therefore not an unexpected outcome. KCH crude mortality at 2 years was 26.25% (21/80). The casenote review indicated that 12/20 (60%) of patients had a major comorbidity at the time of surgery. NBOCA identified 35% of patients as having one or more comorbidities. The population that King's serves is a young population with a high level of deprivation. Unlike other national mortality indicators (Summary Hospital-level Mortality Indicator and Hospital Summary Mortality Radio), the risk-adjustment model used by NBOCA does not take deprivation into account. 28% of KCH patients were over 75, compared to 38% nationally, but we know that in the effect of deprivation on health means that they are not necessarily lower-risk patients. The NBOCA model identifies younger patients as lower-risk. **3. Are there data quality issues that impact upon the result?** KCHFT was undergoing a major organisational change during the period of the collection of the data in this sample (1/4/2013 to 31/3/2014), with the acquisition of a new hospital site. Significant resource was therefore diverted to ensure that the site had processes in place to support the NBOCA submission. This may have had an adverse impact on the quality of data submitted at our Denmark Hill site, in particular the level of detail in relation to patients' co-morbidities. As previously noted, our casenote review indicated that 12/20 (60%) of patients had a major comorbidity at the time of surgery but this is not reflected in the NBOCA data. **Conclusion** Our investigation has not identified any quality of care issues in relation to patients having surgery for bowel cancer at King's College Hospital (Denmark Hill). We believe that our young, deprived population, coupled with very small numbers (20) and under-recording of comorbidities, may be affecting the statistical modelling and leading to the apparent high adjusted mortality rate. We are, however, always extremely keen to improve our service for our local population, where people often present late with advanced symptoms of bowel cancer. We intend to share the results of our review with our local Macmillan GPs and discuss with them actions that might be taken locally to raise public awareness and encourage earlier screening.		
United Lincolnshire Hospitals NHS Trust – Pilgrim Hospital Boston	No response provided		

24 Month Mortality

<table>
<tr><th>NHS Trusts</th><th>Comment</th><th>Outlier 2016 Annual Report</th><th>Outlier 2015 Annual Report</th></tr>
<tr><td>Doncaster and Bassetlaw Hospitals NHS Foundation Trust</td><td>
I have had confirmation of how the analysis was conducted and had the data that the NBOCA used for adjusting our mortality rate as well as UK averages.

Analysis was conducted on all major resections at DBH for colorectal cancer between 01/04/2013 and 31/03/2014

Cases were identified from NBOCAP

Mortality data was taken from HES to identify deaths

Mortality was expressed as Observed 2 year Mortality Rate calculated by the number of deaths occurring within 2 years divided by the sum of the follow-up for each patient up to maximum of 2 years. Therefore output is expressed as a function of the number of deaths and how soon deaths occurred.

This rate was then adjusted by the following factors – all (I presume) from NBOCAP data apart from the last 2 which are from HES data based on our hospital coding output.

1. Age
2. ASA grade – This is from NBOCAP
3. T stage
4. N stage
5. M stage
6. Mode of admission (HES data)
7. Number of comorbidities (HES data)

I have down loaded our data from NBOCAP and personally reviewed the emergency admissions, which we have not scrutinised as much when previously reviewing our data. Between myself and the audit department we have checked the data entry for all elective/ acute admissions and there were some errors, but not many. I have sampled data from around 10% of patients for ASA and TN stage and this broadly appears correct. I have not been able to do the same for M status as this required more note trawling and I ran out of time. We have a large amount of missing data here. The audit department has reviewed all records for the elective entries and I have done the same for the emergency entries to identify our deaths. This is dependent on deaths being recorded on our PAS system, but I think this is reasonably accurate. I didn't find any patients who were still registered alive on our PAS who weren't still in recent follow-up.

