

# National Bowel Cancer Audit Report 2015



This 2015 Annual Report contains data from the 2013/2014 reporting period which covers patients in England and Wales with a date of diagnosis from 1 April 2013 to 31 March 2014.

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**The Association of Coloproctology of Great Britain and Ireland (ACPGBI)** is the professional body that represents UK colorectal surgeons. ACPGBI provided a clinical interpretation of the data analysed in the 2015 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 RCS carried out the analysis of the data for the 2015 Annual Report.



**Health and Social Care Information Centre (HSCIC)** is the trusted source of authoritative data and information relating to health and care. HSCIC's information, data and systems plays a fundamental role in driving better care, better services and better outcomes for patients. HSCIC managed the publication of this annual report.



**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, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical Audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual Audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

# National Bowel Cancer Audit Report 2015

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The project management was carried out by Kimberley Greenaway and Salma Khatun. The Project Team and Board would like to thank the clinical and non-clinical staff at all 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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# Executive Summary

The summary is intended for patients, caregivers, multidisciplinary teams and commissioners. A glossary explaining some of the terms used follows this section.

## Background to the Audit

Colorectal cancer is a major cause of illness, disability and death in the UK. The National Bowel Cancer Audit (NBOCA) was established to describe and compare the diagnosis, care and outcomes of patients diagnosed with bowel cancer in England and Wales; it is now well established and has collected data in its professional form since 2005.

Funding is provided by the Healthcare Quality Improvement Partnership (HQIP) and the Audit is carried out by the Clinical Effectiveness Unit (CEU) of the Royal College of Surgeons of England in partnership with the Association of Coloproctologists of Great Britain and Ireland (ACPGBI), and the Health and Social Care Information Centre (HSCIC).

The 2015 Annual Report is the sixth report produced by the above collaborative group and includes data on over 30,000 patients diagnosed with bowel cancer between 1 April 2013 and 31 March 2014.

## Audit aims

The Audit's overall aim is to measure the quality of care and survival of patients with bowel cancer in England and Wales.

## What the Audit measures

The Audit collects data on items which have been identified and generally accepted as measures of good care and compares these between Strategic Clinical Networks and Trusts/hospital sites. The majority of data items are collected by NHS Trusts in England as part of the Cancer Outcomes and Services Dataset (COSD).<sup>1</sup> Risk adjusted outcomes reported include 90 day post-operative mortality, 90 day unplanned readmission rate, two year mortality for patients having major resection and 18 month stoma rate.

## Consultant Outcomes Publication (COP)

As part of the contract the Audit is required to publish data at individual surgeon level and Trust level for English NHS Trusts.

Our current outcome measure for COP at surgeon and Trust level is 90 day post-operative mortality for patients undergoing elective/scheduled major surgery after being diagnosed with bowel cancer between 1 April 2010 and 31 March 2014. This year we are also publishing the number of procedures performed by each surgeon and Trust.

This data is available at <http://www.acpgbi.org.uk/surgeon-outcomes/>

## Quality standards used

Measures for cancer management have been drawn from the National Institute for Health and Care Excellence (NICE) and the Association of Coloproctology of Great Britain and Ireland published guidance on the diagnosis and management colorectal cancer.<sup>2,3</sup>

## How comparisons are made between hospitals and geographical regions

Patients are all different and factors such as age and general health will vary between different hospitals and regions. In order to compare hospitals in as fair way as possible the Audit reports risk adjusted outcomes to take into account these patient factors.

## Patient confidentiality

Data protection and privacy is an important part of the Audit. No individual patient can be identified in the results.

# Key findings of the National Bowel Cancer Audit 2015

## Chapter 3

- **Ten per cent of patients with bowel cancer are diagnosed by screening**

The NHS Bowel Cancer Screening Programme offers screening every two years to all men and women aged 60 to 74. When compared to patients diagnosed following an emergency presentation or GP referral, patients identified through this programme are more likely to have an early cancer which can often be treated without major surgery and has a better survival rate. This reflects the ongoing success of the NHS Bowel Cancer Screening Programme.

- **One third of patients diagnosed with bowel cancer do not have major surgery**

These patients have been subdivided into pathways:

- Too little cancer: Patients with early stage cancer may be suitable for a local resection procedure which involves the removal of just the cancer from the bowel lining. This year around one in 25 of all patients had this procedure.
- Too much cancer: These patients have bowel cancer that has spread to another area of their body and would not benefit from major surgery. Some patients with cancer that has spread have other treatments such as chemotherapy.
- Too frail: Some patients who are very weak and have other serious illnesses are unable to withstand major surgery. The Audit shows that most of the patients that do not have a major operation for this reason are over 85 years old.

## Chapter 4

- **Survival after major operation to remove bowel cancer is improving**

Almost all (96 per cent) of patients who have a major operation for bowel cancer are alive 90 days following surgery. Although patients who have an emergency operation are known to be more likely to die within 90 days of their operation than patients who have a planned operation, survival after emergency surgery has improved over the last five years from 83 per cent to 87 per cent of patients.

- **Length of hospital stay following surgery is decreasing**

The majority of patients now stay in hospital for around seven days. Patients over the age of 75 years tend to stay in hospital for longer than seven days. Length of stay is highly variable between regions and the proportion of patients who remain in hospital for longer than five days after surgery ranges from 60 to 76 per cent between regions.

- **One in five patients has an unplanned readmission to hospital within 90 days of surgery**

This number has not increased despite more patients going home sooner after their operation.

- **Almost half of patients have their tumour removed by 'key hole' (laparoscopic) surgery**

Patients with more medical problems, those with larger tumours and those who have an emergency (rather than planned) operation are less likely to have 'key hole' surgery. The chance of a patient having 'key hole' surgery varies according to where in the country they are treated.

## Chapter 5

- **Two year patient survival shows large geographical variation**

Overall two year survival was 67 per cent for patients diagnosed between 1 April 2011 and 31 March 2012 and 82 per cent in those patients who have a major operation to remove their bowel cancer. In those who do not have a major operation, two year survival is dependent on the reason for this. In patients with 'too little cancer' to need a major operation, 91 per cent are alive at two years following diagnosis. In contrast, in patients who are too frail or have too much cancer, two year survival is lower, with around 36 per cent alive at this point. There are large variations across regions, across all patients. There are many potential causes of this variation, each with very different implications. The Audit is unable to explore the observed variation yet because during this time period little information was collected on patients not treated surgically.

## Chapter 6

- **83 per cent of patients have a stoma following a major operation to remove rectal cancer**

Whether this stoma can be reversed in the future depends on many reasons including the position of the tumour and the type of operation performed to remove it. The proportion of patients who have a permanent stoma varies throughout the country. Of eligible patients, 65 per cent have their stomas reversed within 18 months of their major surgery.

# Recommendations

## For those who receive care:

- An awareness of the symptoms of bowel cancer is important and individuals should visit their GP if they have any concerns regarding this (Chapter 3). Information about symptoms can be found at <http://www.nhs.uk/Conditions/Cancer-of-the-colon-rectum-or-bowel/Pages/Symptoms.aspx>
- All men and women aged 60 to 74 should take part in The NHS Bowel Cancer Screening Programme every two years. Those over 74 who wish may request to be screened. More information can be found at <http://www.cancerscreening.nhs.uk/bowel/index.html> or provided from GPs (Chapter 3)
- Patients are encouraged to talk to those delivering their care about opportunities to take part in clinical trials (Chapters 3 & 4)
- Patients should be aware that approximately half of rectal cancer patients have a stoma 18 months after surgery (Chapter 6)
- There are many sources of further information and support available regarding bowel cancer for both patients and carers. These are accessible via GP services and online from charitable organisations.

## For care providers and multidisciplinary teams:

- Trusts/hospitals should regularly review Audit data via the Clinical Audit Platform (CAP) to increase data completeness particularly for patients who do not undergo major resection and those receiving neo-adjuvant and adjuvant treatment (Chapter 3 & 6)
- As patients who do not receive major resection have significantly poorer long-term outcomes, those presenting with stage IV colorectal cancer should be referred to an anatomical site specific MDT if both the primary and metastatic tumours are considered potentially resectable, in accordance with NICE guidelines (Chapters 3 & 5)
- In accordance with the joint statement from the ACPGBI and NBOCA, the ASA grade submitted to NBOCA should be that determined by the anaesthetist alone before resection of the cancer (Chapter 4)
- Reducing the proportion of patients undergoing emergency or urgent colorectal cancer resection should remain a clinical priority. The provision of pre-operative resuscitation, adequate theatre access, post-operative critical care, and early colorectal team involvement, including full radiological support and facilities for colonic stenting, is likely to improve survival (Chapters 3 & 4)

- Clinical teams should be encouraged to enter patients undergoing emergency surgery for colorectal cancer into the National Emergency Laparotomy Audit (<http://www.nela.org.uk/>) to enable more information to be gathered about the care provided to and outcomes of patients in this group (Chapter 4)
- Potential delays to discharge, particularly in the elderly population, should be considered pre-operatively, to allow for the provision of community services if required, to reduce the risk of prolonged length of hospital stay (Chapter 4)
- In line with the current NICE guidance, suitable patients should be offered the opportunity for a laparoscopic resection (Chapter 4)
- Loop stoma closure following anterior resection should be prioritised (Chapter 6).

## For commissioners:

- There is variation between NHS providers in various elements of care. Strategic Clinical Networks and Commissioners should review the Audit results for organisations within their regions to assure themselves of the quality of care provided to patients with colorectal cancer, and should work with NHS providers to develop strategies for addressing areas of variation in their region.

# New in 2015 and the future of the Audit

## Newly designed dataset

The number of data items the Audit collects has been greatly reduced in order to collect more complete and accurate information on all patients and not just those having surgery. This has allowed the Audit to also describe the pathways of care for patients not having surgery.

## Individual reports for hospital Trusts

A summary report describing the care and outcomes at each Trust/hospital is available to download at <http://www.hscic.gov.uk/bowel>. This reports on a variety of outcomes compared to Network and National averages. PowerPoint templates are also available from the Audit website for Trusts to populate with their own results to aid discussion at MDT.

## Clinical Audit Platform (CAP) reporting system

The Audit data collection system CAP has the facility to provide feedback to consultants and Trusts about the data they have submitted. Current reports ('Consultant Check Report' and 'Data Manager's Report') were designed to aid checking of cases eligible for inclusion in the Consultant Outcome Publication. The number of reports has been expanded and new user reports including 'case ascertainment' and 'missing data fields' are also available.

## Linkage to chemotherapy and radiotherapy databases

The Audit will continue to widen its focus to better describe the care of all patients, including those who do not have surgery, and to look earlier and later in the pathways of care. The Audit will link to NHS chemotherapy and radiotherapy databases to further understand how these treatments are used in bowel cancer patients.

## Linkage to palliative care database

In the future the Audit will also examine the care of patients towards the end of their lives and the quality of palliative care patients received, describing particularly at what point a patient is referred to palliative care services and place of death.

## Reporting on use of fitness testing

The Audit is now collecting information about the use of pre-surgical fitness testing. This may help to explain how patients are selected for surgery.

## Supplementary reporting

This year the Audit will publish two supplementary reports to examine aspects of bowel cancer care in greater depth. These reports will be available to download at <http://www.hscic.gov.uk/bowel>.

# Guide to Audit Terms

**Abdomino-Perineal Excision of the Rectum (APER)** – An operation to remove the entire rectum and anal canal.

**Anastomotic leak** – A breakdown along an anastomosis allowing bowel fluid to leak out into the abdomen. An anastomosis is the join between two ends of bowel, after a portion (containing the cancer), has been removed.

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

**Adjuvant treatment** – An additional therapy (e.g. chemotherapy or radiotherapy) provided to improve the effectiveness of the primary treatment (e.g. surgery).

**Bowel cancer screening** – The NHS Bowel Cancer Screening Programme offers screening every two years to all men and women aged 60 to 74. Those over 74 can request a screening kit from the Programme.

**Chemotherapy** – Drug therapy used to treat cancer. It may be used alone, or in conjunction with other types of treatment (e.g. surgery or radiotherapy).

**Clinical Nurse Specialists (CNS)** – These are experienced, senior nurses who have undergone specialist training. They play an essential role in improving communication with a cancer patient, being a first point of contact for the patient and coordinating the patient's treatment.

**Computed Tomography (CT) scan** – An imaging modality that uses X-ray radiation to build up a 3-dimensional image of the body.

**Colostomy** – A stoma (surgical opening) constructed by bringing the large bowel (colon) out onto the surface of the skin.

**Curative care** – This is where the aim of the treatment is to cure the patient of the disease.

**Enhanced recovery programme** – An evidence-based approach that helps people recover more quickly after having major surgery.

**Hartmann's procedure** – An operation to remove an area of the bowel on the left hand side of the abdomen and top end of the rectum. It also involves the formation of a Colostomy (see above).

**Hospital Episode Statistics (HES)** – A database which contains data on all in-patients treated within NHS Trusts in England. This includes details of admissions, diagnoses and those treatments undergone.

**Ileostomy** – A stoma (surgical opening) constructed by bringing the end or loop of small intestine (the ileum) out onto the surface of the skin.

**Laparoscopic** – Also called minimally invasive surgery or keyhole surgery, is a type of surgical procedure performed through small incisions in the skin instead of the larger incisions used in open surgery.

**Lymph nodes** – Lymph nodes are small bean shaped organs, often 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 place to which cancers spread.

**Multi-disciplinary team (MDT)** – A group of professionals from diverse specialties that works to optimise diagnosis and treatment throughout the patient pathway.

