National Bowel Cancer Audit

Annual Report 2018

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This 2018 Annual Report contains data from the 2017/2018 reporting period which covers patients in England and Wales with a date of diagnosis from 01 April 2016 to 31 March 2017.

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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 2018 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 2018 Annual Report.

NHS Digital is the new 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. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering 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 projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes

National Bowel Cancer Audit

Annual Report 2018

An audit of the care received by people with Bowel Cancer in England and Wales
2018 Annual Report

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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, Professor Jim Hill (Consultant Colorectal Surgeon and former President of ACPGBI) and Dr Michael Braun (Consultant Oncologist).

The NBOCA Clinical Advisory Group consists of a wide range of professionals who provide input from a diverse range of perspectives on the Annual Report. This includes patient representatives. Patient and bowel cancer charity representatives have been involved in the production of the Patient Report.

The Project Team and Board would like to thank the clinical and non-clinical staff at all National Health Service (NHS) trusts and Welsh Health Boards who collected and submitted data to the audit for their hard work, support and leadership.

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Foreword

This ninth 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 – English trusts, Welsh Health Boards, NHS Digital and the Clinical Effectiveness Unit at the Royal College of Surgeons of England.

This year's audit report also contains some encouraging trends; mortality rates following both elective and emergency surgery have fallen over the past five years and there are increased numbers of operations being performed laparoscopically. The 90-day mortality after elective major resections has improved from 2.9% to 2.0%, plateauing over the last few years, and the 90-day mortality after emergency major resection has improved from 16.3% to 11.5%.

One quarter of eligible patients were diagnosed through the Bowel Cancer Screening Programme; this figure is stable but needs to increase and the uptake of screening across the country continues to vary considerably. Active promotion of the NHS Bowel Cancer Screening Programme needs to continue.

This year's report has also described geographical variation in chemotherapy administration and further work is required to better describe and understand this. It is encouraging to see that there has been a reducing trend of deaths in hospital from 2011 to 2016 (46.2% - 34.6%), but proportions of home deaths remain short of what we know is most patients' wishes.

The audit is now linked to the National Emergency Laparotomy Audit (NELA) and this report presents some initial findings. Further work is planned in order to better understand the management of bowel cancer patients presenting as an emergency. As the audit continues to widen its coverage of the patient pathway it has looked at variation in place of death.

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 English trust/Welsh MDT 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 multi-disciplinary teams.

Once again, a separate patient report summarising the key findings of the 2018 Annual Report has been produced. Individual trust/MDT results are also available on the website https://www.nboca.org.uk/trust-results/.

Professor Brendan Moran
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 the Welsh Government. The audit is carried out by the Clinical Effectiveness Unit (CEU) of the Royal College of Surgeons of England in partnership with ACPGBI and NHS Digital.

The 2018 Annual Report is the ninth report produced by the above collaborative and includes data on over 30,000 patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017.

The key audience of the Annual Report and the Patient Report include those who deliver care to bowel cancer patients (at a regional level this includes English cancer alliances and Wales as a nation, and at a local level English trusts/hospitals and Welsh MDTs), those who 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 NBOCA in a way that supports bowel cancer services to improve quality of 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 good measures of clinical care. It compares regional variation in outcomes between English cancer alliances and Wales, as well as local variation between trusts/hospitals/MDTs. 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 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 90-day post-operative mortality rates for patients undergoing elective/scheduled major surgery following a diagnosis of bowel cancer between 01 April 2012 and 31 March 2017, are currently reported at both surgeon and trust level.

The reporting schedule for additional trust/hospital level outcomes which have been introduced with development of the COP programme are shown in Table 1.1. This year we will report on two pathological outcomes at trust/hospital level for the first time. This includes the proportion of colonic resections with >12 lymph nodes reported, and negative circumferential resection margin rates for rectal resections.

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	Negative 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

- **20% of patients present as an emergency with bowel cancer**
  52% of patients presenting as an emergency are treated with curative intent, compared to 69% and 86% referred from GP and screening services respectively.

- **23% of patients within the eligible age range for bowel cancer screening (aged 60-74 years) are diagnosed via screening services**
  There is geographical variation in the proportion of patients aged 60-74 years being diagnosed via screening (17%-29%).

- **76% of patients who could be allocated to a care pathway were treated with curative intent**
  93% of this group had a major resection and 7% had 'too little' cancer to be treated curatively..

- **24% of patients who could be allocated to a care pathway were treated with non-curative intent**
  Of those categorised as non-curative, 18% had major resection, 58% had 'too much' cancer and 24% were 'too frail'. We are still unable to assign 5,011 patients to a care pathway, largely due to missing data.

- **54% of patients with stage III colorectal cancer received adjuvant chemotherapy**
  Patients who are younger and fitter are more likely to receive chemotherapy. Administration of adjuvant chemotherapy varies geographically from 39%-63%.

Recommendations

3(a) Efforts should continue to increase public awareness of the symptoms and signs of bowel cancer so that it is diagnosed earlier.

3(b) Bowel cancer screening programmes should be further promoted, emphasising improved outcomes.
The introduction of the Faecal Immunochemical Test (FIT) into the Bowel Cancer Screening Programme should help to improve screening uptake rate and potentially increase the number of cancers and adenomas detected.

3(c) Healthcare professionals should refer patients promptly from primary care according to the NICE suspected cancer pathway for colorectal cancer. Commissioners should be aware of NICE DG30 guidance on the additional use of FIT testing for patients with low-risk symptoms.
This recommendation should help to reduce the proportion of patients presenting as an emergency.

3(d) Care commissioners should facilitate provision and access to endoscopy services in order to cope with the demands of increased screening uptake, an ageing population and increased clinical demand/public awareness.

3(e) Trusts/hospitals/MDTs should make efforts to improve data collection for data items: *performance status, care plan intent and pre-treatment M-stage*, to facilitate allocation of care pathways to all patients, enabling improved understanding of variation.

3(f) Further work should be carried out to better describe and understand the geographical variation in chemotherapy administration.

Chapter 4 – Surgical care

- **Over the last 5 years, 90-day mortality after emergency major resection has decreased from 16.3% to 11.5%**
  90-day mortality after elective major resections has also decreased from 2.9% to 2.0%, plateauing since 2014/15.

- **Median length of stay is 7 days for elective major resection compared to 10 days for emergency surgery. These figures have remained stable.**
  There is considerable geographical variation in length of stay, particularly for emergency admissions. For example, the proportion of patients with a length of stay of 5 days or less after emergency major resection varies from 7% to 38%. Emergency 30-day re-admission rates remain stable at 10.5%.

- **Use of laparoscopic surgery continues to expand with 58% of major resections performed using this approach in patients diagnosed between 01 April 2016 and 31 March 2017**
  There is significant variation in the use of laparoscopic surgery across different cancer alliances (37%-74%). Approximately, one quarter of emergency procedures are completed laparoscopically with a 4% conversion rate.

- **There is significant regional variation in the proportion of colonic resections with >12 lymph nodes reported**
  The national average for >12 lymph nodes reported after colonic resection is 82%. However, this varies from 0%-100% in different geographical areas.

Recommendations

4(a) Previous work has suggested that dedicated inpatient discharge services (including Enhanced Recovery after Surgery (ERAS) programmes, specialist discharge co-ordinators and increased Consultant input) may not reduce the number of patients with long length of stay. CCGs and others, might wish to work with cancer alliances and trusts to explore what other factors influence prolonged length of stay. This might include the provision of services in the community.

4(b) Variation in the use of laparoscopic surgery geographically needs to be explored in more detail.

4(c) Trusts/hospitals/MDTs identified as having a low proportion of patients with a lymph node yield >12 should examine their data. Trusts/hospitals/MDTs should identify whether this is a primary data collection/entry issue e.g. they have large amounts of missing data, or whether this is due to surgical or pathological techniques, and seek to improve their results accordingly.

4(d) Further work will be carried out with NBOCA-NELA linked data in order to better understand the management of bowel cancer patients presenting as an emergency.

4(e) Participating trusts/hospitals/MDTs are encouraged to submit their elective and emergency data in a timely manner before the first deadline in order to enable us to link patient records to ONS and HES/PEDW. Without this linkage, patients may have to be excluded from certain analyses due to missing mortality and risk adjustment data.

Chapter 5 – Survival

- **Two thirds of all bowel cancer patients survive beyond 2 years**
  2-year survival for all patients has remained stable at 66% since 2012/13. Observed 2-year survival in all patients demonstrates significant geographical variation.

- **84% of patients undergoing major resection survive beyond 2 years**
  Adjusted 2-year survival for patients undergoing major resection demonstrates no outliers at a cancer alliance/nation level. Variation remains at trusts/hospitals/MDT level, with 3 sites outside the outer limits (compared to 4 last year).

- **Preliminary work has suggested that there is less variation at a trusts/hospitals/MDT level when 2-year cancer-specific mortality is used**
  Cancer-specific mortality should include fewer deaths which are beyond the control of the provider, such as deaths due to lifestyle and other underlying diseases, therefore potentially providing more comparative results.

Recommendations

5(a) Action is required nationally to support healthy behaviours after bowel cancer treatment in order to mitigate the effects of socioeconomic deprivation on overall cancer survival and reduce regional variation.

5(b) Long-term cancer-specific mortality rates will optimise the robustness of survival reporting with deaths from other causes appropriately modelled as competing events.

Chapter 6 – Rectal cancer

- **53% of patients underwent major resection for rectal cancer**
  7% had local excision, 7% non-resectional surgery (e.g. stent) and 33% had no surgical intervention. The proportion of patients not having intervention has increased over time (29% to 33%). This may be explained in part by more chemoradiotherapy complete responders being managed by a watch and wait policy.

- **There is significant geographical variation in the use of neo-adjuvant radiotherapy (from 24% to 61% between cancer alliances)**
  Variation is also present in the proportions of patients receiving long- and short-course radiotherapy.

- **35% of patients undergoing major resection for rectal cancer still have a stoma at 18 months (excluding intended abdomino-perineal excision of the rectum)**
  The overall 18-month stoma rate is 52% with significant regional variation (42%-63%). 59% of patients having emergency procedures have a stoma at 18 months compared to 35% having elective procedures.

Recommendations

6(a) Stoma reversal should be prioritised. The presence of a temporary stoma is known to reduce patients' quality of life following cancer treatments. Additional factors influencing stoma reversal such as receipt of adjuvant chemoradiotherapy and hospital-level determinants need to be explored further.

6(b) Further exploration of regional variation in the use of neo-adjuvant therapy for rectal cancer is required, including the use of short versus long-course radiotherapy. The audit is now reporting negative circumferential resection rates and will be reporting recurrence in the future. Together, these will enable valuable insight in to the impact of neo-adjuvant therapy on outcomes from rectal cancer.

6(c) Trusts/hospitals/MDTs are congratulated on marked improvements in data quality of circumferential resection margins. We encourage trusts/hospitals/MDTs, particularly those with <50% data completeness, to continue efforts to improve collection of this data item.

Chapter 7 – End of life care

- **There has been a reducing trend in hospital deaths from 2011 to 2016 for patients diagnosed with colorectal cancer (46% to 35%)**
  Home deaths have increased from 2011 to 2016 (25% to 32%) but this remains far below reported patient preference in the literature (up to two thirds would prefer to die at home).

- **Place of death appears to be related to socioeconomic status with almost a 10% difference in hospital deaths in the least affluent (43%) compared to the most affluent (35%)**
  Age, time from diagnosis and (to a lesser degree) sex appear to influence place of death.

- **Geographical variation in place of death occurs**
  This is most marked for deaths in hospitals (29%-48%) and hospices (8%-27%).

Recommendations

7(a) Clinicians should aim to identify patients who require 'end of life' care in order to facilitate early involvement of Palliative Care services in order to improve patients' quality of death.

7(b) Patient and family wishes regarding preferred place of death should be clearly defined and measures taken to facilitate this. Elderly and deprived patients, and those dying within 12 months of diagnosis appear most likely to die in hospital. Facilitating out-of-hospital deaths where preferred and avoiding unplanned hospital admissions is crucial in improving end of life care.

7(c) Cancer alliances identified as lying above the limits for hospital deaths, and below the limits for hospice deaths, should look at their policies and resources for end of life care. Others may wish to learn from the practices of alliances lying above the limits for hospice deaths.

7(d) Further work is required to investigate the regional disparities identified in place of death to ascertain whether there is inequity in provision of palliative care services, for example, access to hospital palliative care services and hospice care.

NBOCA news for 2018

National Emergency Laparotomy Audit

The Audit now links to the National Emergency Laparotomy Audit (NELA) dataset. We are in the early stages of data analysis but this will allow more detailed information to be presented in the future regarding the surgical care of patients undergoing emergency surgery for bowel cancer. In this report, we have established details regarding seniority and speciality of surgeon present at emergency procedures.

Chemotherapy dataset

The Audit now links to the Systemic Anti-Cancer Therapy (SACT) dataset. This enables more accurate information to be presented regarding the use of chemotherapy in bowel cancer patients. We are developing our understanding of this dataset in conjunction with the Project Team's oncologist. In this report, we have expanded on our understanding of the variation in administration of adjuvant chemotherapy in stage III colorectal cancer.

End of life care

The NBOCA continues to broaden its scope in order to understand the management of all patients diagnosed with bowel cancer, rather than just those who undergo surgical resection. We have conducted some preliminary work into end of life care. In this report, we present information about the place of death for colorectal cancer patients.

Supplementary short reports

The NBOCA will publish two further short reports in 2018/2019:

1. End of life care
2. Variation in administration of adjuvant chemotherapy in stage III colorectal cancer

Organisational audit

The results of the organisational audit of NHS sites in England and Wales treating bowel cancer patients has been updated for 2018. This details the facilities available at each trusts/hospitals/MDT and can be accessed at www.nboca.org.uk/reports/organisational-survey-results-2018/. The services available at each site are also listed under each trusts/hospitals/MDT on the Trust Results section of the website.

Website development

The NBOCA website can be accessed at www.nboca.org.uk. The website now generates individual Trust Results in the form of both a PDF report and presentation, allowing trusts/hospitals/MDTs to compare their performance at both regional and national levels. These can be utilised in meetings, for example, multidisciplinary team meetings, and can be accessed via www.nboca.org.uk/trust-results/. In addition, we have developed the general accessibility of the website including updating our Frequently Asked Question (FAQ) section with an improved search function, accessible here: www.nboca.org.uk/about/faq/.

Twitter

Follow @NBOCA_CEU for regular updates.

NBOCA short reports & peer-reviewed articles

The NBOCA have produced a series of short reports providing more focussed and detailed evaluation of important topics in the care and outcomes of colorectal cancer patients.

Short reports

- The feasibility of using Patient Reported Outcome Measures (PROMs)
  Access here: www.nboca.org.uk/reports/proms-feasibility-study-2018/

- Validity of cancer-specific mortality as a performance indicator
  Access here: www.nboca.org.uk/reports/short-report-2-2017/

- Optimal timing between radiotherapy and surgery in rectal cancer patients
  Access here: www.nboca.org.uk/reports/short-report-1-2017/

- Variation in length of hospital stay after major resection in patients with bowel cancer
  Access here: www.nboca.org.uk/reports/short-report-2-2016/

- Access to liver resection in bowel cancer patients with liver metastases
  Access here: www.nboca.org.uk/reports/short-report-1-2016/

Peer-reviewed articles

The NBOCA are involved in the ongoing publication of high-quality peer-reviewed articles. The most recent of these are detailed below. New publications will be announced via the NBOCA website.

Vallance AE, van der Meulen J, Kuryba A et al. The impact of advancing age on incidence of hepatectomy and post-operative outcomes in patients with colorectal cancer liver metastases: a population-based cohort study. *HPB*. 2018

Vallance AE, Fearnhead NS, Kuryba A et al. Effect of public reporting of surgeons' outcomes on patient selection, "gaming", and mortality in colorectal cancer surgery in England: a population-based cohort study. *BMJ*. 2018; 361: k1581

Vallance AE, van der Meulen K, Kuryba A et al. Socioeconomic differences in selection for liver resection in metastatic colorectal cancer and the impact on survival. *Eur J Surg Oncol*. 2018; pii: S0748-7983(18)31078–3

Vallance AE, van der Meulen J, Kuryba A et al. The timing of liver resection in patients with colorectal cancer and synchronous liver metastases: a population-based study of current practice and survival. *Colorectal Dis*. 2018; 20(6): 486–495

Vallance AE, Keller DS, Hill J et al. Role of emergency laparoscopic colectomy for colorectal cancer: a population-based study in England. *Ann Surg*. 2018

Vallance AE, van der Meulen JH, Kuryba A et al. Impact of hepatobiliary service centralization on treatment and outcomes in patients with colorectal cancer and liver metastases. *Br J Surg*. 2017; 104(7): 918–925

Kuryba A, Scott N, Hill J et al. Determinants of stoma reversal in rectal cancer patients who had an anterior resection between 2009 and 2012 in the English National Health Service. *Colorectal Dis*. 2016; 18(6): 199–205

2. Methods

Methods – NBOCA 2018

- We have produced a separate, detailed Methodology document which will be available as a supplementary report on the NBOCA website.
- The methodology is broadly similar each year, and we will highlight any key changes in this chapter. Please refer to the supplementary report for more details on all of the sections below, available here: www.nboca.org.uk/reports/methodology-supplement

2.1 Data collection

All eligible NHS trust/hospital sites in England and Health Boards in Wales submitted data to the audit for inclusion in the 2018 Annual Report. The focus of this report is patients in England and Wales included in the audit diagnosed between 01 April 2016 and 31 March 2017. Data are also available from the previous audit and comparisons are made across years for certain outcomes.

This audit report is generated with linkage of NBOCA records to multiple other datasets including HES/PEDW, Office for National Statistics (ONS), the Radiotherapy dataset (RTDS) and the Systemic Anti-Cancer Therapy dataset (SACT). RTDS and SACT are only available for patients treated in England.

2.2 Definition of outlier reported outcomes

The audit currently reports outlier status for four risk-adjusted outcomes.

90-day post-operative mortality – defined as death within 90 days of the NBOCA date of surgery with date of death obtained from ONS.

30-day unplanned readmission – derived from HES/PEDW for patients undergoing major surgery. Defined as an emergency admission to any hospital for any cause within 30 days of surgery. Emergency admissions include those via Accident and Emergency, general practitioners, bed bureaus (point of contact for GPs to arrange urgent admission), or consultant outpatient clinics.

2-year mortality after major resection – the observed rate is the number of patients who died within 2 years divided by the sum of the amount of time each patient is followed up for. Taking into account the amount of follow-up time means that the estimate compares not just the proportion of patients who died within 2 years but also how quickly they died.

18-month stoma rate – estimated for rectal cancer patients undergoing major surgery. Patients undergoing an abdomino-perineal excision of the rectum (APER) or Hartmann's procedure 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 were used to capture whether anterior resection patients received a stoma.

In patients having an anterior resection or Hartmann's procedure, subsequent stoma reversal was also obtained from HES/PEDW. A procedure code for reversal of ileostomy/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/MDTs, 18-month stoma rates for 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 for patients undergoing major resection from 01 April 2013 to 31 March 2016 were used to ensure there were sufficient numbers of operations per trust/hospital/MDT in order to make comparisons. It is only the 2015 and 2018 annual reports which have no overlap in the data reported due to using a 3-year period of data.

Please refer to the supplemental document for further information about risk adjustment of these outcomes.

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 their direct care may legitimately register a type 2 objection with their GP practice. NBOCA does not receive HES or ONS data for patients who have registered a type 2 objection. This means NBOCA is unable to include mortality data or risk-adjusted results for these patients.

The proportion of audit patients who have opted out has increased over time. According to NHS Digital, the proportion of patients who had requested type 2 opt-out in England was 2.4% in March 2018, with variation by region.

2.4 Case ascertainment

Case ascertainment by year is given in Table 2.1. Overall case ascertainment is 93% this year. Case ascertainment at cancer alliance/Wales and trusts/hospitals/MDT level is given in Table 8.1

Table 2.1
Case ascertainment by year

	2012–13	2013–14	2014–15	2015–16	2016–17
Patients identified in HES/PEDW (N)	32,849	31,796	31,979	32,335	32,894
Patients identified in audit (N)	31,376	30,716	31,034	30,714	30,541
% case ascertainment	**96**	**97**	**97**	**95**	**93**

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, and 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/PEDW 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.

Amongst patients undergoing major surgery, 6.6% were missing ASA grade, 5.8% were missing TNM T-stage, 6.4% were missing TNM N-stage and 10.5% were missing TNM M-stage. Mode of admission and Charlson co-morbidity score came from HES/PEDW and were only missing in patients who were not linked to HES/PEDW due to late inclusion. Virtually all patients had complete data on sex, age and site of cancer.

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 2.2). Data completeness reports have been sent to each NHS trust/Welsh MDT both to provide feedback on the data submitted and to point to areas for improvement. Data completeness by cancer alliance/trust/MDT can be found in Table 8.1.

Table 2.2
Percentage of patients undergoing major surgery with complete data on the 7 key items from the audit used in risk adjustment, by audit year

	2012–13		2013–14		2014–15		2015–16		2016–17	
	N	%	N	%	N	%	N	%	N	%
Total patients undergoing major resection*	20,101		19,697		19,584		19,348		18,849	
Complete data on 7 key items	17,845	88.8	15,761	80.0	16,143	82.4	15,667	81.0	15,880	84.2
Data completeness if TNM M-stage recorded	18,847	93.8	18,086	91.8	17,926	91.5	17,018	88.0	16,875	89.5

* Total restricted to those eligible for HES/PEDW/ONS linkage

The following trusts were excluded from the corresponding risk-adjusted analyses because overall data completeness was less than 20% or ASA grade and/or TNM stage was missing in more than 80% of patients included in the analyses.

90-day mortalityand 30-day emergency readmission:

- Bradford Teaching Hospitals NHS Foundation Trust
- East And North Hertfordshire NHS Trust
- Hull And East Yorkshire Hospitals NHS Trust
- Mid Yorkshire Hospitals NHS Trust
- The Royal Wolverhampton NHS Trust

Two-year survival:

- Hampshire Hospitals NHS Foundation Trust – Basingstoke and North Hampshire Hospital
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust

18-month stoma rate:

- University Hospitals of North Midlands NHS Trust

All trusts/hospitals/MDTs submitted data. However, the following trusts had submitted low numbers of cases by the data linkage deadline and had insufficient linked cases to report 90-day mortality and 30-day readmission:

Trusts with not enough cases linked to ONS/HES to report:

- King's College Hospital NHS Foundation Trust – King's College Hospital
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
- University Hospitals Birmingham NHS Foundation Trust
- Warrington and Halton Hospitals NHS Foundation Trust

This is the second consecutive year that East and North Hertfordshire NHS Trust has been excluded from analysis of 90-day mortality and 30-day readmission. The other trusts have not previously been excluded from these analyses in the 2017 report.

Please refer to the supplementary document for further information about the following methodological considerations:

- Handling of missing data
- Definition of surgical urgency
- Statistical analysis
- Funnel plots and their interpretation
- Risk adjustment and adjusted outcomes

All statistical analyses were performed using Stata version 15.1.

3. Care pathways

Care pathways – NBOCA 2018

- Patient referral pathways remain unchanged with the majority of patients referred via their GPs (54%).
- 23% of patients eligible to participate in the National Bowel Cancer Screening Programme (60-74 years old) were referred from screening, but considerable geographical variation (17% to 29%) exists.
- 52% of patients presenting as an emergency were treated with curative intent compared to 69% and 86% of GP and screening referrals respectively.
- 63% of patients underwent curative treatment, with 93% undergoing major resection and 7% falling in to the 'too little cancer' category.
- 54% of patients with stage III colorectal cancer received adjuvant chemotherapy. There was significant geographical variation (39%–63%) in receipt of chemotherapy in those patients who may have potentially benefitted from it.

3.1 Where are patients diagnosed with bowel cancer presenting?

Referral source

The proportion of patients being referred via each pathway remains unchanged over the past 4 years; with the majority of patients continuing to be referred from GP (54%) (Table 3.1). Importantly, one fifth of patients continue to be reported as having presented as an emergency; these patients tend to be older, with lower baseline fitness levels and more advanced disease. They are also more likely to present with right-sided tumours. Only 52% of patients who were reported as emergency cases were treated with curative intent, compared to 69% and 86% of reported referrals from GP and screening programmes respectively.

Diagnosis from screening

Home screening kits are distributed to patients aged 60–74 years old in England and Wales and, therefore, the vast majority of screen detected patients are in this age range. 23% of patients diagnosed between 60–74 years, are referred via screening programmes. Data published by Public Health England shows that the uptake rate for bowel cancer screening in England was 59.0% between 01 April 2016 and 31 March 2017 (NHS Screening Programmes in England 2016 to 2017). In Wales, the uptake rate for screening during this period was 53.4% (Bowel Screening Wales Annual Statistical Report 2016–17). This suggests there may be opportunities to improve participation in order to increase screen detected bowel cancers.

There has been a consistent discrepancy in the proportions of males and females diagnosed via screening over the past 4 years, with males twice as likely to be diagnosed via this route. Screen detected patients are generally fitter and have less advanced disease. 78% of patients diagnosed via screening will have major resection of their cancer compared to 55% and 63% of emergency and GP referrals respectively.

Geographical variation in screening diagnoses in eligible patients

Figure 3.1 demonstrates wide variation in the referral pathway amongst patients aged 60–74 years old (i.e. those eligible for bowel cancer screening). The proportion being referred via screening programmes ranged from 17% in Greater Manchester to 29% in the Thames Valley. There is no obvious association between the proportion of patients aged 60–74 years in each region and the screening referral pattern.

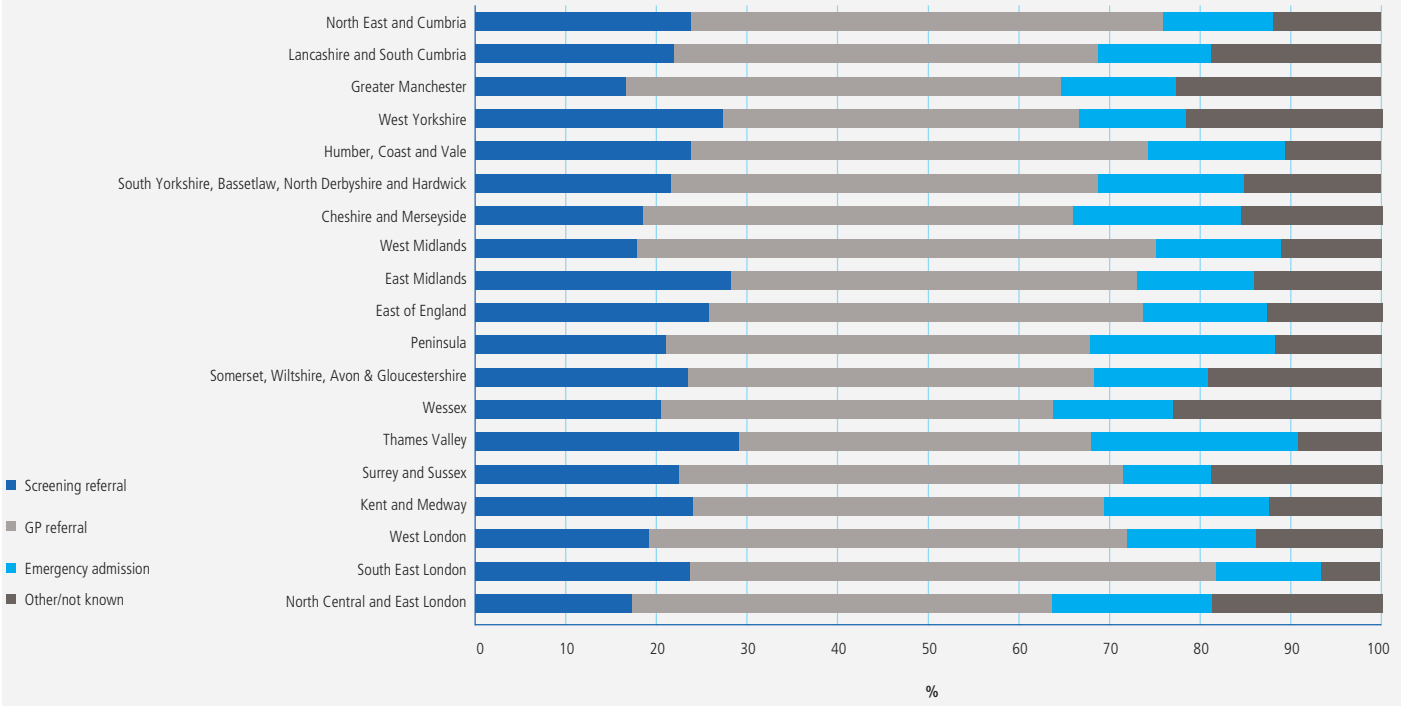
In addition, emergency referrals showed substantial variation from 10% in Surrey and Sussex to 23% in the Thames Valley. Wales did not have any patients in the 'Other/Not Known' category unlike the English cancer alliances. Wales have therefore been excluded from Figure 3.1. This difference may represent variation in data collection and requires further exploration before comparisons can be made between English cancer alliances and Wales.

Table 3.1
Description of the 30, 541 patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017, by referral source

		Emergency Admission		GP Referral		Screening Referral		Other/ Not Known	
		N	%	N	%	N	%	N	%
Total no. patients		**6,165 (20.2%)**		**16,580 (54.3%)**		**3,016 (9.9%)**		**4,780 (15.7%)**	
Sex	**Male**	3,225	52.4	9,478	57.2	1,931	64.1	2,732	57.2
	Female	2,935	47.6	7,096	42.8	1,083	35.9	2,047	42.8
	Missing (% of total)		5 (0.1)		6 (0.0)		2 (0.1)		1 (0.0)
Age-group	**<50 yrs**	565	9.2	855	5.2	3	0.1	405	8.5
	50–64 yrs	1,171	19.0	3,622	21.8	978	32.4	1,086	22.7
	65–74 yrs	1,453	23.6	4,473	27.0	1,934	64.1	1,326	27.7
	75–84 yrs	1,835	29.8	5,555	33.5	96	3.2	1,446	30.3
	85+ yrs	1,141	18.5	2,075	12.5	5	0.2	517	10.8
Cancer site	**Caecum/ascending colon**	2,186	35.5	4,233	25.5	485	16.1	1,379	28.8
	Hepatic flexure	288	4.7	619	3.7	105	3.5	203	4.2
	Transverse colon	570	9.2	931	5.6	183	6.1	319	6.7
	Splenic flexure/descending colon	540	8.8	842	5.1	217	7.2	279	5.8
	Sigmoid colon	1,459	23.7	3,494	21.1	916	30.4	1,093	22.9
	Rectosigmoid	239	3.9	1,018	6.1	183	6.1	246	5.1
	Rectal	883	14.3	5,443	32.8	927	30.7	1,261	26.4
Pre-treatment TNM T-stage	**T1**	151	2.4	637	3.8	328	10.9	403	8.4
	T2	513	8.3	2,789	16.8	748	24.8	873	18.3
	T3	2,013	32.7	7,712	46.5	1,198	39.7	1,772	37.1
	T4	1,790	29.0	2,994	18.1	183	6.1	707	14.8
	Tx	533	8.6	967	5.8	284	9.4	408	8.5
	T9	1,165	18.9	1,481	8.9	275	9.1	617	12.9
Pre-treatment TNM N-stage	**N0**	2,035	33.0	6,359	38.4	1,651	54.7	2,102	44.0
	N1	1,569	25.5	5,230	31.6	761	25.2	1,194	25.0
	N2	942	15.3	2,752	16.6	217	7.2	561	11.7
	Nx	466	7.6	743	4.5	112	3.7	298	6.2
	N9	1,153	18.7	1,485	9.0	275	9.1	624	13.1
Pre-treatment TNM M-stage	**M0**	3,310	53.7	11,505	69.4	2,383	79.0	3,211	67.2
	M1	1,623	26.3	3,081	18.6	210	7.0	762	15.9
	Mx	364	5.9	823	5.0	164	5.4	278	5.8
	M9	868	14.1	1,171	7.1	259	8.6	529	11.1
Performance Status	**Normal activity**	1,637	32.9	6,749	46.9	1,713	66.7	1,904	48.5
	Walk & light work	1,435	28.8	4,487	31.1	657	25.6	1,145	29.1
	Walk & all self care: up >50%	924	18.6	2,140	14.9	156	6.1	577	14.7
	Ltd self care: confined >50%	787	15.8	895	6.2	36	1.4	253	6.4
	Completely disabled	197	4.0	134	0.9	5	0.2	50	1.3
	Missing (% of total)		1,185 (19.2)		2,175 (13.1)		449 (14.9)		851 (17.8)
Care Plan Intent	**Curative**	3,187	51.7	11,424	68.9	2,604	86.3	3,352	70.1
	Non Curative	1,749	28.4	2,948	17.8	117	3.9	714	14.9
	No Cancer Treatment	596	9.7	860	5.2	42	1.4	272	5.7
	Not Known	633	10.3	1,348	8.1	253	8.4	442	9.2
ASA grade*	**1**	447	12.4	1,387	12.5	470	19.2	450	14.4
	2	1,620	44.9	6,154	55.6	1,550	63.4	1,727	55.2
	3	1,293	35.9	3,283	29.7	411	16.8	874	28.0
	4 or 5	246	6.8	244	2.2	15	0.6	76	2.4
	Missing/Not Known (% of total)		2,559 (41.5)		5,512 (33.2)		570 (18.9)		1,653 (34.6)
Surgical Treatment	**Major Resection**	3,365	54.6	10,503	63.3	2,346	77.8	2,969	62.1
	Local Excision	72	1.2	568	3.4	301	10.0	296	6.2
	Stoma	217	3.5	493	3.0	15	0.5	87	1.8
	Stent	99	1.6	136	0.8	9	0.3	22	0.5
	Other	255	4.1	312	1.9	27	0.9	111	2.3
	None Reported	2,157	35.0	4,568	27.6	318	10.5	1,295	27.1

* ASA grade only required if patient undergoes surgical treatment

Figure 3.1
Referral source of the 12,297 patients aged 60 to 74 years diagnosed with bowel cancer between 01 April 2016 and 31 March 2017 in England



3.2 How are patients treated following diagnosis?

Care pathway definitions

Major resection:

Curative intent OR

Non-curative intent

Too little cancer (stage I):

Those undergoing a local resection or polypectomy OR

Those with rectal cancer and pre-treatment M0 undergoing long-course chemoradiotherapy with curative monitoring intent (patients 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

Curative intent

Overall, 76% of patients who could be allocated to a pathway underwent curative treatment. 93% of patients treated with curative intent underwent major resection (Table 3.2). Linkage to SACT data demonstrates that around 35% of patients undergoing curative major resection received adjuvant chemotherapy (Table 3.3). The remaining 7% of curative patients were classified as having no major resection because they had 'too little' cancer.

Age and performance status appear to be important determinants of treatment in those with recorded care pathways. 48% of patients aged 85 and over underwent curative treatment compared to 73% of patients aged 75–84 and 82% of patients aged 65–74. 86% of patients treated with curative intent had a performance status of 0-1 compared to 46% of patients treated with non-curative intent.

Non-curative intent

24% of patients who could be allocated to a pathway underwent non-curative treatment. 18% of patients deemed non-curative underwent major resection. Almost half of these procedures were carried out as an emergency compared to 14% of curative major resections. A further 9% of patients treated with non-curative intent had palliative stoma formation or stent insertion. 42% of patients having non-curative major resection went on to have chemotherapy.

The remainder of non-curative patients were classified as having 'too much' cancer (58%) or being 'too frail' (24%). Of patients who did not undergo a major resection, 30% of those with advanced disease underwent chemotherapy, and negligible numbers of patients deemed too frail for major resection received chemotherapy.

Unknown/other

There remains a substantial group of patients (5,011) whose treatment intent cannot be classified. This is due to incomplete data on reason for no treatment, performance status, care plan intent and pre-treatment M-stage. These patients appear to be a varied cohort and their characteristics are not directly comparable to those patients in any particular pathway.

Geographical variation in care pathways

As shown in Figure 3.2, the proportion of patients undergoing curative major resection ranged from 53%-73%. Some of this variability may be explained by differences in data completeness preventing patients from being allocated to a care pathway. Generally, the cancer alliances with a higher proportion of curative major resections have a lower proportion of patients in the unknown/other pathway.