I have tabulated the findings from the NBOCAP team along with my own analysis from our data for comparison.
<table>
<tr><th rowspan="2">Variable</th><th colspan="2">My Analysis</th><th>My Analysis</th><th>Notes</th></tr>
<tr><th>National Data</th><th>DBH Data</th><th></th><th></th></tr>
<tr><td>Number patients</td><td>?</td><td>174</td><td>178</td><td></td></tr>
<tr><td>Number deaths within 2 years</td><td>?</td><td>?</td><td>26 (14.6%)</td><td></td></tr>
<tr><td>Unadjusted mortality</td><td>?</td><td>21.2%</td><td>8-16%</td><td>Not quite sure how this was done, but can get figure anywhere close to theirs</td></tr>
<tr><td>Adjusted mortality</td><td>19.5</td><td>33.9</td><td>?</td><td></td></tr>
</table>
</td><td></td><td></td></tr>
</table>

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24 Month Mortality

NHS Trusts	Comment	Outlier 2016 Annual Report	Outlier 2015 Annual Report
Doncaster and Bassetlaw Hospitals NHS Foundation Trust			

Data for adjusting				
Age 0-64	30.94%	56 (32.18%)	55 (30.90%)	My data is in line with theirs and with national average
65-74	31.86%	58 (33.33%)	60 (33.71%)	
75-84	29.63%	47 (27.01%)	49 (27.53%)	
84+	7.56%	13 (7.47%)	14 (7.87%)	
ASA 1	11.55%	28 (16.09%)	30 (16.85%)	My data and theirs were in agreement, but our ASAs are significantly lower than national average.
2	53.92%	106 (60.92%)	109 (61.24%)	
3	26.99%	40 (22.99%)	39 (21.91%)	
4/5	2.95%	0 (0%)	0	
miss	4.6%	0 (0%)	0	
T stage 0	1.48%	0 (0%)	0	My data and theirs were in agreement, but our T4 is much lower than national average
1	6.38%	11 (6.32%)	11 (6.18%)	
2	15.36%	51 (29.31%)	53 (29.78%)	
3	48.81%	89 (51.56%)	91 (51.12%)	
4	24.22%	22 (12.64%)	21 (11.80%)	
miss	3.76%	1 (0.57%)	2 (1.12%)	
N- Stage 0	56.98%	109 (62.64%)	108 (60.67%)	My data and theirs were in agreement, but our N2 is a bit lower than national average
1	23.52%	46 (26.44%)	47 (26.40%)	
2	15.53%	18 (10.34%)	21 (11.80%)	
miss	3.97%	1 (0.57%)	2 (1.12%)	
M-Stage 0	78.19%	145 (83.33%)	113 (63.48%)	We have more missing data and I think our M stage may be higher – more in line with national average
1	9.10%	8 (4.60%)	8 (4.49%)	
miss	12.71%	21 (12.07%)	57 (32.02%)	
Mode/ admission				There is a degree of agreement between my data and theirs, but data is from different sources. Our acute rate is lower than national average
Elective	78.72%	151 (86.78%)	162 (91.01%)	
Acute	15.5%	18 (10.34%)	16 (8.99%)	
Number comorbidities 0	54.82%	94 (54.02%)	I don't have access to this data	Our data is in line with national average
1	27.53%	54 (31.03%)		
2	11.96%	21 (12.07%)		
miss	5.69%	5 (2.87%)		

In comparison of data,
I do not find that our mortality rate is as high as theirs, but I guess their HES data should be more accurate. Also I am not sure if they use a fudge factor in getting the unadjusted rate from the cumulative follow-up.

Our significant adjustment upwards appears to be related to

- Lower ASA grade
- Lower T stage
- Slightly lower N2 stage
- Lower M stage
- Lower acute admissions rate
- Compared to the general population

I think that our ASA and T stage and N stage data is right, but I am not sure about the M stage and I think this required further evaluation. Our emergency data is probably right, but I have asked Julie to try and obtain the admission data from coding for these patients and this would be useful to compare.

I have yet to go through the deaths and look at what caused them. Most seem to be related to tumour progression and these are almost always N+ve patients as expected. We did have an unusual series of early deaths unrelated to surgery – e.g. one patient had psychological issues and starved himself to death – but I am not sure if they definitely occurred in this period.