**Metastases** – Deposits of cancer that occur when the cancer has spread from the place in which it started to other parts of the body. These are commonly called secondary cancers. Disease in which this has occurred is known as metastatic disease.

**Magnetic resonance imaging (MRI)** – A type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body.

**The National Institute of Health and Clinical Excellence (NICE)** – An independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health.

**Neo-adjuvant chemotherapy** – Chemotherapy given before another treatment, usually surgery. This is usually given to reduce the size, grade or stage of the cancer and therefore improve the effectiveness of the surgery performed.

**Palliative care** – The care given to patients whose disease cannot be cured. It aims to improve quality of life rather than extend survival and concentrates on relieving physical and psychological distress.

**Per cent (%)** – per 100. For example, 50 per cent of patients means 50 patients out of 100 patients.

**Stent** – A flexible, hollow tube designed to keep a segment of the colon (large 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. See also **Colostomy** and **Ileostomy** for the two types of stoma.

# 1. Introduction

This Annual Report from the National Bowel Cancer Audit represents the most up to date information from England and Wales regarding the care and outcomes of colorectal cancer patients. The report is a testament to the hard work in collecting, analysing and interpreting a huge quantity of data and my thanks go out to all those individuals involved: in Trusts, at the Health and Social Care Information Centre and at the Clinical Effectiveness Unit at the Royal College of Surgeons of England.

The introduction of The NHS Bowel Cancer Screening Programme has heralded a change in the landscape of bowel cancer within England and Wales, as in the rest of the UK, and I believe that it has had a knock-on effect leading to improvements in the diagnosis and management of colorectal cancer across the board. Furthermore, quality standards from NICE were updated in 2014 to include guidance on early rectal cancer and the use of stents in those with more advanced disease. The National Bowel Cancer Audit has previously concentrated on patients undergoing major resection for their colorectal cancer and has under-represented patients who do not undergo major surgery. With improved data now available the Audit has widened its scope to encompass and describe patients with early cancers undergoing a local excision and those with too much disease or co-morbidity for a major resection. It is however, only through complete and accurate data that processes and outcomes of care can be described for all patients with colorectal cancer.

The value of the annual report remains dependent on the quality of data submitted by the contributing multi-disciplinary teams (MDT) and clinical ownership and oversight of the data submitted by each Trust is crucial. Data quality in the Audit continues to improve, representing increasing consultant engagement. The new Clinical Audit Platform allows clinician scrutiny of the MDT data upload by providing clear access to the data entered.

At the centre of colorectal cancer, is clearly the patient and their family. As care providers it is our responsibility to provide accurate and up to date information to those diagnosed and undergoing treatment for colorectal cancer. We are more than familiar with the very sensible and practical questions routinely asked by our patients, commonly relating to the risks of dying from an operation, the recovery from surgery, the chance of long-term cure and the potential need for a stoma bag. We hope that Audit data will assist care providers in accurately answering these important questions.

Much work needs to be done to fully describe the quality of care and outcomes for patients with colorectal cancer in the England and Wales but we can, I feel, be both proud of this very well established national cancer Audit, and excited about the potential for development of the Audit in the years to come.



A handwritten signature in black ink that reads "R. C. Steele". The signature is written in a cursive, flowing style.

**Professor Robert Steele**  
President  
Association of Coloproctology of Great Britain and Ireland

## 2. Methods

### Methods – NBOCA 2015

- All data for patients diagnosed with colorectal cancer from 1 April 2013 were submitted via the Health and Social Care Information Centre (HSCIC) Clinical Audit Platform (CAP) <https://clinicalaudit.hscic.gov.uk/nboca> which does not accept multiple tumour or multiple treatment records
- This is done at NHS Trust level in England and centrally from the Cancer Network Information System Cymru (Canisc) system in Wales
- Historic data submitted via the Open Exeter system has been uploaded into the CAP system. Further information is available in the supportive document
- Case ascertainment is calculated for English Strategic Clinical Networks and Trusts, using Hospital Episode Statistics (HES) data to estimate the denominators
- The Audit dataset is linked to HES data at the patient level to obtain further information on patient care and follow-up, such as stoma reversal and emergency readmissions in England. The equivalent data for Wales (Patient Episode Data Wales (PEDW)) was not available
- Most results are descriptive and are presented in simple tables with percentages of patients in each group
- Funnel plots are used to compare the following four outcomes between Strategic Clinical Networks/Wales and between Trusts/hospital sites: 90 day mortality after major resection; 90 day emergency readmission after major resection; two year mortality after major resection and 18 month stoma rate after major resection for rectal cancer. All outcomes are adjusted for patient case-mix
- Potential outliers on these four risk-adjusted outcomes are reported back to Strategic Clinical Networks/Wales and to Trusts/hospital sites in advance of the report being published.

### 2.1 Data collection

All eligible NHS Trusts in England and all Health Boards in Wales submitted data to the Audit for inclusion in the 2015 Annual Report. The majority of analyses in this report include patients in England and Wales submitted to the Audit who were diagnosed between 1 April 2013 and 31 March 2014, but for certain patient outcomes, different, more relevant, inclusion criteria are used. See FAQs 2015 Annual Report Feedback on the Audit website for more details (<http://www.hscic.gov.uk/bowel>). Data is also available from the previous four Audits and comparisons are made across years for certain key statistics. Patients identified as being submitted to the Audit in a previous year are excluded from subsequent Audits. This year is the first year that data was submitted via the HSCIC's Clinical Audit Platform (CAP). The dataset has been redesigned to contain fewer items, some of which are mandatory, with the aim of improving data completeness across all patients. All participating Trusts in England individually submitted their data for this annual report to this system; whilst the Welsh data was submitted centrally from Canisc.

### 2.2 Data processing

Data collected for patients diagnosed after 1 April 2013 in the CAP system cannot have more than one treatment record listed per patient. The previous data collection system (Open Exeter) allowed multiple treatment records that underwent data processing to obtain one treatment record (Section 2.1 of the 2015 supportive document). Historic Audit data from Open Exeter has been transferred to the CAP system; details of how this was done are also given in Section 2.1 of the supportive document.

### 2.3 Case ascertainment

Case ascertainment for England is expressed as a ratio of the number of patients reported to the Audit compared to the number of patients admitted for the first time to the participating units with a date of diagnosis of bowel cancer within the Audit period, according to HES data. Further details are given in Section 2.2 of the supportive document.

## 2.4 Linkage to HES

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

Patients treated at hospitals in England were linked to HES records using their NHS numbers, date of birth, sex and postcode. 85 per cent of patients undergoing major surgery at English Trusts in the Audit could be linked to HES. For this Annual Report the Audit has been unable to obtain PEDW data for those patients receiving treatment in Wales. As a result of this, no estimates for 90 day unplanned readmissions or 18 month stoma rates are available for Welsh patients. Estimates for English NHS Trusts exclude those patients not linked to HES. Risk adjusted mortality estimates for all Welsh patients and English patients not linked to HES, relied on imputed data for comorbidities and mode of admission.

## 2.5 Data completeness

Data completeness is defined as the proportion of patients with complete data items on all seven of the variables: age, sex, ASA grade, pathological TNM stage (tumour, node, metastasis staging) and site of cancer, as these Audit variables are used for risk adjustment when comparing post-operative mortality between Strategic Clinical Networks and Trusts. Where pathological M-stage is submitted as 'not assessed' (Mx) or 'not recorded' (M9) it is updated from pre-operative tumour staging where recorded as M0 or M1. Dukes' Staging is no longer in the Audit dataset and therefore can no longer be used to update missing values of M-stage. For the purposes of the Audit, the following recorded tumour stages are considered to be missing data: Tx, T9, Nx, N9, Mx, M9. Mode of admission and number of co-morbidities are also used in the model but they come from HES data and are therefore not included in 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. The completeness of other data items in the Audit is mixed, as can be seen in the tables of results throughout this report. Data completeness reports have been sent to each NHS Trust both to provide feedback on the data submitted and to point to areas that need to be addressed in individual Trusts if the Audit is extended to answer additional clinical questions. Overall data completeness is lower this year due to the amendment in handling pathological M-stage data. However, as shown in Table 2.1, if only records with a recorded pathological M-stage are considered, data completeness has continued to improve. Section 2.3 of the supportive document gives details of data completeness by Network.

## 2.6 Handling missing data

The details of how missing data was handled are given in Section 2.4 of the supportive document.

**Table 2.1**  
Percentage of patients undergoing major surgery with complete data on the 7 items from the Audit used in risk adjustment, by Audit year

	2009-10		2010-11		2011-12		2012-13		2013-14	
	N	%	N	%	N	%	N	%	N	%
<b>Total patients undergoing major resection</b>	16,708		19,019		19,316		20,054		19,446	
<b>Complete data on seven key items</b>	12,405	74.2	15,492	81.5	16,052	83.1	17,803	88.8	15,502	79.7
<b>Incomplete data on seven key items</b>	4,303	25.8	3,527	18.5	3,264	16.9	2,251	11.2	3,944	20.3
<b>Data completeness if pathological M-stage recorded</b>	15,627	79.4	18,183	85.2	18,794	85.4	19,618	90.8	16,381	94.6

## 2.7 Definition of outcomes derived from HES

Emergency readmission within 90 days of surgery was derived from HES data for patients undergoing major surgery, and was defined as an emergency admission to any hospital for any cause within 90 days of surgery. HES records mode of admission as one of elective, emergency, maternity, or transfer from another hospital. Emergency admissions include admission via Accident and Emergency, general practitioner, bed bureau, or consultant outpatient clinic.

18 month stoma rate was estimated for rectal cancer patients undergoing major surgery. Patients undergoing an abdominoperineal 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 assumed to be permanent in patients having an APER.

HES data was used to capture whether anterior resection (AR) patients received a stoma and the type of stoma that was created in all patients. In patients having an AR or Hartmann's procedure, information on subsequent stoma reversal was also obtained. A procedure code for reversal of ileostomy or colostomy within 18 months of surgery was assumed to mean that the patient had their stoma reversed, regardless of whether the stoma was originally coded as an ileostomy or colostomy.

## 2.8 Definition of surgical urgency

Surgical urgency is the timescale within which a patient is thought to need their operation. An early operation indicates that a patient is more unwell and would be unlikely to survive without the operation. This means that automatically the risk of death following the surgery is likely to be higher than someone who is well and can wait days/weeks for their operation. The Audit uses the pre-2004 National Confidential Enquiry into Patient Outcomes and Death (NCEPOD) classification of surgical urgency (below) for reasons documented in the 2014 Annual Report:

- **Elective:** Operation at a time to suit both patient and surgeon e.g. after an elective admission
- **Scheduled:** An early operation (usually within three weeks) but not immediately life-saving. This category often includes patients treated on cancer pathways with targets
- **Urgent:** As soon as possible after resuscitation and usually within 24 hours
- **Emergency:** Immediate and life-saving operation, resuscitation simultaneous with surgical treatment. Operation usually within two hours.

## 2.9 Statistical analysis

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

### Funnel plots

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

For all of the funnel plots by Trust/hospital site in this report, if all Trusts/hospitals had the same underlying rate, four would be expected to lie above the inner limits and 0.2 above the outer limit by chance alone.

In this report, those Strategic Clinical Networks, Trusts or hospitals with results outside the outer (99.8 per cent) funnel limit are considered as potential outliers and have been contacted according to the recommended HQIP procedure. [Section 2.5](#) of the supportive document contains more information about the interpretation of funnel plots.

**Table 2.2**  
**Multivariable Regression Model Variables**

<b>Patient Characteristics</b>	Age (modelled as age plus age-squared)
	Sex
<b>Morbidity and Presentation</b>	ASA grade
	Charlson co-morbidity score (according to HES)
	Mode of admission (according to HES)
<b>Cancer</b>	T-stage (pathological)
	N-stage (pathological)
	M-stage (pathological)
	Site of tumour

## Adjusted outcomes

A previously peer-reviewed model for risk adjustment of post-operative mortality in patients with colorectal cancer was used,<sup>4</sup> which includes all of the variables in Table 2.2. An interaction between age and distant metastases was also included in the models to allow age to have a different effect in patients with and without metastases. Once patients have metastatic disease the effect of age is found to be far less important than in patients without metastases.

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

The model for two year survival additionally included interactions between epoch (0-three months after surgery vs. three-24 months after surgery) and all of the risk factors. This allows risk factors to have a different effect shortly after surgery and in the longer term. For example, the effect of ASA grade is much larger peri-operatively than in the longer-term, whilst cancer stage has a much larger impact on longer-term than short-term mortality. The model for 18 month stoma rate did not include cancer site as it was for rectal cancer patients only.

Patients with missing date of surgery were excluded, and multiple imputation was used to fill in any missing information on the risk factors. The following Trusts were excluded from the listed analysis because at least 80 per cent of patients were missing ASA grade and/or TNM stage and/or overall data completeness (as defined in Section 2.5) was less than 80 per cent:

- **90 day mortality and 90 day readmission:**
  - Luton and Dunstable University Hospital NHS Foundation Trust
  - Southport and Ormskirk Hospital NHS Trust
  - University Hospital of North Midlands NHS Trust – Royal Stoke University Hospital
  - East and North Hertfordshire NHS Trust
  - Colchester Hospital University NHS Foundation Trust
  - Bradford Teaching Hospitals NHS Foundation Trust
  - The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
  - North Cumbria University Hospitals NHS Trust
- **90 day readmission:**
  - Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital
- **Two year survival:**
  - East Kent Hospitals University NHS Foundation Trust
  - Lancashire Teaching Hospitals NHS Foundation Trust
  - Medway NHS Foundation Trust.

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

All statistical analyses were performed using Stata version 13.1.