Table 3.2
Description of the 30,541 patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017, by NBOCA treatment pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		No Major Resection		Major Resection		No Major Resection				Other*	
				Too little cancer				Too much cancer		Too frail			
		N	%	N	%	N	%	N	%	N	%	N	%
Total patients		**18,020 (70.6%)**		**1,327 (5.2%)**		**1,088 (4.3%)**		**3,589 (14.1%)**		**1,506 (5.9%)**		**5,011**	
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)		6 (0.0)		1 (0.1)		1 (0.1)		1 (0.0)		1 (0.1)		4 (0.1)
Age	**<50**	1,088	6.0	52	3.9	104	9.6	188	5.2	11	0.7	385	7.7
	50-64	4,501	25.0	349	26.3	249	22.9	691	19.3	69	4.6	998	19.9
	65-74	6,040	33.5	478	36.0	291	26.7	909	25.3	214	14.2	1,254	25.0
	75-84	5,174	28.7	330	24.9	331	30.4	1,100	30.6	583	38.7	1,414	28.2
	85+	1,217	6.8	118	8.9	113	10.4	701	19.5	629	41.8	960	19.2
Cancer site	**Caecum/ascending colon**	5,226	29.0	36	2.7	390	35.8	959	26.7	435	28.9	1,237	24.7
	Hepatic flexure	796	4.4	7	0.5	54	5.0	136	3.8	66	4.4	156	3.1
	Transverse colon	1,280	7.1	27	2.0	96	8.8	238	6.6	122	8.1	240	4.8
	Splenic flexure/descending colon	1,193	6.6	39	2.9	71	6.5	219	6.1	97	6.4	259	5.2
	Sigmoid colon	4,157	23.1	466	35.1	264	24.3	837	23.3	339	22.5	899	17.9
	Rectosigmoid	1,001	5.6	45	3.4	55	5.1	240	6.7	76	5.0	269	5.4
	Rectal	4,367	24.2	707	53.3	158	14.5	960	26.7	371	24.6	1,951	38.9
Pre-treatment TNM T-stage	**T1**	704	3.9	531	40.0	9	0.8	24	0.7	34	2.3	217	4.3
	T2	3,643	20.2	188	14.2	57	5.2	218	6.1	218	14.5	599	12.0
	T3	8,511	47.2	91	6.9	359	33.0	1,405	39.1	527	35.0	1,802	36.0
	T4	2,681	14.9	19	1.4	427	39.2	1,198	33.4	280	18.6	1,069	21.3
	Tx	1,015	5.6	217	16.4	80	7.4	416	11.6	144	9.6	320	6.4
	T9	1,466	8.1	281	21.2	156	14.3	328	9.1	303	20.1	1,004	20.0
Pre-treatment TNM N-stage	**N0**	8,263	45.9	840	63.3	259	23.8	654	18.2	562	37.3	1,569	31.3
	N1	5,447	30.2	71	5.4	338	31.1	1,204	33.6	378	25.1	1,316	26.3
	N2	2,213	12.3	21	1.6	262	24.1	1,009	28.1	142	9.4	825	16.5
	Nx	629	3.5	108	8.1	73	6.7	399	11.1	121	8.0	289	5.8
	N9	1,466	8.1	287	21.6	154	14.2	319	8.9	302	20.1	1,009	20.1
Pre-treatment TNM M-stage	**M0**	14,865	82.5	973	73.3	415	38.1	313	8.7	982	65.2	2,861	57.1
	M1	999	5.5	13	1.0	513	47.2	3,132	87.3	190	12.6	829	16.5
	Mx	997	5.5	90	6.8	43	4.0	33	0.9	103	6.8	363	7.2
	M9	1,159	6.4	251	18.9	117	10.8	111	3.1	231	15.3	958	19.1
Performance Status	**Normal activity**	8,715	55.3	602	54.6	353	37.4	763	25.1	18	1.3	1,552	42.2
	Walk & light work	4,861	30.8	293	26.6	329	34.9	918	30.3	65	4.8	1,258	34.2
	Walk & all self care: up >50%	1,737	11.0	159	14.4	164	17.4	694	22.9	192	14.1	851	23.2
	Ltd self care: confined >50%	403	2.6	43	3.9	80	8.5	556	18.3	876	64.2	13	0.4
	Completely disabled	46	0.3	6	0.5	17	1.8	103	3.4	213	15.6	1	0.0
	Not recorded		2,258 (12.5)		224 (16.9)		145 (13.3)		555 (15.5)		142 (9.4)		1,336 (26.7)

Table 3.2 /continued

Description of the 30,541 patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017, by NBOCA treatment pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		No Major Resection		Major Resection		No Major Resection				Other*	
				Too little cancer				Too much cancer		Too frail			
		N	%	N	%	N	%	N	%	N	%	N	%
Missing pathology record†		865 (4.8)		359 (27.1)		81 (7.4)		3,465 (96.5)		1,445 (95.9)		4,330 (86.4)	
Final pathology T-stage	**T0**	248	1.4	18	1.9	3	0.3	0	0.0	2	3.3	11	1.6
	T1	1,167	6.8	691	71.4	18	1.8	1	0.8	1	1.6	73	10.7
	T2	2,880	16.8	90	9.3	44	4.4	2	1.6	1	1.6	61	9.0
	T3	8,903	51.9	33	3.4	312	31.0	13	10.5	8	13.1	167	24.5
	T4	3,828	22.3	1	0.1	607	60.3	29	23.4	11	18.0	193	28.3
	Tx	47	0.3	36	3.7	10	1.0	35	28.2	4	6.6	63	9.3
	T9	82	0.5	99	10.2	13	1.3	44	35.5	34	55.7	113	16.6
Final pathology N-stage	**N0**	10,271	59.9	577	59.6	307	30.5	15	12.1	12	19.7	260	38.2
	N1	4,228	24.6	14	1.4	289	28.7	9	7.3	6	9.8	111	16.3
	N2	2,429	14.2	6	0.6	385	38.3	18	14.5	5	8.2	94	13.8
	Nx	134	0.8	236	24.4	12	1.2	38	30.6	4	6.6	98	14.4
	N9	92	0.5	135	13.9	13	1.3	44	35.5	34	55.7	118	17.3
Final pathology M-stage	**M0**	15,241	88.8	857	88.5	475	47.2	48	38.7	45	73.8	415	60.9
	M1	920	5.4	7	0.7	491	48.8	69	55.6	4	6.6	99	14.5
	Mx	909	5.3	55	5.7	32	3.2	7	5.6	6	9.8	106	15.6
	M9	85	0.5	49	5.1	9	0.9	0	0.0	6	9.8	61	9.0

*Other includes pathways with small numbers of cases e.g. 288 patients who are recorded as declining treatment and others with data inconsistencies e.g. Curative Care Plan Intent but no recorded treatment

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

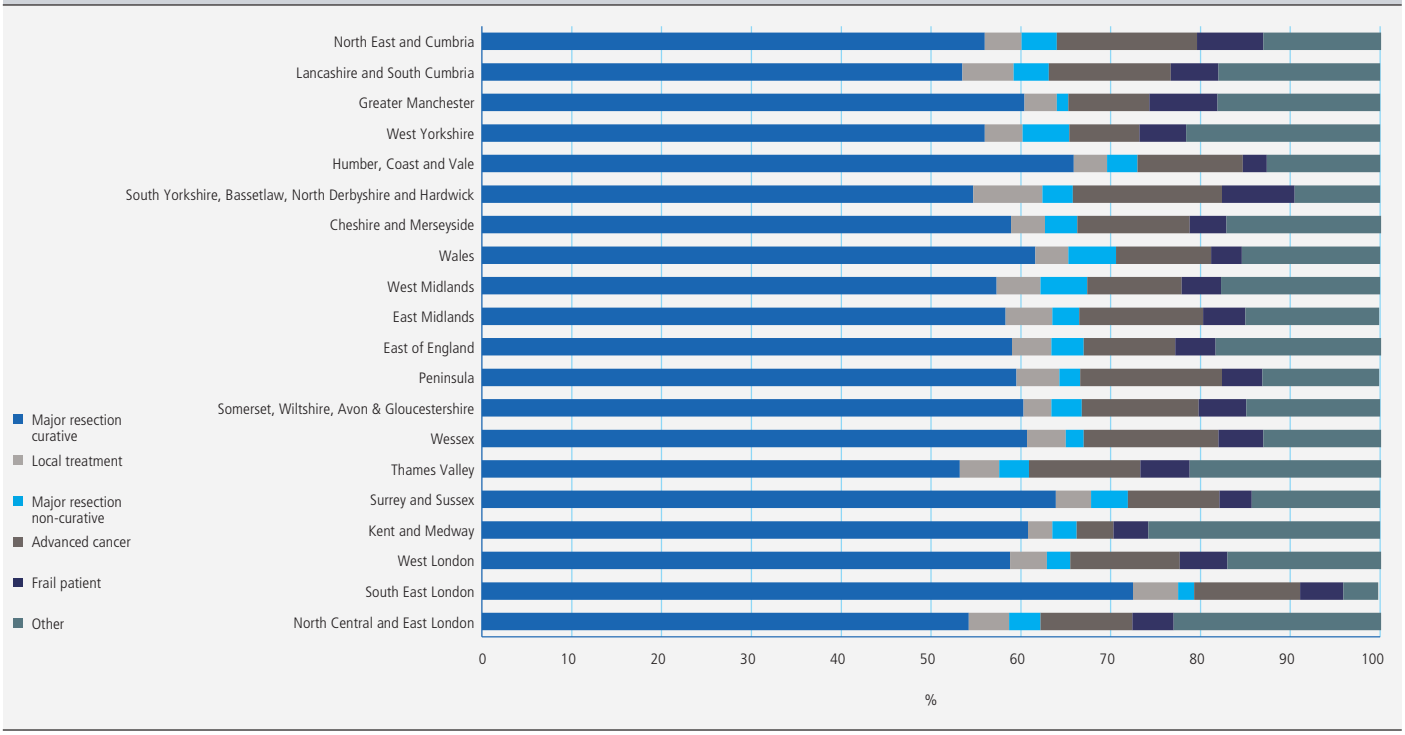
Table 3.3
Description of management of the 30,541 patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017, by NBOCA treatment pathway

		Curative				Non Curative/No Treatment						Unknown pathway or unknown treatment intent	
		Major Resection		No Major Resection		Major Resection		No Major Resection				Other*	
				Too little cancer				Too much cancer		Too frail			
		N	%	N	%	N	%	N	%	N	%	N	%
Total no. of patients		**18,020**		**1,327**		**1,088**		**3,589**		**1,506**		**5,011**	
Planned treatment†	**Surgery**	16,291	90.4	1,145	86.3	634	58.3	462	12.9	169	11.2	1,834	36.6
	Radiotherapy	1,121	6.2	95	7.2	65	6.0	276	7.7	114	7.6	909	18.1
	Chemotherapy	2,143	11.9	57	4.3	328	30.1	1,471	41.0	49	3.3	1,060	21.2
	Specialist Palliative Care	10	0.1	9	0.7	88	8.1	1,170	32.6	437	29.0	489	9.8
	Brachytherapy	5	0.0	2	0.2	1	0.1	2	0.1	4	0.3	16	0.3
	None	672	3.7	107	8.1	164	15.1	540	15.0	772	51.3	1,351	27.0
Reason for no treatment	**Patient declined**	7	0.0	6	0.5	5	0.5	15	0.4	56	3.7	288	5.7
	Unfit: co-morbidity	8	0.0	11	0.8	27	2.5	51	1.4	761	50.5	1	0.0
	Unfit: advanced disease	17	0.1	40	3.0	167	15.3	1,244	34.7	0	0.0	0	0.0
	Multiple	0	0.0	0	0.0	8	0.7	160	4.5	59	3.9	2	0.0
	NK	269	1.5	50	3.8	136	12.5	108	3.0	99	6.6	403	8.0
	Missing	17,719	98.3	1,220	91.9	745	68.5	2,011	56.0	531	35.3	4,317	86.2
Active monitoring intent	**Curative**	2,354	13.1	182	13.7	32	2.9	22	0.6	16	1.1	205	4.1
	Palliative	40	0.2	5	0.4	125	11.5	589	16.4	226	15.0	244	4.9
	Unknown or uncertain future intent	262	1.5	38	2.9	46	4.2	123	3.4	130	8.6	306	6.1
	No monitoring	10,634	59.0	767	57.8	605	55.6	1,973	55.0	771	51.2	2,727	54.4
	Missing	4,730	26.2	335	25.2	280	25.7	882	24.6	363	24.1	1,529	30.5
First definitive non-surgical treatment	**Long Course RT**	1,076	6.0	63	4.7	52	4.8	60	1.7	21	1.4	472	9.4
	Short Course RT	366	2.0	25	1.9	23	2.1	160	4.5	82	5.4	348	6.9
	Other/Brachy	10	0.1	0	0.0	1	0.1	36	1.0	16	1.1	89	1.8
	Chemotherapy	768	4.3	2	0.2	127	11.7	1,068	29.8	27	1.8	986	19.7
	None Recorded	15,800	87.7	1,237	93.2	885	81.3	2,265	63.1	1,360	90.3	3,116	62.2
Surgical Urgency	**Elective/Scheduled**	2,592	14.4	40	3.2	527	48.7	290	52.2	65	56.5	483	43.9
	Emergency/Urgent	15,371	85.6	1,197	96.8	556	51.3	266	47.8	50	43.5	617	56.1
	Missing (% of total)	57 (0.3)		90 (6.8)		5 (0.5)		3,033 (84.5)		1,391 (92.4)		3,911 (78.0)	
Type of Surgery	**Major Resection**	18,020	100.0	0	0.0	1,088	100.0	0	0.0	0	0.0	190	3.8
	Local Excision	0	0.0	1,274	96.0	0	0.0	0	0.0	0	0.0	0	0.0
	Stoma	0	0.0	2	0.2	0	0.0	326	9.1	53	3.5	431	8.6
	Stent	0	0.0	0	0.0	0	0.0	123	3.4	38	2.5	105	2.1
	Other	0	0.0	1	0.1	0	0.0	118	3.3	28	1.9	406	8.1
	None recorded	0	0.0	50	3.8	0	0.0	3,022	84.2	1,387	92.1	3,879	77.4
Treatment Aim following surgery	**Palliative**	319	1.8	19	1.5	580	53.3	496	87.5	95	79.8	386	34.1
	Curative	17,223	95.6	1,174	91.9	402	36.9	39	6.9	16	13.4	478	42.2
	Uncertain	478	2.7	84	6.6	106	9.7	32	5.6	8	6.7	268	23.7
	Missing	0	0.0	50	3.8	0	0.0	3,022	84.2	1,387	92.1	3,879	77.4
Post-operative Destination	**Standard ward**	6,550	54.9	628	90.6	302	44.5	276	77.3	49	73.1	448	74.3
	High Care Area	1,818	15.2	40	5.8	106	15.6	37	10.4	11	16.4	51	8.5
	HDU Level 2	2,343	19.6	18	2.6	159	23.5	23	6.4	3	4.5	62	10.3
	ITU Level 3	1,219	10.2	7	1.0	111	16.4	21	5.9	4	6.0	42	7.0
	Missing (% of total)	6,090 (33.8)		634 (47.8)		410 (37.7)		3,232 (90.1)		1,439 (95.6)		4,408 (88.0)	
Post-operative Chemotherapy	**Yes**	6,291	34.9	68	5.3	458	42.1	235	41.4	5	4.2	391	34.5
	No	11,729	65.1	1,209	94.7	630	57.9	332	58.6	114	95.8	741	65.5
	N/A	0 (0.0)		50 (3.8)		0 (0.0)		3,022 (84.2)		1,387 (92.1)		3,879 (77.4)	

* Other includes pathways with small numbers of cases e.g. 288 patients who are recorded as declining treatment and others with data inconsistencies e.g. Curative Care Plan Intent but no recorded treatment

† Patients can have >1 planned treatment recorded therefore the percentage total may be greater than 100

Figure 3.2
Treatment pathway according to cancer alliance/Wales for patients diagnosed with bowel cancer between 01 April 2016 and 31 March 2017



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

The National Institute for Health and Care Excellence (NICE) guidance recommends that systemic chemotherapy should be offered to all patients with stage III colon or rectal cancer who, after surgery, are fit enough to tolerate it.

We looked at the receipt and timing of adjuvant chemotherapy in a cohort of stage III colorectal cancer patients who were potentially eligible for adjuvant chemotherapy based on information in the NBOCA dataset and SACT:

- Treatment aim – recorded as curative
- Pathological TNM – node positive disease (N1/N2) and no metastatic disease (M0)
- Chemotherapy started after diagnosis and major resection
- Chemotherapy intent recorded as adjuvant, curative or missing intent in SACT
- No neo-adjuvant radiotherapy recorded

Adjuvant chemotherapy was defined as a regimen consisting of Fluorouracil, Oxaliplatin, Fluorouracil + Oxaliplatin, Capecitabine or Capecitabine + Oxaliplatin that started within 90 days of major resection. Adjuvant chemotherapy regimens starting between 91 and 182 days were also recorded, along with other chemotherapy regimens starting within 182 days.

4,190 patients were identified, of whom 54% received adjuvant chemotherapy within 90 days of major resection and 3% received adjuvant chemotherapy within 91–182 days. A small number of patients received other chemotherapy regimens within 182 days.

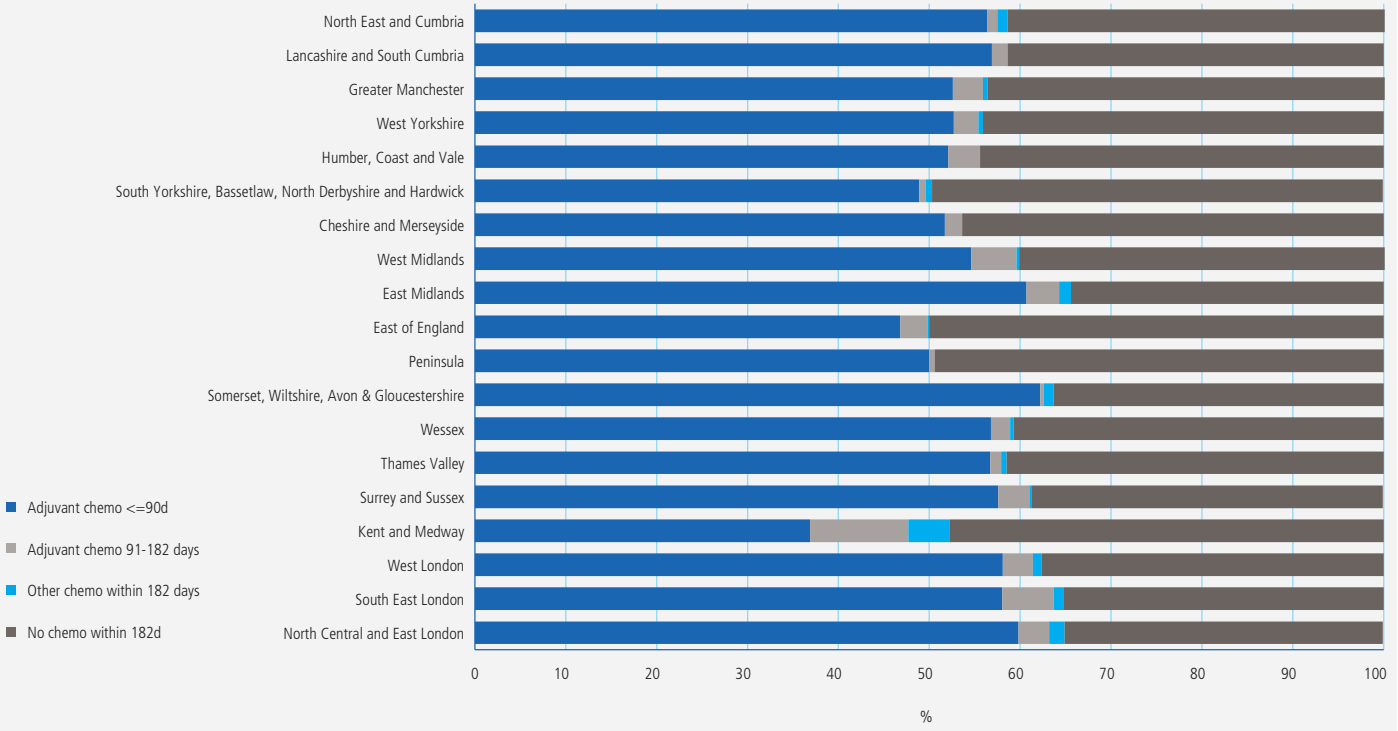
Of those patients receiving chemotherapy, 19% were aged 75 years or older. As well as being younger, patients receiving chemotherapy had better functional status (ASA 1/2 and performance status 0/1) compared to those who did not.

Of the patients undergoing anterior resection, 61% had adjuvant chemotherapy within 90 days compared to 52% undergoing APER and 40% undergoing Hartmann's procedure. 56% of patients having elective surgery received chemotherapy within 90 days compared to 47% of those having emergency surgery.

Geographical variation in adjuvant treatment

The use of adjuvant chemotherapy in patients with stage III disease ranged from 37% in Kent and Medway to 62% in Somerset, Wiltshire, Avon & Gloucestershire, as displayed in Figure 3.3. SACT data is not available for Wales.

Figure 3.3
Adjuvant chemotherapy in patients with stage III colon and rectal cancer by cancer alliance for patients diagnosed from 01 April 2016 – 31 March 2017



Recommendations – Care pathways:

3(a) Efforts should continue to increase public awareness of the symptoms and signs of bowel cancer so that it is diagnosed earlier.

3(b) Bowel cancer screening programmes should be further promoted, emphasising improved outcomes. The introduction of the Faecal Immunochemical Test (FIT) into the Bowel Cancer Screening Programme should help to improve screening uptake rate and potentially increase the number of cancers and adenomas detected.

3(c) Healthcare professionals should refer patients promptly from primary care according to the NICE suspected cancer pathway for colorectal cancer. Commissioners should be aware of NICE DG30 guidance on the additional use of FIT testing for patients with low-risk symptoms. Both of these should help to reduce the proportion of patients presenting as an emergency.

3(d) Care commissioners should facilitate provision and access to endoscopy services in order to cope with the demands of increased screening uptake, an ageing population and increased clinical demand/public awareness.

3(e) Trusts/hospitals/MDTs should make efforts to improve data collection for data items: *performance status, care plan intent and pre-treatment M-stage*, to facilitate allocation of care pathways to all patients, enabling improved understanding of variation.

3(f) Further work should be carried out to better describe and understand the geographical variation in chemotherapy administration.

4. Surgical care

Surgical care – NBOCA 2018

- Overall, 90-day mortality after major surgery has steadily reduced over five years from 4.8% in 2012/13 to 3.3% in 2016/17.
- 90-day mortality following emergency surgery continues to decrease from 16.3% in 2012/13 to 11.5% in 2016/17, whilst elective mortality has plateaued at 2.0%.
- The median length of hospital stay following elective major surgery is 7 days and following emergency major surgery is 10 days.
- One in ten patients had an emergency readmission within 30 days of major resection; this remains stable over time.
- The proportion of major resections performed laparoscopically continues to increase, but with significant geographical variation across cancer alliances (37-74%).
- One in four patients have an emergency major resection completed laparoscopically.
- 82% of patients undergoing colonic 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 3 years, the proportion of patients undergoing major resection has remained stable. Unadjusted post-operative mortality has decreased over the past 4 years and appears to have plateaued in 2016/17 at 3.3% (Table 4.1). It is noted that there is a year on year increase in the number of type 2 objections (Section 2.4) which has the potential to affect mortality analyses.

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

	2012–13		2013–14		2014–15		2015–16		2016–17	
	N	%	N	%	N	%	N	%	N	%
Total patients*	31,368		30,666		31,020		30,703		29,951	
Undergoing major resection	20,094	64.1	19,696	64.2	19,584	63.1	19,347	63.0	18,849	62.9
Dead at 90 days after surgery, out of those undergoing major resection	939	4.8	760	4.0	721	3.8	646	3.4	585	3.3
Missing mortality (% of total)		499 (2.5)		557 (2.8)		627 (3.2)		602 (3.1)		950 (5.0)

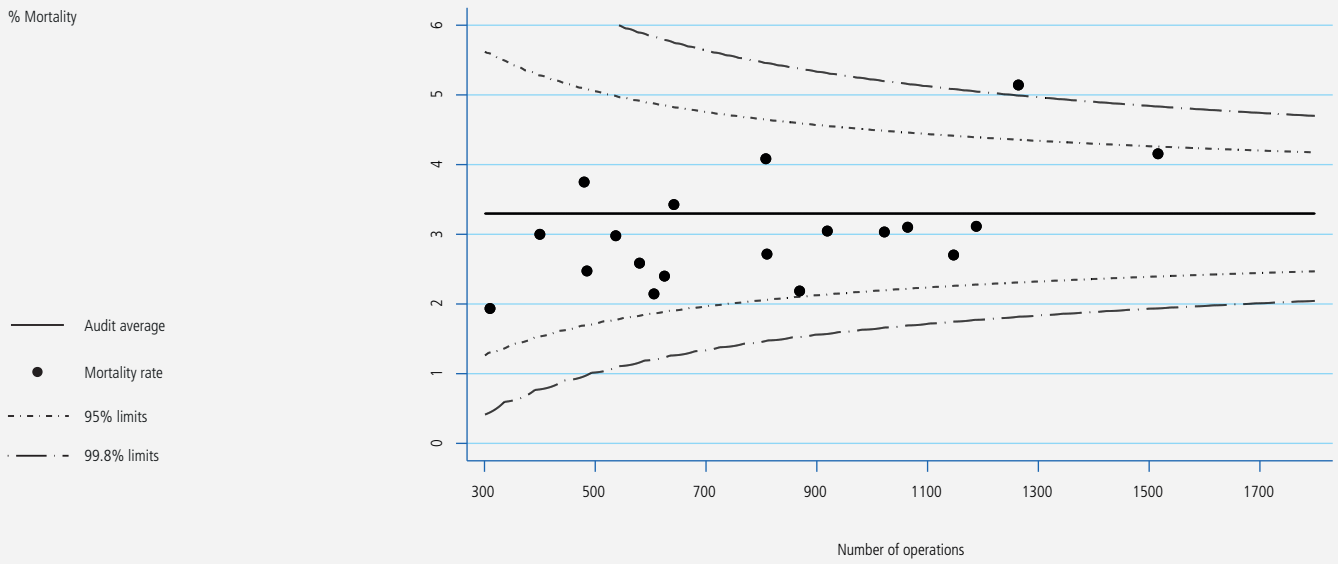
* Total patients entered onto CAP when patient identifiers sent for linkage to ONS/HES/PEDW: 590 patients were added to the 2016-17 cohort after linkage

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

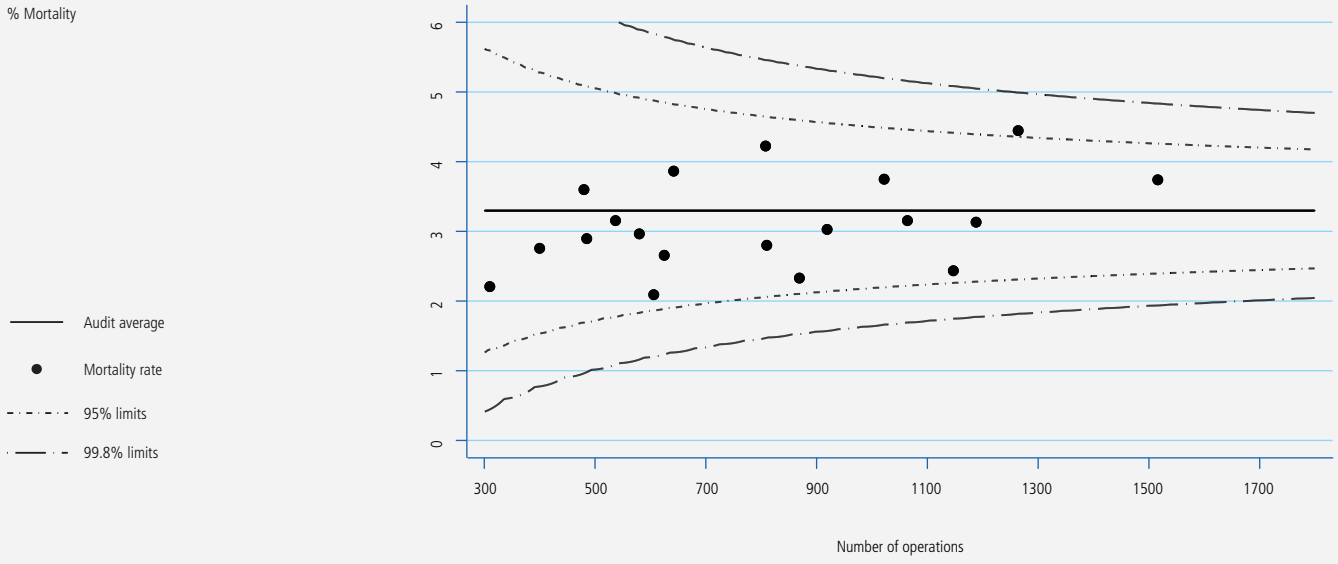
The variation in 90-day post-operative mortality across cancer alliances/Wales is shown in Figure 4.1.
When making comparisons between cancer alliances/Wales and between trusts/hospitals/MDTs, 90-day mortality was adjusted for the 9 risk factors described in the methodology section. After risk adjustment there was a single cancer alliance which was above the inner funnel 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 01 April 2016 and 31 March 2017

Observed 90-day mortality by Cancer Alliance/Wales



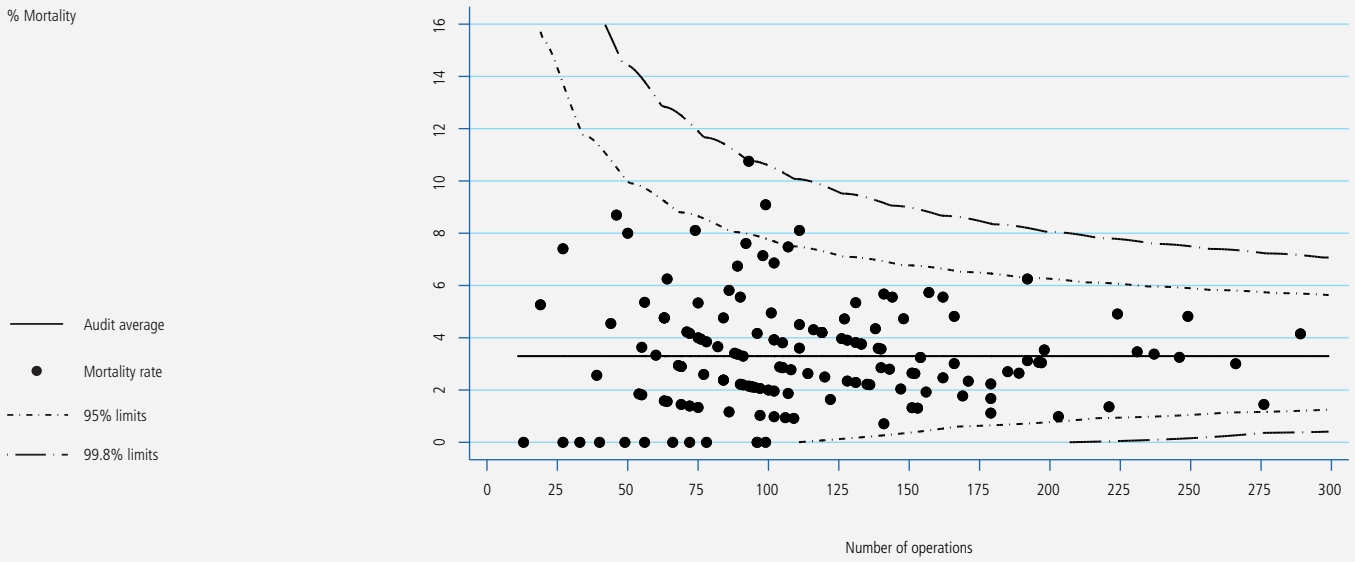
Adjusted 90-day mortality by Cancer Alliance/Wales



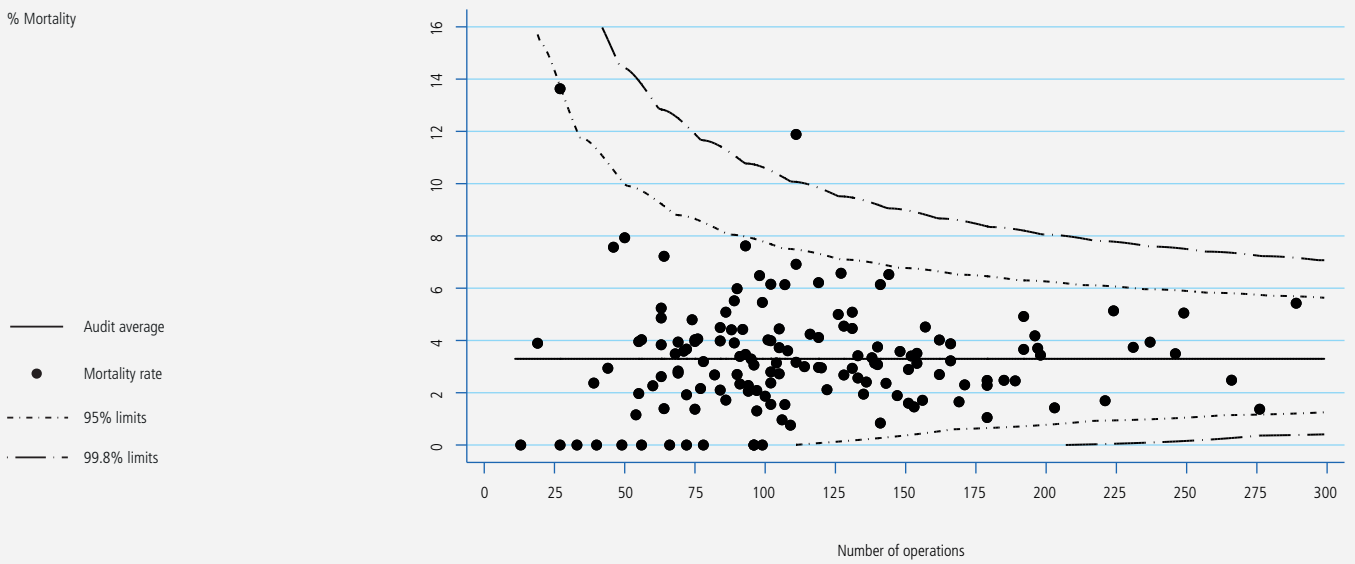
Funnel plots for 90-day post-operative mortality by trust/hospital/MDT, both observed and risk-adjusted, are presented in Figure 4.2. This year, after adjustment, there was one individual trust/hospital/MDT lying above the outer funnel limits, which could be due to chance.

Figure 4.2
Observed and adjusted 90-day post-operative mortality (elective and emergency admissions) by trust/hospital/MDT with more than ten operations for patients diagnosed between 01 April 2016 and 31 March 2017

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

20% of patients were diagnosed with bowel cancer following an emergency admission (Table 4.2). This varied according to trust/hospital/MDT with less than 10% of major resections classified as urgent/emergency in 26 of these and over 20% classified as urgent/emergency in 38 of these (Table 8.3).

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

	2012–13		2013–14		2014–15		2015–16		2016–17	
	N	%	N	%	N	%	N	%	N	%
Total patients*	31,376		30,679		31,021		30,704		29,951	
Emergency admission	5,827	21.3	5,758	21.6	5,643	20.9	5,475	20.7	4,868	19.9
Elective admission	21,483	78.7	20,878	78.4	21,349	79.1	21,036	79.3	19,551	80.1
Missing (% of total)	4,066 (13.0)		4,043 (13.2)		4,029 (13.0)		4,193 (13.7)		5,532 (18.5)	

* Total patients entered onto CAP when patient identifiers sent for linkage to ONS/HES/PEDW: 590 patients were added to the 2016-17 cohort after linkage

The 90-day mortality following elective or scheduled surgery for bowel cancer was 2.0% (Table 4.3). Elective post-operative mortality appears to have plateaued over the past couple of years but, overall, it has reduced from 2.9% in 2012/13 to 2.0% in 2016/17. There continues to be a progressive decline in mortality following emergency surgery from 16.3% in 2012/13 to 11.5% in 2016/17, and similarly with urgent procedures from 13.0% to 7.6%.

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

		2012–13		2013–14		2014–15		2015–16		2016–17	
		N	%	N	%	N	%	N	%	N	%
Total patients undergoing major resection eligible for linkage		20,094		19,696		19,584		19,347		18,849	
Overall 90-day mortality*		939/19,595	4.8	759/19,140	4.0	721/18,959	3.8	644/18,747	3.4	585/17,848	3.3
90-day mortality by urgency of operation	Elective	364/12,634	2.9	279/12,463	2.2	254/12,220	2.1	230/11,709	2.0	218/11,174	2.0
	Scheduled	123/3,820	3.2	91/3,597	2.5	87/3,680	2.4	77/4,010	1.9	76/3,703	2.1
	Urgent	169/1,302	13.0	132/1,256	10.5	110/1,220	9.0	96/1,130	8.5	91/1,195	7.6
	Emergency	279/1,711	16.3	254/1,791	14.2	268/1,808	14.8	241/1,866	12.9	198/1,728	11.5
	Missing urgency of operation	4/128	3.1	3/33	9.1	2/31	6.5	0/32	0.0	2/48	4.2

* some patients are missing mortality data due to Type 2 objections (section 2.4), 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.

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 remains stable at 7 days (IQR 5-12). Length of stay varies according to factors including patient age, baseline functional status, operative urgency and surgical access.

Median length of stay in patients aged 75 or less is 7 days (IQR 5-10) and 9 days (IQR 6-16) in patients aged 85 or older. Median length of stay for patients with ASA grade 1 is 6 days (IQR 4-9) compared to 9 days (IQR 6-15) for ASA grade 3 or above. Similar differences were found with performance status score. Interestingly, median length of stay did not vary substantially according to Charlson co-morbidity score with median length of stay 7 days in those with no co-morbidities, compared to 8 days in those with 2 or more co-morbidities.

Median length of stay is 7 days (IQR 5-11) for elective major resection compared to 10 days (IQR 7-18) for emergency major resection. Patients who underwent open or laparoscopic converted to open procedures had a median length of stay of 9 days (IQR 7-15) compared to 6 days (IQR 4-9) in those undergoing laparoscopic completed procedures.

Approximately one third of patients undergoing emergency major resection remained in hospital at least 14 days following major resection, compared to one sixth of elective patients.

Geographical variation in length of stay

There was substantial variation in the length of stay according to cancer alliance/Wales for both elective and emergency major resection, as shown in Figure 4.3a and 4.3b

In both elective and emergency major resections, the most variation was seen in the proportion of patients staying 5 days or less. This varied from 23% to 49%, and 7% to 38%, in elective and emergency patients respectively. There was considerably more variation across all time periods for length of stay after emergency major resection in comparison to elective procedures.

The risk-adjusted proportion of patients with a length of stay of greater than or equal to 5 days is shown in Table 8.3.

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, 10.5% patients had an emergency readmission within 30 days of surgery. This has remained stable over the last five years (Table 4.4).