90 Day Mortality			
NHS Trusts	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
Blackpool Teaching Hospitals NHS Foundation Trust	Thank you for letting us know of the potential outlier on outcome measure for the year April 2015- March 2016, and also provided with the details of the eight deceased patients used in your calculation. We have carried out the detailed reviews of the cases notes of the deceased. We noted that two patients should never have been in your database for analysis as one patient had never had primary removal of bowel cancer due to frozen pelvis, and the other patient was carried out as an acute emergency for bowel obstruction and hence would have been excluded from your study. The analyses of the remaining review of cases noted that there were 4 postoperative deaths secondary to one anastomotic leak, one ischaemic left colon in arterio-pathic patient and 2 patients have cardiac related deaths (myocardial infarction and acute cardiac failure). Another case was due to development of pulmonary embolism in the community 35 days after primary surgery. These cases all have corner's post mortem. The final case was unrelated to surgery as patient developed community acquired pneumonia, and passed away at day 87 in hospital following admission under medical team. (Detailed review notes of the patients were attached herewith as word document for your ready reference including patients' comorbidity and ASA status). Therefore, mortality in out trust in this period following immediate surgery were due to development of recognised complications following surgery (with a case of mortality unrelated to surgery). Going back to the crude mortality for the year April 2015- March 2016, by removing the two inappropriate patients from the data, our year crude mortality should be 6.2 % but by adjusting the complexity and premorbid state of the patients, the percentage should be even lower. Going further by looking into the crude mortality over a 3 year period and 5 year period, our outcome mortality respectively are 2.7 % (7/258) and 2.7 % (12/441) which were in line with the national mortality figure. There were years in our trust without any perioperative mortality. Hence we feel that the 2015-2016 morality figure is likely to be a one off. Nowadays, our trust has a protocol in place (serious un-towards incidence) for every elective/ scheduled mortality to see whether any lessons can be learned.		

90 Day Mortality			
NHS Trusts	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
York Teaching Hospital NHS Foundation Trust – The York Hospital	**Outlier Communication** Thank you for your letter received on 1st August 2017 advising us that our risk-adjusted 90 day mortality for patients undergoing resection of their bowel cancer in the period 2015/16 was in excess of the national average figure which indicates we are a significant outlier. This is scheduled to be published in December 2017 National Bowel Cancer Audit Report. We are, of course, very concerned by the possibility that our colorectal cancer service in 2015/16 was under-performing. We have undertaken a notes and audit review of all patients in this cohort to understand why the Trust is a significant outlier. **Methodology:** Following identification of all the patients in the cohort who had died we examined all our data. This identified a further death not included in your report but also a further 6 cancer resections not identified either. A retrospective case note review was completed by two surgeons. This also used a specific mortality review proforma (aligned to the Trust Mortality Review process). These proforma are filled in 1 week after any in-patient death during our General Surgery Safety and Quality meeting held weekly to discuss if the death was avoidable/unavoidable with the aim of understanding possible failures and improvements that can be made. This also included CPEX data that was available for all of the elective patients. This was then reviewed by the Governance lead for the surgical department for the Trust. **Outcomes:** **Data Quality** The review of these historic cases identified significant areas of data weaknesses the quality of our data submission to the audit platform. For example our TNM coding was poor. Among the errors there were 33 T4 cancers rather than the 27 on the NBCA database and 74 T3 cancers vs 68 on NBCA. There were at least 10 patients with metastases at the time of resection rather than 3. This would affect the adjusted mortality. **Clinical Reviews of the deaths** • Median Age of patients reviewed was 84 years; (60 – 89) • 7/9 patients died in the post-operative period and two were late deaths after readmission under the general medical team. • All post-operative deaths were discussed with the coroner and the responsible surgeon asked for post-mortems in a different trust for transparency in the four patients requiring post-mortems. • 5/9 Patients had respiratory failure (2 were due to aspiration and sudden arrest, 1 from PE's in a patient with known PE's and a prophylactic IVC filter in, and 2 due to pneumonia) • 2/9 patients had MOF secondary to anastamotic leaks that were operated on. The other two were recorded as Biliary sepsis and Lewy Body Dementia. • 2 post-operative deaths were recorded as 'potentially avoidable' with 1 being an aspiration pneumonitis querying the early oral nutrition used in enhanced recovery as one of the other deaths was also due to aspiration and cardiac arrest in another patient undergoing enhanced recovery. The other potentially avoidable death was in a patient who developed cholangitis post-operatively from new onset CBD stone related obstruction – this queried whether earlier ITU care would have benefited the patient. • Examining the two anastamotic leaks both had inconclusive CT scans which could potentially have delayed the decision to surgery. **Actions** The review of the two 'potentially avoidable' deaths led to changes in our enhanced recovery oral nutrition protocol, and feedback has been given to the intensivists. The mortality reviews have not identified any issues in the way clinical care was delivered. We will share this learning within our wider surgical/anaesthetic/nursing team. We now have a concerted perioperative team approach where the anaesthetists and surgeons perform postoperative ward rounds to ensure that any deviation from planned progression is picked up early. We have already begun to input valid data on staging and will strengthen the collaboration of the clinicians and the Clinical audit and coding teams to assure the validation of HES data with NBOCA data to improve the accuracy of future data submissions.		