## 3. Colorectal cancer – care pathways

### Care pathways – NBOCA 2015

- 55 per cent of patients were diagnosed following GP referral
- Nearly ten per cent of patients were diagnosed through The National Bowel Cancer Screening Programme
- Treatment with curative intent varies depending on mode of presentation. Only 52 per cent of patients presenting as an emergency were treated with curative intent compared to 70 per cent of patients diagnosed following GP referral and 90 per cent of patients diagnosed through screening
- 37 per cent of patients did not undergo major resection. The reasons behind this have been subdivided in four categories: too little cancer (four per cent), too much cancer (11 per cent), too frail (four per cent) or unknown/other reason (17 per cent)
- 90 day survival varied depending on patient pathways: major resection (97 per cent), too little cancer (99 per cent), too much cancer, (66 per cent) and too frail (70 per cent).

### 3.1 Q: Where are patients with colorectal cancer presenting?

#### Why is this important?

Colorectal cancer is a major cause of illness, disability and death in England and Wales. Patients can present with symptoms related to colorectal cancer to their GP or A&E departments. These patients may be diagnosed and treated electively or have a diagnosis following an emergency presentation. Some patients will have no symptoms at all and are diagnosed with colorectal cancer via screening services.

Previous NBOCA reports have shown that post-operative mortality following major surgery for bowel cancer varies according to whether surgery occurs as an emergency (worse outcome) or as an elective procedure.

The NHS Bowel Cancer Screening Programme offers screening every two years to all men and women aged 60 to 74. The aim of this screening is to diagnose cancer at an earlier stage when the chances of cure are higher and there may be a greater chance of needing less invasive treatment.

#### Section aim

- To describe the referral source of patients diagnosed with colorectal cancer between April 2013 and March 2014
- To describe geographical variation in the referral source in these patients.

#### Results

##### Referral source

As shown in [Table 3.1](#), although the majority of patients (55 per cent) are referred via their GP, the number of patients diagnosed following a screening referral was significant at almost ten per cent.

The NHS Bowel Cancer Screening Programme is aimed at those aged 60 to 74 and this is reflected in the age range of patients reported to the Audit diagnosed via screening services. Of patients diagnosed with colorectal cancer in the eligible age range for screening (60-74) 20 per cent had a referral via screening services. Patients referred from screening services were more likely to be younger, have a high performance status, lower ASA grade and have curative intent of treatment than patients diagnosed following emergency admissions and GP referrals. Just over ten per cent of these patients underwent local excision of their tumour in comparison to four per cent of patients diagnosed via GP referral. This reinforces the success of the NHS Bowel Cancer Screening Programme in diagnosing patients at an earlier stage and therefore increasing the likelihood of being appropriate for local tumour excision.

Those diagnosed following an emergency admission (20 per cent) were proportionally more likely to have a right sided tumour (caecum/ascending colon or hepatic flexure) than patients diagnosed from GP or screening services, due to fewer associated symptoms therefore resulting in delayed or emergency presentation. As expected, patients diagnosed from an emergency admission had more advanced disease and poorer performance status than patients from other sources of referral. Around half of these patients presenting as an emergency had curative treatment intent, compared to more than 70 per cent and 90 per cent in those diagnosed via GP and screening services respectively.

A large proportion of patients (16 per cent) were missing referral source. This may account for a proportion of the regional variation in referral pattern as demonstrated in [Figure 3.1](#).

**Table 3.1**  
Description of the 30,633 patients diagnosed with colorectal cancer between 01 April 2013 and 31 March 2014, by Referral Source

		Emergency admission		GP referral		Screening referral		Other/ Not known	
		Number	%	Number	%	Number	%	Number	%
<b>Total no. patients</b>		<b>6,130</b>		<b>16,853</b>		<b>2,798</b>		<b>4,882</b>	
<b>Sex</b>	Male	3,161	51.7	9,646	57.3	1,857	66.5	2,748	56.3
	Female	2,959	48.3	7,196	42.7	937	33.5	2,129	43.7
	Missing (% of total)	10 (0.2)		11 (0.1)		4 (0.1)		5 (0.1)	
<b>Age-group</b>	≤65 yrs	1,610	26.3	4,617	27.4	981	35.1	1,444	29.6
	65-74 yrs	1,377	22.5	4,492	26.7	1,737	62.1	1,396	28.6
	75-84 yrs	1,921	31.3	5,666	33.6	75	2.7	1,540	31.5
	85+ yrs	1,222	19.9	2,078	12.3	5	0.2	502	10.3
<b>Cancer site</b>	Caecum/ascending colon	2,147	35.0	3,962	23.5	436	15.6	1,453	29.8
	Hepatic flexure	287	4.7	564	3.3	111	4.0	201	4.1
	Transverse colon	513	8.4	863	5.1	153	5.5	317	6.5
	Splenic flexure/descending colon	621	10.1	823	4.9	158	5.6	318	6.5
	Sigmoid colon	1,448	23.6	3,678	21.8	881	31.5	1,013	20.7
	Rectosigmoid	238	3.9	1,016	6.0	169	6.0	245	5.0
	Rectal	876	14.3	5,947	35.3	890	31.8	1,335	27.3
<b>Pre-treatment TNM T-stage</b>	T1	96	1.6	608	3.6	294	10.5	354	7.3
	T2	505	8.2	2,691	16.0	674	24.1	815	16.7
	T3	1,892	30.9	7,186	42.6	1,024	36.6	1,694	34.7
	T4	1,541	25.1	2,736	16.2	135	4.8	627	12.8
	Tx	501	8.2	903	5.4	191	6.8	274	5.6
	T9	1,595	26.0	2,729	16.2	480	17.2	1,118	22.9
<b>Pre-treatment TNM N-stage</b>	N0	1,872	30.5	6,298	37.4	1,443	51.6	1,980	40.6
	N1	1,353	22.1	4,567	27.1	610	21.8	1,075	22.0
	N2	846	13.8	2,589	15.4	208	7.4	514	10.5
	Nx	482	7.9	684	4.1	83	3.0	215	4.4
	N9	1,577	25.7	2,715	16.1	454	16.2	1,098	22.5
<b>Pre-treatment TNM M-stage</b>	M0	2,968	48.4	10,379	61.6	2,068	73.9	2,952	60.5
	M1	1,507	24.6	2,887	17.1	162	5.8	658	13.5
	Mx	337	5.5	855	5.1	135	4.8	230	4.7
	M9	1,318	21.5	2,732	16.2	433	15.5	1,042	21.3
<b>Performance Status</b>	Normal activity	1,065	26.1	4,865	41.3	1,186	64.0	1,289	40.0
	Walk & light work	1,269	31.1	3,855	32.8	509	27.5	1,135	35.2
	Walk & all self care :up >50%	887	21.8	2,016	17.1	131	7.1	522	16.2
	Ltd self care: confined >50%	679	16.7	909	7.7	26	1.4	246	7.6
	Completely disabled	177	4.3	121	1.0	2	0.1	33	1.0
	Missing (% of total)	2,053 (33.5)		5,087 (30.2)		944 (33.7)		1,657 (33.9)	
<b>Care Plan Intent</b>	Curative	3,175	51.8	11,839	70.2	2,508	89.6	3,511	71.9
	Non curative	1,950	31.8	3,235	19.2	111	4.0	738	15.1
	No cancer treatment	487	7.9	758	4.5	44	1.6	214	4.4
	Not known	518	8.5	1,021	6.1	135	4.8	419	8.6
<b>ASA grade *</b>	1	419	11.3	1,488	12.9	394	17.0	441	13.0
	2	1,590	42.9	6,605	57.3	1,547	66.8	1,873	55.3
	3	1,380	37.2	3,168	27.5	362	15.6	984	29.1
	4 or 5	319	8.6	271	2.3	13	0.6	86	2.5
	Missing/Not known (% of total)	2,422 (39.5)		5,321 (31.6)		482 (17.2)		1,498 (30.7)	
<b>Surgical treatment</b>	Major resection	3,351	54.7	10,829	64.3	2,198	78.6	3,067	62.8
	Local excision	66	1.1	659	3.9	295	10.5	276	5.7
	Stoma	195	3.2	440	2.6	6	0.2	67	1.4
	Stent	140	2.3	191	1.1	6	0.2	41	0.8
	Other	389	6.3	515	3.1	46	1.6	235	4.8
	None reported	1,989	32.4	4,219	25.0	247	8.8	1,196	24.5

\* ASA grade only required if patient undergoes surgical treatment

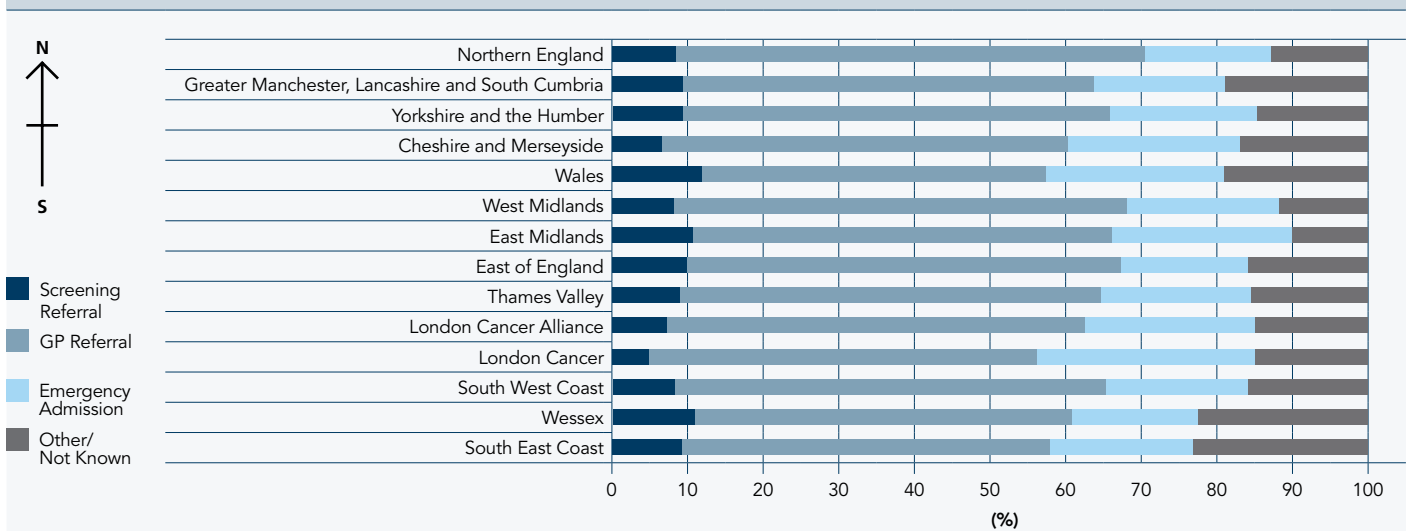
## Geographical variation

As shown in Figure 3.1, there was substantial variation between Strategic Clinical Networks in the proportion of patients diagnosed from each referral source. The proportion of patients diagnosed following screening ranges from approximately five per cent in London Cancer to 12 per cent in Wales. Although there are many factors that may contribute towards this disparity in rates of bowel cancer diagnosis from screening, London Cancer had the lowest proportion of patients in the eligible age range for screening (60-74 years) which may lead to the lower referrals. Patients diagnosed following emergency admission also varies between networks from just under 17 per cent in East of England, Wessex and Northern England to 29 per cent in London Cancer.

## Recommendations:

- The clinical benefits of screening programmes are demonstrated and all health professionals should be encouraged to actively promote participation in this service
- More work is required to promote the awareness of symptoms of colorectal cancer and to encourage patients to present and undergo investigation in order to reduce the proportion of emergency presentations.

**Figure 3.1**  
Referral source of the 30,663 patients diagnosed with colorectal cancer between 01 April 2013 and 31 March 2014 by Network/Nation



## 3.2 Q: How are patients treated following diagnosis?

### Why is this important?

Previous NBOCA reports have focused on patients who had a major surgical procedure to remove their cancer. Surgical removal of a locally confined cancer remains the most certain modality of cure but patient suitability and disease characteristics have a profound influence on treatment. Treatment may also involve chemotherapy, radiotherapy and specialist palliative care; either alone or in combination. A significant proportion of patients (37 per cent) do not undergo major resection. These patients are, for the first time, subdivided into four broad categories:

#### 1. Too little cancer (stage I):

Those undergoing a local resection or polypectomy.

#### 2. 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.

#### 3. 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.

#### 4. Unknown/ other reason:

Does not meet any of the above criteria.

### Section aim

- To describe the patient characteristic and management according to treatment pathway of patients diagnosed with colorectal cancer between April 2013 and March 2014
- To describe geographical variation in the care pathway of these patients
- To describe patient survival at 90 days after diagnosis according to treatment pathway.

This is the first year that data has been collected regarding the reason for 'no cancer treatment' and the performance status of patients. This has allowed the Audit to classify patients into the pathways described below. Trusts are to be commended on completing these data items for the first time; however, there is a substantial group of patients (17 per cent) whom it has not been possible to classify, and more complete information is needed on these data items to allow the Audit to describe the care pathways of all patients.

## Results

### Care pathways

#### 1. Major resection

##### Patient characteristics

Almost 20,000 patients (63 per cent) underwent major resection in this Audit period. This figure has remained stable over the last five years (Table 4.1). Although these patients were proportionally younger than those in other pathways, over a third of patients treated with major resection were over 75 years old. Proportionally more patients had T2 or T3 when compared with patients in alternative pathways. Approximately eight per cent of these patients had M1 disease on pre-treatment staging and a proportion of these patients may proceed to liver resection.