Table 4.4
Emergency hospital readmission rate within 30 days of surgery for patients linked to HES/PEDW who underwent major resection in England and Wales, by audit year

		2012–13		2013–14		2014–15		2015–16		2016–17	
		N	%	N	%	N	%	N	%	N	%
Total patients undergoing major resection		**20,101**		**19,697**		**19,584**		**19,348**		**18,849**	
Emergency readmission within 30 days	**Yes**	1,851	10.1	1,842	10.3	1,823	10.2	1,777	10.1	1,707	10.5
	No	16,416	89.9	16,112	89.7	16,075	89.8	15,738	89.9	14,493	89.5
	Missing (% of total)	1,834 (9.1)		1,743 (8.8)		1,686 (8.6)		1,833 (9.5)		2,649 (14.1)	

Figure 4.3a
Length of hospital stay after elective major surgery in HES/PEDW by cancer alliance/Wales

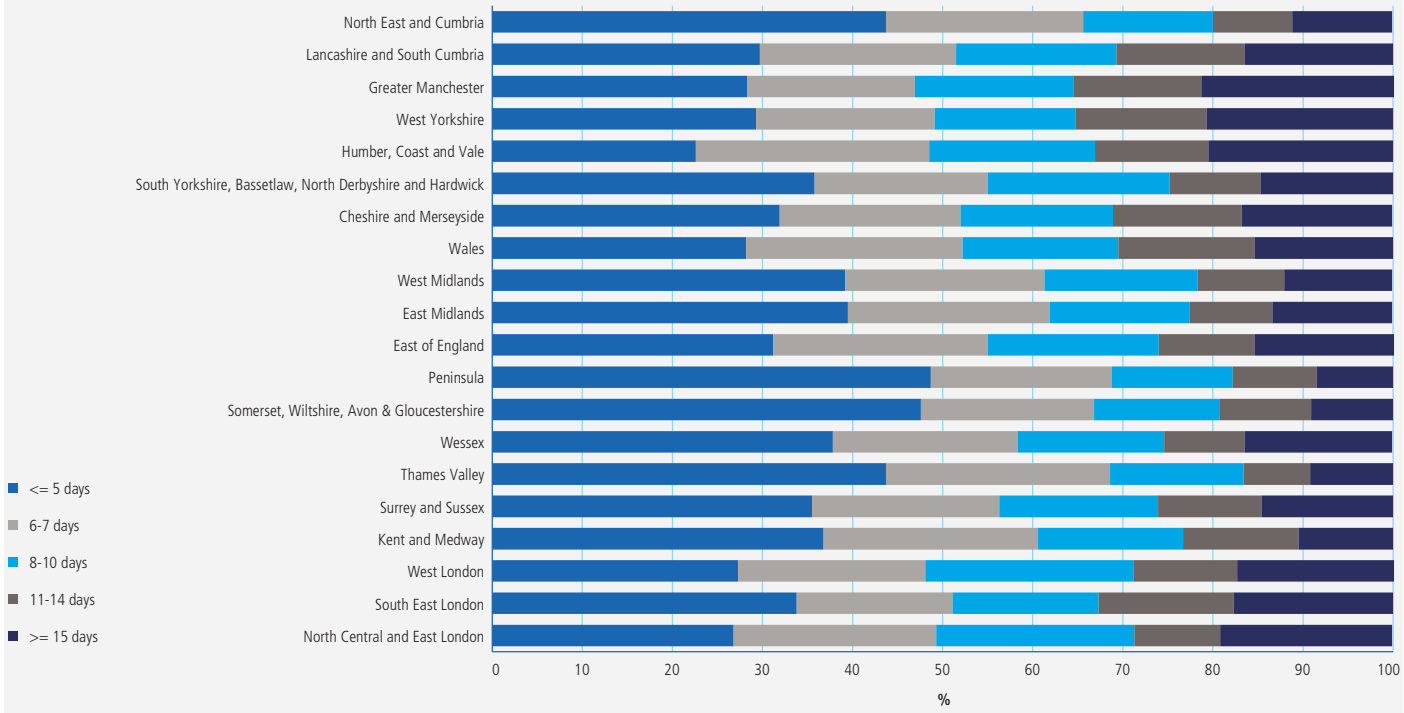
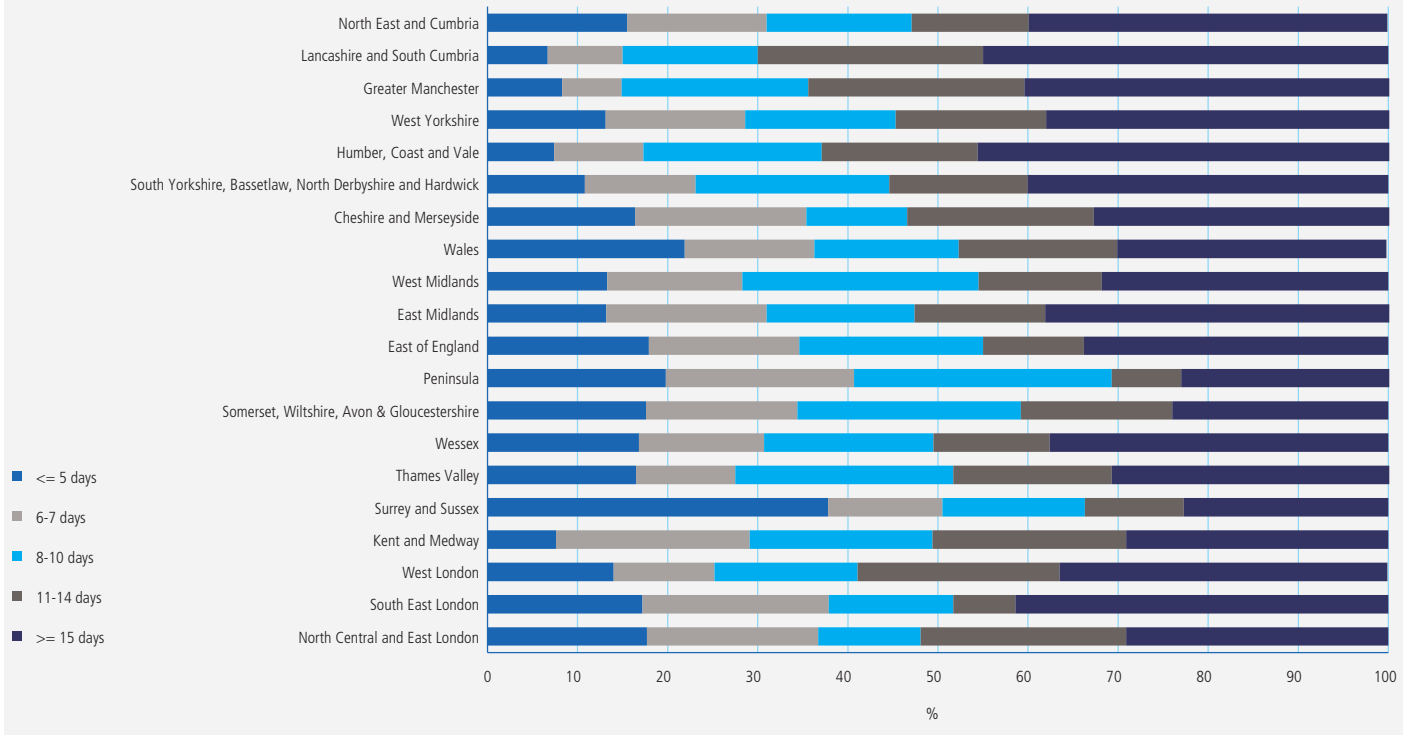


Figure 4.3b
Length of hospital stay after emergency major surgery in HES/PEDW by cancer alliance/Wales



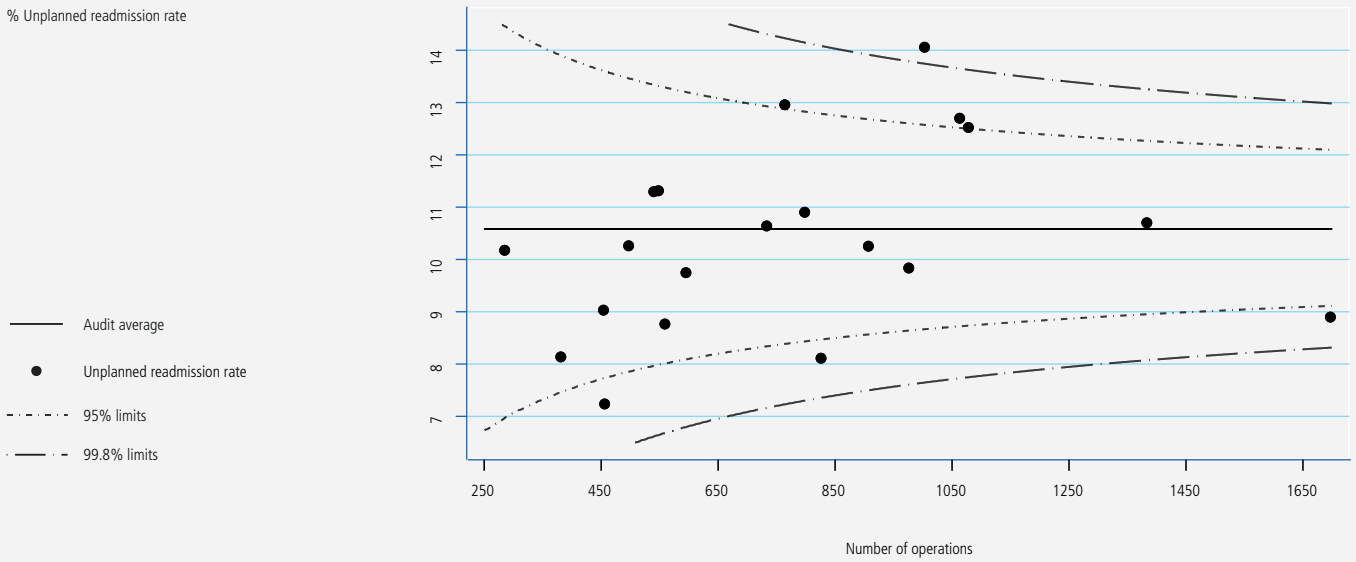
Geographical variation in 30-day emergency readmission

As shown in Figure 4.4, after adjustment, one trust/hospital/MDT was outside the outer funnel limit as well as two trusts/hospitals/MDTs outside the inner limit.

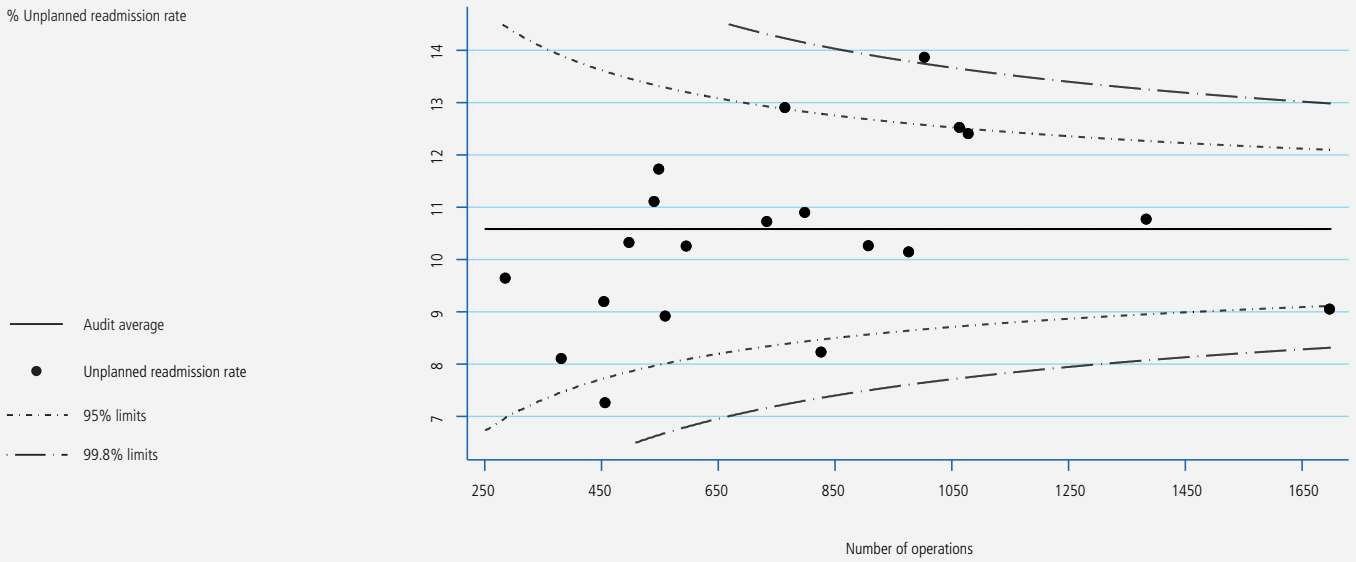
30-day emergency readmission varied across cancer alliances/Wales from 7.3% in Lancashire and South Cumbria to 13.9% in the East Midlands.

Figure 4.4
Observed and adjusted 30-day emergency readmission rate by cancer alliance/Wales for patients diagnosed between 01 April 2016 and 31 March 2017

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



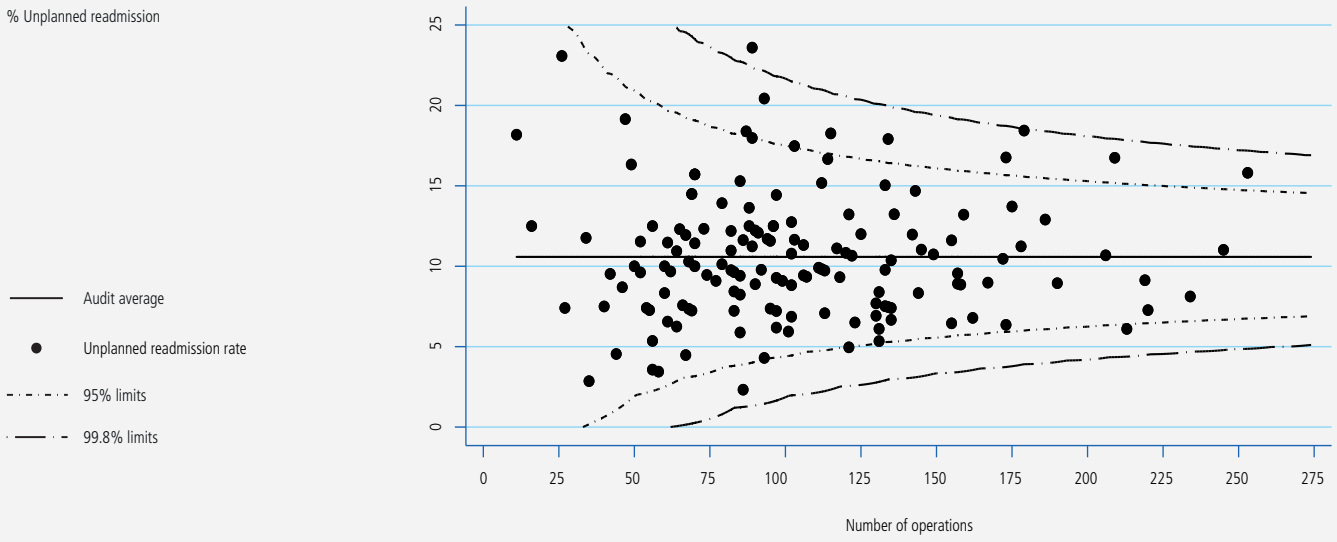
Adjusted 30-day unplanned readmission rate by Cancer Alliance/Wales



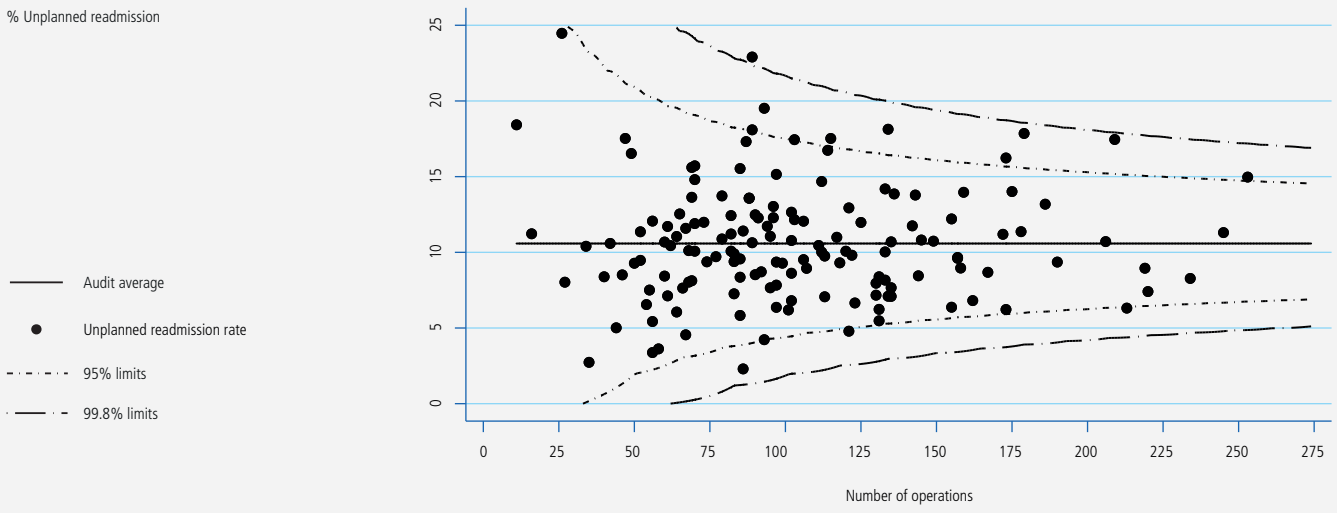
As seen in Figure 4.5, one trust/hospital/MDT was above the outer funnel limit and a further nine trusts/hospitals/MDTs were above the inner limit for adjusted readmission rates.

Figure 4.5
Observed and adjusted 30-day emergency readmission rate by English NHS trust/Welsh MDT for patients diagnosed between 01 April 2016 and 31 March 2017

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 divides surgical access into three categories:

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

Trends in the use of laparoscopic surgery

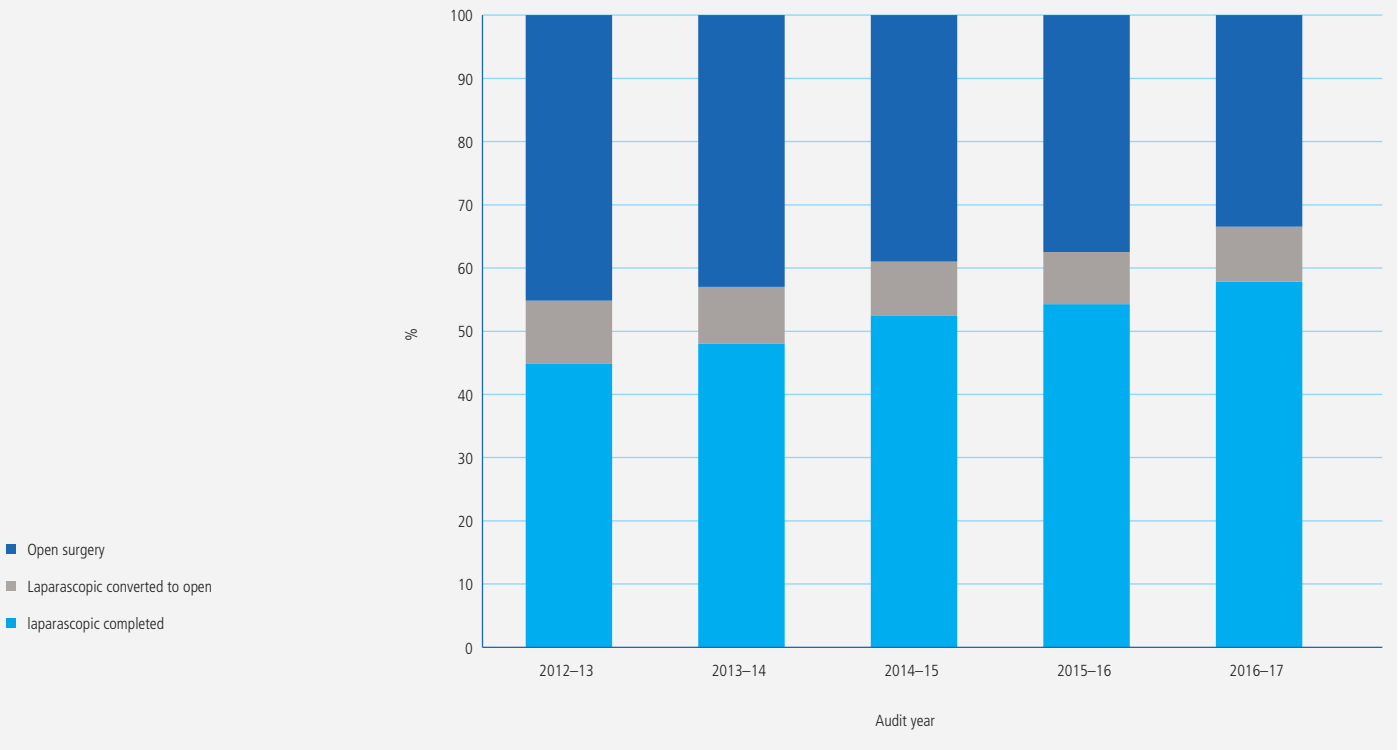
As shown in Figure 4.6, the proportion of major resections performed laparoscopically has continued to increase for an additional year. In 2016/17, 57.8% of procedures were completed laparoscopically compared to 44.9% in 2012/13. There has been no apparent rebound increase in unplanned conversion rate (currently, 8.7% compared to 8.3% in 2015/16 and 8.5% in 2014/15).

Use of laparoscopic surgery varied according to age, with reduced proportions at the extremes of age. 70% patients aged 65–74 years had surgery started laparoscopically compared to 59% aged 85 and over. Patients were also less likely to have their surgery done laparoscopically if they had a higher ASA grade and more advanced disease.

Patients with rectal/rectosigmoid lesions were most likely to have laparoscopic surgery with 71% and 73% respectively. In contrast, splenic flexure and transverse colon lesions were least likely to be undertaken laparoscopically with 54% and 53% respectively.

Just over one quarter of patients undergoing emergency major resection had this completed laparoscopically, with a 4% conversion rate for this group. (Vallance AE *et al*. Role of emergency laparoscopic colectomy for colorectal cancer: a population-based study in England. *Ann Surg.* 2018)

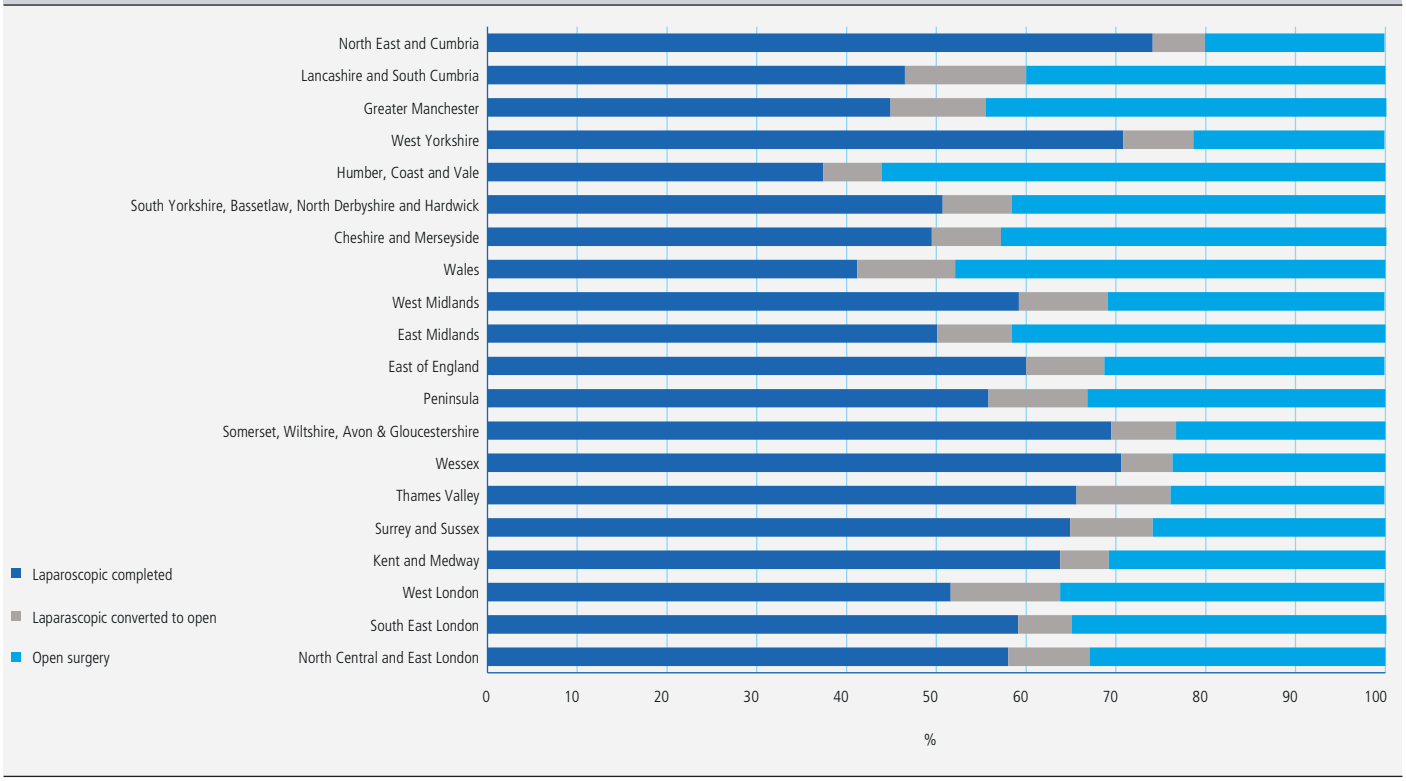
Figure 4.6
Surgical access, by audit year



Geographical variation in laparoscopic surgery

The proportion of patients with laparoscopic completed resections ranged from 37% to 74% across cancer alliances/Wales (Figure 4.7). Rates of unplanned conversion to an open procedure ranged across cancer alliances/Wales from 5% to 14%. The use of laparoscopic surgery also varied widely between trusts/hospitals/MDTs (Table 8.3). There were 10 trusts/hospitals/MDTs with less than 50% of major resections attempted laparoscopically.

Figure 4.7
Surgical access, by cancer alliance/Wales



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

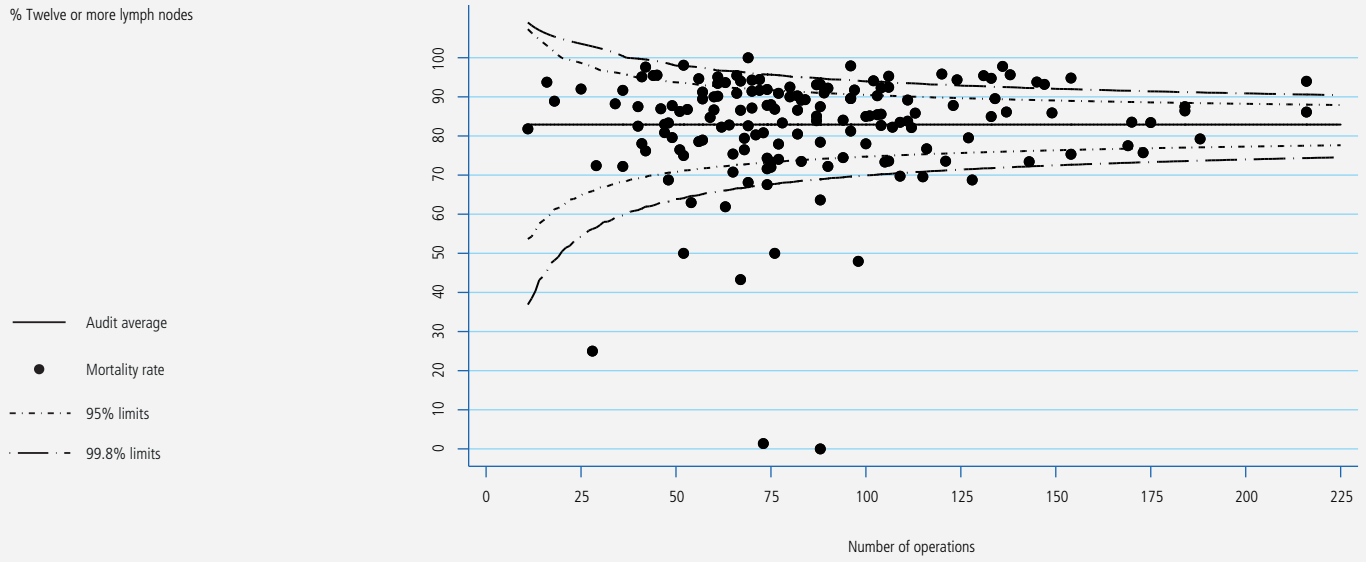
This is the first year that we have reported the proportion of patients undergoing colonic resection who are reported to have at least 12 lymph nodes examined. This will form part of the Clinical Outcomes Publication. The national average rate is 82%.

Geographical variation in lymph node yield

As shown in Figure 4.8, the proportion of patients undergoing colonic resection reported to have had 12 or more lymph nodes examined demonstrated huge variation with a range from 0% to 100%. The two trusts/hospitals/MDTs with low reporting rates submitted no, or very little, data.

Figure 4.8
Observed proportion patients undergoing colonic resection with ≥12 lymph nodes reported to have been examined by English NHS trust/Welsh MDT* for patients diagnosed between 01 April 2016 and 31 March 2017

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

4.6 Emergency colorectal cancer surgery

Despite ongoing improvements and increased media awareness of bowel cancer screening, approximately 20% of colorectal cancer patients will still present as an emergency.

Importantly, this group of patients have a recognised increased morbidity and mortality compared to patients undergoing elective/scheduled surgery. The latest mortality figures from emergency colorectal cancer surgery suggest a 90-day mortality of 11.5%, almost six-fold the risk of patients undergoing elective colorectal resection. Identifying potential areas for improved care in this group of patients could significantly improve outcomes.

NBOCA patients who need an emergency operation for their colorectal tumour should also be recorded in NELA (National Emergency Laparotomy Audit). NELA is a national clinical audit and part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) overseen by HQIP. Its purpose is to facilitate the improvement of quality of care for patients undergoing emergency laparotomy in hospitals in England and Wales.

NBOCA/NELA linkage

There are four main groups of patients who should be present in both audit datasets:

1. Patients undergoing an elective procedure for their colorectal cancer who subsequently need an emergency operation for complications
2. Patients who have an emergency laparotomy for their colorectal cancer as a temporary measure who go on to have a definitive elective procedure at a later date, for example, emergency de-functioning stoma formation to relieve obstruction followed by elective bowel resection
3. Patients who have primary emergency resection of their tumour
4. Patients who have an emergency laparotomy that does not remove their tumour, for example, the formation of a de-functioning stoma

Linkage of NBOCA and NELA provides a unique opportunity to explore the processes of care and outcomes of colorectal cancer patients presenting as an emergency. Due to the size and complexity of the datasets we are initially reporting descriptive data at a national level. Further in depth work is planned to investigate this important group of patients.

According to NBOCA, 62,161 patients underwent a major resection, stoma formation or "other" procedure between January 2014 and December 2016. 10,975 of these procedures were recorded as emergency/urgent surgery and therefore would be expected to also be present in NELA. Of these patients, 6,223 (56.7%) could be linked to a NELA procedure in the same time frame with a procedure date that was within one day of the NBOCA date of surgery.

Which speciality and seniority of surgeon are operating on emergency colorectal cancer patients?

A series of key documents in recent years (e.g. The Higher Risk Surgical Patient, Emergency Surgery: standards for unscheduled care, Emergency General Surgery Consensus Statement 2012 (Association of Surgeons of Great Britain and Ireland)) have highlighted the importance of the presence of a Consultant surgeon in theatre for emergency cases. Studies have shown that input from senior decision-makers early in patients' care pathways improves outcomes and increases efficiency, with consultant-delivered care deemed best practice.

In addition to the seniority of surgeon, there has been an increasing focus on the speciality of the surgeon present. In recent years, general surgeons have become increasingly focussed in their areas of expertise. This sub-specialisation, whilst improving outcomes for elective procedures, has created difficulties in providing an appropriately trained and available workforce to deal with emergency patients.

The recently published document 'Clinical advice for the Commissioning of the Whole Bowel Cancer Pathway. Colorectal Cancer Clinical Expert Group; 2017' recommends that any colorectal cancer patient presenting as an emergency would be operated on by a colorectal specialist surgeon. This might be achieved via networks of neighbouring hospitals, allowing transfer of patients according to clinical need and where the resources they require are best found.

In our cohort there has been a steady increase in the proportion of NBOCA patients undergoing emergency surgery whose procedure was performed by a Consultant surgeon (89.8% in 2014 to 93.5% in 2016).

The completeness of surgical speciality has increased over time from 85.0% in 2014 to 92.5% in 2016, along with a slight increase in the reported proportion of patients whose surgery was performed by a general or emergency surgeon. There has been little change in the proportion of cases operated on by a colorectal surgeon with around two thirds of patients having their procedure performed by a colorectal specialist (Table 4.5).

Almost all patients whose procedure was performed by a Colorectal, General or Emergency specialist were operated on by a consultant. The speciality of most procedures performed by non-consultant grade surgeons was recorded as other/missing.

Table 4.5
Speciality and grade of operating surgeon from NELA in NBOCA patients recorded as undergoing an emergency bowel procedure 01 January 2014–31 December 2016

		2014		2015		2016	
		N	%	N	%	N	%
NBOCA patients whose surgical procedure was recorded as emergency/urgent		**3,655**		**3,735**		**3,585**	
Total linked to NELA		**1,992**	**54.5**	**2,169**	**58.1**	**2,062**	**57.5**
Recorded as first operative procedure in NELA		**1,967**		**2,151**		**2,048**	
Speciality of Operating Surgeon	Colorectal Surgery	1,096	65.3	1,227	65.0	1,236	65.2
	General Surgery	169	10.1	198	10.5	206	10.9
	Emergency Surgery	66	3.9	93	4.9	102	5.4
	Other Named*	347	20.7	370	19.6	351	18.5
	Missing (% of total)**		289 (14.7)		263 (12.2)		153 (7.5)
Grade of Operating Surgeon	Consultant	1,767	89.8	1,960	91.1	1,914	93.5
	Non-Consultant	200	10.2	191	8.9	134	6.5

* Other Named includes Breast, Endocrine, Hepatobiliary, Oesphago-Gastric, Vascular and Other

** No response or response recorded as "Unknown"

Recommendations – Surgical care

4(a) Previous work has suggested that dedicated inpatient discharge services (including Enhanced Recovery after Surgery (ERAS) programmes, specialist discharge co-ordinators and increased Consultant input) may not reduce the number of patients with long length of stay. CCGs and others, might wish to work with cancer alliances and trusts to explore what other factors influence prolonged length of stay. This might include the provision of services in the community.

4(b) Variation in the use of laparoscopic surgery geographically needs to be explored in more detail.

4(c) Trusts/hospitals/MDTs identified as having a low proportion of patients with a lymph node yield >12 should examine their data. Trusts/hospitals/MDTs should identify whether this is a primary data collection/entry issue e.g. they have large amounts of missing data, or whether this is due to surgical or pathological techniques, and seek to improve their results accordingly.

4(d) Further work will be carried out with NBOCA-NELA linked data in order to better understand the management of bowel cancer patients presenting as an emergency.

4(e) Participating trusts/hospitals/MDTs are encouraged to submit their elective and emergency data in a timely manner before the first deadline in order to enable us to link patient records to ONS and HES/PEDW. Without this linkage, patients may have to be excluded from certain analyses due to missing mortality and risk adjustment data.

5. Survival

Survival – NBOCA 2018

- Two-year survival rates for all patients diagnosed with bowel cancer has remained stable at 66%.
- Two-year survival rates in patients undergoing major resection has increased slightly from 82% in 2012/13 to 84% in 2014/15.
- Two-year survival in patients who do not undergo tumour excision has decreased from 35% in 2011/12 to 29% in 2014/15.
- There were no outliers above the outer limit for adjusted two-year mortality amongst patients undergoing a major resection at a regional level.

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 66% since 2011/12. Two-year survival rates in patients undergoing major resection have slightly increased from 82% in 2012/13 to 84% in 2014/15 (Table 5.1).

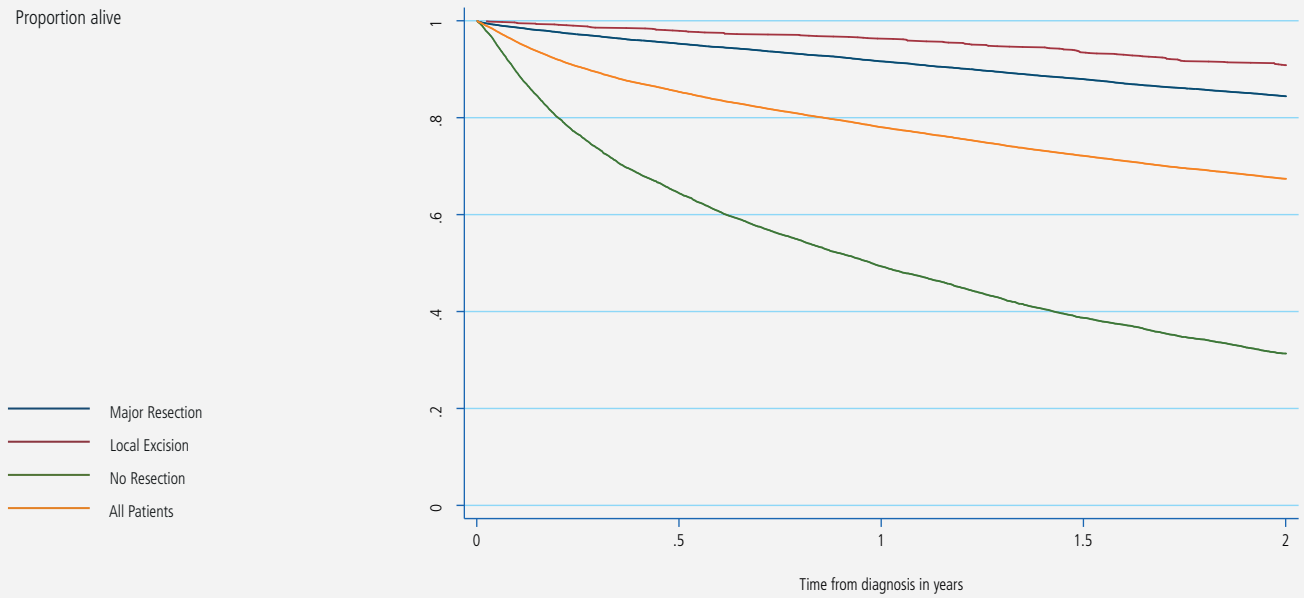
Two-year survival in patients who do not undergo tumour excision appears to have decreased from 35% in 2011/12 to 29% in 2014/15. The reasons for this are unclear at present. The proportion of patients undergoing major resection remains stable and we have seen wider availability of chemotherapy agents. Patients who do not undergo excision are often comorbid and frail. In an ageing population, it may be that patients not having major resection are increasingly frail and therefore have reduced survival.