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90 Day Mortality			
NHS Trusts	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
York Teaching Hospital NHS Foundation Trust – The York Hospital	**Summary and future plan:** The Trust is confident that its outlier status will resolve. Having examined our data to be submitted for the 2018 report covering admissions from 2016-2017 we are reassured to a degree that there was only 5 identifiable 90 day deaths out of 167 resections (unadjusted mortality 3.0%), of which only 2 were elective curative resections. However, it must be stressed that this data hasn't undergone its second round of validation before submission to NBOCAP for the 2016-2017 round. Having performed this "deep dive" we feel that overall the outlier status is likely to be due to a combination of random variation and data quality issues however we are not relying on this assumption. The latest report outcomes have been discussed internally and brought to the attention of the Governance team managing patient safety. As a Trust we consider that the MDT review and resulting actions put in place are an appropriate way to address the outlier issue and any potential shortfall in our colorectal cancer service.		
Brighton and Sussex University Hospitals NHS Trust	Further to your communication highlighting Brighton and Sussex University Hospitals as a National outlier for the 90 Day mortality following large bowel cancer resections, we have carried out an investigation on the data submitted to the NBOCAP team. After interrogating the three data sets on colorectal surgery available to us, for the period of 1/04/2015 and 31/03/2016, we were able to amend the mortality outcomes as follows: The total number of patients undergoing elective surgery was obtained from the Somerset database. This includes all patients diagnosed with colorectal cancer, irrespective of the treatment they received. The numbers undergoing elective and emergency surgery ware carefully validated against the departmental colorectal database, and the CEPOD database. The total number of patients undergoing elective surgery was 128. The total number of patients who died, as recorded by NBOCAP was 11. of these, 5 had undergone elective surgery, 5 emergency surgery, and one was outside the 90 day period. Taking into consideration the above figures, the overall 90 day mortality for all patients undergoing elective colorectal surgery is 3.9% (5/128). It would seem therefore that the significant discrepancy in the outcomes was due to the fact that 6 of the 11 deaths on the data communicated to NBOCAP were recorded as elective surgery, whereas in fact five patients had undergone emergency surgery and one patient died outside the 90 day period. On behalf of the colorectal service we would like to take this opportunity to apologise for the errors in our data submission which led to the NBOCAP conclusions on our 90 day mortality outcomes. We are committed as an organisation and the directorate team to ensure that the future data submissions are accurate and robust. We will be pleased to submit further clarifications or details if required.		

<table>
<tr><th colspan="4">18 Month Stoma Rates</th></tr>
<tr><th>Strategic Clinical Networks</th><th>Comment</th><th>Outlier 2016 Annual Report</th><th>Outlier 2015 Annual Report</th></tr>
<tr><td>NHS Trusts</td><td></td><td></td><td></td></tr>
<tr><td>West Wales General and Prince Phillip MDT</td><td>
Thank you for your letter of 1 August 2017. The Heath Board NBOCAP audit has found that the adjusted 18 month stoma rate for West Wales and Prince Philip Hospital multidisciplinary team (MDT) was 86% compared to the national average in England of 52%.