##### Patient management

The majority of patients undergoing major resection do so with curative intent (Table 3.3). Audit data suggests that around 16 per cent of these patients received neo-adjuvant treatment and 28 per cent adjuvant treatment. Future linkages to the chemotherapy and radiotherapy dataset will allow the use of cytotoxic treatment to be further explored. The information on HDU and ITU use in this group of patients is missing in 50 per cent of cases and it is therefore currently not possible to describe this reliably. It is hoped that completeness of this item will improve over time.

### NICE clinical guidelines 131, December 2014

#### 1.2.3 Stage I colorectal cancer

- The colorectal MDT should consider further treatment for patients with locally excised, pathologically confirmed stage I cancer, taking into account pathological characteristics of the lesion, imaging results and previous treatments. [2011]
- Offer further treatment to patients whose tumour had involved resection margins (less than 1 mm). [2011]

#### 1.2.4. Stage I rectal cancer

- After discussion in the MDT responsible for the management of stage I rectal cancer, discuss uncertainties about the potential risks and benefits of all treatment options with patients and their family members and carers (as appropriate), taking into account each patient's circumstances. [new 2014]
- Explain to patients and their family members or carers (as appropriate) that there is very little good-quality evidence comparing treatment options for stage I rectal cancer. [new 2014]
- Offer patients the chance to take part in a randomised controlled trial (if available) that compares treatment options for stage I rectal cancer. [new 2014]

## 2. Too little cancer (stage I)

Increasingly endoscopic or minimally invasive local excision of a primary cancer does not leave any visible residual disease and these patients therefore do not undergo major resection. This group made up four per cent of patients.

### Patient characteristics

Although pre-treatment stage was only available in around 70 per cent of patients, patients in this group had less advanced tumours when compared with those undergoing major resection with, of those with known staging, over 60 per cent of patients staged as T1 and over 90 per cent N0.

Almost 50 per cent of patients in this pathway had rectal cancer. While locally advanced disease is best managed by resection, organ preservation can be considered suitable for early cases of rectal cancer. Although the optimal treatment of stage I rectal cancer is not yet known, there has been a steady increase in the use of local excision (TEMS or other local procedure) to over ten per cent of rectal cancer patients in this Audit period (Table S3.1 in the supportive document).

### Patient management

The vast majority of patients in this group are treated with curative intent and as expected very few appear to receive chemotherapy or radiotherapy in addition to a local excision (Table 3.3). As the completeness of pre-operative staging data and curative monitoring data improves, and links to the chemotherapy and radiotherapy datasets are established, the Audit will aim to accurately identify rectal cancer patients with a complete response to chemoradiotherapy and to incorporate these patients into this pathway.

## 3. Too much cancer (stage IV)

When the tumour burden is extensive with multiple distant metastases, it is possible that surgical resection, particularly if the primary tumour is asymptomatic, might not improve either patient survival or quality of life. For the majority of these patients, treatment is based on management of the symptoms of the primary tumour and considerations of prolongation of life and improvement in quality of life.

### NICE clinical guidelines 131, December 2014

#### 1.3.1 Patients presenting with stage IV colorectal cancer

- Prioritise treatment to control symptoms if at any point the patient has symptoms from the primary tumour. [2011]
- If both primary and metastatic tumours are considered resectable, anatomical site specific MDT should consider initial systemic treatment followed by surgery, after full discussion with the patient. The decision on whether the operations are done at the same time or separately should be made by the site specialist MDT in consultation with the patient. [2011]

### Patient characteristics

Over 70 per cent of patients recorded as having metastatic systemic disease (M1) on pre-treatment staging did not undergo a major surgical resection. When compared to smaller tumours, proportionately fewer (56 per cent) of 5,039 patients with pre-treatment T4 disease underwent surgical resection (Table 3.2).

### Patient management

Only a minority of patients who present with advanced colorectal cancer have the potential for cure (Table 3.3). The majority of patients in the 'too much cancer' pathway do not have a record of receiving chemotherapy or radiotherapy; it is unclear whether this is due to missing data items or a true reflection of care. According to Audit data, 23 per cent of these patients received chemotherapy either prior to a surgical procedure (the majority being stoma formation or stent) or as a single palliative treatment. More information on palliative treatments should be available for future Audits following linkage with the national chemotherapy and radiotherapy datasets. Just over a third of patients had a plan for specialist palliative care treatment.

#### 4. Too frail

The other cited reason for patients not undergoing major resection was frailty due to medical comorbidities that make surgical intervention too risky in terms of risk to life or potential impact on quality of life (e.g. stroke).

##### Patient characteristics

Within the data submitted to the Audit, age was an obvious discriminator of frailty; of 3,807 patients aged over 85 years at diagnosis, only 37 per cent were offered major surgical resection. Over 70 per cent of patients under the age of 65 underwent major resection.

##### Patient management

Audit data suggests that these patients are not undergoing further therapy following decision that they are not suitable for major resection. Less than ten per cent of patients underwent a palliative surgical procedure (stoma or stent) and a similar proportion of patients received palliative chemotherapy or radiotherapy. Just over a third of patients had a plan for specialist palliative care treatment.

We hope future Audit data collection will better determine the pattern of surgical decision making in relation to co-morbidity by collecting Cardiopulmonary Exercise Testing (CPET) data, as well as by collecting more complete information on performance status and reasons for no treatment.

#### 5. Unknown/other

There are over 5,000 patients who do not fit into one of the pathways described above. These patients appear to be a varied cohort and their characteristics are not directly comparable to those patients in any particular pathway. The proportion of patients who do not fit into a pathway is expected to fall in subsequent Audits as data completeness for new Audit items increases.

##### Patient characteristics

Over 30 per cent of these patients did not have a recorded pre-treatment staging, 95 per cent had reason for no treatment missing or unknown, and over 40 per cent had no recorded performance status. Together with 'care plan intent', these items of information are required to allow patients to be allocated to the correct pathway.

##### Patient management

Almost 50 per cent of patients in this group were treated with curative intent. A small proportion of these patients will include those with rectal cancer with a complete clinical response to long course chemoradiotherapy. If the data item 'monitoring intent' was more complete, it could be used together with chemoradiotherapy information to identify these patients.

**Table 3.2**  
Description of the 30,633 patients diagnosed with colorectal cancer between 01 April 2013 and 31 March 2014, by NBOCA Treatment Pathway

		Major resection		Too little		Too much		Too frail		Not known/Other *	
		N	%	N	%	N	%	N	%	N	%
<b>Total no. patients</b>		<b>19,445</b>		<b>1,296</b>		<b>3,346</b>		<b>1,348</b>		<b>5,228</b>	
<b>Gender</b>	Male	11,087	57.1	801	61.9	1,914	57.2	680	50.6	2,930	56.1
	Female	8,340	42.9	492	38.1	1,430	42.8	665	49.4	2,294	43.9
	Missing (% of total)	18 (0.1)		3 (0.2)		2 (0.1)		3 (0.2)		4 (0.1)	
<b>Age-group</b>	≤65 yrs	6,099	31.4	355	27.4	765	22.9	78	5.8	1,355	25.9
	65-74 yrs	6,218	32.0	463	35.7	847	25.3	180	13.4	1,294	24.8
	75-84 yrs	5,702	29.3	350	27.0	1,064	31.8	506	37.5	1,580	30.2
	85+ yrs	1,426	7.3	128	9.9	670	20.0	584	43.3	999	19.1
<b>Cancer site</b>	Caecum/ascending colon	5,477	28.2	40	3.1	869	26.0	368	27.3	1,244	23.8
	Hepatic flexure	830	4.3	8	0.6	137	4.1	55	4.1	133	2.5
	Transverse colon	1,266	6.5	15	1.2	192	5.7	98	7.3	275	5.3
	Splenic flexure/descending colon	1,269	6.5	44	3.4	247	7.4	86	6.4	274	5.2
	Sigmoid colon	4,573	23.5	497	38.3	760	22.7	263	19.5	927	17.7
	Rectosigmoid	1,052	5.4	47	3.6	232	6.9	73	5.4	264	5.0
	Rectal	4,978	25.6	645	49.8	909	27.2	405	30.0	2,111	40.4
<b>Pre-treatment TNM T-stage</b>	T1	663	3.4	441	34.0	32	1.0	30	2.2	186	3.6
	T2	3,532	18.2	189	14.6	183	5.5	164	12.2	617	11.8
	T3	8,376	43.1	62	4.8	1,270	38.0	442	32.8	1,646	31.5
	T4	2,825	14.5	13	1.0	1,105	33.0	195	14.5	901	17.2
	Tx	970	5.0	220	17.0	270	8.1	131	9.7	278	5.3
	T9	3,079	15.8	371	28.6	486	14.5	386	28.6	1,600	30.6

Table 3.2 (continued)

Description of the 30,633 patients diagnosed with colorectal cancer between 01 April 2013 and 31 March 2014, by NBOCA Treatment Pathway

		Major resection		Too little		Too much		Too frail		Not known/Other *	
		N	%	N	%	N	%	N	%	N	%
<b>Total no. patients</b>		<b>19,445</b>		<b>1,296</b>		<b>3,346</b>		<b>1,348</b>		<b>5,228</b>	
<b>Pre-treatment TNM N-stage</b>	<b>N0</b>	8,234	42.3	777	60.0	611	18.3	487	36.1	1,484	28.4
	<b>N1</b>	5,150	26.5	46	3.5	1,042	31.1	246	18.2	1,121	21.4
	<b>N2</b>	2,381	12.2	15	1.2	903	27.0	110	8.2	748	14.3
	<b>Nx</b>	672	3.5	103	7.9	311	9.3	121	9.0	257	4.9
	<b>N9</b>	3,008	15.5	355	27.4	479	14.3	384	28.5	1,618	30.9
<b>Pre-treatment TNM M-stage</b>	<b>M0</b>	13,872	71.3	857	66.1	249	7.4	782	58.0	2,607	49.9
	<b>M1</b>	1,514	7.8	14	1.1	2,910	87.0	112	8.3	664	12.7
	<b>Mx</b>	1,028	5.3	97	7.5	26	0.8	112	8.3	294	5.6
	<b>M9</b>	3,031	15.6	328	25.3	161	4.8	342	25.4	1,663	31.8
<b>Performance Status</b>	<b>Normal activity</b>	6,417	47.5	428	49.4	480	20.3	10	0.9	1,070	35.4
	<b>Walk &amp; light work</b>	4,684	34.7	257	29.6	625	26.4	49	4.2	1,153	38.2
	<b>Walk &amp; all self care:up &gt;50%</b>	1,869	13.8	137	15.8	623	26.4	129	11.2	798	26.4
	<b>Ltd self care: confined &gt;50%</b>	487	3.6	41	4.7	537	22.7	795	68.8	0	0.0
	<b>Completely disabled</b>	59	0.4	4	0.5	98	4.1	172	14.9	0	0.0
	<b>Not recorded (% of total)</b>	5,929 (30.5)		429 (33.1)		983 (29.4)		193 (14.3)		2,207 (42.2)	
<b>Missing pathology record †</b>		562	2.9	351	27.1	3196	95.5	1252	92.9	4169	79.7
<b>Final pathology T-stage</b>	<b>T0</b>	338	1.8	29	3.1	0	0.0	0	0.0	18	1.7
	<b>T1</b>	1,204	6.4	591	62.5	1	0.7	5	5.2	96	9.1
	<b>T2</b>	2,982	15.8	104	11.0	3	2.0	5	5.2	103	9.7
	<b>T3</b>	9,455	50.1	30	3.2	21	14.0	15	15.6	368	34.7
	<b>T4</b>	4,678	24.8	13	1.4	32	21.3	7	7.3	250	23.6
	<b>Tx</b>	46	0.2	23	2.4	35	23.3	19	19.8	37	3.5
	<b>T9</b>	180	1.0	155	16.4	58	38.7	45	46.9	187	17.7
<b>Final pathology N-stage</b>	<b>N0</b>	11,026	58.4	431	45.6	16	10.7	16	16.7	482	45.5
	<b>N1</b>	4,615	24.4	26	2.8	19	12.7	10	10.4	182	17.2
	<b>N2</b>	2,973	15.7	6	0.6	19	12.7	3	3.1	110	10.4
	<b>Nx</b>	63	0.3	227	24.0	30	20.0	19	19.8	66	6.2
	<b>N9</b>	206	1.1	255	27.0	66	44.0	48	50.0	219	20.7
<b>Final pathology M-stage</b>	<b>M0</b>	14,708	77.9	744	78.7	33	22.0	65	67.7	639	60.3
	<b>M1</b>	1,672	8.9	16	1.7	111	74.0	9	9.4	95	9.0
	<b>Mx</b>	1,960	10.4	89	9.4	1	0.7	10	10.4	180	17.0
	<b>M9</b>	543	2.9	96	10.2	5	3.3	12	12.5	145	13.7

\* Other includes pathways with small numbers of cases eg 248 patients who are recorded as declining treatment and others with data inconsistencies eg Curative Care Plan Intent but no recorded treatment

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

**Table 3.3**  
Description of management of the 30,633 patients diagnosed with colorectal cancer between 01 April 2013 and 31 March 2014, by NBOCA treatment pathway