Patients who do not have resection of their tumour have a worse two-year prognosis (Figure 5.1). Some of these patients may have palliative chemotherapy. In 2014/15, two-year survival for patients who did not have excision of their tumour but are recorded as having chemotherapy (within 2 years) is 42%. In comparison, patients who did not have surgery or chemotherapy have a two-year survival of 27%.

Table 5.1
Two-year survival over time for all patients diagnosed between 01 April 2012 and 31 March 2015

		2012–13		2013–14		2014–15	
		N	%	N	%	N	%
All patients		**31,026**		**30,263**		**30,605**	
Died within 24 months of diagnosis	**Yes**	10,235	33.7	9,861	33.5	9,950	33.7
	No	20,101	66.3	19,569	66.5	19,615	66.3
	Missing (% of total)	690 (2.2)		833 (2.8)		1,040 (3.4)	
Underwent Major Resection		**19,953**	64.3	**19,559**	64.6	**19,439**	63.5
Died within 24 months of diagnosis	**Yes**	3,440	17.7	3,157	16.6	3,018	16.1
	No	15,988	82.3	15,812	83.4	15,743	83.9
	Missing (% of total)	525 (1.7)		590 (1.9)		678 (2.2)	
Underwent Local Excision		**1,417**	4.6	**1,291**	4.3	**1,201**	3.9
Died within 24 months of diagnosis	**Yes**	107	7.8	109	8.7	110	9.5
	No	1,267	92.2	1,141	91.3	1,046	90.5
	Missing (% of total)	43 (0.1)		41 (0.1)		45 (0.1)	
No Excision of Tumour		**9,656**	31.1	**9,413**	31.1	**9,965**	32.6
Died within 24 months of diagnosis	**Yes**	6,688	70.1	6,595	71.6	6,822	70.7
	No	2,846	29.9	2,616	28.4	2,826	29.3
	Missing (% of total)	122 (0.4)		202 (0.7)		317 (1.0)	

Figure 5.1
Kaplan-Meier survival curve over 2 years for all patients diagnosed between 01 April 2014 and 31 March 2015 (England and Wales)



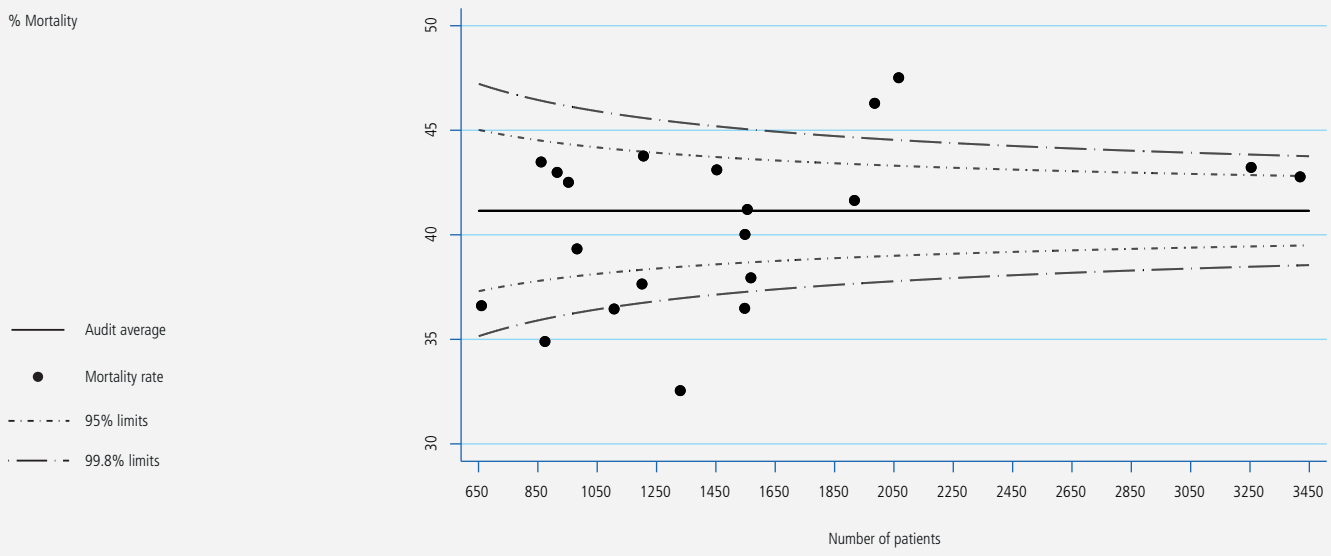
Geographical variation in two-year survival in all patients

There was a large variation in observed two-year patient survival (all patients) according to cancer alliance/Wales (Figure 5.2). This variation is more than would be expected by chance alone, with two cancer alliances above and four below the outer limits. 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 and therefore the results cannot be used for regional comparisons.

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. In addition, 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 consideration is the cause of death (see box below).

Figure 5.2
Observed two-year mortality for all patients diagnosed between 01 April 2014 and 31 March 2015, by cancer alliance/Wales, including hospital/trust/MDTs with more than ten operations

Observed two-year mortality by Cancer Alliance/Wales



NBOCA Short Report

The validity of cancer-specific mortality as a performance indicator in patients having major surgery for bowel cancer

- A short report assessing the validity of cancer-specific 2-year mortality after major surgery as a performance indicator. This included 19,888 patients undergoing major resection between 01 April 2012 and 31 March 2013.
- Cancer-specific death was defined as death from any cause within 90 days of surgery or death with bowel cancer or cancer of an unspecified site as the underlying cause in the 91 days to 2 years after surgery.

Key Findings

- All-cause 2-year mortality rate per person-year was 20.8% (95% CI 20.1–21.5%).
- Cancer-specific 2-year mortality rate per person-year was 16.0% (95% CI 15.4-16.6%).
- Cardiovascular disease, surgical complication and obstruction/perforation as the underlying cause of death is more prominent in the first 90 days after surgery.
- 3,639 patients died within 2 years with the main causes of death bowel cancer/cancer of unspecified site (77%) and cardiovascular disease (10%).
- Cancer stage, emergency admission, and to a lesser degree sex, were more strongly associated with cancer-specific mortality than all-cause mortality.
- Age and co-morbidities were more strongly associated with all-cause mortality.
- ASA grade had a similar association with both all-cause and cancer-specific mortality.
- ***There appeared to be less variation between hospital trusts in observed cancer-specific 2-year mortality compared to all-cause 2-year mortality. Mortality was not adjusted for patient or tumour characteristics.***

Conclusion

- Underlying cause of death was dependent on time from surgery.
- All-cause and cancer-specific mortality have different correlation patterns with known risk factors.
- Less variation in observed cancer-specific 2-year mortality between hospital trusts was found compared to all-cause mortality.

The full report can be accessed at: www.nboca.org.uk/reports/short-report-2-2017/

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

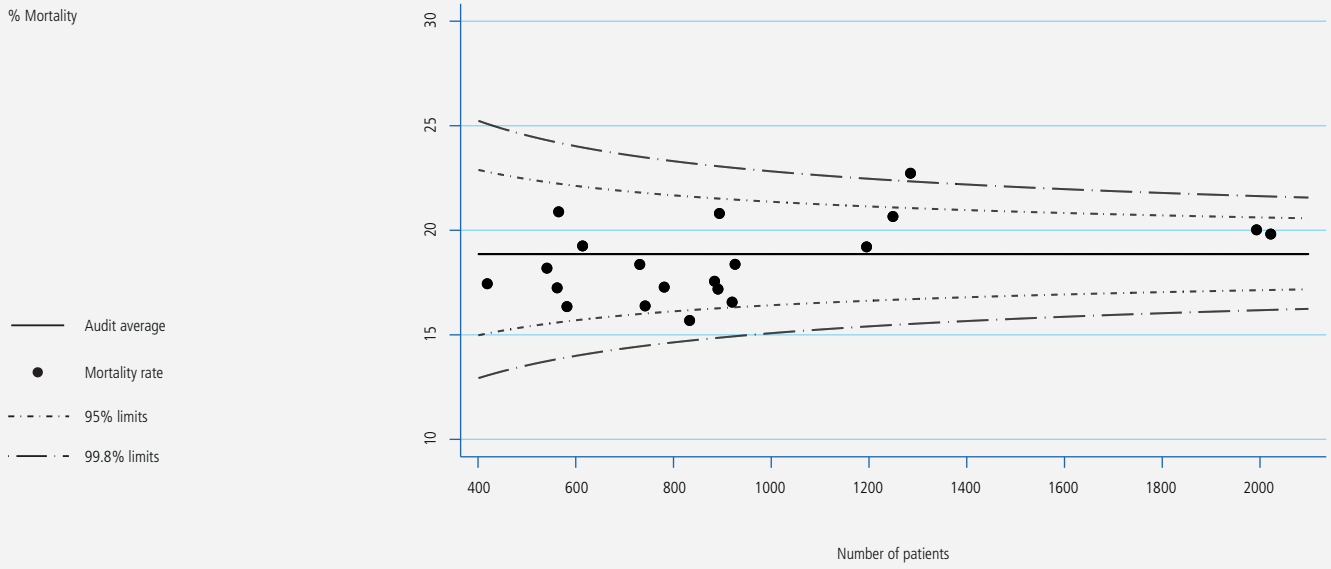
Figures 5.3 and 5.4 show observed and adjusted two-year mortality amongst patients undergoing major resection by cancer alliance/Wales and by trust/hospital/MDT.

In the adjusted analysis, there were no outliers above or below the outer limits. One cancer alliance was above the inner funnel limits. There is considerably less variation than last year's results where two cancer alliances were below the outer limits and six cancer alliances above the inner funnel limits.

In the adjusted analysis at trust/hospital/MDT level, 14 sites were above the inner limits. This is more than would be expected by chance alone but remains similar to last year (13 trusts/hospitals/MDTs). Of these 14 trusts/hospitals/MDTs, 3 were above the outer limits, compared to 4 last year. One of these trusts/hospitals/MDTs has been an outlier previously (when non-overlapping time periods are considered).

Figure 5.3
Observed and adjusted two-year surgical outcomes for patients undergoing a major surgical resection between 01 April 2014 and 31 March 2015, by cancer alliance/Wales, including hospital/trust/MDTs with more than ten operations

Observed two-year mortality by Cancer Alliance/Wales



Adjusted two-year mortality by Cancer Alliance/Wales

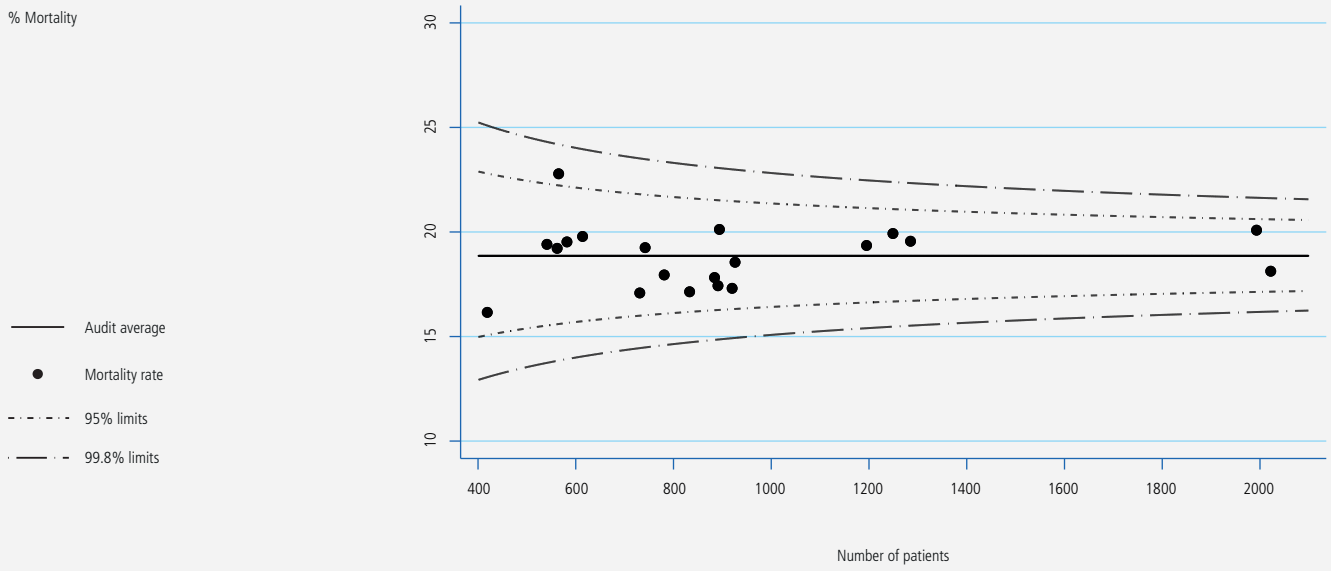
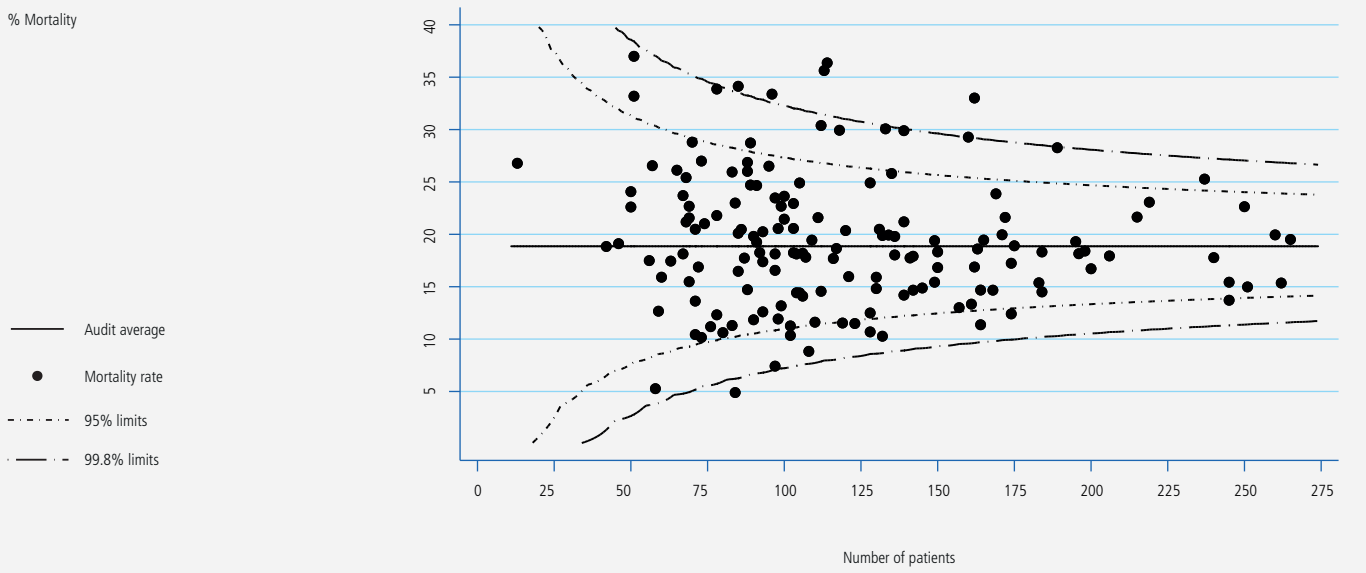
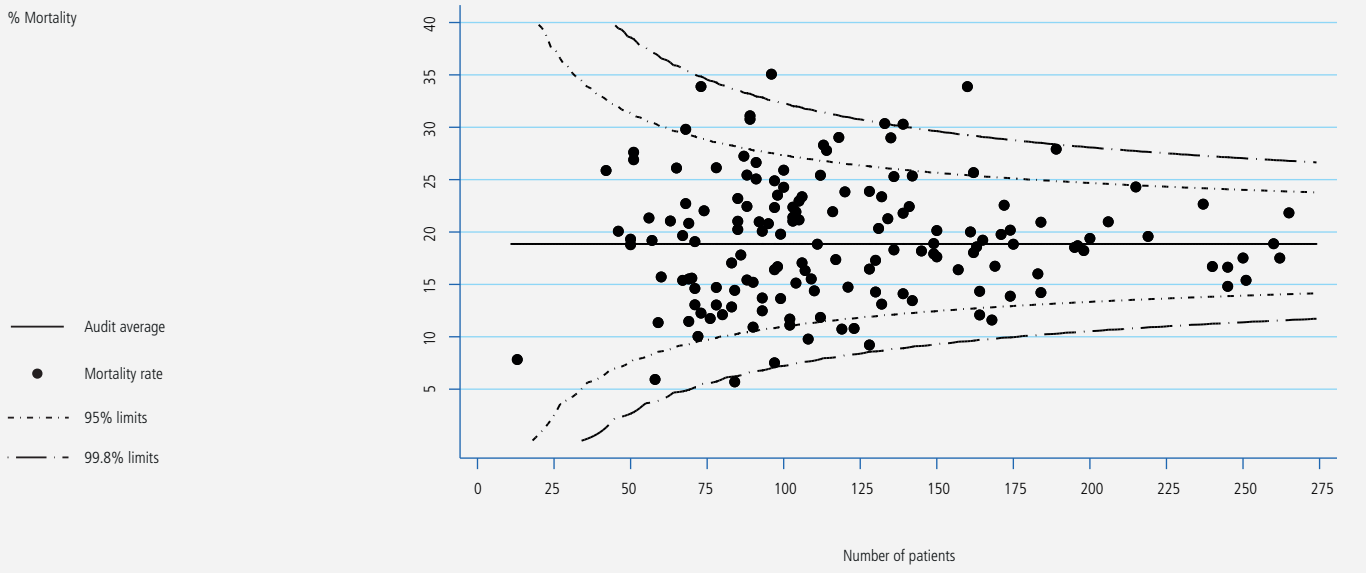


Figure 5.4
Observed and adjusted two-year mortality for patients undergoing a major resection between 01 April 2014 and 31 March 2015, by hospital/trust/MDTs with more than ten operations

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 support healthy behaviours after bowel cancer treatment in order to mitigate the effects of socioeconomic deprivation on overall cancer survival and reduce regional variation.

5(b) Long-term cancer-specific mortality rates will optimise the robustness of survival reporting with deaths from other causes appropriately modelled as competing events.

6. Rectal Cancer

Rectal cancer – NBOCA 2018

- 53% of rectal cancer patients underwent major resection and 7% underwent local excision. 4.5% of rectal cancer patients were managed with a stoma alone.
- 39% of rectal cancer patients undergoing major resection received neo-adjuvant treatment.
- The use of neo-adjuvant treatment ranged widely between cancer alliances/Wales from 24%-61%.
- 84% patients having major resection for rectal cancer had a stoma formed, including 77% patients undergoing anterior resection.
- Just over half of rectal cancer patients undergoing major resection had a stoma at 18 months. There was substantial variation in rates across trusts/hospitals/MDTs.
- Patients who are male, elderly, comorbid and have more advanced disease are less likely to have stoma reversal. Patients undergoing open or emergency procedures are also more likely to have a stoma at 18 months.

6.1 How are patients with rectal cancer treated?

Trends over time

Rectal cancer is still largely treated with surgical resection with 53% of rectal cancer patients diagnosed between 01 April 2016 and 31 March 2017 undergoing major resection (Table 6.1). 7% of patients underwent local excision of their rectal cancer e.g. TEMS (transanal endoscopic microsurgery), and a further 7% underwent non-resectional procedures e.g. stoma formation or stent insertion.

Since 2012/13, there has been a slight increase in the proportion of patients recorded as not undergoing rectal surgery. This may be explained by an increase in the number of patients with a complete pathological response to chemoradiotherapy who therefore undergo a 'watchful waiting' approach rather than immediate surgery. Of the 3,998 patients who did not undergo major resection, 15% underwent local excision, 10% stoma formation, 6% 'other' surgery (e.g. stenting) and 69% had no procedure.

Table 6.1
Management of rectal cancer patients, by audit year

	2012–13		2013–14		2014–15		2015–16		2016–17	
	N	%	N	%	N	%	N	%	N	%
Total	**9,190**		**9,038**		**9,109**		**8,582**		**8,514**	
Major resection	4,998	54.4	5,062	56.0	4,970	54.6	4,560	53.1	4,516	53.0
Local excision	689	7.5	644	7.1	610	6.7	611	7.1	618	7.3
Non-resectional surgery	807	8.8	669	7.4	695	7.6	626	7.3	614	7.2
No Surgery	2,696	29.3	2,663	29.5	2,834	31.1	2,785	32.5	2,766	32.5

Use of radiotherapy

Of the patients undergoing major resection for their rectal cancer, 39% received pre-operative treatment. 28% patients received long-course radiotherapy and 8% patients received short-course radiotherapy. The remaining 3% received pre-operative treatment that could not be classified into either long- or short-course regimens.
The proportion of patients receiving long- and short-course radiotherapy has remained stable since 2014/15.

Patient characteristics according to pre-surgical treatment type are shown in Table 6.2. Patients aged 75 or over and those admitted as an emergency are generally less likely to receive radiotherapy. In addition, patients who are younger and those with more advanced T- and N-stage disease are more likely to have long-course radiotherapy. Patients receiving long-course radiotherapy have fewer co-morbidities. There is little difference in the distribution of co-morbidities in those not receiving pre-operative radiotherapy and those receiving short-course radiotherapy.

The majority of patients (70%) who have long-course radiotherapy will have their major resection within 16 weeks of their last dose of radiotherapy, but 14% will wait over 21 weeks. In contrast, the majority of patients (69%) who have short-course radiotherapy will have their major resection within 14 days of receipt of their last dose of radiotherapy.

Table 6.2
Patient characteristics by treatment type, for 4,618 rectal cancer patients diagnosed between 01 January 2016 and 31 December 2016 who underwent a major resection

		No preop treatment recorded		Long-course RT pre-surgery		Short-course RT pre-surgery		Other treatment pre-surgery *	
		N	%	N	%	N	%	N	%
Total no. rectal cancer patients		**2,818**		**1,274**		**381**		**145**	
Sex	**Male**	1,788	63.4	849	66.7	258	67.7	93	64.1
	Female	1,030	36.6	424	33.3	123	32.3	52	35.9
	Missing (% of total)		0 (0.0)		1 (0.1)		0 (0.0)		0 (0.0)
Age-group	**<50 yrs**	153	5.4	159	12.5	23	6.0	16	11.0
	50-64 yrs	808	28.7	485	38.1	118	31.0	58	40.0
	65-74 yrs	1,031	36.6	430	33.8	119	31.2	44	30.3
	75-84 yrs	704	25.0	188	14.8	110	28.9	25	17.2
	85+ yrs	122	4.3	12	0.9	11	2.9	2	1.4
Pre-treatment TNM T-stage	**T1**	165	5.9	8	0.6	3	0.8	5	3.4
	T2	1,007	35.7	111	8.7	76	19.9	14	9.7
	T3	1,287	45.7	897	70.4	274	71.9	87	60.0
	T4	141	5.0	223	17.5	22	5.8	30	20.7
	TX	82	2.9	5	0.4	3	0.8	3	2.1
	T9	136	4.8	30	2.4	3	0.8	6	4.1
Pre-treatment TNM N-stage	**N0**	1,663	59.0	258	20.3	130	34.1	36	25.0
	N1	786	27.9	519	40.7	173	45.4	43	29.9
	N2	184	6.5	451	35.4	65	17.1	55	38.2
	Nx	43	1.5	11	0.9	8	2.1	4	2.8
	N9	142	5.0	35	2.7	5	1.3	6	4.2
Pre-treatment TNM M-stage	**M0**	2,446	86.8	1,107	86.9	316	82.9	91	62.8
	M1	90	3.2	87	6.8	34	8.9	40	27.6
	Mx	157	5.6	44	3.5	20	5.2	8	5.5
	M9	125	4.4	36	2.8	11	2.9	6	4.1
Time to surgery from final RT	**Within 7 days**			0	0.0	182	56.3		
	8-14 days			0	0.0	41	12.7		
	3-8 weeks			42	3.7	32	9.9		
	9-12 weeks			343	30.1	17	5.3		
	13-16 weeks			407	35.8	25	7.7		
	17-20 weeks			183	16.1	11	3.4		
	21+ weeks			163	14.3	15	4.6		
	Missing (% of total)				136 (10.7		58 (15.2)		
Mode of admission (from HES)	**Elective**	2,392	96.1	1,091	95.8	337	96.0	116	93.5
	Emergency	98	3.9	48	4.2	14	4.0	8	6.5
	Missing (% of total)	328 (11.6)		135 (10.6)		30 (7.9)		21 (14.5)	
Comorbidities (from HES)	**0**	1,510	60.6	727	63.8	217	61.8	70	56.5
	1	723	29.0	316	27.7	100	28.5	42	33.9
	2+	259	10.4	96	8.4	34	9.7	12	9.7
	Missing (% of total)		326 (11.6)		135 (10.6)		30 (7.9)		21 (14.5)

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

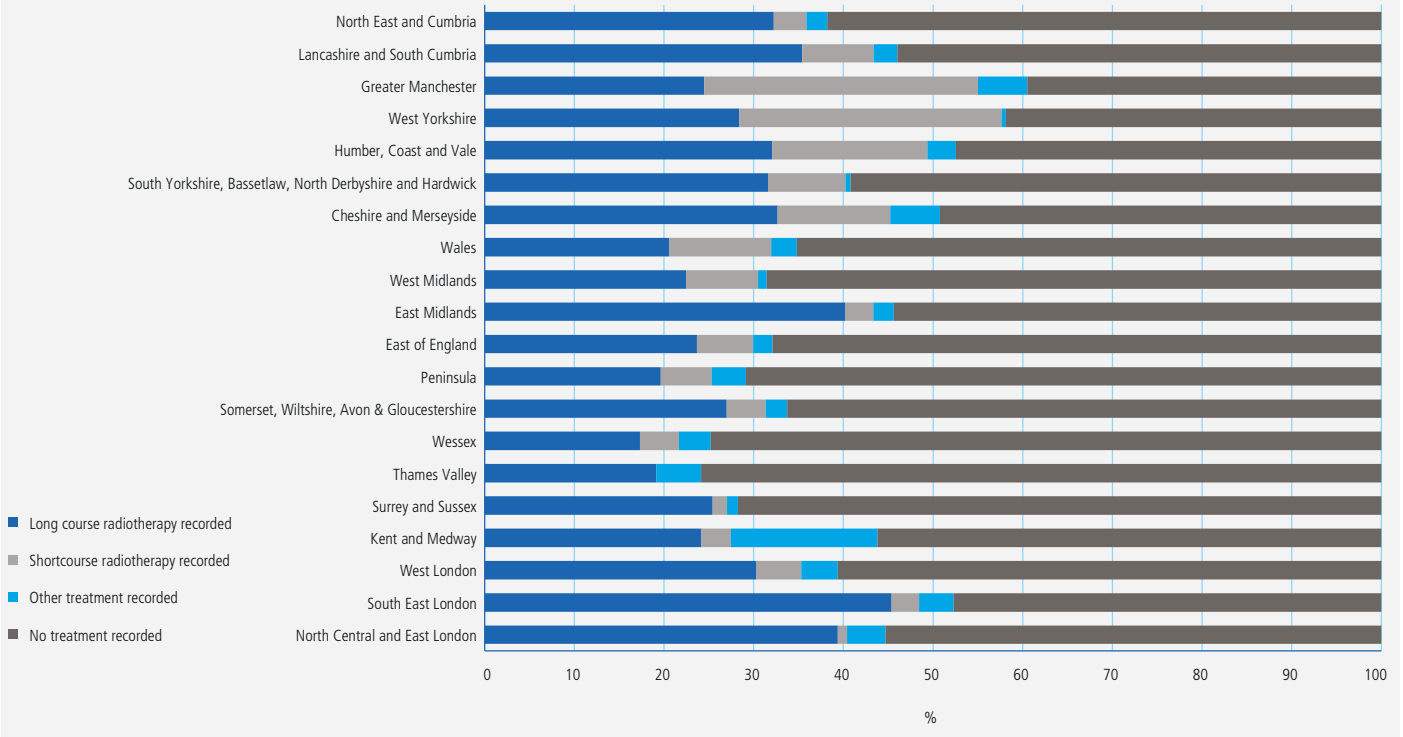
Geographical variation in the use of neo-adjuvant radiotherapy

The use of neo-adjuvant treatment according to cancer alliance/Wales is presented in Figure 6.1. The use of neo-adjuvant treatment ranged from 24% of patients in the Thames Valley to 61% of patients in Greater Manchester. Variation is noted within the use of both long-course (17%-45%) and short-course radiotherapy (0%-31%). The proportion of patients undergoing neo-adjuvant treatment remains relatively unchanged from the last audit year.

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 England and Wales.

The audit is now reporting on negative circumferential resection margin rates for rectal cancer (Section 6.2). This should provide some valuable insights into the relationship between neo-adjuvant therapy and circumferential margin clearance. In future years, local recurrence data will be collected in the audit which will provide further insights into this very variable and important aspect of rectal cancer treatment.

Figure 6.1
Treatment pathways for rectal cancer patients diagnosed between 01 January 2016 and 31 December 2016 who underwent major resection, by cancer alliance/nation performing surgery



6.2 How many patients having rectal cancer surgery have a negative circumferential resection margin?

This is the first year that we have reported negative circumferential resection margins (CRM) for patients undergoing rectal cancer resection. This is recorded as negative if the edge of the tumour is greater than 1mm from the CRM, i.e. the margin is not involved according to the histopathologist. CRM clearance is important as involvement of margins is a strong predictor of both local and distant recurrence.

Data quality has improved significantly since 2012/13 with missing margin status reducing from 33% to 16% (Table 6.3). For the 2016/17 audit period, 18 trusts/hospitals/MDTs have <50% complete data. Completion of CRM status varies by trust/hospital/MDT from 0% to 100% (median 95%, IQR 83%-100%).

There has been an improvement in negative CRM rates from 62% in 2012/13 to 77% in 2016/17. The negative CRM rate for 2016/17 varies by trust/hospital/MDT from 0% to 100% (median 85%, IQR 74%-93%).

Table 6.3
Resection margin status for those with rectal cancer undergoing major resection, by audit year

		2012–13		2013–14		2014–15		2015–16		2016–17	
		N	%	N	%	N	%	N	%	N	%
Total No. Patients		4,998		5,062		4,970		4,560		4,516	
Recorded Margin Status	Negative	3,102	62.1	3,520	69.5	3,358	67.6	3,096	67.9	3,477	77.0
	Positive	236	4.7	274	5.4	346	7.0	330	7.2	299	6.6
	Missing	1,660	33.2	1,268	25.1	1,266	25.5	1,134	24.9	740	16.4

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

Formation of stoma and stoma reversal

In total, 84% of rectal cancer patients undergoing major resection had a stoma formed at the time of surgical resection (Table 6.4). This includes all patients undergoing APER and Hartmann's by default, and 77% of patients undergoing anterior resection.

Overall, 52% of rectal cancer patients undergoing major resection had a stoma at 18 months. Excluding patients having APER (and therefore a permanent stoma by definition) this figure reduces to 35%.

Excluding patients undergoing APER, patients are less likely to have reversal of their stoma within 18 months if they are male, elderly, co-morbid, have advanced disease, undergo emergency surgery, have an open procedure or undergo a Hartmann's procedure. 59% of patients undergoing emergency rectal surgery have a stoma at 18 months compared to 35% of patients undergoing elective surgery.

Table 6.4
Description of stoma types by procedure for 13,540 rectal cancer patients linked to HES/PEDW having a major resection between 01 April 2013 and 31 March 2016, by procedure

		AR		APER		Hartmann's		Other	
		Number	%	Number	%	Number	%	Number	%
Total rectal cancer patients undergoing major resection		**8,474**		**3,502**		**1,209**		**355**	
Any stoma	**No**	1,939	22.9	0	0.0	0	0.0	242	68.2
	Yes	6,535	77.1	3,502	100.0	1,209	100.0	113	31.8
Stoma at 18 months, ignoring deaths	**No**	6,102	72.0	0	0.0	107	8.9	266	74.9
	Yes	2,372	28.0	3,502	100.0	1,102	91.1	89	25.1

Geographical variation in 18-month stoma rates

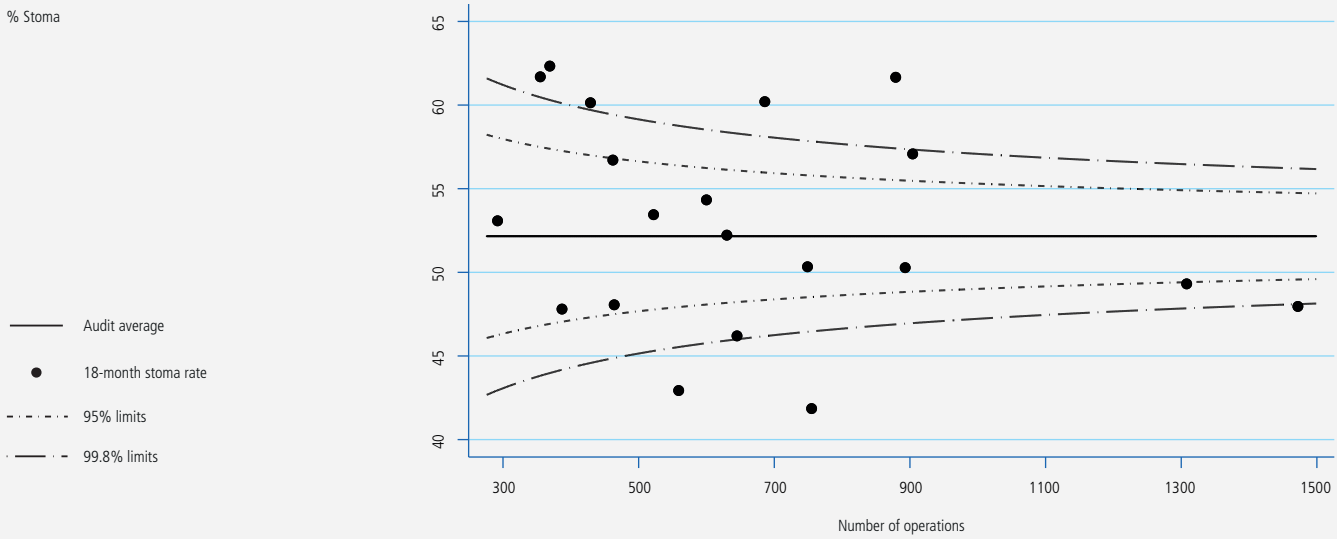
There has been an increase in variation in adjusted 18-month stoma rates between cancer alliances/Wales compared to last year (Figure 6.2). The three cancer alliances who were outliers last year remain outliers, with two additional cancer alliances now above the outer limits.

The variation by trust/hospital/MDT site was also large, with 7 above the outer limits and 8 below the outer limits (Figure 6.3). A further 13 trusts/hospitals/MDTs were above the inner limits which has reduced slightly from 16 trusts/hospitals/MDTs last year.