Thank you for the clarification of the data subset, the CEU contacted Mr Mathias, Consultant General and Colorectal Surgeon. I understand from the CEU's response that the data was obtained entirely using the PEDW software and not CANISC, which as you are aware is the system used throughout NHS Wales to input data. Mr Mathias has engaged in detailed discussions with relevant clinicians and the Health Board Medical Director and the Health Board is currently conducting an audit across all sites of the Health Board in order to scrutinise the 18 month stoma rate. The findings of this will be shared with you as soon as possible.

The data from West Wales and Prince Philip Hospital MDT shows that the stoma rate is around 56% for elective resections. The data set from CANISC and the figures from April 2013 to March 2016 are attached [below]. We will be in a position to share further information with you on completion of the Health Board wide audit.

Rectal Cancer Stoma rates – Elective curative resections

Data includes:
1. All patients undering curative resection of the sigmoid/rectosigmoid/rectal
2. Only elective
3. Operated at WWG – excluded exenterations (ABM)

Formula for determining overall stoma rate at 18months
• Overall permanent stoma rate for undergoing resectional surgery for rectal cancers =
APER + AR-H*/ APER + AR + AR-H

* includes AR not reversed

<table>
<tr><td></td><td>AR</td><td>(AR-Not Reversed)</td><td>AR+H</td><td>APER</td><td>TOTAL</td><td>%</td></tr>
<tr><td>2013-2014</td><td>32</td><td>4</td><td>16</td><td>7</td><td>55</td><td>49</td></tr>
<tr><td>2014-2015</td><td>13</td><td>3</td><td>4</td><td>15</td><td>32</td><td>69</td></tr>
<tr><td>2015-2016</td><td>18</td><td>2</td><td>6</td><td>11</td><td>35</td><td>54</td></tr>
<tr><td>TOTAL</td><td>63</td><td>9</td><td>26</td><td>33</td><td>122</td><td>56</td></tr>
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18 Month Stoma Rates			
Strategic Clinical Networks	**Comment**	**Outlier 2016 Annual Report**	**Outlier 2015 Annual Report**
NHS Trusts			
The Christie NHS Foundation Trust	I asked our senior colorectal surgeons to review the recent data and comment on why Christie patients have a higher than usual rate for a permanent stoma. Mr Wilson has responded with the following: The 80% figure seems correct but as last year, our data continues to show a significantly higher proportion of both rectal and colon cancers treated are T4 than that seen nationally (in the rectal cohort, 18 of 83 patients have stage T4 (21.7%). In the colonic cohort, 10 of 20 patients have stage T4 (50%)). Overall in our cohort, the T4 tumours represent 28/103 (27.2%). In the last NBOCAP report the reported rate of T4 rectal cancers was 7%. Last year we had exactly the same conversation with NBOCAP, indicating that we are a tertiary referral centre with one of the largest multi-visceral resection practices in the UK. These procedures by definition will lead to permanent stomas in the majority (often with an associated urostomy as well!) This was accepted and is printed at the end of the final report. A recent audit of our last 101 total pelvic clearances for rectal cancer (locally advanced primaries and recurrent tumours) demonstrated an overall R0 resection rate of 75.2%. In the primary rectal cancer group the R0 resection rate was 78.6% and in the recurrent rectal cancer group the R0 resection rate was 58.2%. This cohort had a 30 day mortality of <1%, a grade 4 complication rate of 9%, a grade 3 complication rate of 3% and a grade 2 complication rate of 45% (NCI scoring). The primary rectal cancer group have an overall median survival of 49 months (55 months in the R0 group) and a 3 year overall survival of 67% (71% in the R0 group). In 2015 and 2016 combined, the Colorectal team at The Christie performed 1003 intermediate, major and major complex operations, with four 30-day mortalities (0.4%) and a combined NCI grade 3/grade 4 complication rate of 10.1%. This data should convince NBOCAP that our practice has complication rates and outcomes comparable with the best internationally published series (references 1 and 2). 1. Simillis C, Baird DL, Kontovounisios C, Pawa N, Brown G, Rasheed S, Tekkis PP. A Systematic Review to Assess Resection Margin Status After Abdominoperineal Excision and Pelvic Exenteration for Rectal Cancer. Ann Surg. 2017 Feb;265(2):291-299. 2. Quyn AJ, Austin KK, Young JM, Badgery-Parker T, Masya LM, Roberts R, Solomon MJ. Outcomes of pelvic exenteration for locally advanced primary rectal cancer: Overall survival and quality of life. Eur J Surg Oncol. 2016 Jun;42(6):823-8. This time the report mentions that delays in stoma reversal may, in some centres, reflect a delay for adjuvant chemotherapy to be concluded but unfortunately does not recognise that it may also be a reflection of patient case mix, particularly when late stage and or recurrent and hence referred to a team who undertake more complex procedures. You kindly included this in the final report following our letter to you last year. As this will apply to our case mix, and therefore to audit results in the foreseeable future, we would appreciate some inclusion in the discussion that this is the reason among the patients receiving surgery in this tertiary cancer centre.		
East Kent Hospitals University NHS Foundation Trust	Thank you for your letter highlighting that the National Bowel Cancer Audit has found that East Kent Hospital University Foundation Trust has a significantly higher than expected rate of 18 month stoma rates after major resection. Discussion with surgeons and indeed results from the 2 previous year's audits suggest that the data are correct and are not due to random variation or data definitions and quality. There may be some differences in patient case-mix and that is being examined together with a search for other potential contributing factors. I would like to correct what I believe may be a typographical error in your letter of the 1st August because the letter goes on to say that "A local audit of these cases with a decision as to whether the deaths were expected/unexpected and avoidable/unavoidable might be appropriate. We have also been requested to share this information with the CQC as part of the new approach to proactively share all outlier data with our regulators.". Whilst East Kent Hospital University Foundation Trust may be an outlier in terms of higher than expected 18 month stoma rate I believe if anything, especially at the Margate site, our mortality is significantly less, as doubtless you will have seen from the data such as the National Emergency Laparotomy audit. I have requested our 2 colorectal surgical departments in Ashford and Margate to examine this higher 18 month stoma rate in detail in order to better understand the reasons behind this and this is work that will be completed in time for our first GIRFT General Surgery visit later this year.	*	*