		Major resection		Too little		Too much		Too frail		Not known / Other *	
		19,445	%	1,296	%	3,346	%	1,348	%	5,228	%
<b>Care plan intent</b>	Curative	17,246	88.7	1,142	88.1	2	0.1	99	7.3	2,544	48.7
	Non curative	996	5.1	30	2.3	2,828	84.5	684	50.7	1,496	28.6
	No cancer treatment	92	0.5	57	4.4	504	15.1	492	36.5	358	6.8
	Not known	1,111	5.7	67	5.2	12	0.4	73	5.4	830	15.9
<b>Planned treatment†</b>	Surgery	17,743	91.2	1,189	91.7	486	14.5	190	14.1	2,210	42.3
	Radiotherapy	1,394	7.2	63	4.9	246	7.4	130	9.6	964	18.4
	Chemotherapy	2,647	13.6	22	1.7	1,199	35.8	51	3.8	1,180	22.6
	Specialist palliative care	39	0.2	3	0.2	1,205	36.0	467	34.6	667	12.8
	Brachytherapy	18	0.1	1	0.1	3	0.1	1	0.1	10	0.2
	None	430	2.2	71	5.5	490	14.6	538	39.9	801	15.3
<b>Reason for no planned treatment</b>	Patient declined	10	0.1	0	0.0	25	0.7	54	4.0	247	4.7
	Unfit: co-morbidity	24	0.1	5	0.4	69	2.1	654	48.5	0	0.0
	Unfit: advanced disease	103	0.5	48	3.7	1,036	31.0	0	0.0	0	0.0
	Multiple	2	0.0	1	0.1	122	3.6	31	2.3	0	0.0
	Not known	602	3.1	48	3.7	322	9.6	45	3.3	599	11.5
	Missing	18,704	96.2	1,194	92.1	1,772	53	564	41.8	4,382	83.8
<b>Active monitoring intent</b>	Curative	2,283	11.7	177	13.7	21	0.6	18	1.3	192	3.7
	Palliative	186	1.0	12	0.9	675	20.2	286	21.2	230	4.4
	Unknown or uncertain future intent	246	1.3	22	1.7	141	4.2	77	5.7	154	2.9
	None	1,990	10.2	124	9.6	414	12.4	198	14.7	406	7.8
	None recorded	14,740	75.8	961	74.2	2,095	62.6	769	57.0	4,246	81.2
<b>First definitive non-surgical treatment</b>	Chemotherapy	895	4.6	5	0.4	762	22.8	18	1.3	627	12.0
	Chemoradiotherapy	1,736	8.9	50	3.9	156	4.7	18	1.3	679	13.0
	Teletherapy	593	3.0	40	3.1	148	4.4	87	6.5	426	8.1
	Brachytherapy	7	0.0	0	0.0	0	0.0	0	0.0	6	0.1
	None recorded	16,214	83.4	1,201	92.7	2,280	68.1	1,225	90.9	3,490	66.8
<b>Type of surgery</b>	Major resection	19,445	100.0								
	Local excision			1,296	100.0						
	Stoma					235	7.0	69	5.1	404	7.7
	Stent					167	5.0	41	3.0	170	3.3
	Other					150	4.5	62	4.6	973	18.6
	None recorded					2,794	83.5	1,176	87.2	3,681	70.4
<b>Post-operative destination</b>	Standard ward	5,162	52.9	504	97.3	198	76.2	47	70.1	381	76.5
	High care area	1,410	14.5	9	1.7	27	10.4	4	6.0	46	9.2
	HDU (level 2)	2,224	22.8	4	0.8	16	6.2	10	14.9	41	8.2
	ITU (level 3)	961	9.8	1	0.2	19	7.3	6	9.0	30	6.0
	Missing	9,688 (49.8)		778 (60)		3,086 (92.2)		1,281 (95)		4,730 (90.5)	
<b>Post-operative treatment</b>	Chemotherapy	4,951	25.5	33	2.5	213	6.4	11	0.8	386	7.4
	Chemoradiotherapy	455	2.3	22	1.7	45	1.3	4	0.3	155	3.0
	Teletherapy	69	0.4	47	3.6	17	0.5	9	0.7	53	1.0
	Brachytherapy	0	0.0	1	0.1	0	0.0	0	0.0	1	0.0
	None Recorded	13,970	71.8	1,193	92.1	3,071	91.8	1,324	98.2	4,633	88.6

\* Other includes pathways with small numbers of cases e.g. 248 patients who are recorded as declining treatment; those with curative care plan intent but no recorded treatment

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

## Geographical variation

As shown in Figure 3.2, there was variation between Strategic Clinical Networks in the proportion of patients reported to have had a major resection; varying between 57 and 67 per cent of cases. The proportions of patients undergoing local excision also varied between networks from 2.8 per cent in London Cancer to 5.8 per cent in the Northern England network. Figure 3.2 also highlights the large amount of missing information required to classify patient pathways. The proportion of patients unclassified to the four pathways varies from 12 per cent to 26 per cent between networks. The most incomplete data items required to assign patients to pathways were reason for no treatment, pre-treatment staging and performance status.

39 Trusts had over 90 per cent of patients assigned to a pathway, whilst for 14 Trusts this was less than 70 per cent (Table 7.2). Ongoing improvements in data completeness will decrease the number of patients unassigned to a pathway and may lessen network variability in the proportion of patients in assigned to each pathway.

## Outcomes

The proportion of patients who died within 90 days of diagnosis varied greatly between pathways (Table 3.4). Around 35 per cent of patients with no major resection and advanced disease at the time of diagnosis died within 90 days of diagnosis and of those patients considered too frail to undergo major resection almost 30 per cent had died within 90 days.

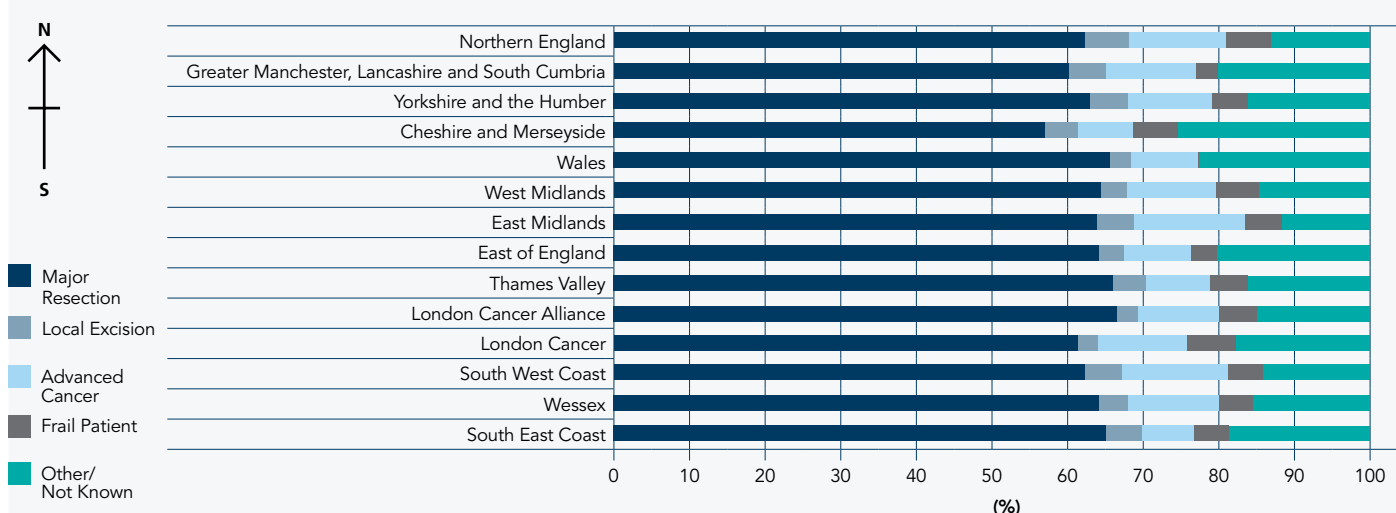
In contrast, approximately one per cent of patients undergoing a local excision and three per cent of patients undergoing a major resection died within 90 days of diagnosis, suggesting suitable patient selection and functional MDT decision-making.

As outlined above the mix of reasons for non-resection is complex and includes those with early stage disease, advanced unresectable cancer and resectable disease in an otherwise frail individual. The aim of future Audits will be to continue to characterise these groups according to the above pathways. The unknown/other category has a mortality rate in between that of the other pathways and it is plausible therefore that these patients are a mix of the four pathways.

## Recommendations:

- Trusts/hospitals should regularly review Audit data via the Clinical Audit Platform (CAP) to increase data completeness, particularly in those patients who do not undergo major resection.
- Patients with stage IV disease, when both primary and metastatic tumours are considered resectable, should be referred to anatomical site-specific MDT for consideration of resection, in accordance with NICE guidelines.

**Figure 3.2**  
Treatment pathway by Strategic Clinical Networks/Wales



**Table 3.4**  
Chance of death by pathway

	Major resection		Too little		Too much		Too frail		Not known/ Other	
	N	%	N	%	N	%	N	%	N	%
<b>Total patients</b>	<b>19,445</b>		<b>1,296</b>		<b>3,346</b>		<b>1,348</b>		<b>5,228</b>	
<b>Died before diagnosis confirmed</b>	43	0.2	0	0.0	8	0.2	9	0.7	10	0.2
<b>Died within 90 days of diagnosis</b>	556	2.9	12	0.9	1,153	34.5	398	29.7	733	14.0

## 4. Surgical care

### Surgical care – NBOCA 2015

- Overall 90 day mortality after major surgery has steadily reduced over five years from 5.8 per cent in 2009/10 to 3.8 per cent in the last Audit year
- Emergency admission with colorectal cancer remained at 21 per cent of all cases in England (Welsh data unavailable)
- Emergency major surgery was associated with a risk of death of 13 per cent at 90 days (reduced from 17 per cent over five years)
- Just over two thirds of colorectal cancer patients were still in hospital five days after resection. There was substantial regional variation in this percentage (between 60 and 76 per cent). This has potentially significant consequences to episode based hospital costs
- 48 per cent of resections were completed laparoscopically in 2013/14 (an increase from 30 per cent in 2009/10).

#### 4.1 Q: How many patients die within 90 days of major surgery?

##### Why is this important?

Alongside the benefits of tumour removal, major colorectal resection can infer serious potential complications, including risk to life. Improvements in surgical techniques and patient care are likely to lead to improved post-operative survival over time.

##### Section aim

- To describe trends in 90 day post-operative mortality over time in patients who had both elective/scheduled and urgent/emergency major surgery after diagnosis with colorectal cancer
- To compare variation in 90 day post-operative mortality between care providers of patients diagnosed between April 2013 and March 2014.

### Results

#### Variation in 90 day post-operative mortality over time

Unadjusted post-operative mortality has decreased over the last five years of the Audit, as shown in Table 4.1. As the proportion of patients undergoing major resection has remained fairly constant, the decrease in unadjusted post-operative mortality may indicate that improvement of patient care is leading to a genuine reduction in post-operative death rates.

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

The variation in 90 day post-operative mortality across English Strategic Clinical Networks/Wales, without and with risk-adjustment is shown in Figure 4.1. When making comparisons between Strategic Clinical Networks and between Trusts/hospitals, 90 day mortality was adjusted for the nine risk factors listed in Table 2.2. After risk-adjustment there were no networks outside the inner limits. There was no more variation in 90 day post-operative mortality across Strategic Clinical Networks than might be expected by chance.

ASA grade is a widely used subjective assessment of comorbidity and is a central component of the risk adjustment model detailed in Table 2.2. The variation in distribution of ASA grade between Trusts/hospitals is shown in Table 7.1. The proportion of patients at a Trust/hospital recorded as ASA 3 varied between 0 per cent and 43 per cent and seven Trusts/hospitals reported that no major resections were performed on patients with an ASA grade of 1. The ASA grade submitted to NBOCA should be that determined by the anaesthetist alone before resection of the cancer. A joint statement from the ACPBGI and NBOCA regarding ASA grade and colorectal cancer patients is available in the NBOCA 'frequently asked questions' document at <http://www.hscic.gov.uk/bowel>.