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

Figure 6.2
Observed and adjusted 18-month stoma rate by cancer alliance/Wales for rectal cancer patients undergoing a major resection between 01 April 2013 and 31 March 2016

Observed 18-month stoma rate by Cancer Alliance/Wales



Adjusted 18-month stoma rate by Cancer Alliance/Wales

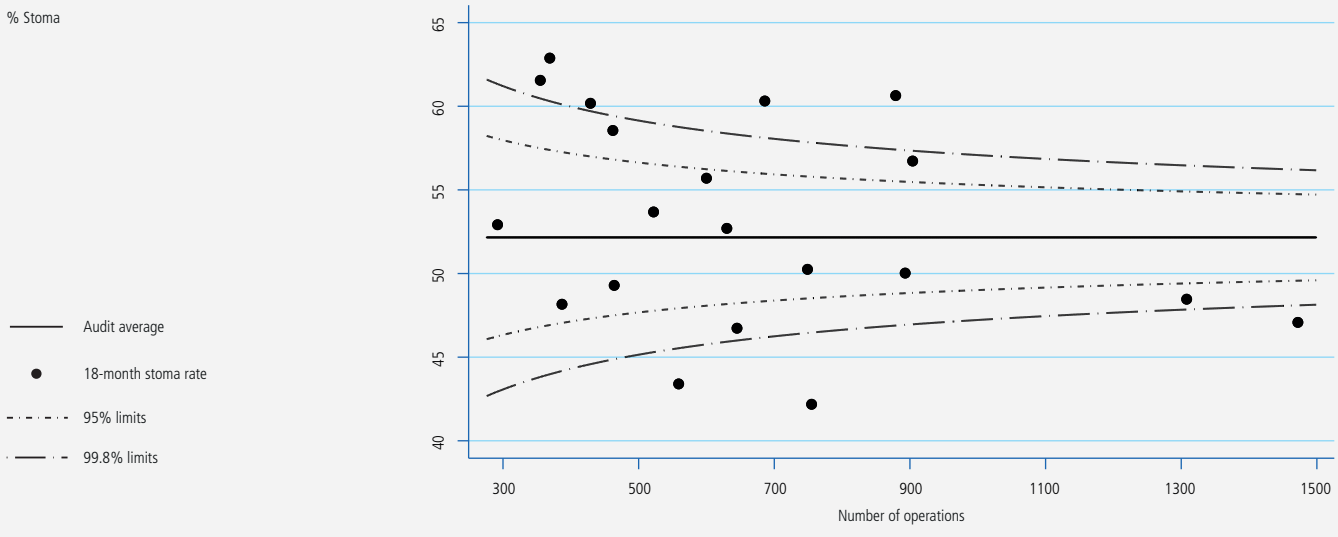
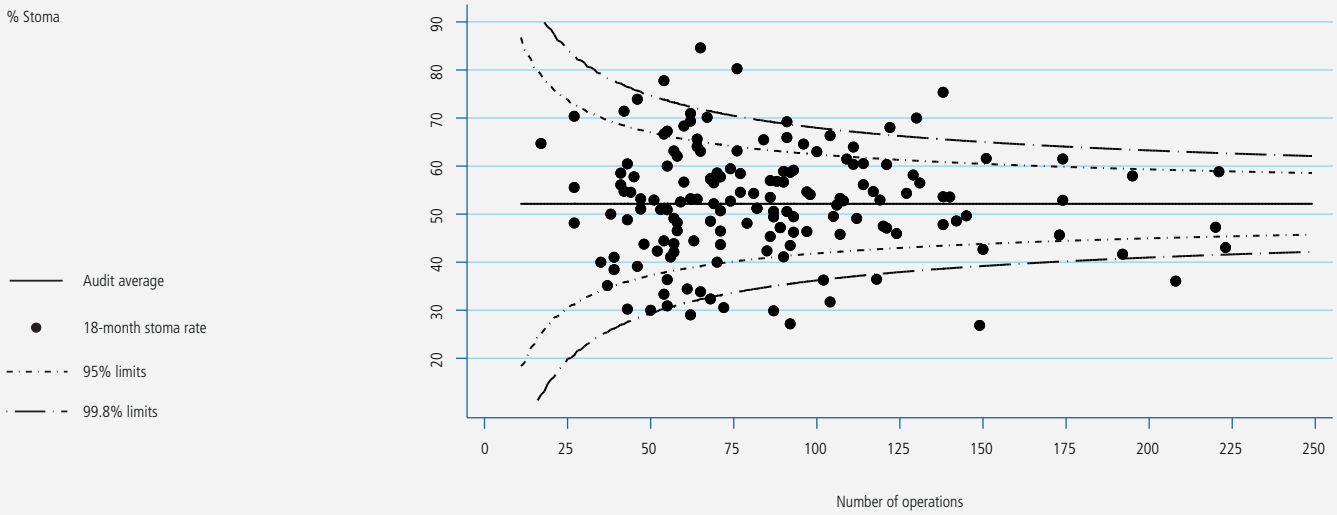
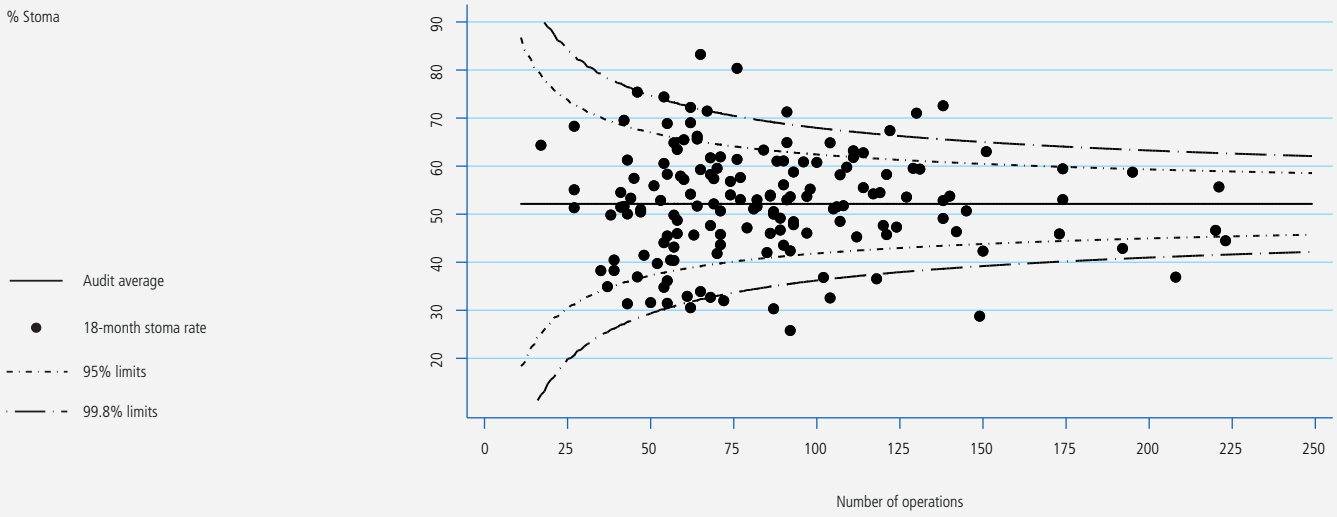


Figure 6.3
Observed and adjusted 18-month stoma rate by trust/hospital/MDT for rectal cancer patients undergoing a major resection between 01 April 2013 and 31 March 2016

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) Stoma reversal should be prioritised. The presence of a stoma is known to reduce patients' quality of life following cancer treatments. Additional factors influencing stoma reversal such as receipt of adjuvant chemoradiotherapy and hospital-level determinants need to be explored further.

6(b) Further exploration of regional variation in the use of neo-adjuvant therapy for rectal cancer is required, including the use of short versus long-course radiotherapy. The audit is now reporting negative circumferential resection rates and will be reporting recurrence in the future. Together, these will enable valuable insight in to the impact of neo-adjuvant therapy on outcomes from rectal cancer.

6(c) Trusts/hospitals/MDTs are congratulated on marked improvements in data quality of circumferential resection margins. We encourage trusts/hospitals/MDTs, particularly those with <50% data completeness, to continue efforts to improve collection of this data item.

7. End of life care

End of Life Care – NBOCA 2018

- There has been a downward trend from 2011–2016 in the proportion of patients dying in hospital, coupled with an upward trend in both home and care home deaths.
- In 2016, 32% of patients died at home, which is often what patients prefer (up to two thirds prefer to die at home).
- Age, deprivation and time from diagnosis appear to be important factors in determining place of death.
- There is nearly a 10% difference in hospital deaths between the highest and lowest socioeconomic deprivation groups (43% most deprived vs. 35% least deprived). There is also variation in the proportion of hospice deaths (14% most deprived vs. 19% least deprived).
- Patients dying within 1 year of diagnosis are most likely to die in hospital.
- Regional variation in place of death is evident, particularly in hospital/hospice deaths.

7.1 Why is end of life care important?

Patients are defined as at the 'end of life' when they are identified as being likely to die within the next 12 months. The Department of Health (England) 'End of Life Care Strategy' (2008) report identified key areas of concern in provision of end of life care including; resources for increasing numbers of dying patients were going to be required, patients were not dying in their place of choice, and not all patients were receiving high quality end of life care.

Subsequently, clear standards have been defined, 'NICE Quality Standard for End of Life Care for Adults' (2011, updated 2017). This guideline consists of 16 quality statements related to the delivery of care. A national framework 'Ambitions for Palliative and End of Life Care' was initiated in 2015 and presents six ambitions for improved care including individual co-ordinated care and equal access to services.

Colorectal cancer patients who are recognised as being 'end of life' should receive prompt palliative care input with a focus on symptom relief and optimisation of quality of life. This includes taking into account patient and family preferences of the place of death. Unplanned hospital admissions coupled with futile investigations and procedures at the end of life can be detrimental to patients' quality of life.

In the context of an ageing population, with colorectal cancer a disease common in the elderly population, provision of timely and quality end of life care constitutes a key priority in the care pathways of colorectal cancer patients.

7.2 Why is place of death important?

There is considerable evidence that most patients prefer to die at home (up to two thirds). There is a complicated network of factors influencing where cancer patients die including age, co-morbidities, deprivation, marital status, type of cancer and access to palliative care services.

In this chapter, we describe the place of death for 70,167 colorectal cancer patients dying in the period 01 January 2011 to 31 December 2016 in England and Wales, using a linked Audit-ONS dataset. This includes patients with a primary diagnosis of colorectal cancer identified between 01 April 2010 and 31 March 2016.

ONS categorises place of death as follows; home, local authority care home, non-local authority care home, NHS hospital, non-NHS hospital, NHS hospice, non-NHS hospice, other hospital including psychiatric institutions and elsewhere. We grouped these categories together to provide place of death as home, hospital, hospice, care home and other.

Table 7.1
Place of death for colorectal cancer patients dying between 01 January 2011 – 31 December 2016 in England & Wales, by year of death

	Year of death											
	2011		2012		2013		2014		2015		2016	
	N	%	N	%	N	%	N	%	N	%	N	%
	7,181		**10,532**		**12,543**		**13,417**		**14,415**		**12,079**	
Home	1,816	25.3	2,993	28.4	3,743	29.8	4,151	30.9	4,348	30.2	3,884	32.2
Hospital	3,320	46.2	4,247	40.3	4,724	37.7	4,986	37.2	5,321	36.9	4,182	34.6
Hospice	1,081	15.1	1,796	17.1	2,148	17.1	2,173	16.2	2,403	16.7	1,967	16.3
Care Home	853	11.9	1,323	12.6	1,724	13.7	1,871	13.9	2,126	14.8	1,844	15.3
Other*	111	1.6	173	1.6	204	1.6	236	1.8	217	1.5	202	1.7

*Other includes ONS categories 'Other hospital' including psychiatric units and 'Elsewhere'

7.3 Death from colorectal cancer

Deaths from colorectal cancer can be broadly considered as two different entities: patients who die quickly after diagnosis (e.g. post-operative deaths or incurable rapidly progressive disease), and those dying later due to recurrence or other causes. Deaths in 2011 will mostly represent patients in the former category. As expected, there is a steady increase in the number of deaths per year as patients accumulate over the audit period (Table 7.1). In 2016, a decrease is seen due to patients diagnosed from only January–March being included.

As demonstrated in Table 7.2, of those patients who die, the majority will die within the first 12 months (52%).

Table 7.2
Number of colorectal cancer patients dying between 01 January 2011 – 31 December 2016 in England & Wales, according to number of years after diagnosis

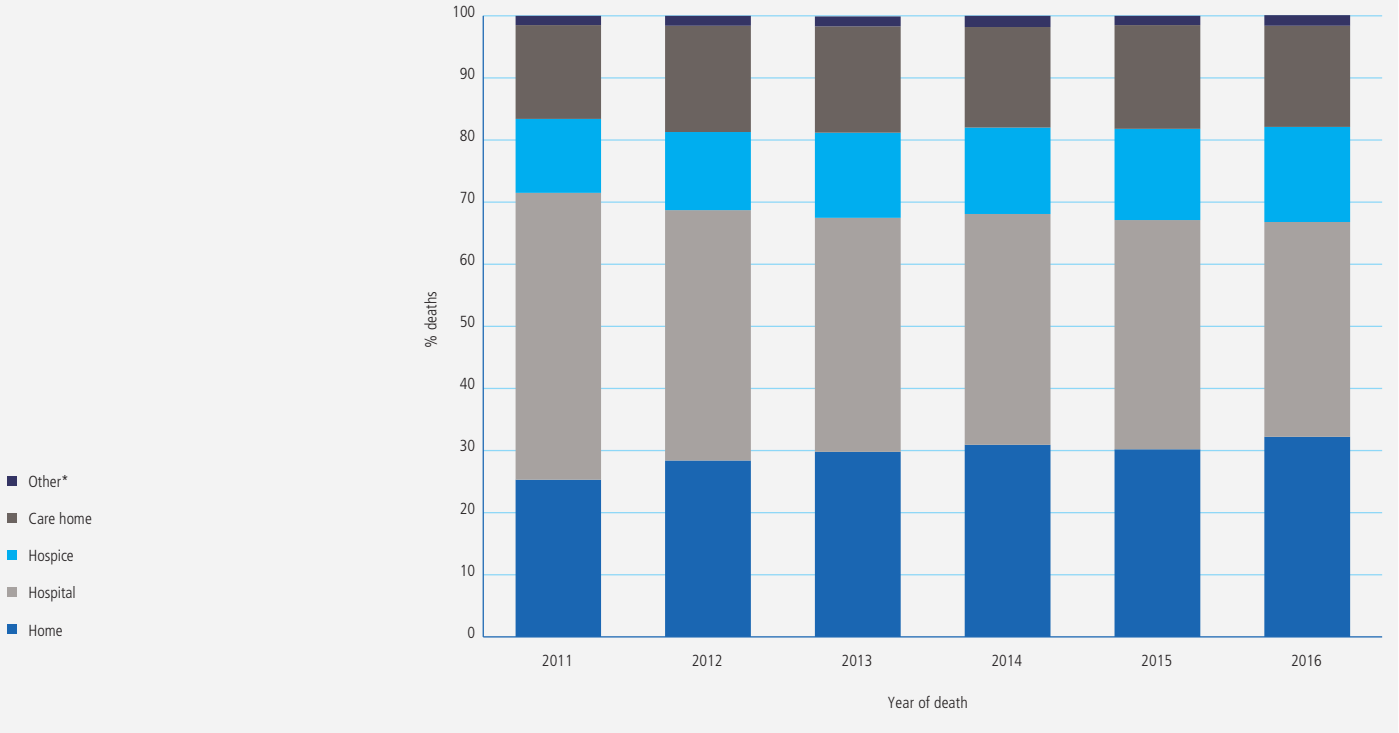
	<1		≥1 & <2		≥2 & <3		≥3 & <4		≥4 & <5		≥5 & <6		≥6 & <7	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Number of deaths*	36,235	51.7	16,681	23.8	8,749	12.5	4,714	6.7	2,419	3.5	1,068	1.5	218	0.3

*Analysis excludes 83 patients who have dates of diagnosis >14 days after death i.e. greater than might be expected following a post-mortem diagnosis

7.4 Place of death

There has been a marked downward trend in the numbers of patients dying within the hospital setting from 2011 to 2016 (46% to 35%) (Table 7.1). This will in part reflect that more patients dying in 2011 died soon after diagnosis. This has been mirrored by an upward trend in patients dying in their own homes (25% to 32%) and patients dying in care homes (12% to 15%). Deaths within hospices initially increased, but have remained relatively stable from 2014 (16%) (Figure 7.1). Despite an increase in home deaths, this remains sub-optimal compared to patient preference (two thirds prefer to die at home). There has also been an increase in care home deaths and we must take into account that this may be some patients' usual residence.

Figure 7.1
Place of death for colorectal cancer patients dying between 01 January 2011 – 31 December 2016 in England & Wales, by year of death



*Other includes ONS categories 'Other hospital' including psychiatric units and 'Elsewhere'

7.5 Place of death by age, sex, deprivation, cancer site and period of time after diagnosis

Patient age at death

Place of death differed significantly dependent upon age at death (Table 7.3). Elderly patients (≥85 years) were less likely to die at home (22%) compared to patients aged 50-64 years (34%). The youngest patients (<50 years) were the least likely to die in hospital (31%).

As might be expected, there is a marked increase in the proportion of patients dying within a care home setting with increasing age (<50 years 2% versus ≥85 years 32%), and a reverse trend with hospice deaths (<50 years 34% versus ≥85 years 8%). Hospital deaths accounted for the highest proportion of place of death for all age categories except <50s, who were most likely to die in a hospice.

Gender

Men were slightly more likely than women to die in their own homes (31% versus 28%) or hospital (40% versus 36%). Women died more frequently in care homes and hospices. Possible explanations for this include men being more likely to have a partner at home to look after them coupled with women having a higher life expectancy.

Deprivation

Socioeconomic deprivation was determined from the last HES/PEDW record prior to death. Almost a 10% difference exists in hospital deaths between the highest and lowest deprivation groups (43% most deprived versus 35% least deprived). The proportion of patients dying in hospices also increases proportionate to deprivation (14% most deprived versus 19% least deprived). Possible explanations might include differences in access to palliative care services, availability of support at home in respective communities, and case-mix.

Site of cancer

There is little difference noted in place of death according to tumour location.

Period after diagnosis

Patients dying within 1 year of diagnosis were most likely to die in hospital (43%) and less likely to die in their own homes (27%) (Figure 7.2). Patients in the 1-3 year period after diagnosis were least likely to die in hospital.

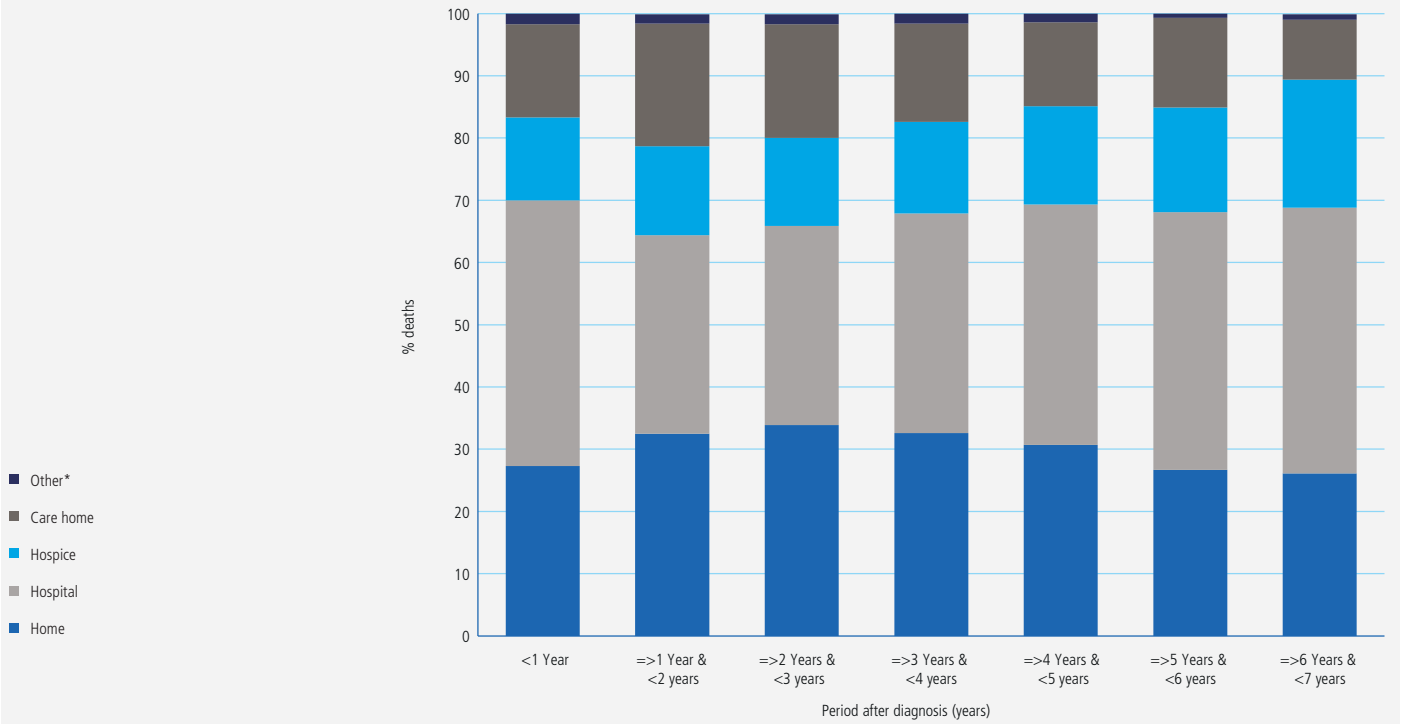
Due to the mix of patients in each time period after diagnosis (in relation to year of diagnosis and year of death), a sensitivity analysis was performed. This analysed the trend in place of death for patients diagnosed in 2011 and patients who died in 2016 separately. Results for trend in place of death for both analyses were broadly the same as for all patients.

Table 7.3
Place of death for colorectal cancer patients dying between 01 January 2011 – 31 December 2016 in England & Wales, by patient age, sex, deprivation and site of cancer

		Place of Death									
		Home		Care Home		Hospice		Hospital		Other*	
		N	%	N	%	N	%	N	%	N	%
		20,935		**9,741**		**11,568**		**26,780**		**1,143**	
Age at death (years)	<50		30.9	63	1.7	1,265	33.6	1,180	31.4	94	2.5
	50-64	9,741	34.2	671	4.5	3,387	22.5	5,619	37.3	237	1.6
	65-74		31.6	2,347	10.7	3,677	16.7	8,742	39.7	311	1.4
	75-84	11,568	27.3	4,733	20.4	2,740	11.8	9,033	38.9	378	1.6
	=>85		21.9	1,927	31.7	499	8.2	2,206	36.2	123	2.0
Sex	Male	26,780	31.3	4,663	11.7	6,252	15.7	15,845	39.9	559	1.4
	Female		28.0	5,078	16.7	5,316	17.5	10,935	36.0	584	1.9
IMDQ	1 (most deprived)	1,143	28.9	1,866	11.8	2,286	14.4	6,824	43.1	288	1.8
	2		29.1	1,819	14.6	1,957	15.7	4,891	39.1	202	1.6
	3	4,191	30.0	2,011	14.4	2,322	16.6	5,232	37.5	206	1.5
	4	4,330	30.4	2,066	14.5	2,521	17.7	5,077	35.7	248	1.7
	5 (least deprived)	4,067	30.9	1,902	14.5	2,437	18.5	4,568	34.7	186	1.4
	Missing		144		77		45		188		13
Site cancer	Right colon	7,843	29.3	3,786	14.1	4,441	16.6	10,290	38.4	452	1.7
	Left colon	5,889	29.8	2,548	12.9	3,354	17.0	7,610	38.6	334	1.7
	Rectosigmoid	1,369	31.3	538	12.3	712	16.3	1,686	38.5	72	1.6
	Rectum	5,834	30.3	2,869	14.9	3,061	15.9	7,194	37.4	285	1.5

*Other includes ONS categories 'Other hospital' including psychiatric units and 'Elsewhere'

Figure 7.2
Place of death for colorectal cancer patients dying between 01 January 2011 – 31 December 2016 in England & Wales, according to time after diagnosis



7.6 Place of death by cancer alliance

Geographical variation is demonstrated in the place of death for patients dying in 2016. For deaths in hospital, one cancer alliance and Wales are above the outer limits, and one cancer alliance is below the outer limits (Figure 7.3a). Death in hospital varies from 29% in West Yorkshire to 48% in Wales.

For deaths in hospices, there is one cancer alliance above the outer limit, and Wales and one other cancer alliance are below the outer limit (Figure 7.3b). Death in hospices varies from 8% in Wales to 27% in Kent and Medway. For deaths at home or in care homes, only one cancer alliance is above the outer limit. There is variation from 41% in North Central and East London to 53% in North East and Cumbria (Figure 7.3c).

Further work is required to investigate these regional disparities. Possible explanations might include differential provision and access to hospices, and variation in provision of community palliative care services. Additionally, there has been no adjustment to account for case-mix differences and therefore, results should be interpreted with caution.

Figure 7.3a
Observed proportion of deaths in hospitals by cancer alliance/Wales for colorectal cancer patients dying between 01 January 2016 – 31 December 2016

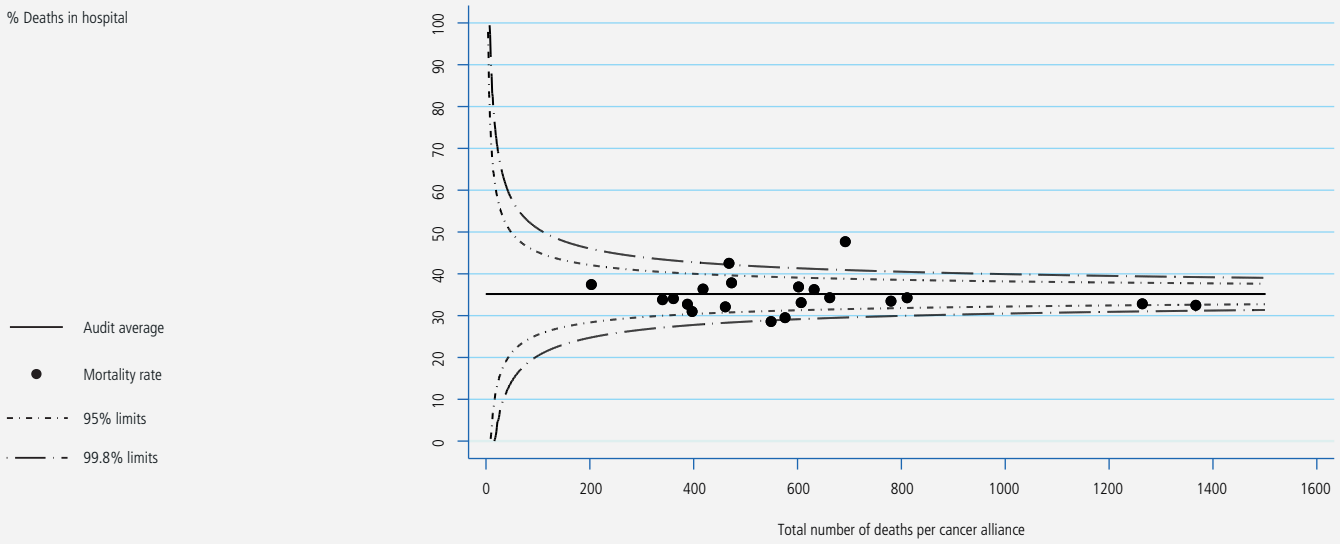


Figure 7.3b
Observed proportion of deaths in hospices by cancer alliance/Wales for colorectal cancer patients dying between 01 January 2016 – 31 December 2016

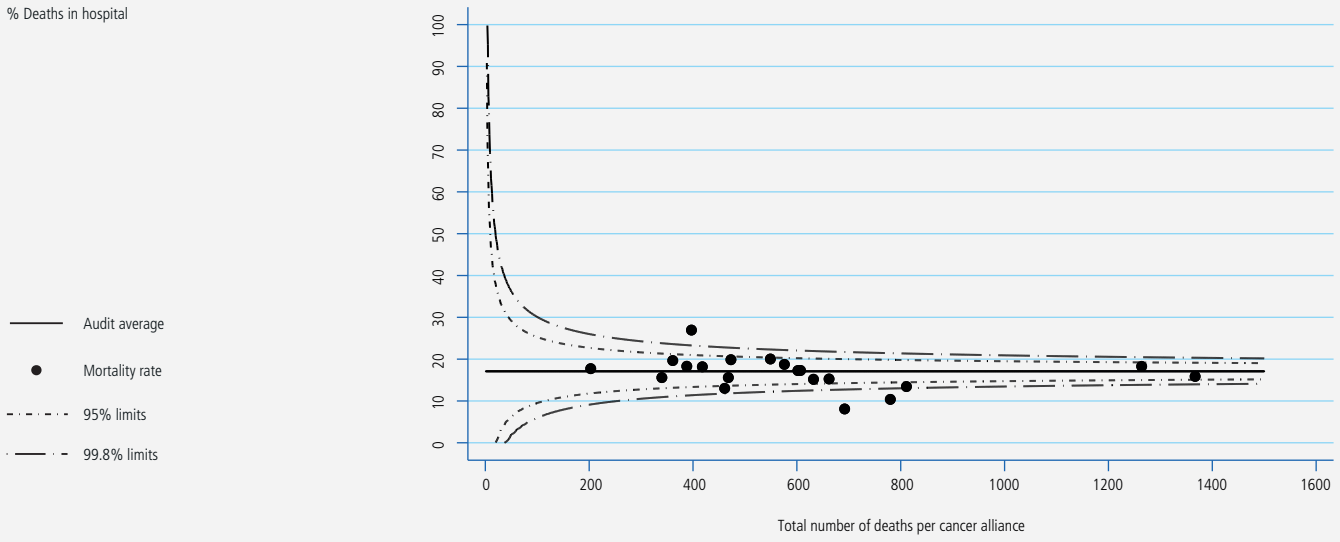
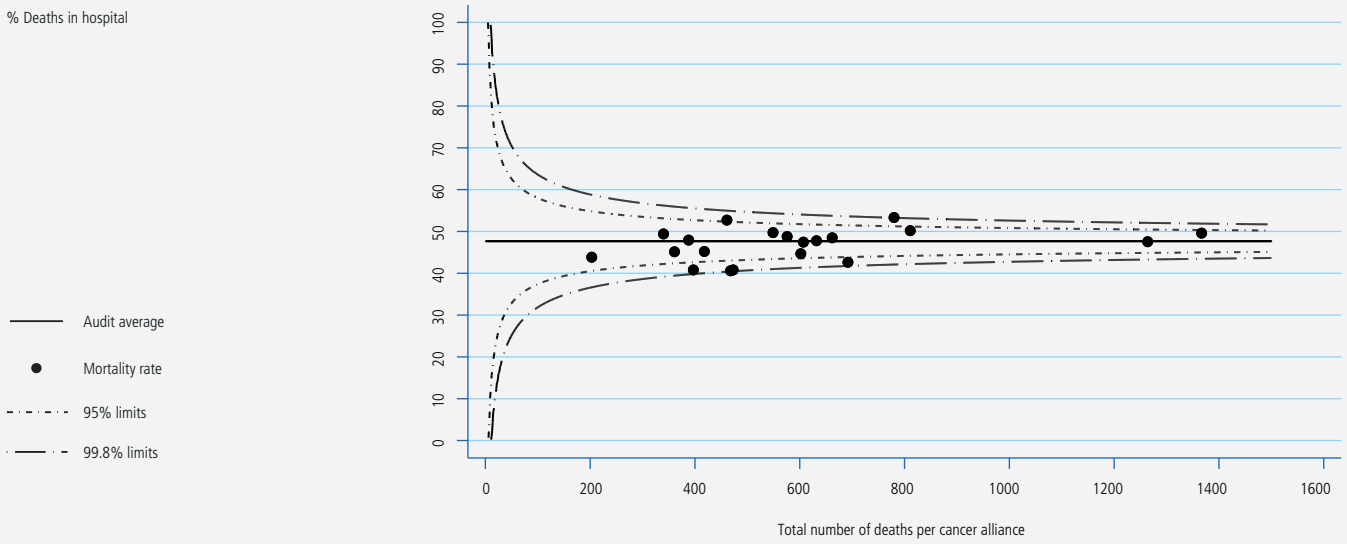


Figure 7.3c
Observed proportion of deaths in homes/care homes by cancer alliance/Wales for colorectal cancer patients dying between 01 January 2016 – 31 December 2016



Recommendations – End of life care

7(a) Clinicians should aim to identify patients who require 'end of life' care in order to facilitate early involvement of Palliative Care services in order to improve patients' quality of death.

7(b) Patient and family wishes regarding preferred place of death should be clearly defined and measures taken to facilitate this. Elderly and deprived patients, and those dying within 12 months of diagnosis appear most likely to die in hospital. Facilitating out-of-hospital deaths where preferred and avoiding unplanned hospital admissions is crucial in improving end of life care.

7(c) Cancer alliances identified as lying above the limits for hospital deaths, and below the limits for hospice deaths, should look at their policies and resources for end of life care. Others may wish to learn from the practices of alliances lying above the limits for hospice deaths.

7(d) Further work is required to investigate the regional disparities identified in place of death to ascertain whether there is inequity in provision of palliative care services, for example, access to hospital palliative care services and hospice care.

8. Bowel cancer management – by English trust & Welsh MDT

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	
Grade	**Value**
■	>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 8.1
Case ascertainment and data completeness according to trust/hospital/MDT

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	**30,541**	**32,894**	**93**	**78**	**85**	**19,183**	**83**	**12**	**52**	**27**	**2**	**7**
North East and Cumbria	**1,981**	**1,927**	**103**	**78**	**82**	**1,180**	**92**	**10**	**48**	**34**	**4**	**4**
City Hospitals Sunderland NHS Foundation Trust	153	163	94	73	97	102	75	6	48	42	4	0
County Durham And Darlington NHS Foundation Trust	326	285	114	83	46	177	90	7	47	38	3	5
Gateshead Health NHS Foundation Trust	187	162	115	69	85	100	91	11	47	33	3	6
North Cumbria University Hospitals NHS Trust	195	204	96	78	43	77	81	5	49	39	3	4
North Tees And Hartlepool NHS Foundation Trust	260	241	108	83	97	145	96	3	56	30	7	4
Northumbria Healthcare NHS Foundation Trust	282	290	97	83	90	160	99	13	49	33	4	1
South Tees Hospitals NHS Foundation Trust	265	285	93	49	97	205	88	20	40	27	3	11
South Tyneside NHS Foundation Trust	90	86	105	93	100	54	100	9	46	41	4	0
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	223	211	106	97	100	160	99	8	48	38	5	1
Lancashire and South Cumbria	**866**	**878**	**99**	**86**	**94**	**500**	**89**	**18**	**54**	**23**	**2**	**3**
Blackpool Teaching Hospitals NHS Foundation Trust	248	177	140	88	90	118	87	21	58	17	2	3
East Lancashire Hospitals NHS Trust	215	223	96	83	99	141	84	15	52	28	2	2
Lancashire Teaching Hospitals NHS Foundation Trust	202	260	78	99	100	94	91	13	60	22	2	3
University Hospitals Of Morecambe Bay NHS Foundation Trust	201	218	92	73	87	147	92	21	48	24	2	5

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
Greater Manchester	**1,432**	**1,558**	**92**	**75**	**88**	**938**	**89**	**10**	**55**	**29**	**2**	**3**
Bolton NHS Foundation Trust	135	165	82	92	98	98	87	6	50	30	7	7
Central Manchester University Hospitals NHS Foundation Trust	170	151	113	81	99	108	99	27	56	15	2	0
Pennine Acute Hospitals NHS Trust	429	390	110	78	83	236	87	5	59	33	3	0
Salford Royal NHS Foundation Trust	125	133	94	33	75	70	74	6	61	29	1	3
Stockport NHS Foundation Trust	166	161	103	69	82	100	96	4	59	36	1	0
Tameside And Glossop Integrated Care NHS Foundation Trust	111	98	113	84	95	67	97	3	46	48	3	0
The Christie NHS Foundation Trust	~	~	~	~	~	78	68	26	49	6	0	19
University Hospital Of South Manchester NHS Foundation Trust	140	173	81	70	94	100	99	12	52	34	2	0
Wrightington, Wigan And Leigh NHS Foundation Trust	148	156	95	91	86	81	86	11	56	30	2	1
West Yorkshire	**1,308**	**1,274**	**103**	**80**	**73**	**812**	**70**	**13**	**37**	**20**	**1**	**29**
Airedale NHS Foundation Trust	132	126	105	93	100	85	99	38	49	12	0	1
Bradford Teaching Hospitals NHS Foundation Trust	169	199	85	74	41	103	17	0	17	3	0	81
Calderdale And Huddersfield NHS Foundation Trust	235	205	115	71	74	112	91	15	49	28	1	7
Harrogate And District NHS Foundation Trust	150	130	115	69	100	104	94	16	41	33	5	5
Leeds Teaching Hospitals NHS Trust	365	351	104	98	84	254	96	11	51	33	2	3
Mid Yorkshire Hospitals NHS Trust	257	263	98	64	49	154	12	9	8	0	0	82
Humber, Coast and Vale	**922**	**928**	**99**	**81**	**89**	**634**	**51**	**3**	**28**	**20**	**2**	**47**
Hull And East Yorkshire Hospitals NHS Trust	311	288	108	79	76	201	0	0	0	0	0	100
Northern Lincolnshire And Goole NHS Foundation Trust	237	256	93	77	96	190	47	1	24	22	2	52
York Teaching Hospital NHS Foundation Trust – The York Hospital	252	272	93	89	93	165	100	10	60	28	2	0
York Teaching Hospital NHS Foundation Trust– Scarborough Hospital	122	112	109	75	98	78	90	3	40	53	4	1
South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	**1,050**	**1,028**	**102**	**83**	**79**	**601**	**94**	**16**	**55**	**27**	**2**	**1**
Barnsley Hospital NHS Foundation Trust	134	127	106	78	97	72	96	19	50	26	3	1
Chesterfield Royal Hospital NHS Foundation Trust	210	207	101	80	96	120	98	26	51	23	0	0
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	277	242	114	79	24	160	85	14	56	26	3	1
Sheffield Teaching Hospitals NHS Foundation Trust	266	305	87	86	100	155	94	12	60	25	3	0
The Rotherham NHS Foundation Trust	163	147	111	96	100	94	99	10	52	37	1	0

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
Cheshire and Merseyside	**1,501**	**1,580**	**95**	**90**	**92**	**919**	**88**	**11**	**54**	**30**	**3**	**3**
Aintree University Hospital NHS Foundation Trust	229	238	96	96	83	117	96	26	53	18	2	2
Countess Of Chester Hospital NHS Foundation Trust	93	159	58	97	100	81	98	10	74	15	1	0
East Cheshire NHS Trust	123	105	117	98	100	72	96	14	60	24	3	0
Mid Cheshire Hospitals NHS Foundation Trust	207	184	113	96	100	99	84	16	62	22	0	0
Royal Liverpool And Broadgreen University Hospitals NHS Trust	186	201	93	88	90	113	93	4	60	33	3	1
Southport And Ormskirk Hospital NHS Trust	129	117	110	91	59	90	69	10	53	31	4	1
St Helens And Knowsley Hospital Services NHS Trust	248	226	110	92	100	166	92	8	47	36	4	5
Warrington And Halton Hospitals NHS Foundation Trust	69	152	45	77	90	54	70	7	33	39	6	15
Wirral University Teaching Hospital NHS Foundation Trust	215	184	117	74	100	127	87	6	43	49	1	2
Wales	**1,948**	**1,874**	**104**	**85**	**90**	**1,297**	**93**	**8**	**56**	**33**	**2**	**2**
Bronglais MDT	50	45	111	70	92	14	71	14	36	36	7	7
Cardiff MDT	230	211	109	79	47	137	85	9	49	35	0	7
Nevill Hall Hospital MDT	108	125	86	88	99	74	95	1	53	41	3	3
Prince Charles Hospital MDT	109	106	103	97	99	79	99	0	58	38	4	0
Princess Of Wales MDT	149	150	99	95	100	92	100	11	65	23	1	0
Royal Glamorgan Hospital MDT	108	114	95	72	94	76	93	8	42	46	3	1
Royal Gwent Hospital MDT	256	135	190	86	95	167	99	15	51	34	0	0
Swansea MDT	229	253	91	69	98	196	81	8	58	32	1	1
West Wales General & Prince Phillip MDT	157	173	91	92	92	100	97	8	66	21	4	1
Withybush General MDT	86	83	104	90	79	51	90	10	53	29	0	8
Ysbwyty Glan Clwydd MDT	155	165	94	83	99	94	100	6	53	32	9	0
Ysbwyty Gwynedd MDT	149	150	99	85	99	103	97	6	57	36	1	0
Ysbwyty Maelor MDT	162	164	99	98	100	114	98	8	61	28	3	0