18 Month Stoma Rates			
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NHS Trusts			
Nevill Hall Hospital MDT	We have looked at our data from CANISC that was submitted during the years audited and find that this is at variance with the outcome data provided by NBOCAP: When we analysed our data manually it showed that our crude and unadjusted per cent stoma rate for ALL Major cancer resections was exactly 50% and the stoma rate for ALL rectal cancers was also 50%. For the eighteen months between 1st October 2015 to the 31st March 2017, we had 98 major cases and 49 had no stomas whilst 49 had stomas = 50%. For rectal cancers, we would also like to point out that when it comes to decision making regarding whether to proceed with either a low anterior resection or an APER, such decision making always involves two Consultant Colorectal surgeons. Furthermore we would like to add that quality of life and patient choice are also taken into account in this decision making process and we are to understand that these parameters are not used in the data adjustment. There is therefore a discrepancy between our crude data and the adjusted outcome data and we cannot understand how the percentage figure goes up after adjustment instead of down. In the past we had problems with data transfer between the data we input into CANISC (which we validate every six months) and Cancer Services, with the main issue being in coding. At the meeting we had in December 2016 between the ACPGBI, NBOCAP and the Welsh MDT leads regarding the Welsh audit data, it was pointed out that there were problems with CANISC and with the interaction between PEDW and HES; indeed in the NBOCAP report (version 2) for 2016 it specifically states that there was no PEDW data for all Welsh MDT's for stomas following 'major rectal cancer surgery'. This could have been a factor in the audit but then it would have affected all the Welsh MDT's equally. We will continue to audit our data locally and ensure proper validation and would be grateful if you would include this statement in the publication of the Audit in December 2017.		
Lancashire Teaching Hospitals NHS Foundation Trust	**Review of Outlier Status with Regard to 18 month stoma Rate in Rectal Surgery in 2017 NBOCAP Audit** In this year's NBOCAP audit 90 patients have been identified as having had a stoma created as a result of a resection of a rectal carcinoma at Lancashire Teaching Hospitals NHS Foundation Trust. of these 64 were identified as still having a stoma 18 months after their cancer resection. As colorectal MDT lead for the trust I have reviewed the records of these patients with the regard to the reasons for stoma non-closure. The data provided by NBOCAP was generally accurate with 3 exceptions. One patient identified as a stoma non-closure had their loop ileostomy closed in the private sector within 18 months. One of the patients had a stoma formed in an emergency procedure to defunction a perforated advanced rectal cancer without a resection and hence lies out with the remit of this audit. Conversely one patient not identified as a non-closure had undergone AP resection with a permanent stoma. There were therefore 63 patients who had not had a stoma closure within the remit of the audit# of these 32 patients had undergone Abdomino-Perineal Resection (APR). APR is a major operation resulting in an irreversible stoma and should be regarded as a last resort where there is no oncologically sound and clinically sensible alternative. In this trust we strive to avoid APR where alternatives are available and have extensively pursued both local resection by TEM and rectal conservation with surveillance after complete response to radiotherapy. I have reviewed the records of the patients undergoing APR and am satisfied that in all cases, after consideration of the proximity of the tumour to the anus and the tumour staging, no reasonable alternative was available. Since the denominator in this audit does not include rectal cancers managed without a stoma, this figure does not represent the AP resection rate for the unit. In a further 6 patients a low Hartmann's procedure with permanent end colostomy was performed. Three of these cases were performed as palliative resections with a high risk of pelvic recurrence where an anastomosis was deemed ontologically inappropriate. In a 2 cases the patients had extensive co-morbidity and anastomosis was deemed unacceptably hazardous. In one case very dense post radiation fibrosis was found intraoperatively preventing formation of an anastomosis. This therefore leaves 25 cases where an anterior resection with a planned temporary defunctioning stoma was performed but the stoma was not closed within 18 months In 15 of these patients there as a subsequent decision not to close the stoma. In 3 of these cases patients had progressive metastatic disease requiring ongoing chemotherapy and in one there was a local tumour recurrence. In 4 cases it was agreed that the anaesthetic risk for further surgery was high due to comorbidity and patients decided against stoma closure. Two further patients opted not to have their stoma closured due to concerns about further surgery or post-operative function. In 4 cases stoma closer was prevented by an anastomotic leak. In one case the patient died in the post-operative period before stoma closure. In 10 cases the stoma was subsequently closed beyond 18 months. In three of these cases closure was delayed due to the presence of a small radiological leak on contrast enema but closure took place successfully shortly after 18 months. In three cases patients requested a delay before going ahead with stoma closure. In the remaining 4 cases a combination of prolonged chemotherapy and subsequent waiting list pressures led to closure shortly after the 18 months target.	*	*