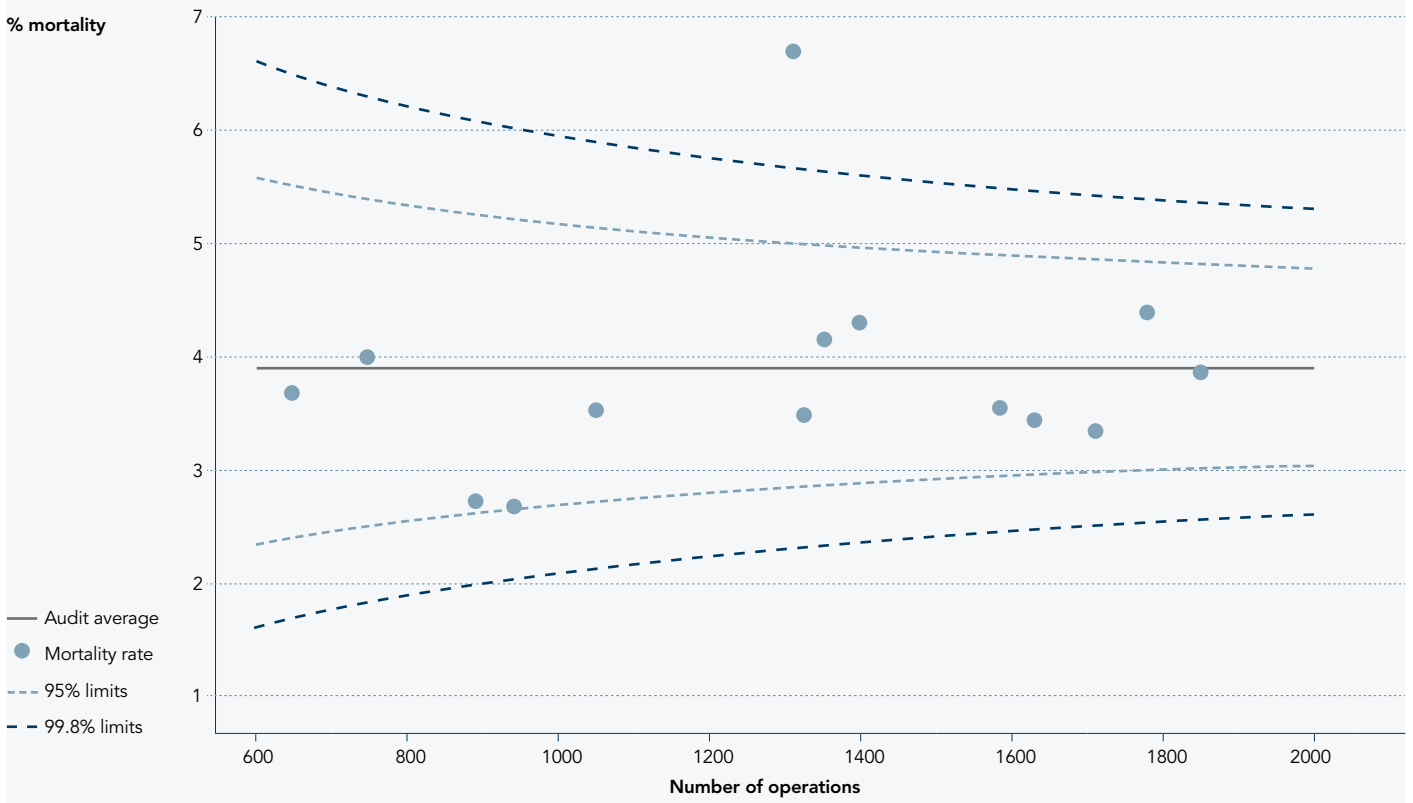
**Table 4.1**  
Patients undergoing major surgery and chance of death after major surgery, by Audit year

	2009-10		2010-11		2011-12		2012-13		2013-14	
	Number	%	Number	%	Number	%	Number	%	Number	%
<b>Total patients</b>	27,298		29,040		30,406		31,460		30,663	
<b>Undergoing major resection</b>	16,708	61.2	19,019	65.5	19,316	63.5	20,047	63.7	19,445	63.4
<b>Dead at 90 days after surgery, out of those undergoing major resection</b>	967	5.8	999	5.3	888	4.6	931	4.6	746	3.8

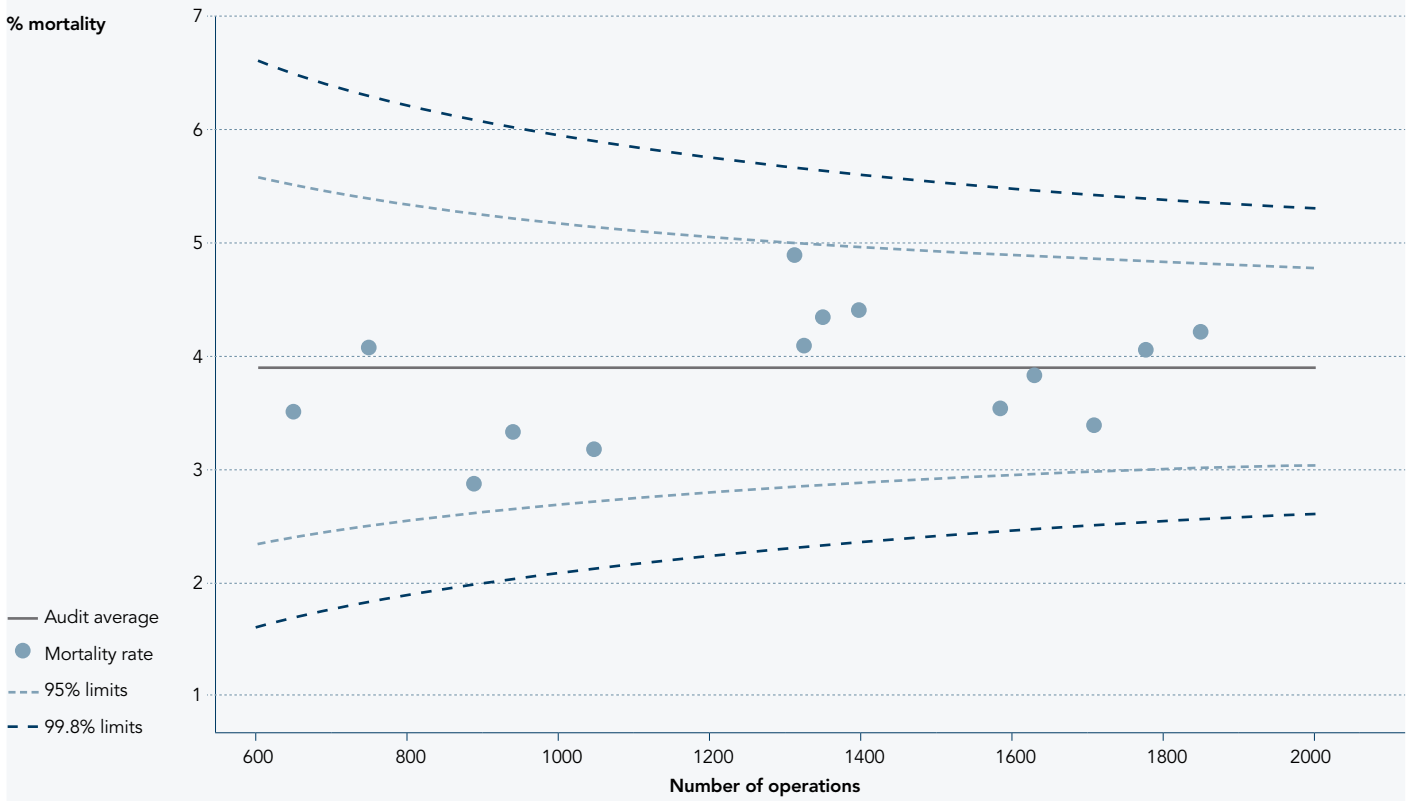
**Figure 4.1**

Observed and adjusted 90 day post-operative mortality (Elective and Emergency admissions) by English Strategic Clinical Network/Wales for patients diagnosed between 1 April 2013 and 31 March 2014

**Observed 90 day mortality by network/nation**



**Adjusted 90 day mortality by network/nation**

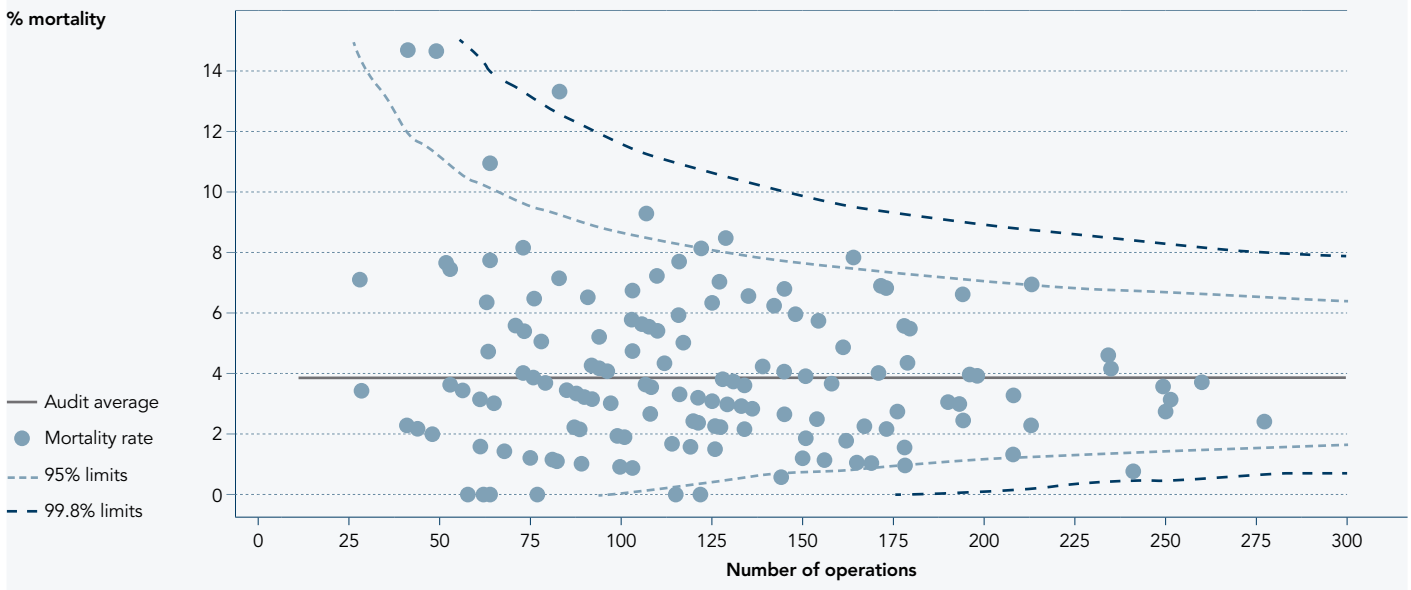


Funnel plots for 90 day post-operative mortality by Trust/hospital, both observed and risk-adjusted, are presented in Figure 4.2. There were no Trusts outside the outer limit for adjusted 90 day mortality and the number outside the inner limits was no more than expected by chance.

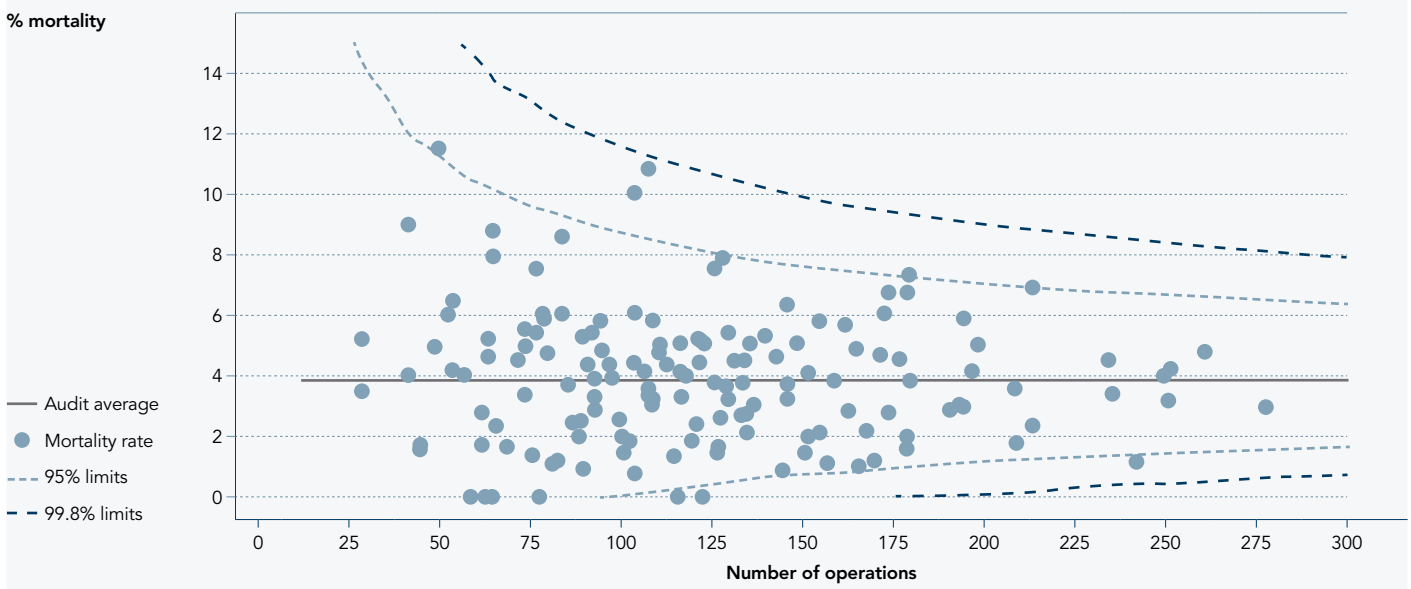
These Trusts have not previously been outliers for 90 day mortality. Together with the network funnel plots this implies that there is no postcode lottery in 90 day post-operative mortality across the England and Wales.

**Figure 4.2**  
Observed and adjusted 90 day post-operative mortality (Elective and Emergency admissions) by Trust/hospital with more than ten operations for patients diagnosed between 1 April 2013 and 31 March 2014

**Observed 90 day mortality by Trust/site with more than ten operations**



**Adjusted 90 day mortality by Trust/site with more than ten operations**



## Variation in 90 day post-operative mortality according to mode of admission/urgency of operation

Emergency admission with colorectal cancer has remained an unchanging feature of clinical practice in England and Wales, accounting for a stubborn 20 to 22 per cent of all admissions over the last five years of Audit data from England (Table 4.2). It might be hoped that bowel symptom awareness and the NHS Bowel Cancer Screening Programme may in due course diminish this aspect of clinical presentation.

**Table 4.2**  
Emergency admissions in England (from HES), by Audit year

	2009-10		2010-11		2011-12		2012-13		2013-14	
	Number	%	Number	%	Number	%	Number	%	Number	%
<b>Total patients</b>	<b>25,651</b>		<b>27,977</b>		<b>28,916</b>		<b>29,893</b>		<b>29,101</b>	
<b>Emergency admission</b>	4,923	21.9	5,452	21.7	5,218	20.4	5,508	20.8	5,217	21.1
<b>Elective admission</b>	17,522	78.1	19,642	78.3	20,383	79.6	20,950	79.2	19,464	78.9
<b>Missing (% of total)</b>	3,206 (12.5)		2,883 (10.3)		3,315 (11.5)		3,435 (11.5)		4,420 (15.2)	

As a consequence of this pattern of colorectal cancer admissions, 16 per cent of patients having major surgery had an urgent or emergency procedure. There was some variation by Trust, with less than ten per cent of major resections carried out as urgent/emergency in 23 Trusts and over 30 per cent carried out as urgent/emergency in six Trusts (Table 7.3).