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
West Midlands	**2,837**	**3,235**	**88**	**80**	**84**	**1,814**	**76**	**12**	**50**	**29**	**3**	**7**
Burton Hospitals NHS Foundation Trust	163	170	96	98	99	120	99	3	33	57	7	1
George Eliot Hospital NHS Trust	95	100	95	96	100	58	100	7	59	31	3	0
Heart Of England NHS Foundation Trust	335	346	97	78	100	198	96	17	56	22	5	0
Sandwell And West Birmingham Hospitals NHS Trust	117	154	76	58	90	78	50	9	44	31	4	13
Shrewsbury And Telford Hospital NHS Trust	313	362	86	75	99	206	54	13	47	25	2	13
South Warwickshire NHS Foundation Trust	131	128	102	66	56	97	93	8	60	28	3	1
The Dudley Group NHS Foundation Trust	218	233	94	83	94	137	67	8	42	37	5	7
The Royal Wolverhampton NHS Trust	41	274	15	93	93	22	14	0	14	0	0	86
University Hospitals Birmingham NHS Foundation Trust	242	230	105	70	16	124	1	5	37	29	2	27
University Hospitals Coventry And Warwickshire NHS Trust	189	229	83	79	92	135	95	8	52	34	5	1
University Hospitals Of North Midlands NHS Trust	333	409	81	85	91	239	86	16	55	19	3	7
Walsall Healthcare NHS Trust	109	108	101	84	99	70	50	27	47	21	0	4
Worcestershire Acute Hospitals NHS Trust	414	364	114	84	77	242	91	10	61	29	1	0
Wye Valley NHS Trust	137	128	107	73	87	88	95	20	51	24	3	1
East Midlands	**2,005**	**2,300**	**87**	**63**	**78**	**1,249**	**83**	**11**	**56**	**27**	**2**	**4**
Derby Teaching Hospitals NHS Foundation Trust	334	303	110	60	91	188	92	17	55	19	2	8
Kettering General Hospital NHS Foundation Trust	209	165	127	69	94	139	99	24	60	15	1	0
Northampton General Hospital NHS Trust	159	202	79	52	88	123	62	12	42	22	0	24
Nottingham University Hospitals NHS Trust	442	644**	69	82	100	258	100	5	61	32	2	0
Sherwood Forest Hospitals NHS Foundation Trust	214	199	108	27	3	129	24	12	59	26	2	0
University Hospitals Of Leicester NHS Trust	449	430	104	77	70	291	99	5	54	35	5	0
United Lincolnshire Hospitals NHS Trust – Lincoln And Grantham	90	249	36	46	79	43	91	12	65	21	0	2
United Lincolnshire Hospitals NHS Trust – Pligrim Hospital Boston	108	108	100	28	84	78	40	4	55	32	8	1

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
East of England	**3,496**	**3,596**	**97**	**62**	**88**	**2,168**	**79**	**11**	**56**	**29**	**2**	**2**
Basildon And Thurrock University Hospitals NHS Foundation Trust	155	231	67	77	98	111	96	16	61	23	0	0
Bedford Hospital NHS Trust	157	136	115	30	100	91	79	9	59	26	0	5
Cambridge University Hospitals NHS Foundation Trust	244	254	96	59	100	191	99	4	58	35	3	0
East And North Hertfordshire NHS Trust	263	242	109	9	2	134	7	13	46	37	1	2
East Suffolk and North Essex NHS Foundation Trust – Colchester Hospital	273	251	109	80	99	156	86	12	58	29	1	0
East Suffolk and North Essex NHS Foundation Trust – Ipswich Hospital	228	236	97	63	79	152	67	9	51	29	6	6
James Paget University Hospitals NHS Foundation Trust	166	163	102	83	100	101	90	7	31	56	6	0
Luton And Dunstable University Hospital NHS Foundation Trust	175	171	102	75	95	121	75	12	61	21	4	1
Mid Essex Hospital Services NHS Trust	93	174	53	82	100	35	23	20	34	17	0	29
Milton Keynes University Hospital NHS Foundation Trust	135	144	94	98	99	94	96	23	53	22	1	0
Norfolk And Norwich University Hospitals NHS Foundation Trust	432	453	95	63	95	259	94	7	57	34	1	1
North West Anglia NHS Foundation Trust – Hinchingbrooke Hospital	107	97	110	76	100	59	98	19	47	31	2	2
North West Anglia NHS Foundation Trust – Peterborough City Hospital	212	204	104	53	100	137	96	25	50	21	4	0
Southend University Hospital NHS Foundation Trust	186	176	106	18	92	108	99	5	64	29	3	0
The Princess Alexandra Hospital NHS Trust	164	150	109	87	99	82	99	11	51	35	2	0
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	146	155	94	55	95	91	0	3	31	57	8	1
West Hertfordshire Hospitals NHS Trust	204	180	113	58	68	139	60	2	87	7	0	4
West Suffolk NHS Foundation Trust	156	179	87	97	100	107	98	15	70	15	0	0
Peninsula	**1,105**	**1,180**	**94**	**87**	**64**	**677**	**96**	**23**	**53**	**22**	**1**	**0**
Northern Devon Healthcare NHS Trust	118	129	91	69	100	65	88	17	49	32	2	0
Plymouth Hospitals NHS Trust	108	237	46	94	82	77	94	6	58	31	1	3
Royal Cornwall Hospitals NHS Trust	344	335	103	91	42	210	98	30	61	8	1	0
Royal Devon And Exeter NHS Foundation Trust	299	269	111	85	100	176	100	13	55	30	2	0
Torbay And South Devon NHS Foundation Trust	236	210	112	86	22	149	92	37	40	21	2	1

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
Somerset, Wiltshire, Avon & Gloucestershire	**1,709**	**1,639**	**104**	**86**	**96**	**1,081**	**91**	**10**	**59**	**27**	**1**	**2**
Gloucestershire Hospitals NHS Foundation Trust	423	398	106	72	88	301	90	12	62	24	1	1
North Bristol NHS Trust	255	207	123	97	99	139	96	14	51	30	1	3
Royal United Hospitals Bath NHS Foundation Trust	208	249	84	94	100	160	98	9	62	26	3	0
Salisbury NHS Foundation Trust	166	154	108	94	100	95	88	11	60	19	2	8
Taunton And Somerset NHS Foundation Trust	200	210	95	80	100	129	92	9	55	36	0	1
University Hospitals Bristol NHS Foundation Trust	235	211	111	90	97	133	85	8	71	20	0	0
Weston Area Health NHS Trust	77	84	92	100	100	51	100	6	43	45	6	0
Yeovil District Hospital NHS Foundation Trust	145	126	115	79	97	73	70	8	55	32	0	5
Wessex	**1,524**	**1,529**	**100**	**83**	**80**	**966**	**92**	**10**	**56**	**27**	**3**	**4**
Dorset County Hospital NHS Foundation Trust	105	115	91	93	84	71	96	7	49	38	1	4
Hampshire Hospitals NHS Foundation Trust – Basingstoke And North Hampshire Hospital	119	175	68	86	98	100	96	1	73	23	0	3
Hampshire Hospitals NHS Foundation Trust – Royal Hampshire County Hospital	109	140	78	81	100	79	90	1	72	24	3	0
Isle Of Wight NHS Trust	104	96	108	77	93	64	66	23	20	25	3	28
Poole Hospital NHS Foundation Trust	181	163	111	76	86	100	92	5	59	27	6	3
Portsmouth Hospitals NHS Trust	355	333	107	62	27	203	93	12	55	27	2	4
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	254	223	114	99	100	153	97	10	60	25	5	0
University Hospital Southampton NHS Foundation Trust	297	284	105	99	100	196	94	17	52	29	3	1
Thames Valley	**1,119**	**1,034**	**108**	**78**	**79**	**656**	**81**	**18**	**44**	**20**	**2**	**16**
Buckinghamshire Healthcare NHS Trust	253	231	110	93	98	163	98	21	53	22	2	1
Great Western Hospitals NHS Foundation Trust	187	200	94	39	68	122	70	7	38	25	6	25
Oxford University Hospitals NHS Foundation Trust	415	349	119	75	60	211	61	31	29	7	0	33
Royal Berkshire NHS Foundation Trust	264	254	104	94	100	160	100	8	61	29	1	0

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
Surrey and Sussex	**1,761**	**1,835**	**96**	**77**	**80**	**1,172**	**81**	**10**	**58**	**23**	**3**	**6**
Ashford And St Peter's Hospitals NHS Foundation Trust	160	169	95	97	100	104	96	6	60	28	6	1
Brighton And Sussex University Hospitals NHS Trust	261	223	117	44	73	154	32	3	75	8	0	14
East Sussex Healthcare NHS Trust	238	286	83	41	38	151	70	10	62	21	1	5
Frimley Health NHS Foundation Trust – Frimley Park Hospital	171	224	76	99	100	145	82	14	46	29	2	8
Frimley Health NHS Foundation Trust – Heatherwood And Wexham Park Hospitals	213	173	123	94	100	115	92	21	51	23	5	0
Royal Surrey County Hospital NHS Foundation Trust	169	189	89	96	20	100	75	11	52	12	1	24
Surrey And Sussex Healthcare NHS Trust	179	226	79	94	99	175	98	10	65	22	3	0
Western Sussex Hospitals NHS Foundation Trust – St Richard's Hospital	180	182	99	77	100	117	100	3	64	30	3	0
Western Sussex Hospitals NHS Foundation Trust – Worthing Hospital	190	163	117	75	99	111	93	8	43	36	5	7
Kent and Medway	**1,015**	**1,117**	**91**	**77**	**79**	**639**	**86**	**11**	**53**	**29**	**2**	**5**
Dartford And Gravesham NHS Trust	136	174	78	76	100	100	91	10	57	27	4	2
East Kent Hospitals University NHS Foundation Trust	424	457	93	74	80	280	93	10	53	36	1	0
Maidstone And Tunbridge Wells NHS Trust	295	302	98	77	60	152	65	9	43	28	2	18
Medway NHS Foundation Trust	160	184	87	90	94	107	92	18	66	13	0	3
West London	**1,390**	**1,800**	**77**	**83**	**89**	**868**	**90**	**12**	**55**	**27**	**3**	**3**
Chelsea And Westminster Hospital NHS Foundation Trust	160	158	101	91	99	98	91	26	51	20	2	1
Croydon Health Services NHS Trust	113	116	97	96	100	54	98	4	72	24	0	0
Epsom And St Helier University Hospitals NHS Trust	183	188	97	95	99	113	83	5	41	42	1	12
Imperial College Healthcare NHS Trust	227	240	95	92	100	143	100	9	52	32	7	0
Kingston Hospital NHS Foundation Trust	152	131	116	97	99	96	100	10	61	23	5	0
London North West Hospitals NHS Trust	256	288	89	75	97	191	83	13	65	18	3	1
St George's University Hospitals NHS Foundation Trust	172	171	101	52	28	59	95	24	51	22	3	0
The Hillingdon Hospitals NHS Foundation Trust	116	106	109	70	90	74	88	16	51	31	1	0
The Royal Marsden NHS Foundation Trust	~	~	~	~	~	40	65	3	40	38	0	20

Table 8.1 continued
Case ascertainment and data completeness according to trust/hospital/MDT

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 (%)
South East London	**557**	**756**	**74**	**71**	**98**	**453**	**64**	**13**	**55**	**24**	**1**	**7**
Guy's And St Thomas' NHS Foundation Trust	81	168	48	21	85	109	50	9	41	21	1	28
King's College Hospital NHS Foundation Trust – King's College Hospital	152	189	80	78	100	115	16	17	58	23	2	0
King's College Hospital NHS Foundation Trust – Princess Royal University Hospital	139	162	86	77	99	93	88	19	49	29	1	1
Lewisham And Greenwich NHS Trust	185	237	78	81	100	136	99	10	66	23	1	0
North Central and East London	**898**	**1,281**	**70**	**81**	**99**	**526**	**72**	**20**	**45**	**19**	**1**	**14**
Barking, Havering And Redbridge University Hospitals NHS Trust	273	263	104	70	100	150	42	15	22	15	1	47
Barts Health NHS Trust	106	324	33	97	100	76	70	28	62	5	0	5
Homerton University Hospital NHS Foundation Trust	71	67	106	96	99	41	98	2	39	51	7	0
North Middlesex University Hospital NHS Trust	95	109	87	79	98	64	83	14	47	34	3	2
Royal Free London NHS Foundation Trust	167	316	53	92	99	72	99	17	58	25	0	0
The Whittington Health NHS Trust	47	59	80	83	100	30	93	43	50	7	0	0
University College London Hospitals NHS Foundation Trust	139	143	97	68	99	93	75	28	60	12	0	0

* For the purposes of the audit, the following recorded tumour stages are considered to be missing data: Tx, T9, Nx, N9, Mx, M9
** Significantly more cases were identified in HES than anticipated. Unlinked patients with an OPCS code relating to Chemotherapy delivery or Brachytherapy were removed as their numbers were significantly increased compared to 2015/16. Despite this the HES denominator is higher than previously found and so reported case ascertainment may be lower than it actually is

Table 8.2
Management of all patients reported to the audit according to trust/hospital/MDT

Diagnosing Cancer Alliance/Trust Name 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	**30,424**	**93**	**59**	**4**	**4**	**17**	**16**
North East and Cumbria	**1,981**	**94**	**56**	**4**	**4**	**23**	**13**
City Hospitals Sunderland NHS Foundation Trust	153	87	48	4	8	27	13
County Durham And Darlington NHS Foundation Trust	326	98	57	2	3	22	17
Gateshead Health NHS Foundation Trust	187	89	65	6	2	19	8
North Cumbria University Hospitals NHS Trust	195	93	33	4	2	17	44
North Tees And Hartlepool NHS Foundation Trust	260	95	67	7	2	19	6
Northumbria Healthcare NHS Foundation Trust	282	92	50	4	4	35	7
South Tees Hospitals NHS Foundation Trust	265	96	60	5	5	20	10
South Tyneside NHS Foundation Trust	90	98	56	1	9	24	10
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	223	96	63	3	4	24	6
Lancashire And South Cumbria	**866**	**96**	**53**	**6**	**4**	**19**	**18**
Blackpool Teaching Hospitals NHS Foundation Trust	248	96	49	7	1	17	27
East Lancashire Hospitals NHS Trust	215	94	52	3	5	25	16
Lancashire Teaching Hospitals NHS Foundation Trust	202	95	44	3	3	28	21
University Hospitals Of Morecambe Bay NHS Foundation Trust	201	100	71	9	7	6	6
Greater Manchester	**1,432**	**97**	**60**	**4**	**1**	**17**	**18**
Bolton NHS Foundation Trust	135	95	75	1	1	11	12
Central Manchester University Hospitals NHS Foundation Trust	170	99	63	11	1	16	10
Pennine Acute Hospitals NHS Trust	429	100	57	1	1	16	26
Salford Royal NHS Foundation Trust	125	100	56	2	3	15	23
Stockport NHS Foundation Trust	166	89	60	1	1	25	13
Tameside And Glossop Integrated Care NHS Foundation Trust	111	100	60	8	5	20	6
University Hospital Of South Manchester NHS Foundation Trust	140	98	59	3	1	26	11
Wrightington, Wigan And Leigh NHS Foundation Trust	148	92	58	7	0	7	28
West Yorkshire	**1,308**	**84**	**56**	**4**	**5**	**13**	**22**
Airedale NHS Foundation Trust	132	96	53	1	3	11	33
Bradford Teaching Hospitals NHS Foundation Trust	169	70	59	3	3	7	28
Calderdale And Huddersfield NHS Foundation Trust	235	80	54	5	3	6	33
Harrogate And District NHS Foundation Trust	150	93	69	4	5	15	7
Leeds Teaching Hospitals NHS Trust	365	79	56	5	8	14	17
Mid Yorkshire Hospitals NHS Trust	257	97	50	5	5	23	16
Humber, Coast And Vale	**922**	**99**	**66**	**4**	**3**	**14**	**13**
Hull And East Yorkshire Hospitals NHS Trust	311	99	70	2	4	10	14
Northern Lincolnshire And Goole NHS Foundation Trust	237	99	70	5	3	11	11
York Teaching Hospital NHS Foundation Trust – The York Hospital	252	99	62	4	2	22	9
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	122	98	53	4	4	18	20
South Yorkshire, Bassetlaw, North Derbyshire And Hardwick	**1,050**	**94**	**55**	**8**	**3**	**25**	**10**
Barnsley Hospital NHS Foundation Trust	134	97	57	7	0	28	8
Chesterfield Royal Hospital NHS Foundation Trust	210	89	56	12	1	22	10
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	277	89	53	6	5	28	8
Sheffield Teaching Hospitals NHS Foundation Trust	266	97	56	8	3	23	9
The Rotherham NHS Foundation Trust	163	99	52	5	6	23	14
Cheshire And Merseyside	**1,501**	**92**	**59**	**4**	**4**	**17**	**17**
Aintree University Hospital NHS Foundation Trust	229	94	57	7	2	18	17
Countess Of Chester Hospital NHS Foundation Trust	93	98	72	0	3	10	15
East Cheshire NHS Trust	123	86	50	6	4	28	13
Mid Cheshire Hospitals NHS Foundation Trust	207	92	62	5	1	10	22
Royal Liverpool And Broadgreen University Hospitals NHS Trust	186	90	55	6	6	17	16
Southport And Ormskirk Hospital NHS Trust	129	92	63	2	7	12	16
St Helens And Knowsley Hospital Services NHS Trust	248	91	57	4	6	20	13
Warrington And Halton Hospitals NHS Foundation Trust	69	100	71	0	3	10	16
Wirral University Teaching Hospital NHS Foundation Trust	215	90	58	0	1	17	23

Table 8.2 continued
Management of all patients reported to the audit according to trust/hospital/MDT

Diagnosing Cancer Alliance/Trust Name 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	**1,948**	**100**	**62**	**4**	**5**	**14**	**15**
Bronglais MDT	50	100	54	2	0	0	44
Cardiff MDT	230	100	57	5	3	16	20
Nevill Hall Hospital MDT	108	100	58	6	12	11	13
Prince Charles Hospital MDT	109	100	68	6	5	15	6
Princess Of Wales MDT	149	100	64	2	5	15	15
Royal Glamorgan Hospital MDT	108	100	68	1	2	19	11
Royal Gwent Hospital MDT	256	100	60	2	7	13	18
Swansea MDT	229	99	66	4	9	12	10
West Wales General & Prince Phillip MDT	157	100	62	3	6	13	16
Withybush General MDT	86	100	53	6	9	7	24
Ysbwyty Glan Clwydd MDT	155	100	56	5	3	18	17
Ysbwyty Gwynedd MDT	149	100	62	5	3	17	13
Ysbwyty Maelor MDT	162	100	69	3	2	16	10
West Midlands	**2,837**	**95**	**57**	**5**	**5**	**15**	**18**
Burton Hospitals NHS Foundation Trust	163	99	66	2	7	23	2
George Eliot Hospital NHS Trust	95	89	59	4	5	24	7
Heart Of England NHS Foundation Trust	335	99	51	5	7	29	8
Sandwell And West Birmingham Hospitals NHS Trust	117	84	65	1	2	16	16
Shrewsbury And Telford Hospital NHS Trust	313	97	63	4	2	12	18
South Warwickshire NHS Foundation Trust	131	88	60	7	8	16	9
The Dudley Group NHS Foundation Trust	218	93	57	5	4	14	19
The Royal Wolverhampton NHS Trust	41	100	49	0	2	12	37
University Hospitals Birmingham NHS Foundation Trust	242	96	39	3	4	3	51
University Hospitals Coventry And Warwickshire NHS Trust	189	99	67	2	3	15	14
University Hospitals Of North Midlands NHS Trust	333	98	62	10	8	8	12
Walsall Healthcare NHS Trust	109	100	54	4	7	20	15
Worcestershire Acute Hospitals NHS Trust	414	88	55	7	5	15	19
Wye Valley NHS Trust	137	99	59	5	5	5	26
East Midlands	**2,005**	**92**	**58**	**5**	**3**	**19**	**15**
Derby Teaching Hospitals NHS Foundation Trust	334	87	51	4	5	24	16
Kettering General Hospital NHS Foundation Trust	209	83	75	7	3	3	12
Northampton General Hospital NHS Trust	159	94	62	3	2	17	17
Nottingham University Hospitals NHS Trust	442	93	51	7	4	24	14
Sherwood Forest Hospitals NHS Foundation Trust	214	100	61	2	0	9	28
University Hospitals Of Leicester NHS Trust	449	94	63	6	1	25	5
United Lincolnshire Hospitals NHS Trust – Lincoln And Grantham	90	99	42	3	6	9	40
United Lincolnshire Hospitals NHS Trust – Pligrim Hospital Boston	108	95	65	5	6	11	14
East Of England	**3,496**	**90**	**59**	**4**	**4**	**15**	**18**
Basildon And Thurrock University Hospitals NHS Foundation Trust	155	93	66	4	3	18	10
Bedford Hospital NHS Trust	157	87	54	8	7	16	16
Cambridge University Hospitals NHS Foundation Trust	244	99	64	7	4	20	6
East And North Hertfordshire NHS Trust	263	97	52	1	2	12	32
East Suffolk and North Essex NHS Foundation Trust – Colchester Hospital	273	93	61	5	4	18	12
East Suffolk and North Essex NHS Foundation Trust – Ipswich Hospital	228	85	57	5	2	7	29
James Paget University Hospitals NHS Foundation Trust	166	83	49	1	10	22	17
Luton And Dunstable University Hospital NHS Foundation Trust	175	93	69	3	3	15	9
Mid Essex Hospital Services NHS Trust	93	99	32	4	6	18	39
Milton Keynes University Hospital NHS Foundation Trust	135	100	70	4	0	2	24
Norfolk And Norwich University Hospitals NHS Foundation Trust	432	77	58	7	4	10	22
North West Anglia NHS Foundation Trust – Hinchingbrooke Hospital	107	94	51	5	8	21	15
North West Anglia NHS Foundation Trust – Peterborough City Hospital	212	86	63	2	2	13	20
Southend University Hospital NHS Foundation Trust	186	91	55	4	4	32	4
The Princess Alexandra Hospital NHS Trust	164	78	53	1	1	12	32
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	146	94	61	8	1	8	23
West Hertfordshire Hospitals NHS Trust	204	99	67	4	1	11	17
West Suffolk NHS Foundation Trust	156	98	65	5	6	17	7

Table 8.2 continued
Management of all patients reported to the audit according to trust/hospital/MDT

Diagnosing Cancer Alliance/Trust Name 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	**1,105**	**98**	**60**	**5**	**2**	**20**	**13**
Northern Devon Healthcare NHS Trust	118	99	54	3	1	22	19
Plymouth Hospitals NHS Trust	108	98	69	1	3	18	10
Royal Cornwall Hospitals NHS Trust	344	98	60	5	3	23	10
Royal Devon And Exeter NHS Foundation Trust	299	96	59	5	1	21	14
Torbay And South Devon NHS Foundation Trust	236	100	59	6	4	16	15
Somerset, Wiltshire, Avon & Gloucestershire	**1,709**	**95**	**60**	**3**	**3**	**18**	**15**
Gloucestershire Hospitals NHS Foundation Trust	423	98	68	4	3	13	12
North Bristol NHS Trust	255	95	44	4	7	27	18
Royal United Hospitals Bath NHS Foundation Trust	208	88	64	3	4	20	9
Salisbury NHS Foundation Trust	166	96	69	3	2	16	11
Taunton And Somerset NHS Foundation Trust	200	96	63	5	1	14	17
University Hospitals Bristol NHS Foundation Trust	235	94	60	2	2	16	21
Weston Area Health NHS Trust	77	94	61	0	5	21	13
Yeovil District Hospital NHS Foundation Trust	145	94	49	1	4	26	19
Wessex	**1,524**	**92**	**61**	**4**	**2**	**20**	**13**
Dorset County Hospital NHS Foundation Trust	105	98	62	4	5	11	18
Hampshire Hospitals NHS Foundation Trust – Basingstoke And North Hampshire Hospital	119	91	81	1	0	9	9
Hampshire Hospitals NHS Foundation Trust – Royal Hampshire County Hospital	109	92	71	1	2	13	14
Isle Of Wight NHS Trust	104	86	64	2	1	25	8
Poole Hospital NHS Foundation Trust	181	88	56	8	2	15	19
Portsmouth Hospitals NHS Trust	355	94	53	6	3	31	8
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	254	99	58	5	1	22	14
University Hospital Southampton NHS Foundation Trust	297	89	62	3	2	17	16
Thames Valley	**1,119**	**95**	**53**	**4**	**3**	**18**	**21**
Buckinghamshire Healthcare NHS Trust	253	98	59	3	3	21	14
Great Western Hospitals NHS Foundation Trust	187	80	48	2	5	15	30
Oxford University Hospitals NHS Foundation Trust	415	97	49	5	3	9	33
Royal Berkshire NHS Foundation Trust	264	100	58	6	2	31	2
Surrey And Sussex	**1,761**	**79**	**64**	**4**	**4**	**14**	**14**
Ashford And St Peter's Hospitals NHS Foundation Trust	160	93	66	4	3	11	17
Brighton And Sussex University Hospitals NHS Trust	261	86	66	4	2	10	18
East Sussex Healthcare NHS Trust	238	97	55	4	3	18	20
Frimley Health NHS Foundation Trust – Frimley Park Hospital	171	99	65	2	13	5	15
Frimley Health NHS Foundation Trust – Heatherwood And Wexham Park Hospitals	213	84	48	5	8	23	16
Royal Surrey County Hospital NHS Foundation Trust	169	100	77	2	1	4	17
Surrey And Sussex Healthcare NHS Trust	179	75	87	4	2	7	0
Western Sussex Hospitals NHS Foundation Trust – St Richard's Hospital	180	8	61	6	4	20	9
Western Sussex Hospitals NHS Foundation Trust – Worthing Hospital	190	78	56	4	2	25	13
Kent And Medway	**1,015**	**89**	**61**	**3**	**3**	**8**	**26**
Dartford And Gravesham NHS Trust	136	85	74	1	0	5	20
East Kent Hospitals University NHS Foundation Trust	424	81	61	4	4	10	22
Maidstone And Tunbridge Wells NHS Trust	295	98	52	2	2	7	38
Medway NHS Foundation Trust	160	99	66	4	3	9	18
West London	**1,390**	**94**	**59**	**4**	**3**	**17**	**17**
Chelsea And Westminster Hospital NHS Foundation Trust	160	91	64	4	3	21	7
Croydon Health Services NHS Trust	113	100	44	9	6	32	9
Epsom And St Helier University Hospitals NHS Trust	183	98	62	7	1	18	12
Imperial College Healthcare NHS Trust	227	90	63	1	1	15	20
Kingston Hospital NHS Foundation Trust	152	90	59	6	7	19	9
London North West Hospitals NHS Trust	256	92	70	4	2	14	10
St George's University Hospitals NHS Foundation Trust	172	95	36	0	1	7	56
The Hillingdon Hospitals NHS Foundation Trust	116	100	59	5	3	24	8

Table 8.2 continued
Management of all patients reported to the audit according to trust/hospital/MDT

Diagnosing Cancer Alliance/Trust Name 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	**557**	**100**	**73**	**5**	**2**	**17**	**4**
Guy's And St Thomas' NHS Foundation Trust	81	100	91	2	2	1	2
King's College Hospital NHS Foundation Trust – King's College Hospital	152	100	68	5	1	20	5
King's College Hospital NHS Foundation Trust – Princess Royal University Hospital	139	100	69	5	0	24	2
Lewisham And Greenwich NHS Trust	185	99	70	6	3	15	5
North Central And East London	**898**	**99**	**54**	**4**	**3**	**15**	**23**
Barking, Havering And Redbridge University Hospitals NHS Trust	273	97	51	6	3	12	29
Barts Health NHS Trust	106	100	76	2	1	7	14
Homerton University Hospital NHS Foundation Trust	71	100	51	4	7	25	13
North Middlesex University Hospital NHS Trust	95	99	64	1	4	14	17
Royal Free London NHS Foundation Trust	167	99	37	1	5	21	37
The Whittington Health NHS Trust	47	98	64	2	4	13	17
University College London Hospitals NHS Foundation Trust	139	99	56	12	3	15	14

The Royal Marsden and The Christie Hospital NHS Foundation trust are tertiary cancer centres that mainly provide oncological treatment for bowel cancer patients therefore have been excluded from Treatment Pathways

Total does not include patients reported by non-NHS institutions

Table 8.3
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
Overall	**19,222**	**8**	**17**	**66**	**13,589**	**95**	**87**	**13,500**	**64**
North East and Cumbria	**1,184**	**8**	**15**	**80**	**833**	**97**	**88**	**911**	**55**
City Hospitals Sunderland NHS Foundation Trust	102	8	18	99	75	75	98	77	59
County Durham And Darlington NHS Foundation Trust	178	5	19	76	121	98	75	127	71
Gateshead Health NHS Foundation Trust	100	11	13	93	74	100	92	81	47
North Cumbria University Hospitals NHS Trust	77	15	23	86	57	98	80	53	48
North Tees And Hartlepool NHS Foundation Trust	146	15	12	90	111	100	89	118	51
Northumbria Healthcare NHS Foundation Trust	160	6	16	49	107	100	82	129	51
South Tees Hospitals NHS Foundation Trust	205	4	13	82	145	99	94	159	49
South Tyneside NHS Foundation Trust	54	6	20	89	41	100	95	42	44
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	162	8	12	79	102	100	94	125	66
Lancashire And South Cumbria	**502**	**11**	**15**	**60**	**366**	**96**	**72**	**391**	**72**
Blackpool Teaching Hospitals NHS Foundation Trust	120	5	17	80	88	91	70	84	66
East Lancashire Hospitals NHS Trust	141	20	18	37	96	100	90	112	80
Lancashire Teaching Hospitals NHS Foundation Trust	94	11	14	77	67	96	45	73	67
University Hospitals Of Morecambe Bay NHS Foundation Trust	147	9	11	57	115	96	73	122	72
Greater Manchester	**939**	**9**	**16**	**55**	**699**	**96**	**81**	**670**	**72**
Bolton NHS Foundation Trust	99	3	21	36	76	95	53	60	74
Central Manchester University Hospitals NHS Foundation Trust	108	8	12	56	80	100	90	71	84
Pennine Acute Hospitals NHS Trust	236	4	15	64	184	93	92	179	70
Salford Royal NHS Foundation Trust	70	16	17	61	54	100	63	53	67
Stockport NHS Foundation Trust	100	5	21	42	77	100	78	75	81
Tameside And Glossop Integrated Care NHS Foundation Trust	67	9	16	61	53	98	88	50	63
The Christie NHS Foundation Trust	78	34	1	30	40	100	83	52	87
University Hospital Of South Manchester NHS Foundation Trust	100	8	18	76	66	100	91	73	67
Wrightington, Wigan And Leigh NHS Foundation Trust	81	6	17	60	69	88	77	57	53
West Yorkshire	**825**	**10**	**12**	**79**	**548**	**99**	**84**	**439**	**68**
Airedale NHS Foundation Trust	85	5	0	93	52	100	98	77	62
Bradford Teaching Hospitals NHS Foundation Trust	103	3	4	96	68	99	78	†	†
Calderdale And Huddersfield NHS Foundation Trust	114	12	17	44	67	100	94	84	78
Harrogate And District NHS Foundation Trust	104	13	9	89	74	100	72	90	61
Leeds Teaching Hospitals NHS Trust	258	9	12	75	175	99	84	188	70
Mid Yorkshire Hospitals NHS Trust	161	16	20	83	112	97	84	†	†

Table 8.3 continued
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
Humber, Coast And Vale	**640**	**7**	**15**	**44**	**436**	**95**	**86**	**336**	**69**
Hull And East Yorkshire Hospitals NHS Trust	203	8	21	32	143	87	84	†	†
Northern Lincolnshire And Goole NHS Foundation Trust	194	3	16	65	133	98	86	133	79
York Teaching Hospital NHS Foundation Trust – The York Hospital	165	8	9	29	103	100	85	145	61
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	78	8	13	54	57	98	91	58	65
South Yorkshire, Bassetlaw, North Derbyshire And Hardwick	**603**	**9**	**12**	**58**	**375**	**99**	**90**	**474**	**65**
Barnsley Hospital NHS Foundation Trust	72	15	19	44	46	98	89	47	81
Chesterfield Royal Hospital NHS Foundation Trust	120	9	3	34	80	100	93	113	78
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	160	9	13	86	104	98	84	125	43
Sheffield Teaching Hospitals NHS Foundation Trust	157	5	13	48	96	100	98	113	64
The Rotherham NHS Foundation Trust	94	9	12	69	49	100	80	76	75
Cheshire And Merseyside	**919**	**8**	**17**	**57**	**676**	**94**	**91**	**617**	**68**
Aintree University Hospital NHS Foundation Trust	117	4	10	53	83	96	93	95	76
Countess Of Chester Hospital NHS Foundation Trust	81	8	19	28	60	97	90	58	43
East Cheshire NHS Trust	72	4	29	72	51	94	92	40	71
Mid Cheshire Hospitals NHS Foundation Trust	99	4	17	57	77	84	88	74	70
Royal Liverpool And Broadgreen University Hospitals NHS Trust	113	5	11	39	72	99	93	80	70
Southport And Ormskirk Hospital NHS Trust	90	13	24	67	65	78	90	59	77
St Helens And Knowsley Hospital Services NHS Trust	166	16	22	73	120	100	96	116	64
Warrington And Halton Hospitals NHS Foundation Trust	54	2	9	50	47	89	93	▲	▲
Wirral University Teaching Hospital NHS Foundation Trust	127	10	13	63	101	98	87	89	67
Wales	**1,298**	**13**	**19**	**52**	**902**	**98**	**87**	**859**	**70**
Bronglais MDT	14	25	50	50	11	91	90	▲	▲
Cardiff MDT	138	13	18	76	104	99	86	98	60
Nevill Hall Hospital MDT	74	11	11	46	56	96	81	51	77
Prince Charles Hospital MDT	79	4	23	82	59	100	85	52	48
Princess Of Wales MDT	92	12	16	40	61	100	90	72	71
Royal Glamorgan Hospital MDT	76	14	8	68	48	98	70	59	76
Royal Gwent Hospital MDT	167	15	28	38	123	99	89	72	82
Swansea MDT	196	22	16	31	127	91	88	148	70
West Wales General & Prince Phillip MDT	100	20	26	65	62	97	85	62	71
Withybush General MDT	51	8	22	37	29	97	75	40	83
Ysbwyty Glan Clwydd MDT	94	10	23	49	63	100	94	62	70
Ysbwyty Gwynedd MDT	103	9	17	44	70	99	93	50	86
Ysbwyty Maelor MDT	114	6	11	68	89	100	91	89	54

Table 8.3 continued
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
West Midlands	**1,818**	**9**	**19**	**69**	**1,296**	**86**	**90**	**1,141**	**59**
Burton Hospitals NHS Foundation Trust	120	15	20	73	82	100	87	72	54
George Eliot Hospital NHS Trust	58	9	16	74	40	100	88	43	50
Heart Of England NHS Foundation Trust	198	8	22	77	147	99	94	129	59
Sandwell And West Birmingham Hospitals NHS Trust	78	11	14	73	48	83	100	56	57
Shrewsbury And Telford Hospital NHS Trust	206	8	15	51	154	80	94	163	56
South Warwickshire NHS Foundation Trust	97	13	26	67	74	97	76	59	70
The Dudley Group NHS Foundation Trust	138	7	25	67	94	93	80	89	58
The Royal Wolverhampton NHS Trust	22	9	5	64	16	100	94	†	†
University Hospitals Birmingham NHS Foundation Trust	125	0	32	52	88	0	0	▲	▲
University Hospitals Coventry And Warwickshire NHS Trust	135	9	12	59	87	97	96	107	70
University Hospitals Of North Midlands NHS Trust	239	5	16	77	169	96	80	182	57
Walsall Healthcare NHS Trust	71	22	35	61	52	52	96	▲	▲
Worcestershire Acute Hospitals NHS Trust	243	6	16	85	184	92	95	179	59
Wye Valley NHS Trust	88	6	15	70	61	100	93	55	66
East Midlands	**1,252**	**10**	**17**	**58**	**848**	**100**	**83**	**849**	**60**
Derby Teaching Hospitals NHS Foundation Trust	188	10	14	54	134	100	90	150	67
Kettering General Hospital NHS Foundation Trust	142	5	20	60	97	99	93	91	46
Northampton General Hospital NHS Trust	123	9	21	59	69	100	83	91	73
Nottingham University Hospitals NHS Trust	258	11	17	74	188	100	79	115	56
Sherwood Forest Hospitals NHS Foundation Trust	129	10	9	47	94	100	84	105	57
University Hospitals Of Leicester NHS Trust	291	11	16	54	173	100	76	212	58
United Lincolnshire Hospitals NHS Trust – Lincoln And Grantham	43	15	19	47	36	97	74	33	97
United Lincolnshire Hospitals NHS Trust – Pligrim Hospital Boston	78	25	28	59	57	100	91	52	50

Table 8.3 continued
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
East Of England	**2,178**	**7**	**14**	**69**	**1,564**	**88**	**88**	**1,461**	**67**
Basildon And Thurrock University Hospitals NHS Foundation Trust	111	8	13	77	76	100	87	83	51
Bedford Hospital NHS Trust	91	17	9	61	65	85	89	75	74
Cambridge University Hospitals NHS Foundation Trust	195	10	18	48	138	99	96	137	78
East And North Hertfordshire NHS Trust	137	0	9	77	98	51	94	†	†
East Suffolk and North Essex NHS Foundation Trust – Colchester Hospital	156	10	15	83	111	93	90	120	55
East Suffolk and North Essex NHS Foundation Trust – Ipswich Hospital	152	4	20	63	116	99	77	106	66
James Paget University Hospitals NHS Foundation Trust	101	5	31	79	75	93	77	67	67
Luton And Dunstable University Hospital NHS Foundation Trust	122	8	20	78	88	86	91	88	56
Mid Essex Hospital Services NHS Trust	35	18	21	89	28	29	88	21	50
Milton Keynes University Hospital NHS Foundation Trust	94	5	0	72	68	100	79	84	59
Norfolk And Norwich University Hospitals NHS Foundation Trust	261	4	1	63	170	97	86	219	69
North West Anglia NHS Foundation Trust – Hinchingbrooke Hospital	59	12	0	71	42	100	98	55	81
North West Anglia NHS Foundation Trust – Peterborough City Hospital	137	3	16	60	96	100	90	103	77
Southend University Hospital NHS Foundation Trust	108	5	14	85	74	100	88	85	73
The Princess Alexandra Hospital NHS Trust	82	4	7	34	69	100	100	41	83
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	91	•	24	56	73	1	100	▲	▲
West Hertfordshire Hospitals NHS Trust	139	19	14	91	100	97	88	101	57
West Suffolk NHS Foundation Trust	107	6	27	66	77	100	91	75	62
Peninsula	**678**	**5**	**18**	**67**	**489**	**98**	**79**	**504**	**53**
Northern Devon Healthcare NHS Trust	65	4	11	80	42	88	86	55	50
Plymouth Hospitals NHS Trust	77	7	26	42	61	98	97	49	65
Royal Cornwall Hospitals NHS Trust	210	4	16	78	149	100	86	156	42
Royal Devon And Exeter NHS Foundation Trust	177	5	16	65	128	100	69	136	58
Torbay And South Devon NHS Foundation Trust	149	5	22	60	109	98	71	108	57
Somerset, Wiltshire, Avon & Gloucestershire	**1,088**	**6**	**14**	**77**	**750**	**95**	**93**	**768**	**52**
Gloucestershire Hospitals NHS Foundation Trust	301	5	12	68	216	99	95	204	57
North Bristol NHS Trust	139	9	13	96	84	99	90	102	42
Royal United Hospitals Bath NHS Foundation Trust	162	3	18	80	104	100	92	116	54
Salisbury NHS Foundation Trust	97	5	8	91	67	94	92	70	33
Taunton And Somerset NHS Foundation Trust	129	5	15	80	82	98	93	94	40
University Hospitals Bristol NHS Foundation Trust	135	8	11	79	100	84	93	96	66
Weston Area Health NHS Trust	51	18	18	35	45	100	96	36	56
Yeovil District Hospital NHS Foundation Trust	74	7	22	73	52	81	93	50	69