18 Month Stoma Rates			
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NHS Trusts			
Leeds Teaching Hospitals NHS Trust	Thank you for the opportunity to scrutinise our data prior to publication of the NBOCAP audit. We are aware of our previous outlier status for 18 months stoma rates from a previous audit period and have analysed the reasons for that. We undertook a careful review of the new dataset you provided that has not been published before (Rectal cancers from April 2014-March 2015). The national analysis has calculated an adjusted stoma rate of 64% and an unadjusted rate of 67%. Our analysis undertaken by Mr Richard Baker – Clinical lead for colorectal surgery looked at 61 cases. of these 16 underwent an APER (26%), we are satisfied that these were appropriate; 15 tumours were within 2cm of the dentate line on histology and one was at 4cm. 5 of the cases were exenterations or recurrent cancers and a further 8 were tertiary referrals from other hospitals because of different complicating factors. All of these had a stoma. If these 13 tertiary referral cases are excluded from the analysis our 18 months stoma rate is 57%. The leak rate was 5% (n= 3) preventing reversal in 2 patients and delaying it in one (reversed at 26 months). We are conscious of a higher rate of Hartmann's procedures in this series compared to the published data from the 2016 NBOCAP audit (8% nationally versus 21%). Retrospectively, the decisions to do a Hartmann's either before surgery (due to co - morbidity, n=11) or intra-operatively (due to complicating factors, n=2) seem reasonable. This is something we will continue to monitor and try to improve.	*	*