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

	2009-10		2010-11		2011-12		2012-13		2013-14		
	Number	%	Number	%	Number	%	Number	%	Number	%	
<b>Total patients undergoing major resection</b>	<b>16,708</b>		<b>19,019</b>		<b>19,316</b>		<b>20,047</b>		<b>19,445</b>		
<b>Overall 90 day mortality*</b>	967/16,602	5.8	999/19,004	5.3	888/19,316	4.6	931/20,045	4.6	746/19,441	3.8	
<b>90 day mortality by urgency of operation</b>	Elective	403/10,052	4.0	429/12,292	3.5	351/12,572	2.8	363/12,928	2.8	280/12,701	2.2
	Scheduled	97/2,508	3.9	111/3,300	3.4	104/3,451	3.0	121/3,916	3.1	88/3,617	2.4
	Urgent	165/1,837	9.0	160/1,472	10.9	154/1,375	11.2	170/1,348	12.6	134/1,277	10.5
	Emergency	254/1,456	17.4	283/1,678	16.9	258/1,702	15.2	273/1,725	15.8	242/1,818	13.3
	Missing urgency of operation	48/749	6.4	16/262	6.1	21/216	9.7	4/128	3.1	2/28	7.1

\*some patients are missing mortality data

The 90 day mortality following elective or scheduled surgery for colorectal cancer was 2.3 per cent in contrast to 12.1 per cent in patients who had major surgery on an urgent or emergency basis (Table 4.3). The data for 2013/14 showed reduction in mortality for all urgency categories and the 90 day mortality in emergency patients has decreased from 17.4 per cent in 2009/10 to 13.3 per cent in 2013/14.

Stenting strategies may act as a 'bridge' and allow emergency admissions with obstruction to be converted to planned resections. Results from a national prospective randomised trial are currently awaited to provide evidence about both short-term and oncological outcomes following stenting as an alternative to emergency resection.

#### **NICE clinical guidelines 131, December 2014**

##### **1.2.2 Colonic stents in acute large bowel obstruction:**

- For patients with acute left-sided large bowel obstruction caused by colorectal cancer that is potentially curable, and for whom surgery is suitable:
  - Resuscitate patients and explain to them and their family members or carers (as appropriate) that acute bowel obstruction can initially be managed either with emergency surgery or a colonic stent, and that there is no clear evidence that one treatment is better than the other. [new 2014]
  - Offer patients the chance to take part in a randomised controlled trial (if available) that compares emergency surgery with colonic stent insertion to initially manage acute bowel obstruction. [new 2014].
- For patients with acute left-sided large bowel obstruction caused by colorectal cancer that is not potentially curable, or for whom surgery is unsuitable: [new 2014]
  - Resuscitate patients with acute large bowel obstruction, then consider placing a self-expanding metallic stent to initially manage a left-sided complete or near-complete colonic obstruction. [2011]
  - A consultant colorectal surgeon should consider inserting a colonic stent in patients presenting with acute large bowel obstruction. They should do this together with an endoscopist or a radiologist (or both) who is experienced in using colonic stents. [2011].

#### **Recommendations:**

- In accordance with the joint ACPGBI and NBOCA statement, the ASA grade submitted to NBOCA should be that determined by the anaesthetist alone before resection of the cancer
- Reducing the proportion of patients undergoing emergency or urgent colorectal cancer resection should remain a clinical priority. The provision of pre-operative resuscitation, adequate theatre access, post-operative critical care, and early colorectal team involvement, including full radiological support and facilities for colonic stenting, is likely to improve survival
- Clinical teams should be encouraged to enter patients undergoing emergency surgery for colorectal cancer into the National Emergency Laparotomy Audit to enable more information to be gathered about the care provided to and outcomes of patients in this group.

#### **4.2 Q: How long do patients stay in hospital after major colorectal cancer resection?**

##### **Why is this important?**

The length of time a patient needs to stay in hospital after surgery will vary according to their pre and post-operative health, the type of operation performed and any problems that occur during their hospital stay, as well as social care provision after surgery. A prolonged length of hospital stay following major surgery may not only be detrimental to the patient but carry with it financial implications for the treating hospital. The widespread adoption of Enhanced Recovery After Surgery (ERAS) programmes has resulted in discharge home five days after colorectal cancer resection being adopted as an 'ideal' in defining length of stay.

The ERAS programme is an evidence-based multimodal approach to optimising peri-operative patient care. The programme involves both patient education and interventions designed to aid early mobilisation and early resumption of normal gut function to reduce the requirement for post-operative hospitalisation. Compared with traditional patient management following colorectal rectal surgery, ERAS represents a fundamental shift in peri-operative care.

##### **Section aim**

- To describe trends over time in length of hospital stay in patients who had major surgery after diagnosis with colorectal cancer
- To describe geographical variation in length of hospital stay in these patients.

## Results

### Length of Hospital Stay

Table 4.4 summarises the length of stay derived from HES for patients undergoing major surgery in England over time. The proportion with a length of stay greater than five days has decreased from 75 per cent in 2009/2010 to 69 per cent in 2013/2014. There appears to be an increase in the length of stay after surgery after the age of 75. It is likely that this represents a combination of increased co-morbidity and social dependency in determining the discharge date.

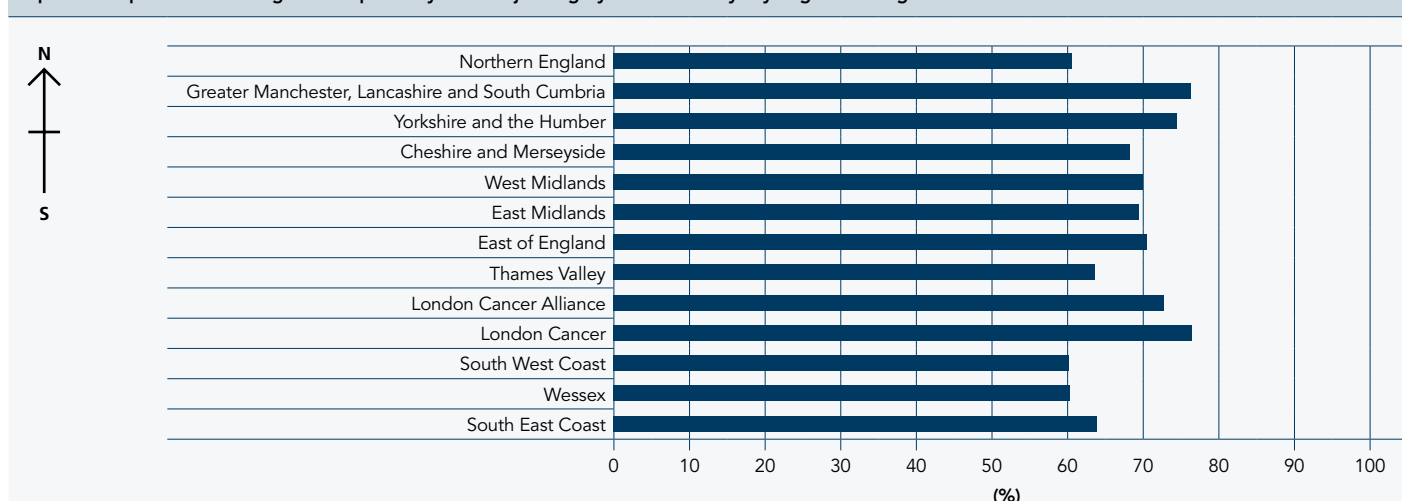
### Geographical variation

Figure 4.3 shows the proportion of patients staying in hospital longer than five days after major resection by Strategic Clinical Network. There was substantial variation amongst English Strategic Clinical Networks, from 60 per cent to 76 per cent, of patients still in hospital five days or longer after resection. It is unlikely that differences in patient characteristics or clinical approach will account for all of this variation. Hospital discharge in an elderly population of colorectal cancer patients is likely to be highly dependent on aspects of social care provision and have significant consequences to the episode based hospital costs. Variation in length of stay will be explored further in a short report to be published later this Audit year.

**Table 4.4**  
Length of hospital stay (HES definition) of patients undergoing major resection in England, by Audit year

		2009-10		2010-11		2011-12		2012-13		2013-14	
		N	%	N	%	N	%	N	%	N	%
<b>Total patients undergoing major resection</b>		15,280		18,109		18,069		18,769		18,124	
<b>Length of hospital stay (LOS)</b>	Median LOS	8		8		7		7		7	
	Range	1-1,150		1-1,700		1-950		1-569		1-297	
	Interquartile range	6-13		5-13		5-13		5-12		5-12	
<b>Length of stay longer than five days</b>	Yes	10,356	75.0	11,867	71.2	11,595	68.9	12,123	69.5	11,164	68.6
	No	3,446	25.0	4,797	28.8	5,238	31.1	5,328	30.5	5,120	31.4
	Missing (% of total)	1,478 (9.7)		1,445 (8.0)		1,236 (6.8)		1,318 (7.0)		1,840 (10.2)	
<b>Length of hospital stay by age group</b>	<65 yrs	Median LOS	7		7		7		7		7
		Range	1-758		1-1,700		1-950		1-201		1-297
		Interquartile range	5-11		5-11		4-10		5-11		4-10
	65-74 yrs	Median LOS	8		7		7		7		7
		Range	1-386		1-912		1-475		1-569		1-234
		Interquartile range	5-12		5-12		5-12		5-11		5-12
	75-84 yrs	Median LOS	9		9		8		8		8
		Range	1-654		1-319		1-234		1-309		1-200
		Interquartile range	6-15		6-15		5-15		6-14		5-14
	85+ yrs	Median LOS	11		11		10		10		10
		Range	1-1,150		1-193		1-217		1-139		1-150
		Interquartile range	7-19		7-19		7-18		6-17		7-18

**Figure 4.3**  
Proportion of patients with length of hospital stay after major surgery in HES > 5 days by English Strategic Clinical Network\*



\* Equivalent data source (PEDW) is not available for Welsh patients

## Recommendations:

- Clinicians and commissioners should be encouraged to continue to develop ERAS programmes to continue to reduce length of hospital stay
- Potential delays to discharge, particularly in the elderly population, should be considered pre-operatively, to allow for the provision of community services if required, to reduce the risk of prolonged length of hospital stay.

## 4.3 Q: How many patients are readmitted within 90 days of discharge from hospital after major colorectal cancer surgery?

### Why is this important?

A potential disadvantage of early discharge is the need for unplanned readmission. This remains an important aspect of quality assessment of hospital care for colorectal cancer patients.

## Section aim

- To describe trends over time in 90 day emergency readmission in patients who had major surgery after diagnosis with colorectal cancer
- To compare 90 day emergency readmission in these patients between Strategic Clinical Networks and Trusts/hospitals.

For the purposes of this analysis, HES data linked to the cases submitted to the Audit by English Trusts was used to determine emergency readmissions within 90 days of surgery.

## Results

### Emergency Readmissions within 90 days

Overall, one in five patients had an emergency readmission within 90 days of surgery. This has remained stable over the last five years, despite length of stay decreasing.

The relationship between length of stay and hospital readmission will be investigated as part of a short report on length of stay to be published later this Audit year. It is possible that because elderly patients tend to stay in hospital longer after their surgery, complications of surgery are dealt with during the original admission.