Table 8.3 continued
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
Wessex	**967**	**6**	**12**	**76**	**692**	**97**	**87**	**723**	**61**
Dorset County Hospital NHS Foundation Trust	71	3	17	80	56	100	95	50	46
Hampshire Hospitals NHS Foundation Trust – Basingstoke And North Hampshire Hospital	100	6	11	74	73	100	81	75	75
Hampshire Hospitals NHS Foundation Trust – Royal Hampshire County Hospital	79	6	10	65	74	89	76	62	54
Isle Of Wight NHS Trust	64	0	9	73	44	100	95	54	51
Poole Hospital NHS Foundation Trust	100	10	13	85	71	97	83	79	44
Portsmouth Hospitals NHS Trust	203	12	11	89	131	99	96	149	63
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	154	2	9	67	106	97	76	117	69
University Hospital Southampton NHS Foundation Trust	196	5	16	72	137	94	91	137	63
Thames Valley	**658**	**8**	**17**	**76**	**472**	**99**	**93**	**453**	**58**
Buckinghamshire Healthcare NHS Trust	163	9	11	85	124	99	95	115	48
Great Western Hospitals NHS Foundation Trust	123	10	32	44	88	98	90	75	77
Oxford University Hospitals NHS Foundation Trust	212	8	17	81	154	100	95	144	59
Royal Berkshire NHS Foundation Trust	160	8	13	85	106	100	92	119	53
Surrey And Sussex	**1,176**	**7**	**31**	**74**	**853**	**94**	**90**	**682**	**64**
Ashford And St Peter's Hospitals NHS Foundation Trust	107	16	43	68	82	96	84	55	64
Brighton And Sussex University Hospitals NHS Trust	155	11	31	89	113	95	91	56	62
East Sussex Healthcare NHS Trust	151	5	7	34	105	77	95	124	68
Frimley Health NHS Foundation Trust – Frimley Park Hospital	145	8	16	82	96	90	91	104	65
Frimley Health NHS Foundation Trust – Heatherwood And Wexham Park Hospitals	115	8	65	82	87	91	92	33	92
Royal Surrey County Hospital NHS Foundation Trust	100	1	87	98	66	100	95	13	18
Surrey And Sussex Healthcare NHS Trust	175	6	23	61	133	98	97	121	57
Western Sussex Hospitals NHS Foundation Trust – St Richard's Hospital	117	4	4	89	88	100	93	99	71
Western Sussex Hospitals NHS Foundation Trust – Worthing Hospital	111	4	23	78	83	100	73	77	56
Kent And Medway	**642**	**9**	**17**	**69**	**451**	**96**	**89**	**465**	**63**
Dartford And Gravesham NHS Trust	100	4	15	59	70	99	96	78	77
East Kent Hospitals University NHS Foundation Trust	282	11	23	69	216	99	87	199	48
Maidstone And Tunbridge Wells NHS Trust	153	5	5	68	90	82	88	126	80
Medway NHS Foundation Trust	107	12	19	80	75	100	88	62	58

Table 8.3 continued
Management of patients who had major surgery according to trust/hospital/MDT

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 (%)	Laparoscopic surgery attempted (%)	No. colon cancer patients having major surgery	Proportion of colon cancer patients with recorded number of lymph nodes (%)	Proportion of colon cancer patients with cases >=12 nodes reported (%)	No. patients included in risk adjusted elective length of stay*	Risk adjusted length of stay >5 days (%)
West London	**872**	**8**	**14**	**64**	**625**	**100**	**90**	**651**	**72**
Chelsea And Westminster Hospital NHS Foundation Trust	98	12	14	75	72	99	96	75	74
Croydon Health Services NHS Trust	54	6	11	56	36	100	92	42	67
Epsom And St Helier University Hospitals NHS Trust	113	6	14	50	87	100	85	82	63
Imperial College Healthcare NHS Trust	143	6	7	75	106	100	95	117	59
Kingston Hospital NHS Foundation Trust	96	5	13	59	78	100	83	72	76
London North West Hospitals NHS Trust	192	7	17	71	136	100	98	143	78
St George's University Hospitals NHS Foundation Trust	59	7	47	42	41	100	78	26	59
The Hillingdon Hospitals NHS Foundation Trust	74	14	9	72	51	100	76	60	86
The Royal Marsden NHS Foundation Trust	43	17	0	35	18	100	89	34	94
South East London	**456**	**8**	**12**	**65**	**323**	**99**	**91**	**258**	**66**
Guy's And St Thomas' NHS Foundation Trust	112	11	8	43	60	97	93	85	84
King's College Hospital NHS Foundation Trust – King's College Hospital	115	9	16	74	90	100	92	▲	▲
King's College Hospital NHS Foundation Trust – Princess Royal University Hospital	93	6	10	74	70	100	87	65	49
Lewisham And Greenwich NHS Trust	136	7	14	68	103	100	90	101	62
North Central And East London	**527**	**10**	**18**	**67**	**391**	**93**	**87**	**373**	**75**
Barking, Havering And Redbridge University Hospitals NHS Trust	150	8	30	49	109	97	86	96	75
Barts Health NHS Trust	77	9	19	89	63	68	91	50	78
Homerton University Hospital NHS Foundation Trust	41	10	10	68	34	100	88	34	47
North Middlesex University Hospital NHS Trust	64	11	14	67	47	100	81	40	87
Royal Free London NHS Foundation Trust	72	11	14	71	49	100	88	57	70
The Whittington Health NHS Trust	30	7	17	77	25	92	100	21	90
University College London Hospitals NHS Foundation Trust	93	16	10	71	64	98	84	75	80

▲ Too few cases to report (<10)
† Adjusted estimates not reported due to poor completeness of risk adjustment variables
* Length of stay obtained from HES/PEDW
• No data provided

Table 8.4
Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
Overall	**17,689**	**3.3**	**3.3**	**16,101**	**10.6**	**10.6**	**18,770**	**18.9**	**18.9**
North East and Cumbria	**1,147**	**2.7**	**2.4**	**1,078**	**12.5**	**12.4**	**1,249**	**20.7**	**19.9**
City Hospitals Sunderland NHS Foundation Trust	102	6.9	6.2	95	11.6	11.1	128	24.9	23.9
County Durham And Darlington NHS Foundation Trust	169	1.8	1.7	157	9.6	9.7	189	28.3	27.9
Gateshead Health NHS Foundation Trust	96	0.0	0.0	93	20.4	19.5	83	25.9	17.0
North Cumbria University Hospitals NHS Trust	75	1.3	1.4	70	15.7	15.7	135	25.8	29.0
North Tees And Hartlepool NHS Foundation Trust	143	2.8	2.4	133	9.8	10.0	121	16.0	14.7
Northumbria Healthcare NHS Foundation Trust	156	1.9	1.7	149	10.7	10.7	196	18.2	18.7
South Tees Hospitals NHS Foundation Trust	198	3.5	3.4	186	12.9	13.2	183	15.4	16.0
South Tyneside NHS Foundation Trust	54	1.9	1.2	52	9.6	9.5	50	22.6	19.3
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	154	3.2	3.1	143	14.7	13.8	164	14.7	14.3
Lancashire And South Cumbria	**480**	**3.8**	**3.6**	**456**	**7.2**	**7.3**	**541**	**18.2**	**19.4**
Blackpool Teaching Hospitals NHS Foundation Trust	111	4.5	6.9	102	6.9	6.8	104	14.4	15.1
East Lancashire Hospitals NHS Trust	138	4.3	3.3	134	7.5	7.1	165	19.5	19.2
Lancashire Teaching Hospitals NHS Foundation Trust	91	2.2	2.3	85	8.2	8.4	136	19.8	25.3
University Hospitals Of Morecambe Bay NHS Foundation Trust	140	3.6	3.1	135	6.7	7.1	136	18.0	18.3
Greater Manchester	**869**	**2.2**	**2.3**	**798**	**10.9**	**10.9**	**894**	**20.8**	**20.1**
Bolton NHS Foundation Trust	86	5.8	5.1	82	12.2	12.4	118	29.9	29.0
Central Manchester University Hospitals NHS Foundation Trust	102	1.0	1.6	83	7.2	7.3	87	17.7	27.2
Pennine Acute Hospitals NHS Trust	221	1.4	1.7	206	10.7	10.7	215	21.6	24.3
Salford Royal NHS Foundation Trust	69	2.9	2.8	66	7.6	7.6	73	27.0	33.9
Stockport NHS Foundation Trust	94	2.1	2.1	94	11.7	11.7	112	14.6	11.9
Tameside And Glossop Integrated Care NHS Foundation Trust	60	3.3	2.3	56	5.4	5.4	72	16.9	10.0
The Christie NHS Foundation Trust	66	0.0	0.0	54	7.4	6.5	60	15.9	15.7
University Hospital Of South Manchester NHS Foundation Trust	94	2.1	2.3	89	23.6	22.9	86	20.5	17.8
Wrightington, Wigan And Leigh NHS Foundation Trust	77	2.6	2.2	68	7.4	8.0	71	20.5	19.1
West Yorkshire	**537**	**3.0**	**3.2**	**497**	**10.3**	**10.3**	**742**	**16.4**	**19.3**
Airedale NHS Foundation Trust	84	2.4	4.0	79	10.1	10.9	71	10.4	14.6
Bradford Teaching Hospitals NHS Foundation Trust	99	2.0	†	94	11.7	†	106	18.2	23.4
Calderdale And Huddersfield NHS Foundation Trust	106	0.9	1.0	102	8.8	8.6	105	14.4	23.0
Harrogate And District NHS Foundation Trust	101	5.0	4.0	97	14.4	15.2	80	10.6	12.1
Leeds Teaching Hospitals NHS Trust	246	3.3	3.5	219	9.1	8.9	219	23.1	19.6
Mid Yorkshire Hospitals NHS Trust	147	1.4	††	140	10.7	††	161	13.3	20.0

Table 8.4 continued

Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
Humber, Coast And Vale	**400**	**3.0**	**2.8**	**381**	**8.1**	**8.1**	**565**	**20.9**	**22.8**
Hull And East Yorkshire Hospitals NHS Trust	187	4.3	††	177	6.8	††	200	16.7	19.4
Northern Lincolnshire And Goole NHS Foundation Trust	166	4.8	3.9	155	6.5	6.4	149	19.4	17.9
York Teaching Hospital NHS Foundation Trust – The York Hospital	162	2.5	2.7	158	8.9	9.0	160	29.3	33.9
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	72	0.0	0.0	68	10.3	10.1	56	17.5	21.3
South Yorkshire, Bassetlaw, North Derbyshire And Hardwick	**580**	**2.6**	**3.0**	**540**	**11.3**	**11.1**	**582**	**16.3**	**19.5**
Barnsley Hospital NHS Foundation Trust	64	1.6	1.4	60	8.3	8.4	68	21.2	22.7
Chesterfield Royal Hospital NHS Foundation Trust	119	4.2	6.2	117	11.1	11.0	120	20.4	23.8
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	154	3.2	3.5	145	11.0	10.8	142	17.9	25.4
Sheffield Teaching Hospitals NHS Foundation Trust	153	1.3	1.5	131	8.4	8.4	174	12.4	13.9
The Rotherham NHS Foundation Trust	90	2.2	2.7	87	18.4	17.3	78	12.3	14.7
Cheshire And Merseyside	**808**	**4.1**	**4.2**	**733**	**10.6**	**10.7**	**891**	**17.2**	**17.4**
Aintree University Hospital NHS Foundation Trust	111	8.1	11.9	106	11.3	12.1	106	14.1	17.1
Countess Of Chester Hospital NHS Foundation Trust	72	1.4	1.9	69	14.5	15.6	110	11.6	14.4
East Cheshire NHS Trust	63	4.8	3.8	56	3.6	3.4	70	28.8	15.6
Mid Cheshire Hospitals NHS Foundation Trust	95	2.1	3.3	89	18.0	18.1	97	7.4	7.5
Royal Liverpool And Broadgreen University Hospitals NHS Trust	108	2.8	3.6	90	8.9	8.5	116	17.7	21.9
Southport And Ormskirk Hospital NHS Trust	84	2.4	2.1	74	9.5	9.4	71	13.6	13.1
St Helens And Knowsley Hospital Services NHS Trust	157	5.7	4.5	142	12.0	11.7	133	30.1	30.4
Warrington And Halton Hospitals NHS Foundation Trust	▲	▲	▲	▲	▲	▲	98	20.6	23.5
Wirral University Teaching Hospital NHS Foundation Trust	111	3.6	3.2	101	5.9	6.2	90	11.8	10.9
Wales	**1,264**	**5.1**	**4.4**	**1,063**	**12.7**	**12.5**	**1,285**	**22.7**	**19.6**
Bronglais MDT	13	0.0	0.0	11	18.2	18.4	13	26.8	7.8
Cardiff MDT	135	2.2	1.9	121	13.2	12.9	142	14.7	13.5
Nevill Hall Hospital MDT	64	6.3	7.2	56	12.5	12.1	84	23.0	14.4
Prince Charles Hospital MDT	78	3.8	3.2	70	15.7	14.8	88	26.9	25.4
Princess Of Wales MDT	90	5.6	6.0	85	9.4	9.6	113	35.6	28.3
Royal Glamorgan Hospital MDT	75	4.0	4.0	69	14.5	13.6	68	25.4	29.8
Royal Gwent Hospital MDT	162	5.6	4.0	102	12.7	12.6	169	23.9	16.7
Swansea MDT	192	6.3	4.9	179	18.4	17.9	139	21.2	21.8
West Wales General & Prince Phillip MDT	98	7.1	6.5	86	11.6	11.4	89	24.7	31.1
Withybush General MDT	50	8.0	7.9	50	10.0	9.3	73	10.2	12.3
Ysbwyty Glan Clwydd MDT	93	10.8	7.6	79	13.9	13.7	105	24.9	21.2
Ysbwyty Gwynedd MDT	100	2.0	1.9	58	3.4	3.6	95	26.5	20.8
Ysbwyty Maelor MDT	114	2.6	3.0	97	7.2	7.8	107	17.8	16.3

Table 8.4 continued

Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
West Midlands	**1,516**	**4.2**	**3.7**	**1,383**	**10.7**	**10.8**	**2,022**	**19.8**	**18.1**
Burton Hospitals NHS Foundation Trust	92	7.6	4.4	89	11.2	10.6	99	22.7	19.8
George Eliot Hospital NHS Trust	55	3.6	4.0	52	11.5	11.4	63	17.4	21.1
Heart Of England NHS Foundation Trust	189	2.6	2.5	159	13.2	14.0	251	15.0	15.4
Sandwell And West Birmingham Hospitals NHS Trust	75	5.3	4.0	64	6.3	6.1	111	21.6	18.8
Shrewsbury And Telford Hospital NHS Trust	197	3.0	3.7	190	8.9	9.4	240	17.8	16.7
South Warwickshire NHS Foundation Trust	82	3.7	2.7	77	9.1	9.7	78	21.8	13.0
The Dudley Group NHS Foundation Trust	133	3.8	2.6	122	10.7	9.8	112	30.4	25.4
The Royal Wolverhampton NHS Trust	22	9.1	††	22	9.1	††	150	18.3	17.6
University Hospitals Birmingham NHS Foundation Trust	▲	▲	▲	▲	▲	▲	97	18.1	24.9
University Hospitals Coventry And Warwickshire NHS Trust	131	5.3	4.5	120	10.8	10.1	128	10.7	9.2
University Hospitals Of North Midlands NHS Trust	224	4.9	5.1	209	16.7	17.5	250	22.6	17.5
Walsall Healthcare NHS Trust	19	5.3	3.9	16	12.5	11.2	85	34.1	20.2
Worcestershire Acute Hospitals NHS Trust	231	3.5	3.7	213	6.1	6.3	262	15.4	17.5
Wye Valley NHS Trust	84	4.8	4.5	70	10.0	10.1	96	33.4	35.1
East Midlands	**1,188**	**3.1**	**3.1**	**1,003**	**14.1**	**13.9**	**1,195**	**19.2**	**19.4**
Derby Teaching Hospitals NHS Foundation Trust	179	2.2	2.5	175	13.7	14.0	175	18.9	18.8
Kettering General Hospital NHS Foundation Trust	131	2.3	2.9	106	9.4	9.5	130	14.8	14.3
Northampton General Hospital NHS Trust	119	4.2	4.1	112	15.2	14.7	102	10.3	11.1
Nottingham University Hospitals NHS Trust	249	4.8	5.0	133	15.0	14.2	237	25.3	22.7
Sherwood Forest Hospitals NHS Foundation Trust	120	2.5	3.0	114	16.7	16.7	108	8.8	9.8
University Hospitals Of Leicester NHS Trust	276	1.4	1.4	253	15.8	15.0	265	19.5	21.8
United Lincolnshire Hospitals NHS Trust – Lincoln And Grantham	40	0.0	0.0	40	7.5	8.4	100	21.4	25.9
United Lincolnshire Hospitals NHS Trust – Pligrim Hospital Boston	74	8.1	4.8	70	11.4	11.9	78	33.9	26.1

Table 8.4 continued

Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
East Of England	**1,800**	**4.0**	**4.0**	**1,697**	**8.9**	**9.1**	**1,993**	**20.0**	**20.1**
Basildon And Thurrock University Hospitals NHS Foundation Trust	105	2.9	3.7	96	12.5	12.3	131	20.5	20.3
Bedford Hospital NHS Trust	89	3.4	3.9	82	11.0	11.2	85	20.1	23.2
Cambridge University Hospitals NHS Foundation Trust	179	1.1	1.1	173	6.4	6.2	164	11.4	12.1
East And North Hertfordshire NHS Trust	131	1.5	†††	124	10.5	†††	85	16.5	21.0
East Suffolk and North Essex NHS Foundation Trust – Colchester Hospital	144	5.6	6.5	136	13.2	13.9	130	15.9	17.3
East Suffolk and North Essex NHS Foundation Trust – Ipswich Hospital	148	4.7	3.6	131	6.1	6.2	162	33.0	25.7
James Paget University Hospitals NHS Foundation Trust	99	9.1	5.5	95	7.4	7.7	69	21.6	15.5
Luton And Dunstable University Hospital NHS Foundation Trust	116	4.3	4.2	111	9.9	10.5	93	20.2	20.1
Mid Essex Hospital Services NHS Trust	27	0.0	0.0	27	7.4	8.0	103	18.2	21.4
Milton Keynes University Hospital NHS Foundation Trust	88	3.4	4.4	85	5.9	5.8	92	18.3	21.0
Norfolk And Norwich University Hospitals NHS Foundation Trust	237	3.4	3.9	220	7.3	7.4	245	13.7	16.6
North West Anglia NHS Foundation Trust – Hinchingbrooke Hospital	56	5.4	4.0	55	7.3	7.5	67	23.7	19.7
North West Anglia NHS Foundation Trust – Peterborough City Hospital	131	3.8	5.1	123	6.5	6.7	114	36.4	27.8
Southend University Hospital NHS Foundation Trust	102	3.9	4.0	97	9.3	9.4	132	19.9	23.4
The Princess Alexandra Hospital NHS Trust	46	8.7	7.6	44	4.5	5.0	69	15.5	11.5
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	▲	▲	▲	▲	▲	▲	72	24.8	†††
West Hertfordshire Hospitals NHS Trust	128	3.9	4.5	118	9.3	9.3	163	18.6	18.6
West Suffolk NHS Foundation Trust	104	2.9	3.1	103	17.5	17.4	89	28.7	30.8
Peninsula	**642**	**3.4**	**3.9**	**595**	**9.7**	**10.3**	**781**	**17.3**	**17.9**
Northern Devon Healthcare NHS Trust	63	1.6	2.6	62	9.7	10.4	76	11.2	11.7
Plymouth Hospitals NHS Trust	71	4.2	3.6	65	12.3	12.5	162	16.9	18.0
Royal Cornwall Hospitals NHS Trust	196	3.1	4.2	178	11.2	11.4	198	18.4	18.2
Royal Devon And Exeter NHS Foundation Trust	171	2.3	2.3	157	8.9	9.6	195	19.3	18.5
Torbay And South Devon NHS Foundation Trust	141	5.7	6.1	133	7.5	8.2	150	16.8	20.1
Somerset, Wiltshire, Avon & Gloucestershire	**1,022**	**3.0**	**3.7**	**907**	**10.3**	**10.3**	**920**	**16.6**	**17.3**
Gloucestershire Hospitals NHS Foundation Trust	289	4.2	5.4	234	8.1	8.3	245	15.4	14.8
North Bristol NHS Trust	128	2.3	2.7	115	18.3	17.5	145	14.9	18.2
Royal United Hospitals Bath NHS Foundation Trust	151	1.3	1.6	144	8.3	8.4	174	17.2	20.2
Salisbury NHS Foundation Trust	93	2.2	3.5	88	13.6	13.6	59	12.7	11.4
Taunton And Somerset NHS Foundation Trust	122	1.6	2.1	113	7.1	7.1	104	18.1	21.9
University Hospitals Bristol NHS Foundation Trust	127	4.7	6.6	107	9.3	8.9	97	16.6	16.4
Weston Area Health NHS Trust	44	4.5	2.9	42	9.5	10.6	46	19.1	20.1
Yeovil District Hospital NHS Foundation Trust	68	2.9	3.5	64	10.9	11.0	50	24.1	18.8

Table 8.4 continued

Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
Wessex	**919**	**3.0**	**3.0**	**826**	**8.1**	**8.2**	**833**	**15.7**	**17.1**
Dorset County Hospital NHS Foundation Trust	63	4.8	4.9	60	10.0	10.7	99	13.2	13.6
Hampshire Hospitals NHS Foundation Trust – Basingstoke And North Hampshire Hospital	97	1.0	1.3	86	2.3	2.3	69	26.4	††††
Hampshire Hospitals NHS Foundation Trust – Royal Hampshire County Hospital	76	3.9	4.1	69	7.2	8.1	88	14.7	15.4
Isle Of Wight NHS Trust	63	4.8	5.2	61	11.5	11.7	67	18.1	15.4
Poole Hospital NHS Foundation Trust	96	4.2	3.1	91	12.1	12.3	91	19.3	25.1
Portsmouth Hospitals NHS Trust	192	3.1	3.7	167	9.0	8.7	206	17.9	21.0
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	147	2.0	1.9	130	7.7	8.0	98	11.9	16.7
University Hospital Southampton NHS Foundation Trust	185	2.7	2.5	162	6.8	6.8	184	14.5	14.2
Thames Valley	**625**	**2.4**	**2.7**	**548**	**11.3**	**11.7**	**562**	**17.2**	**19.2**
Buckinghamshire Healthcare NHS Trust	152	2.6	3.4	130	6.9	7.2	172	21.6	22.6
Great Western Hospitals NHS Foundation Trust	119	4.2	3.0	112	9.8	10.0	117	18.6	17.4
Oxford University Hospitals NHS Foundation Trust	203	1.0	1.4	172	10.5	11.2	132	10.3	13.1
Royal Berkshire NHS Foundation Trust	151	2.6	2.9	134	17.9	18.1	141	17.7	22.4
Surrey And Sussex	**1,064**	**3.1**	**3.2**	**976**	**9.8**	**10.1**	**926**	**18.4**	**18.6**
Ashford And St Peter's Hospitals NHS Foundation Trust	102	3.9	2.8	97	6.2	6.4	103	22.9	21.0
Brighton And Sussex University Hospitals NHS Trust	105	3.8	4.4	82	9.8	10.1	58	5.3	5.9
East Sussex Healthcare NHS Trust	140	2.9	3.8	135	10.4	10.7	128	12.5	16.5
Frimley Health NHS Foundation Trust – Frimley Park Hospital	136	2.2	2.4	121	5.0	4.8	119	11.5	10.7
Frimley Health NHS Foundation Trust – Heatherwood And Wexham Park Hospitals	107	7.5	6.1	96	12.5	13.0	103	20.6	22.4
Royal Surrey County Hospital NHS Foundation Trust	96	0.0	0.0	88	12.5	13.6	65	26.1	26.1
Surrey And Sussex Healthcare NHS Trust	166	3.0	3.2	155	11.6	12.2	123	11.5	10.8
Western Sussex Hospitals NHS Foundation Trust – St Richard's Hospital	107	1.9	1.5	103	11.7	12.2	139	29.9	30.3
Western Sussex Hospitals NHS Foundation Trust – Worthing Hospital	105	2.9	2.7	99	9.1	9.3	88	26.0	22.4
Kent And Medway	**606**	**2.1**	**2.1**	**559**	**8.8**	**8.9**	**614**	**19.3**	**19.8**
Dartford And Gravesham NHS Trust	97	2.1	2.1	93	4.3	4.2	97	23.5	22.3
East Kent Hospitals University NHS Foundation Trust	266	3.0	2.5	245	11.0	11.3	260	19.9	18.9
Maidstone And Tunbridge Wells NHS Trust	141	0.7	0.8	131	5.3	5.5	157	13.0	16.4
Medway NHS Foundation Trust	102	2.0	2.4	90	12.2	12.5	100	23.6	24.3

Table 8.4 continued

Outcomes of patients who had major surgery according to trust/hospital/MDT
(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	Observed 30-day unplanned readmission rate (%)	Adjusted 30-day unplanned readmission rate (%)	No. patients having major resection 1 Apr 14 – 31 Mar 15	Observed 2-year mortality (%)	Adjusted 2-year mortality (%)
West London	**810**	**2.7**	**2.8**	**764**	**13.0**	**12.9**	**884**	**17.6**	**17.8**
Chelsea And Westminster Hospital NHS Foundation Trust	91	3.3	3.4	85	15.3	15.5	90	19.8	15.2
Croydon Health Services NHS Trust	49	0.0	0.0	46	8.7	8.5	74	21.0	22.0
Epsom And St Helier University Hospitals NHS Trust	109	0.9	0.8	102	10.8	10.8	93	12.6	12.5
Imperial College Healthcare NHS Trust	133	3.8	3.4	125	12.0	12.0	139	14.2	14.1
Kingston Hospital NHS Foundation Trust	89	6.7	5.5	83	8.4	9.4	91	24.7	26.6
London North West Hospitals NHS Trust	179	1.7	2.3	173	16.8	16.2	184	18.3	20.9
St George's University Hospitals NHS Foundation Trust	55	1.8	2.0	49	16.3	16.5	102	11.3	11.7
The Hillingdon Hospitals NHS Foundation Trust	72	4.2	3.7	67	11.9	11.6	69	22.7	20.8
The Royal Marsden NHS Foundation Trust	33	0.0	0.0	34	11.8	10.4	42	18.8	25.9
South East London	**310**	**1.9**	**2.2**	**285**	**10.2**	**9.6**	**419**	**17.4**	**16.2**
Guy's And St Thomas' NHS Foundation Trust	99	0.0	0.0	92	9.8	8.7	109	19.4	15.5
King's College Hospital NHS Foundation Trust – King's College Hospital	▲	▲	▲	▲	▲	▲	83	11.3	12.8
King's College Hospital NHS Foundation Trust – Princess Royal University Hospital	78	0.0	0.0	73	12.3	12.0	93	17.4	13.7
Lewisham And Greenwich NHS Trust	126	4.0	5.0	113	9.7	9.8	134	19.9	21.3
North Central And East London	**485**	**2.5**	**2.9**	**454**	**9.0**	**9.2**	**731**	**18.4**	**17.1**
Barking, Havering And Redbridge University Hospitals NHS Trust	139	3.6	3.1	135	7.4	7.7	171	20.0	19.8
Barts Health NHS Trust	69	1.4	2.8	61	6.6	7.1	149	15.4	18.9
Homerton University Hospital NHS Foundation Trust	39	2.6	2.4	35	2.9	2.7	57	26.6	19.2
North Middlesex University Hospital NHS Trust	56	0.0	0.0	47	19.1	17.5	51	37.0	27.6
Royal Free London NHS Foundation Trust	69	2.9	3.9	67	4.5	4.6	168	14.7	11.6
The Whittington Health NHS Trust	27	7.4	13.6	26	23.1	24.5	51	33.2	26.9
University College London Hospitals NHS Foundation Trust	86	1.2	1.7	83	9.6	9.9	84	4.9	5.7

† Adjusted estimates not reported because overall data completeness low (also not included in associated Network totals)
†† Adjusted estimates not reported because most patients missing ASA grade (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 pathological TNM staging (also not included in associated Network totals)
▲ Too few cases to report (<10)

Table 8.5
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Overall	**4,503**	**84**	**77**	**26**	**4,607**	**36**	**13,360**	**52**	**52**
North East and Cumbria	**298**	**91**	**85**	**29**	**301**	**37**	**893**	**50**	**50**
City Hospitals Sunderland NHS Foundation Trust	26	81	81	50	23	39	98	54	55
County Durham And Darlington NHS Foundation Trust	49	76	65	27	45	44	140	54	54
Gateshead Health NHS Foundation Trust	26	96	92	27	23	48	55	36	36
North Cumbria University Hospitals NHS Trust	16	94	94	31	16	75	77	58	58
North Tees And Hartlepool NHS Foundation Trust	27	100	100	26	35	49	118	36	37
Northumbria Healthcare NHS Foundation Trust	37	100	95	35	39	23	120	48	48
South Tees Hospitals NHS Foundation Trust	51	88	80	31	48	23	127	54	54
South Tyneside NHS Foundation Trust	12	92	92	25	15	20	41	56	51
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	54	96	85	19	57	32	117	55	54
Lancashire And South Cumbria	**109**	**94**	**81**	**28**	**113**	**43**	**355**	**62**	**62**
Blackpool Teaching Hospitals NHS Foundation Trust	27	96	81	41	27	33	58	62	63
East Lancashire Hospitals NHS Trust	37	97	86	24	36	44	109	61	60
Lancashire Teaching Hospitals NHS Foundation Trust	16	75	75	31	14	71	91	69	71
University Hospitals Of Morecambe Bay NHS Foundation Trust	29	97	76	21	36	39	97	55	54
Greater Manchester	**173**	**88**	**74**	**32**	**200**	**58**	**686**	**60**	**60**
Bolton NHS Foundation Trust	21	71	52	43	31	81	93	59	59
Central Manchester University Hospitals NHS Foundation Trust	21	90	76	38	21	52	90	57	56
Pennine Acute Hospitals NHS Trust	43	93	88	23	48	33	151	62	63
Salford Royal NHS Foundation Trust	10	90	70	30	10	70	55	67	69
Stockport NHS Foundation Trust	14	86	71	14	16	69	64	66	66
Tameside And Glossop Integrated Care NHS Foundation Trust	▲	▲	▲	▲	▲	▲	54	44	44
The Christie NHS Foundation Trust	27	96	70	37	28	79	76	80	80
University Hospital Of South Manchester NHS Foundation Trust	24	100	92	33	30	40	64	53	52
Wrightington, Wigan And Leigh NHS Foundation Trust	▲	▲	▲	▲	▲	▲	39	41	40
West Yorkshire	**213**	**83**	**74**	**23**	**222**	**58**	**600**	**54**	**56**
Airedale NHS Foundation Trust	28	100	100	29	30	50	59	53	58
Bradford Teaching Hospitals NHS Foundation Trust	27	7	7	11	28	46	77	55	53
Calderdale And Huddersfield NHS Foundation Trust	34	79	74	35	36	67	111	60	63
Harrogate And District NHS Foundation Trust	24	100	92	25	17	65	72	31	32
Leeds Teaching Hospitals NHS Trust	60	98	77	28	65	62	174	61	59
Mid Yorkshire Hospitals NHS Trust	40	93	85	8	46	54	107	53	58

Table 8.5 continued
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Humber, Coast And Vale	**165**	**61**	**45**	**34**	**156**	**49**	**429**	**60**	**60**
Hull And East Yorkshire Hospitals NHS Trust	49	57	8	41	42	57	145	50	51
Northern Lincolnshire And Goole NHS Foundation Trust	45	4	4	29	46	50	138	75	73
York Teaching Hospital NHS Foundation Trust – The York Hospital	50	100	96	24	50	46	119	53	54
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	21	100	100	52	18	39	27	70	68
South Yorkshire, Bassetlaw, North Derbyshire And Hardwick	**163**	**94**	**90**	**39**	**174**	**41**	**462**	**57**	**59**
Barnsley Hospital NHS Foundation Trust	11	100	91	45	16	19	45	58	57
Chesterfield Royal Hospital NHS Foundation Trust	33	97	91	39	33	67	86	53	54
Doncaster And Bassetlaw Hospitals NHS Foundation Trust	47	85	85	38	45	24	131	56	59
Sheffield Teaching Hospitals NHS Foundation Trust	38	97	89	39	46	50	129	58	60
The Rotherham NHS Foundation Trust	34	100	97	35	34	35	71	58	62
Cheshire And Merseyside	**178**	**63**	**54**	**27**	**199**	**45**	**630**	**52**	**53**
Aintree University Hospital NHS Foundation Trust	17	47	18	29	21	57	51	53	56
Countess Of Chester Hospital NHS Foundation Trust	17	41	35	24	23	13	90	59	61
East Cheshire NHS Trust	18	100	83	39	18	72	55	60	58
Mid Cheshire Hospitals NHS Foundation Trust	21	67	67	24	20	70	70	40	42
Royal Liverpool And Broadgreen University Hospitals NHS Trust	31	16	10	32	36	50	93	46	48
Southport And Ormskirk Hospital NHS Trust	19	47	47	21	16	38	53	51	53
St Helens And Knowsley Hospital Services NHS Trust	33	97	85	21	33	27	92	59	54
Warrington And Halton Hospitals NHS Foundation Trust	▲	▲	▲	▲	▲	▲	69	52	52
Wirral University Teaching Hospital NHS Foundation Trust	21	95	86	29	26	58	57	49	50
Wales	**337**	**93**	**85**	**34**	**316**	**32**	**879**	**62**	**61**
Bronglais MDT	▲	▲	▲	▲	▲	▲	▲	▲	▲
Cardiff MDT	27	100	85	15	27	4	89	47	49
Nevill Hall Hospital MDT	16	100	81	50	11	82	54	78	74
Prince Charles Hospital MDT	18	100	89	39	17	12	71	46	46
Princess Of Wales MDT	23	100	100	26	27	15	91	66	65
Royal Glamorgan Hospital MDT	25	96	84	40	24	29	41	59	55
Royal Gwent Hospital MDT	39	100	87	41	32	31	121	60	58
Swansea MDT	63	87	79	29	60	28	100	63	61
West Wales General & Prince Phillip MDT	32	88	81	44	28	39	65	85	83
Withybush General MDT	19	53	53	26	18	44	46	74	75
Ysbwyty Glan Clwydd MDT	25	100	100	44	23	39	60	68	65
Ysbwyty Gwynedd MDT	23	96	91	26	26	46	62	53	54
Ysbwyty Maelor MDT	24	100	100	33	22	45	71	51	51

Table 8.5 continued
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
West Midlands	**427**	**63**	**57**	**28**	**410**	**31**	**1,308**	**49**	**48**
Burton Hospitals NHS Foundation Trust	33	100	91	33	33	18	74	59	57
George Eliot Hospital NHS Trust	13	100	85	31	12	50	42	55	52
Heart Of England NHS Foundation Trust	36	92	86	31	40	45	192	42	43
Sandwell And West Birmingham Hospitals NHS Trust	27	4	4	22	22	59	93	49	48
Shrewsbury And Telford Hospital NHS Trust	43	28	28	21	44	45	174	53	53
South Warwickshire NHS Foundation Trust	16	94	94	50	14	29	61	34	33
The Dudley Group NHS Foundation Trust	39	51	41	23	37	24	86	57	54
The Royal Wolverhampton NHS Trust	▲	▲	▲	▲	13	31	112	49	45
University Hospitals Birmingham NHS Foundation Trust	32	0	0	44	25	52	68	57	62
University Hospitals Coventry And Warwickshire NHS Trust	46	100	89	15	42	17	106	52	52
University Hospitals Of North Midlands NHS Trust	51	88	84	24	48	33	169	54	†
Walsall Healthcare NHS Trust	13	31	15	38	▲	▲	46	39	37
Worcestershire Acute Hospitals NHS Trust	50	46	42	30	52	12	173	46	46
Wye Valley NHS Trust	24	100	75	33	20	5	81	54	51
East Midlands	**330**	**97**	**93**	**27**	**353**	**43**	**904**	**57**	**57**
Derby Teaching Hospitals NHS Foundation Trust	51	100	100	20	50	26	108	53	52
Kettering General Hospital NHS Foundation Trust	35	100	94	29	44	7	88	57	61
Northampton General Hospital NHS Trust	41	83	80	22	30	40	86	45	46
Nottingham University Hospitals NHS Trust	60	100	97	27	62	40	195	58	59
Sherwood Forest Hospitals NHS Foundation Trust	31	97	94	39	31	39	74	53	54
University Hospitals Of Leicester NHS Trust	98	100	95	30	110	65	221	59	56
United Lincolnshire Hospitals NHS Trust – Lincoln And Grantham	▲	▲	▲	▲	▲	▲	67	70	71
United Lincolnshire Hospitals NHS Trust – Pligrim Hospital Boston	12	100	83	17	19	74	65	63	59

Table 8.5 continued
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
East Of England	**484**	**87**	**81**	**24**	**511**	**30**	**1,472**	**48**	**47**
Basildon And Thurrock University Hospitals NHS Foundation Trust	34	100	94	18	37	32	84	65	63
Bedford Hospital NHS Trust	18	78	56	39	21	43	69	57	57
Cambridge University Hospitals NHS Foundation Trust	53	100	91	28	58	64	142	49	46
East And North Hertfordshire NHS Trust	36	44	44	22	26	19	60	57	57
East Suffolk and North Essex NHS Foundation Trust – Colchester Hospital	31	81	74	19	38	18	102	36	37
East Suffolk and North Essex NHS Foundation Trust – Ipswich Hospital	26	100	88	23	29	24	92	27	26
James Paget University Hospitals NHS Foundation Trust	21	90	86	19	22	9	55	51	45
Luton And Dunstable University Hospital NHS Foundation Trust	25	100	96	40	25	20	76	63	61
Mid Essex Hospital Services NHS Trust	▲	▲	▲	▲	▲	▲	57	42	43
Milton Keynes University Hospital NHS Foundation Trust	21	95	71	24	23	30	79	48	47
Norfolk And Norwich University Hospitals NHS Foundation Trust	64	95	94	23	69	25	208	36	37
North West Anglia NHS Foundation Trust – Hinchingbrooke Hospital	12	67	50	17	15	13	43	30	31
North West Anglia NHS Foundation Trust – Peterborough City Hospital	33	100	100	24	31	55	104	66	65
Southend University Hospital NHS Foundation Trust	26	100	100	27	31	42	70	59	60
The Princess Alexandra Hospital NHS Trust	12	100	100	25	16	0	35	40	38
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	16	0	0	19	14	43	54	67	61
West Hertfordshire Hospitals NHS Trust	32	91	88	25	30	10	85	42	42
West Suffolk NHS Foundation Trust	21	95	90	19	22	23	57	44	40
Peninsula	**149**	**94**	**88**	**28**	**158**	**25**	**522**	**53**	**54**
Northern Devon Healthcare NHS Trust	15	80	80	20	19	47	56	41	40
Plymouth Hospitals NHS Trust	11	91	73	45	17	47	122	68	67
Royal Cornwall Hospitals NHS Trust	55	98	93	24	53	21	138	54	53
Royal Devon And Exeter NHS Foundation Trust	37	100	97	43	43	23	124	46	47
Torbay And South Devon NHS Foundation Trust	31	87	77	16	26	8	82	51	53
Somerset, Wiltshire, Avon & Gloucestershire	**272**	**85**	**80**	**24**	**252**	**31**	**749**	**50**	**50**
Gloucestershire Hospitals NHS Foundation Trust	80	71	69	15	83	36	220	47	47
North Bristol NHS Trust	47	98	89	19	40	38	121	47	46
Royal United Hospitals Bath NHS Foundation Trust	38	100	100	32	34	38	138	48	49
Salisbury NHS Foundation Trust	24	96	88	29	24	17	58	47	49
Taunton And Somerset NHS Foundation Trust	36	83	81	31	31	23	64	64	66
University Hospitals Bristol NHS Foundation Trust	28	93	93	29	25	20	68	49	48
Weston Area Health NHS Trust	▲	▲	▲	▲	▲	▲	42	71	70
Yeovil District Hospital NHS Foundation Trust	16	44	31	25	13	31	38	50	50

Table 8.5 continued
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
Wessex	**251**	**94**	**89**	**15**	**254**	**22**	**755**	**42**	**42**
Dorset County Hospital NHS Foundation Trust	13	100	100	46	18	11	71	44	44
Hampshire Hospitals NHS Foundation Trust – Basingstoke And North Hampshire Hospital	27	93	85	4	27	11	62	29	31
Hampshire Hospitals NHS Foundation Trust – Royal Hampshire County Hospital	▲	▲	▲	▲	▲	▲	52	42	40
Isle Of Wight NHS Trust	17	100	88	24	17	6	43	49	50
Poole Hospital NHS Foundation Trust	28	89	82	21	26	19	65	34	34
Portsmouth Hospitals NHS Trust	72	99	94	8	73	32	223	43	44
The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust	43	84	81	16	42	7	89	47	47
University Hospital Southampton NHS Foundation Trust	50	96	92	14	50	34	150	43	42
Thames Valley	**137**	**90**	**85**	**28**	**141**	**19**	**464**	**48**	**49**
Buckinghamshire Healthcare NHS Trust	32	97	91	25	35	23	105	50	51
Great Western Hospitals NHS Foundation Trust	28	61	54	25	26	12	96	65	61
Oxford University Hospitals NHS Foundation Trust	44	95	95	23	49	20	149	27	29
Royal Berkshire NHS Foundation Trust	33	100	94	39	31	19	114	61	63
Surrey And Sussex	**260**	**60**	**57**	**18**	**248**	**27**	**645**	**46**	**47**
Ashford And St Peter's Hospitals NHS Foundation Trust	14	100	79	29	▲	▲	47	51	50
Brighton And Sussex University Hospitals NHS Trust	28	0	0	18	31	10	62	69	69
East Sussex Healthcare NHS Trust	40	45	45	33	38	32	91	51	53
Frimley Health NHS Foundation Trust – Frimley Park Hospital	42	52	52	19	36	25	104	32	33
Frimley Health NHS Foundation Trust – Heatherwood And Wexham Park Hospitals	20	65	65	30	22	32	87	49	51
Royal Surrey County Hospital NHS Foundation Trust	28	11	11	4	24	33	55	31	31
Surrey And Sussex Healthcare NHS Trust	39	95	85	3	39	26	63	44	46
Western Sussex Hospitals NHS Foundation Trust – St Richard's Hospital	25	100	100	8	28	18	92	43	42
Western Sussex Hospitals NHS Foundation Trust – Worthing Hospital	24	100	100	25	21	48	44	55	53
Kent And Medway	**152**	**78**	**75**	**28**	**153**	**27**	**369**	**62**	**63**
Dartford And Gravesham NHS Trust	26	85	85	50	23	48	68	57	58
East Kent Hospitals University NHS Foundation Trust	58	83	74	33	55	27	130	70	71
Maidstone And Tunbridge Wells NHS Trust	42	60	60	17	45	27	114	56	56
Medway NHS Foundation Trust	26	92	92	12	30	13	57	63	65

Table 8.5 continued
Results for patients with rectal cancer who had major surgery according to trust/hospital/MDT

Cancer Alliance/Trust Name	Number of patients with rectal cancer undergoing major surgery	Proportion of patients with recorded margin status (%)	Negative margins reported (%)	APER rate (%)	Number of patients diagnosed with rectal cancer Jan-Dec 2016 undergoing major surgery	Pre-operative radiotherapy* (%)	Number of patients in 18-month stoma estimate	Observed 18-month stoma rate using HES/PEDW (%)	Adjusted 18-month stoma rate using HES/PEDW (%)
West London	**202**	**97**	**91**	**20**	**221**	**35**	**559**	**43**	**43**
Chelsea And Westminster Hospital NHS Foundation Trust	18	89	78	22	23	13	58	48	46
Croydon Health Services NHS Trust	17	100	76	0	20	65	39	38	38
Epsom And St Helier University Hospitals NHS Trust	20	90	90	15	16	31	37	35	35
Imperial College Healthcare NHS Trust	31	100	90	32	37	49	87	30	30
Kingston Hospital NHS Foundation Trust	14	100	93	36	15	20	54	33	35
London North West Hospitals NHS Trust	44	98	95	14	51	25	107	46	49
St George's University Hospitals NHS Foundation Trust	18	100	100	0	17	24	68	32	33
The Hillingdon Hospitals NHS Foundation Trust	20	95	95	35	17	6	47	53	51
The Royal Marsden NHS Foundation Trust	20	100	90	25	25	72	62	71	72
South East London	**106**	**95**	**89**	**12**	**130**	**49**	**292**	**53**	**53**
Guy's And St Thomas' NHS Foundation Trust	45	91	84	22	57	53	111	64	62
King's College Hospital NHS Foundation Trust – King's College Hospital	19	100	89	0	24	46	43	60	61
King's College Hospital NHS Foundation Trust – Princess Royal University Hospital	21	95	90	10	27	59	48	44	41
Lewisham And Greenwich NHS Trust	21	100	95	5	22	32	90	41	44
North Central And East London	**97**	**69**	**61**	**16**	**94**	**40**	**387**	**48**	**48**
Barking, Havering And Redbridge University Hospitals NHS Trust	28	11	11	21	28	71	87	51	50
Barts Health NHS Trust	▲	▲	▲	▲	10	20	82	51	52
Homerton University Hospital NHS Foundation Trust	▲	▲	▲	▲	▲	▲	27	56	55
North Middlesex University Hospital NHS Trust	15	100	87	0	▲	▲	17	65	64
Royal Free London NHS Foundation Trust	18	100	94	17	18	22	97	46	46
The Whittington Health NHS Trust	▲	▲	▲	▲	▲	▲	27	48	51
University College London Hospitals NHS Foundation Trust	18	100	100	11	21	33	50	30	32

* Almost all short or long course radiotherapy (0.26% nationally classified as other)
▲Too few cases to report (<10)
† Adjusted estimates not reported because overall data completeness low (also not included in associated Network totals)

Appendix 1 – Outlier communications

<table>
<tr><th colspan="4">24 Month Mortality</th></tr>
<tr><th>NHS Trusts</th><th>Comment</th><th>Outlier 2017 Annual Report</th><th>Outlier 2016 Annual Report</th></tr>
<tr><td>York Teaching Hospital NHS Foundation Trust</td><td>
Letter dated 2/7/18 sent to Chief Executive and Medical Director stating that a response was needed by the 20/7/18 and communicating that:

"The Audit has found that your trust had a higher than expected rate of 2-year mortality after major resection. The adjusted 2-year mortality of 33.9% for YORK TEACHING HOSPITALS NHS FOUNDATION TRUST compares to an overall 2-year mortality for England and Wales of 18.9%. The mortality rate was adjusted for patient case-mix. The unadjusted 2-year mortality at your trust was 29.3%… In line with the Department of Health's Detection and Management of Outliers document, we will be writing to your Clinical Leads to inform them of our findings in a few days"

This letter quoted the data that had been analysed to give the above figures - a total number of 160 patients without mention of the number of deaths in 2 years and then figures for the risk adjustment factors calculated for these 160 patients. This states York NHS Trust, which should include Scarborough General Hospital (SGH) and York Teaching Hospital (YTH).

[List of email correspondence between York and the NBOCA project team.]

Methodology:

Given the above discrepancies and analysis of our data by NBOCAP we were duty bound to analyse our own data. As colorectal lead for YTH, I have done this in conjunction with our analysts as mentioned above with each death also being reviewed by the responsible consultant and myself.

Analysis:

The data we uploaded to NBOCAP, and therefore should be the same data they are analysing, shows 218 patients had major resections in 2014/15 with 48 deaths and so an absolute 2-year mortality of 22.0% (48/218) for the York NHS Trust as a whole.

Of these 218 patients, 139 were performed in YTH and 79 in SGH. Of these 139 performed in York there were 33 deaths giving an absolute 2-year mortality of 23.7% (33/139).

This is higher than the national average without adjustment and not looking at the 'observed mortality'. We were very concerned by the possibility that our colorectal cancer service in 2014/15 was under-performing.

This table shows the data for risk factors on all our 139 patients that we identified in YTH alone and that was actually uploaded to NBOCAP, as well as the figures that NBOCAP initially used in their analysis of 160 patients to demonstrate that York NHS Trust was an outlier and then also compared to the national averages they quoted. As mentioned I am the lead only for YTH and not SGH that is why I am only allowed to comment on YTH data.

This shows that most of the risk factors for our patients were higher than the national average and higher than the NBOCAP calculated figures used in risk adjustment. This would suggest that the process of risk adjustment should decrease our observed mortality.

<table>
<tr><th></th><th>York numbers/ total York resections</th><th>York %</th><th>NBOCAP data for 'York' based on the 160 patients they analysed</th><th>National average</th></tr>
<tr><td>Emergency</td><td>27/139</td><td>19.4%</td><td>19.4%</td><td>15.3%</td></tr>
<tr><td>ASA 4</td><td>4/139</td><td>2.8%</td><td>2.5%</td><td>2.9%</td></tr>
<tr><td>ASA3</td><td>33/139</td><td>23.7%</td><td>25.0%</td><td>25.31%</td></tr>
<tr><td>T4 disease</td><td>42/139</td><td>30.2%</td><td>27.5%</td><td>23.2%</td></tr>
<tr><td>N2 disease</td><td>25/139</td><td>18.0%</td><td>16.3%</td><td>15.1%</td></tr>
<tr><td>M1disease</td><td>17/139</td><td>12.2%</td><td>5.6%</td><td>8.2%</td></tr>
<tr><td>Age >85</td><td>11/139</td><td>7.9%</td><td>6.9%</td><td>7.2%</td></tr>
<tr><td>Age 75-84</td><td>42/139</td><td>30.2%</td><td>28.8%</td><td>29.4%</td></tr>
</table>

We did not have time to note trawl for all 139 York patients and so we cannot say exactly how many out of the 139 had stage 4 disease at the time of operation, but from the notes we did examine there were at least 15 who had stage 4 disease at the time of operation making this 12.2% as opposed to the NBOCA data which suggested we had only 9 out of 160 patients (5.63%) with the national average being 8.2%.

In this case, this is mainly due to our failure to record M status properly and to also upload correctly as we could not put MX down in the pathology and so it was put down as M0 instead of the radiological diagnosis- the pathology M0 overrides the radiological M1. This has hopefully been addressed in our current data.

Our data collection or ability to identify morbidity has always been poor and we find it very difficult to code for this despite the need to. Therefore this data cannot be included.
</td><td>No</td><td>No</td></tr>
</table>

/continues over

24 Month Mortality			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
York Teaching Hospital NHS Foundation Trust **/continued**	**Clinical review of the deaths** Over 40% died from causes unrelated to their cancer 14 of the 33 patients who died had metastases at the time of resection (42.4% had stage 4 disease). Stage 4 disease is particularly associated with a lower survival (NHS England data show that 1-year survival for patients diagnosed with Stage 4 disease is 40%). Of the remaining patients 12/33 (36.4%) had recurrence. We had a higher than national average for locally advanced diseases with a number of these patients presenting as emergencies and with perforation and invasion into other organs and so we would expect a higher recurrence rate for them. **Was our surgery adequate?** Our 90-day mortality was 5.8% but given our case mix we would expect that to be adjusted down and it is within the normal variance at that time and suggest our peri-operative care was within normal limits. CRM positive in 9/139 patients (6.5%) would suggest our surgery was within normal limits. Of these 9 CRM positive resections- 5 were emergencies, 5 were rectal cancers and 3 right sided lesions. Of the rectal cancers 3 had likely positive margins on imaging despite LCRT and had R1 resections. One patient was palliative with brain metastases and would have required an exenteration to get RO and the other a planned benign resection for what was thought to be a Crohn's stricture that had perforated anteriorly and was an R1 resection. Of the 4 right sided lesions 3 were emergencies. 2/4 had palliative resections after presenting with obstruction and stage 4 disease and these were R1. The other two had T4 cancer invading abdominal wall and small bowel in one case with R1 resections. **Conclusions** Our investigation has not identified any quality of care issues in relation to patients having surgery for bowel cancer at York NHS trust. Given our mean adjusted observed mortality for York and Scarborough was around 19% for 2012-13 and a combined figure was 22.6% for 2013-14. The Colorectal lead for Scarborough General Hospital has written back to me and advised me their mortality is 15 from 80 patients that they operated on giving an absolute mortality of 18.8%. Given they have a high-risk population they feel they lie within the normal range for 2-year mortality. Unfortunately they have not been able to interrogate the data further given the time constraints. Looking at the York figures alone we did have a high absolute unadjusted 2-year mortality of 23.7% rather than the 29.3% mentioned in your report. If we look at all the patients on our database that had major resections in 2014-15 but not captured in NBOCAP the absolute mortality is 33/147 (22.4%). We are unsure how the observed mortality is calculated or the risk adjustment is performed and so cannot do this. However, it would be logical to assume that risk adjustment would bring the figure down in line with the average nationally and so we would hope that we lie within the normal range and not be an outlier. This is because it would take into account the case mix, which as seen above, shows our patients are at higher risk of mortality than the average case mix for nearly every risk adjustment factor, and most importantly, for arguably the two biggest risk factors in emergency presentation and stage 4 disease. The mortality reviews have not identified any issues in the way clinical care was delivered and as a Trust we consider that the MDT review and resulting actions put in place. 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. **Summary and future plan:** We absolutely agree with the premise of NBOCAP to drive excellence and help outliers improve performance or examine and present their data accurately as this is how we are all judged. It also raises the question of a 2-year mortality review- we feel as a group of surgeons, that though the number of patients operated on with metastases was high and associated with a high mortality, that surgeons should not be dissuaded from doing what could be a good palliative operation that would benefit the patients quality of life and that patients also wish for. A possible answer is to send out the summarised data after the data upload for the trust themselves to check the summaries, such as tumour staging, ASA etc. This can be without the national averages so that the trust can check the figures before they are incorporated into a final analysis. This would possibly be better than asking a few trusts to look at what seem to be outlier results just before publication as it would allow all trusts to rigorously check the data that is being published about them and allow time to correct inaccuracies.	**No**	**No**

24 Month Mortality			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Wye Valley NHS Trust	We had been sent a list of patients who had died within 2 years of surgery. I have reviewed all case notes and histopathology as well as oncology records where applicable and death certification. Some oncology records are incomplete since, whereas radio and chemotherapy are given on site, they are provided for us by a separate Trust. Although 26 deaths out of a total of 102 cases would not, on the face of it, equate to a 33.4% mortality, it would appear that, because of earlier deaths over a 2-year period in this cohort of patients, it does. Nevertheless, as 76 patients are alive after a 2 year follow up, our 2-year survival is 75%. Our 90-day mortality for this period was concerning, but, because of small numbers, this did not trigger an alert for the 2016 NBCA report. It did, however, lead us to review those deaths 2 years ago. Amongst these 11 deaths were, in fact, 5 patients who did not have a major resection. This almost halves our 90-day mortality following major resection for this period and, therefore, will also increase our 2-year survival to below the cut-off point to trigger an alert. Of these 5 patients, 3 cases were emergency admissions and had laparotomies and defunctioning stomas to palliate advanced disease. However, since these patients had such poor prognoses, they may have been better managed non-operatively. 1 patient, who was due a planned admission for major resection, presented with peritonitis. Laparotomy revealed irreversibly ischaemic bowel and no resection was performed. The fifth patient, who was 89, died following bleeding after a colonoscopic polypectomy. This case was centrally reported, underwent a rapid review and a root cause analysis, as well as a coroner's inquest. There were 6 patients who did undergo major resection and died within 90 days, 1 patient (m59) was referred as an in-patient: an obstructing cancer had been diagnosed during a medical admission for decompensated alcoholic liver disease. Resection was performed without full MDT discussion. Early post-operative death was due to liver failure. This led to an MDT policy change to ensure that non-core members discuss proposed urgent/emergency surgery with the MDT surgical lead or nominated deputy. 89f presented with an obstructing cancer and died after 9 days because of aspiration pneumonia. 76f, having previously undergone a right nephrectomy, died following intra-operative haemorrhage during a right colectomy (Coroner's inquest). 83m discharged on day 2 post laparoscopic resection died from PE/pneumonia confirmed at post mortem examination. 83f died following an anastomotic leak. Finally, 69f with multiple co-morbidities presented late with colon cancer invading stomach and abdominal wall. The remaining 15 patients (median age 71, 61-90) survived for a median of 14 months (4-19). 4 of these had presented with established metastatic disease and another with a perforated tumour. 2 patients died from co-existing lung disease and 3 died from second malignancies: thyroid, uterus and lymphoma, this last diagnosis pre-dating surgery for colorectal cancer. All patients bar two (frail, elderly) with metastatic, T4 or nodal disease received adjuvant/palliative chemotherapy.	**No**	**No**

24 Month Mortality			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Western Sussex Hospitals NHS Foundation Trust	Thank you very much for your letter to our trust. As lead clinician for colorectal cancer at St Richard's, I have investigated our outlier status in two-year mortality after major resection. I am sorry for the delay in replying to you. I know that you have been in touch with our clinical audit office on more than one occasion and the patient list that we have been given for review has been amended several times. This has delayed my assessment of the individual case notes. We answered a request about outlier status with your organisation several years ago and my findings are very much the same as then. Surgical treatment in these cases is predominantly performed by four clinicians who normally undertake major colorectal resections both electively and emergently, 32 of 34 cases. 2 cases were performed by upper gastrointestinal surgical colleagues as emergencies. Whilst there are a small number of post-operative deaths (2) whilst in hospital after elective resection (less than 90 days) this is within an acceptable rate for operative mortality over the period in question. The data show that the vast majority of the remaining (32) patients who died within two years of surgery were operated on as an emergency or in an elective or semi-urgent fashion in a palliative setting. Most emergency patients had either bowel perforation or obstruction at the time of surgery and could have been treated with operation or non-surgical palliation (with death inevitable shortly after). Many had advanced local or distant disease at the time of surgery. It is the feeling of our department that where surgery in an emergency setting, particularly in the very elderly, offers a reasonable chance of successful pain relief, discharge from hospital and meaningful, often albeit, limited life expectancy postoperatively when compared to certain death without, then operative intervention is the correct choice. Another large group of patients within the audit had effectively palliative surgery either semi-emergent or elective with distant or peritoneal disease that was apparent either before or at the time of surgery. Once again in this department it is our feeling (and borne out by the literature) that resectional surgery to primary disease as palliation even in the presence of distance metastases confers an advantage in survival with acceptable quality of life over non-surgical palliative care. The majority of patients undergoing surgery over this period who survived to leave hospital had what we would consider an acceptable quality of life for a reasonable period after their operation. We can offer no other suggestions as to how we would change the management of individuals who we believe will need either emergency or palliative surgical treatment for colorectal cancer in the future. We maintain that doing what we feel is clinically appropriate for the individual at the time of surgery is our over-riding concern. We feel that decision making at this time does not and should not take account of likely 2-year mortality rates where meaningful life expectancy post operatively is anticipated, no matter how short. I have stated before in communication with your office that we know that our department's 90-day mortality rates for elective surgery fall within recognised limits and have done so since the inception of the audit. Similarly the rate of R0 resections and average number of nodes harvested at operation are more than acceptable. This would suggest that any differences in two-year survival data will not be as a result of poor quality surgery but rather explained by the disease burden at diagnosis, other comorbidities or perhaps and I think this is unlikely, inappropriate under-use of adjuvant treatment post-operatively. I believe that without knowing the number of patients nationally with colorectal cancer who do not undergo surgical resection (particularly where this might be for palliation or as an emergency) and the cancer specific death rates at 2 years, comparison between units in audits such as this is less valuable. I will of course forward this letter to our Medical Director as well as my colleagues in the Department of Colorectal and General Surgery; we thank you for your hard work with this project and we would of course value any thoughts you may have regarding our data and my assessment and comments thereon.	**No**	**No**

90 Day Mortality			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Aintree University Hospitals NHS Foundation Trust	We were, of course, very disappointed to learn of our position following the analysis of our submission of data to NBOCA as an outlier. We have since been through our submissions as well as patients we have found to be omitted from submission by virtue of them not being uploaded on to Somerset or flagged up as a colorectal cancer. This data has now been uploaded and resubmitted and I am sure this will see our position improve. However, this latest change in data analysis does raise some questions that are concerning to the Trust. Last year we were in the best performing 25% of Trusts in the UK and now, for the 2016-2017 submission we find ourselves as the soul outlier. The "weighting" of the mortality in our patients has always been somewhat of a mystery. We serve the fourth most socioeconomically deprived area in the country and of all the Trusts in our region we were the only Trust to be weighted upwards last year (mortality greater than that observed). This year we find that our adjusted mortality is greater than 3% higher than that observed (this equates to over 50% increase over our observed 90-day mortality!) Clearly this cannot be correct and we have tried to contact NBOCA on previous occasionally only to be informed that this is a validated scoring system. I look forward to learning of the new analysis of our extended cohort (synchronous resections were omitted – any by definition, with metastatic disease, should be weighted downwards). I do believe that NBOCA should be a little more transparent with its data analysis to assist the Trusts who may be perceived to be performing below par who have had an otherwise good track record up to this point where new data sets are being analysed.	**No**	**No**

30-day readmission after major resection			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
University Hospital of South Manchester NHS Foundation Trust	Thank you for your letter of 02 July 2018 highlighting Wythenshawe Hospital as legacy University Hospital South Manchester (UHSM) now part of the Manchester University Hospital NHS Foundation Trust (MFT), reported a higher than expected rate of 30-day readmission after major resection. Following a deep dive by the Division of Surgery to understand the reason for the higher than expected readmission rates, it has been identified that there is a recoding issue for planned follow up of patients attending the Surgical Ambulatory Care Unit (SACRU) at Wythenshawe Hospital. Breakdown by Primary Diagnosis of the readmission shows the top primary diagnosis is Z080 - Follow-up examination after surgery for malignant neoplasm. This indicates that ward staff /admissions team are incorrectly recording the patient's attendance as a readmission within Lorenzo PAS. The following actions have been implemented to address this position and support on-going improvement in performance. • Immediate training has been put in place to rectify the incorrect historic practice for recording attendances to SACRU. • Scrutiny and review by Surgery Directorate Manager of the weekly SACRU monitoring data to ensure accuracy. • Retrospective review of data since April 2018 with the divisional business analyst to correct historic data. o Sign off for EPR methodology & manual review to review re-admissions since April 2018 o Liaison with Data Quality team to correct and amend data before the 4 August 2018 • Monthly review of performance as part of SACRU working group.	**No**	**No**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
West Wales General & Prince Philip MDT	Response not yet received.	**No**	**No**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Lancashire Teaching Hospitals NHS Foundation Trust	In this year's NBOCAP audit 91 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 62 were identified as still having a stoma 18 months after their cancer resection. As colorectal MDT lead for the trust I have reviewed the electronic records of these patients with the regard to the reasons for stoma non-closure The data provided by NBOCAP was generally accurate with two 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 Thirty patients in this series 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. However as a tertiary cancer centre, which is the regional centre for advanced pelvic malignancy, early rectal cancer, and plastic surgery, we do receive a net inflow of patients with very low rectal cancers. 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 treatment alternative was available other than APR and that these cases were entirely justified on clinical grounds. In a further four patients a low Hartmann's procedure was performed. Two of these cases were performed as palliative resections with a high risk of pelvic recurrence where an anastomosis was deemed oncologically inappropriate. One patient had very extensive comorbidity and anastomosis was deemed unacceptably hazardous. In one case very dense post radiation fibrosis was found intraoperatively preventing formation of an anastomosis. Fifty five patients in this series underwent anterior resection with an anastomosis and defunctioning stoma. Of these 26 patients still had a stoma at 18 months from their surgery. In 15 of these patients there was a subsequent decision not to close the stoma. One patient died prior to stoma closure and another suffered deteriorating health to an extent that further surgery was agreed to be an unacceptable risk. In 7 of these cases patients had progressive metastatic disease requiring ongoing oncological therapy and in one there was a local recurrence. Four patients opted not to have their stoma closed due to concerns about further surgery or post-operative function. In one case closure was prevented by an anastomotic stricture. In 10 cases the stoma was subsequently closed beyond 18 months. In four of these cases delay was due to successful conservative management of potential anastomotic leaks on contrast examination. In 3 cases patients underwent prolonged chemotherapy delaying listing for stoma closure and subsequent waiting list delays resulted in their closures occurring after 18 months. In one patient closure was delayed by the need for 2 sequential liver resections. In two cases closure was delayed due to a patient preference to delay further surgery. One further patient is still undergoing conservative management of a radiological leak and is expected to undergo stoma closure later this year. Whilst there is no doubt that a number of patients wait longer than necessary for stoma closure due to waiting list pressures, in this series the main reasons for delayed or non-closure of stomas appear to be due to sound clinical reasons. On examination of the records of these patients, I have not found any instances of inappropriate clinical management or cause for concern.	**No**	**No**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Plymouth Hospitals NHS Trust	Thank you for your letter of 2nd July highlighting that the National Bowel Cancer Audit has found that our trust had a higher than expected rate of 18-month stoma rates after major resection between 1 April 2013 and 31 March 2016. The adjusted estimated 18-month stoma rate of 67% University Hospitals Plymouth compares to an overall 18-month stoma rate for England of 52%. The unadjusted 18-month stoma rate at our trust was 68%. I am concerned that there might be a typo in your letter. In paragraph five you advise 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." The rest of the letter appears to be referring to stoma rates. Our National Bowel Cancer Audit mortality is slightly higher than expected at 90 days but as expected at two years. Both were worse in 2017 than 2016 and have been examined by the service along with SHMI / HSMR data. Assuming you are advising the CQC of our stoma rates I can advise you that they are already aware of our outlier position through our regular intelligence reports. We were able to discuss this with them during our inspection in May 2018. At that point we were discussing our 2017 risk-adjusted 18-month temporary stoma rate in rectal cancer patients undergoing major resection which was 65.5% - which was worse than expected. The 2016 figure was 59.3%. Both of these continue to be above the national average. The data is included in the Trust CQC report. I am sorry that in collaboration with colleagues I am not in a position today to comment on the accuracy of the 2013-16 data. Appropriate reports were requested from our Information Performance team but are not back yet. Our Colorectal team had a similar request from NBoCaP in 2013. At that time we undertook a local audit of these cases with a decision as to whether the stomas were expected/unexpected and avoidable/ unavoidable might be appropriate. I have attached our response from 2013 – which took several months after initial screen through the Somerset Cancer Registry (used by our cancer MDT) and relevant notes had been requested. We hope that as the NBoCaP numbers are significantly higher on this 2013-2016 report we will not find major discrepancy between Somerset Cancer Registry and HES data. I am disappointed that we didn't perform the subgroup analysis suggested on TME Hartmanns patients in 2013-14. I am sorry that this response does not address the key questions of data accuracy. I would hope that we will have the requested reports back in the next week and would be able to perform similar population analysis to that presented in your letter. I will forward our response with that data as soon as it is available.	**No**	**No**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
East Kent Hospital University NHS Foundation Trust	Response not yet received.	**Yes**	**Yes**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
Northern Lincolnshire and Goole NHS Foundation Trust	Thank you very much for your letter, dated 2 July 2018. I am the Divisional Clinical Director for Surgery & Critical Care and have liaised with our Clinical Lead for Colorectal Cancer Services in order to respond on behalf of our Chief Executive and Medical Director. In your letter you cite the observed 18 months stoma rate, however your letter then refers to expected, unexpected and unavoidable deaths in the Trust and their appropriateness. I have looked at all the data provided and there is no mention of any mortality data, I assume this is a typing error hence I have not looked in to that element. I, along with my two colleagues, (Clinical Lead for Colorectal Services) have gone through each individual case and we have looked at the overall data as well supported by our audit department. As part of this, and as discussed with your analyst last week, we have identified that we have in the region of 250 patients that have had major resection for rectal cancer. We understood from speaking with your team, that the 18-month stoma rate indicator is only applicable to a subset of patients having major resections, specifically those with 'malignant neoplasm of rectum'. To be sure of our own data quality, therefore, and to ensure that the national audit results are accurate, we will start looking at those patients' records who have had major resection surgery (for example those diagnosed with 'malignant neoplasm of recto-sigmoid junction') to assure ourselves that this data is accurate including diagnosis. Beginning in September we will undertake a complete audit of our practice and report back to you on all the patients that we hold in our system so that the data can be correct, accurate and reflective of practice. With regards to the data you have shared with us, after analysing the 104 'malignant neoplasm of rectum' patients who according to the national audit data still had a stoma at 18 months, we have established (and shared with you this information) that 5 of these had been inaccurately recorded as there is no evidence of them having had a stoma, another patient according to our records was reversed within 18 months. Another patient was not a curative resection, it was a palliative resection in a patient with mets and there were two other patients done as emergency procedures, but as we understand from our discussions with your analyst, these would still be included. From our initial work, recognising that the assessment of data quality is still underway, we have thus far identified some changes needed in the national data that would more accurately present the Trust's 18-month stoma rate, decreasing this slightly. The more detailed audit work may yet yield other changes/updates needed within the national data being reported, we'd be grateful therefore if you bear this in mind and could make reference to this ongoing work in your planned reporting schedule. We will be able to provide you with actual figures once we have looked at all patients with rectal surgery and we will come back to you. In your data tables in the summary attached to your letter, it shows the percentage of emergency surgery patients and it seems you have included these patients, this I think would require a definition and as I understand when the individual Surgeon reporting started 5 years back there was an intense national debate, and at the end it was decided that urgent patients would be included which are operated by colorectal surgeon and not emergency patients like bowel perforation etc. because they don't give true reflection of quality of surgery and for this reason it was decided they would be excluded from individual Surgeon reporting and hence excluded from reporting in the database. Also in the summary sheet, if you look at the age group, our percentage of patients between 75 to 84 is higher than the national average and also higher in greater than over 85 years old. That means we are dealing with an older cohort of patients that the national average and indeed that has been shown in our regional audits. Secondly if you look at the ASA grade, again for ASA 3 and 4 which are the sickest patients, again we are higher than the national average. I am sure you will appreciate that in older patients if there is any complication with them being grade ASA 3 or 4 there is no margin for error and hence an MDT would have decided that Hartmann's procedure for instance might be the best option for that particular patient and other factors like weak sphincters etc. are taken into consideration. If our Hartmann's procedure rate is higher that is well explained by all these factors. All patient management decisions are taken by the MDT, considering all patient factors and decisions were implemented with the patient's approval on clinical consultation. We will get in touch with you when we have analysed the entire dataset of rectal cancer surgery in this organisation.	**No**	**No**

18 Month Stoma Rates			
NHS Trusts	**Comment**	**Outlier 2017 Annual Report**	**Outlier 2016 Annual Report**
The Christie NHS Foundation Trust	Thank you for your letter and the draft report with the Christie data benchmarked with other colorectal surgical services. You will be aware that The Christie is a tertiary cancer centre that does not undertake primary surgery for bowel cancer nor for previously undiagnosed patients who present as emergencies. As noted in previous correspondence, the position as an outlier for permanent stoma rates reflects the case mix here. To provide reassurance I can confirm that the data submitted on these patients has been reviewed and again supports this explanation. These were referrals through MDTs from other units for management of cancer recurrence or where complex pelvic surgery would be needed. There are a high proportion of T3 and T4 tumours in comparison with other trusts' data. 57 required a permanent stoma as part of their procedure. Among the 19 patients who underwent anterior resection/Hartmanns, reversal of the stoma was not an option or applicable in the majority. This included the presence of other disease that required chemotherapy /liver resection or pelvic recurrence. In 5 patients the stoma was temporary; of these three have since had reversal, one was deferred because of pain problems and one patient continues on chemotherapy. As in previous reports it would be helpful to include some commentary to reflect this. We do not anticipate that there would be any change in this picture m in future NBOCAP audits, in which we are very pleased to participate.	**Yes**	**No**

Glossary

Abdomino-perineal excision of the rectum (APER) – operation to remove the entire rectum and anal canal. The patient is left with a permanent stoma.

Adenoma – a growth from the inside of the bowel which is usually non-cancerous, but over time has the potential to develop in to a cancer. For this reason, they are generally removed.

Adjusted – a way of reporting results that takes into account differences between the patients that each trust/ hospital/MDT or region is treating. This allows comparisons to be made more fairly.

Anterior resection – operation to remove part, or all, of the rectum.

Cancer Alliance – at a regional level, results in England are reported according to cancer alliance. This is a particular geographical area containing many hospitals. There are 19 cancer alliances.

Chemotherapy – drug therapy used to treat cancer. It may be used alone, or in combination with other types of treatment (for example surgery or radiotherapy).

Curative intent – the aim of the treatment is to cure the patient of the disease.

ERAS (Enhanced Recovery after Surgery) – an evidence-based approach to help people recover more quickly following major surgery. Research has shown that the sooner patients get back to normal activities such as eating, drinking and walking, the quicker their recovery is.

Hartmann's procedure – operation to remove an area of the bowel on the left hand side of the abdomen and top end of the rectum. It involves the formation of a stoma, but this is not necessarily permanent.

Health Board – in Wales, bowel cancer services are provided by Health Boards which serve distinct geographical areas. There are 7 Health Boards. The multidisciplinary teams operate within these.

Faecal Immunochemical Test – a stool sample is provided by the patient and can then be tested for the amount of blood within it. Abnormal results will require further telescopic examination of the bowel.

Laparoscopic – also known as minimally invasive surgery or keyhole surgery. This is a type of surgical procedure performed through small cuts in the skin instead of the larger cuts used in open surgery.

Local excision – procedure done with instruments inserted through the anus (often during a colonoscopy), without cutting into the skin of the abdomen to remove just a small piece of the lining of the colon or rectum wall.

Lymph nodes – small bean shaped organs, also referred to as lymph 'glands', which form part of the immune system. They are distributed throughout the body and can be one of the first places to which cancers spread.

Metastases – cancer that has spread from where it first started in the body. These can also be called secondary cancers.

Multidisciplinary Team (MDT) – at a local level, results from Wales are reported according to multidisciplinary teams. There are 13 Welsh MDTs. An MDT is a group of bowel cancer experts based within a hospital who discuss and plan the treatment of every patient with bowel cancer. The team contains surgeons, medical doctors, nurses, radiologists and pathologists. Patients from smaller hospitals will be discussed in their closest specialist bowel MDT.

Open surgery – an operation carried out by cutting an opening in the abdomen.

Palliative care – care given to patients whose disease cannot be cured. It aims to improve quality of life rather than extending life.

Radiotherapy – the treatment of disease, especially cancer, using x-rays or similar forms of radiation.

Screening – patients aged 60–74 are invited to take part in this every 2 years. They do this by providing a stool sample. They will be invited to have a camera test of the bowel if this is positive.

Stage - a way of describing the size of a cancer and how far it has grown. Staging is important because it helps decide which treatments are required.

Stent – a flexible, hollow tube designed to keep a section of the bowel open when it has become blocked.

Stoma – a surgical opening in the abdomen through which the bowel is brought out onto the surface of the skin. Colostomy and ileostomy are types of stoma.

Trust - an organisation within the English NHS, made up of one or more hospitals, and generally serving one geographical area.

Type 2 Objection – a request from a patient which is registered with their GP and means that personal identifiable information relating to them cannot be disseminated or published by NHS Digital. From May 2018, Type 2 objections will be replaced by the national data opt-out.