**Table 4.5**  
Emergency hospital readmission rate (HES definition) within 90 days of surgery for patients undergoing major resection in England, by Audit year

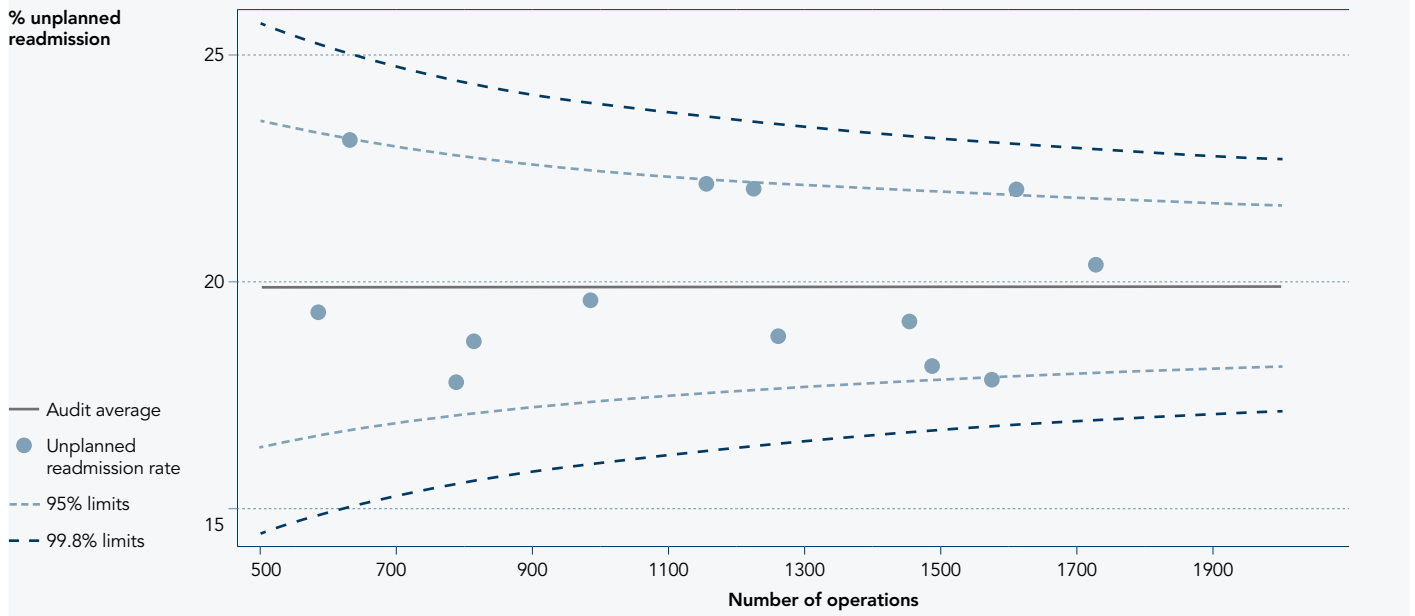
	2009-10		2010-11		2011-12		2012-13		2013-14		
	N	%	N	%	N	%	N	%	N	%	
<b>Total patients undergoing major resection</b>	<b>15,280</b>		<b>18,109</b>		<b>18,069</b>		<b>18,769</b>		<b>18,124</b>		
<b>Emergency readmission within 90 days</b>	Yes	2,680	19.4	3,346	20.0	3,392	20.1	3,490	19.9	3,287	20.1
	No	11,170	80.6	13,385	80.0	13,477	79.9	14,013	80.1	13,091	79.9
	Missing (% of total)	1,430 (9.4)		1,378 (7.6)		1,200 (6.6)		1,266 (6.7)		1,746 (9.8)	

## Variation in 90 day emergency readmission between care providers

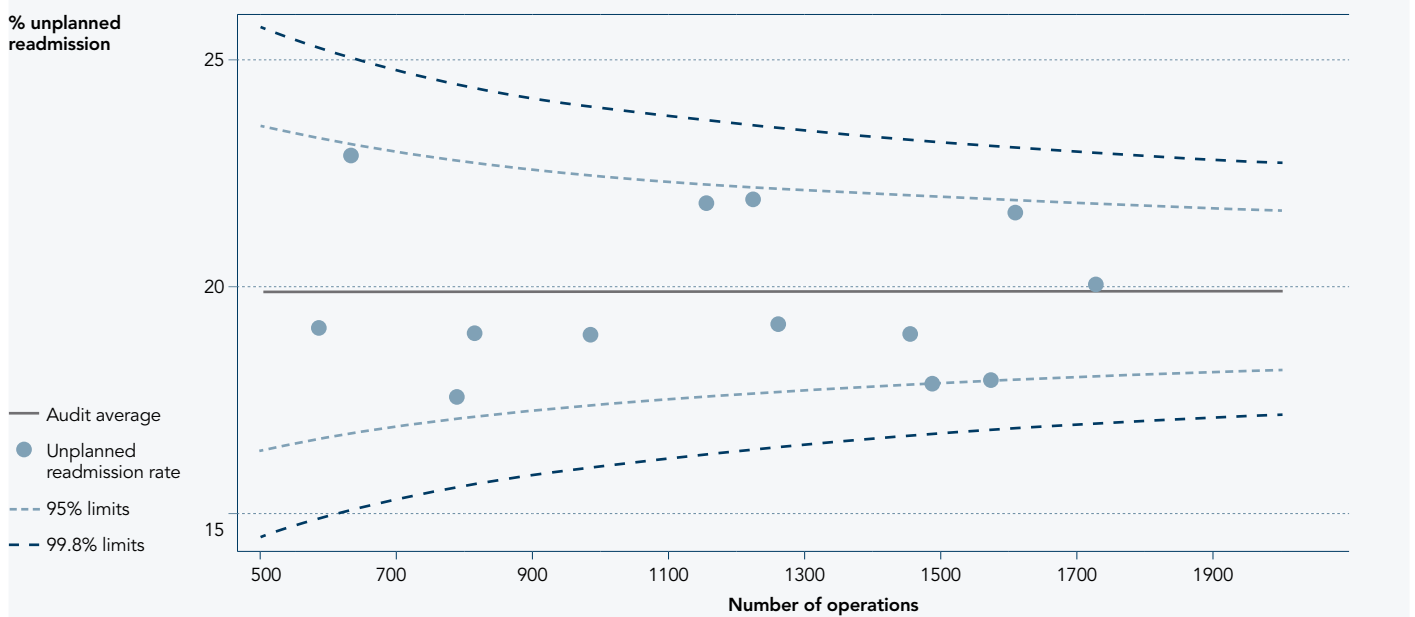
In the funnel plots in [Figure 4.4](#), none of the Strategic Clinical Networks fell above the inner or outer limits for adjusted readmission rate.

**Figure 4.4**  
Observed and adjusted 90 day emergency readmission rate by English Strategic Clinical Network for patients diagnosed between 1 April 2013 and 31 March 2014\*

### Observed 90 day unplanned readmission rate by network



### Adjusted 90 day unplanned readmission rate by network



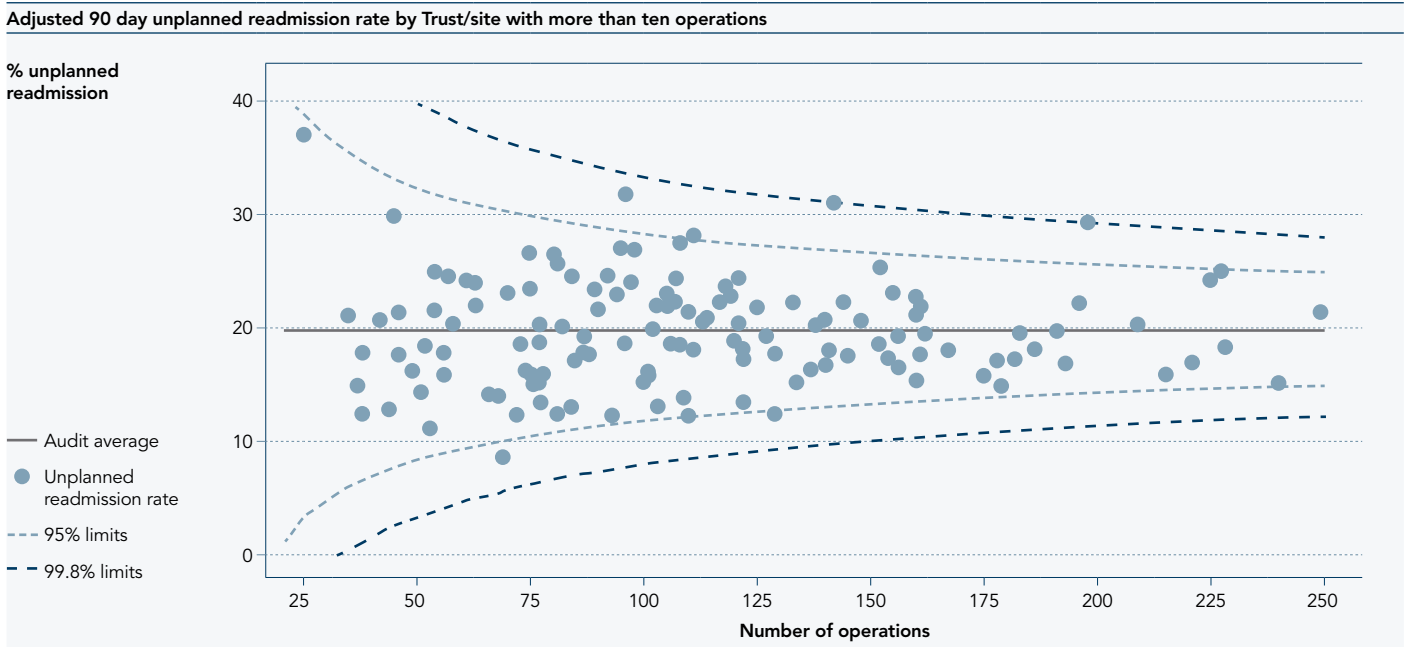
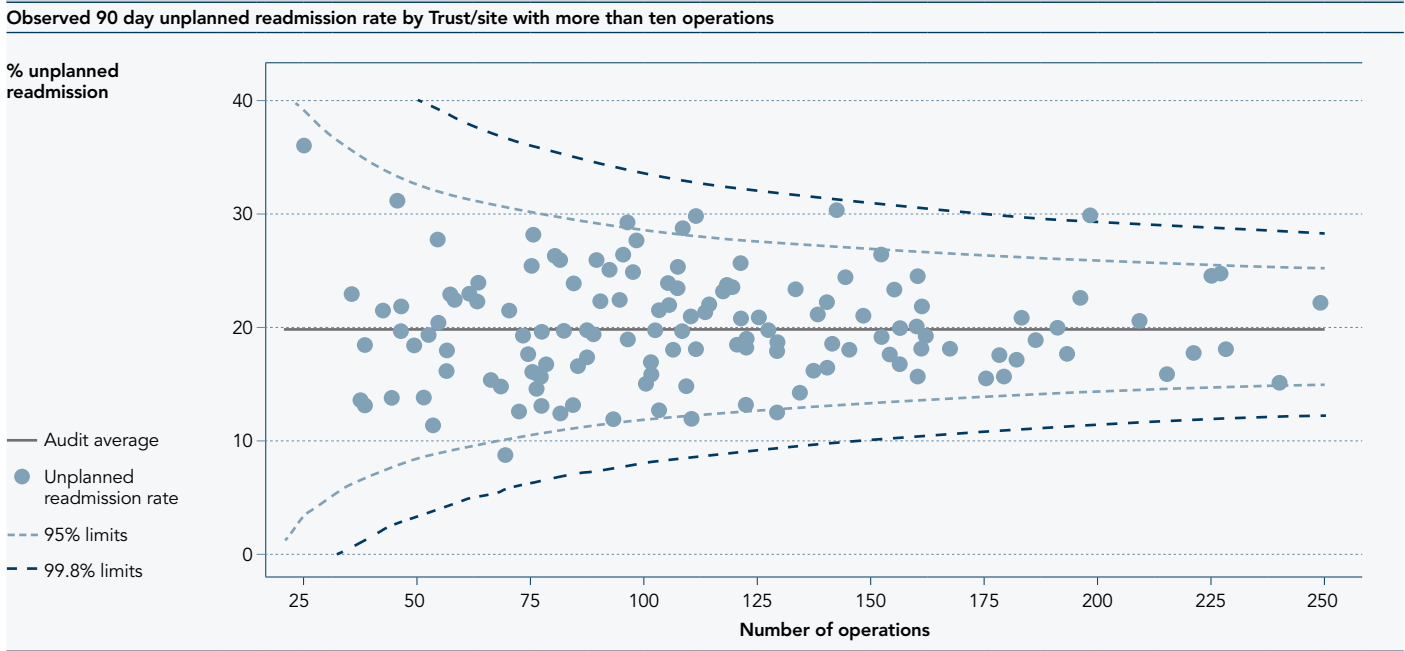
\* Equivalent data source (PEDW) is not available for Wales

In the funnel plots in Figure 4.5 one Trust fell above the outer limit and five fell outside the inner limit on adjusted readmission rate. This is no more than would be expected by chance alone. The Trust falling above the outer limit is considered to be a potential outlier and has been notified according to the Audit's Outlier Policy. This Trust has not previously been an outlier for unplanned readmission.

**Recommendations:**

- There is no indication from the Audit's results that reduced length of stay has increased the rate of unplanned readmissions. The continued implementation of the ERAS programme should be advocated.

**Figure 4.5**  
Observed and adjusted 90 day emergency readmission rate by English NHS Trust for patients diagnosed between 1 April 2013 and 31 March 2014\*



\* Equivalent data source (PEDW) is not available for Wales

## 4.4 Q: How many patients have laparoscopic (keyhole) surgery?

### Why is this important?

Laparoscopic surgery for colorectal cancer is associated with shorter hospital stay. Suitability for laparoscopic surgery is dependent on several factors including whether the patient has undergone previous abdominal surgery and the stage and location of the tumour. Some procedures may be started laparoscopically and subsequently converted intra-operatively to an open operation.

The Audit subdivides surgical access into three categories:

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

### NICE clinical guidelines 131, December 2014

#### 1.2.5 Laparoscopic surgery

- Laparoscopic (including laparoscopically assisted) resection is recommended as an alternative to open resection for individuals with colorectal cancer in whom both laparoscopic and open surgery are considered suitable. [2006]
- Laparoscopic colorectal surgery should be performed only by surgeons who have completed appropriate training in the technique and who perform this procedure often enough to maintain competence. The exact criteria to be used should be determined by the relevant national professional bodies. Cancer networks and constituent Trusts should ensure that any local laparoscopic colorectal surgical practice meets these criteria as part of their clinical governance arrangements. [2006]
- The decision about which of the procedures (open or laparoscopic) is undertaken should be made after informed discussion between the patient and the surgeon. In particular, they should consider:
  - the suitability of the lesion for laparoscopic resection
  - the risks and benefits of the two procedures
  - the experience of the surgeon in both procedures. [2006]

### Section aim

- To examine trends over time in the use of laparoscopic surgery in patients who had major colorectal cancer resection
- To describe geographical variation in the use of laparoscopic surgery in patients after diagnosis with colorectal cancer between April 2013 and March 2014.

### Results

#### Trends over time

The adoption of laparoscopic resection of colorectal cancer has been a significant success story for UK colorectal surgery over the last five years. Approximately 30 per cent of all resections were laparoscopic in 2009/10 increasing to 48 per cent overall in 2013/14; as shown in [Figure 4.6](#).

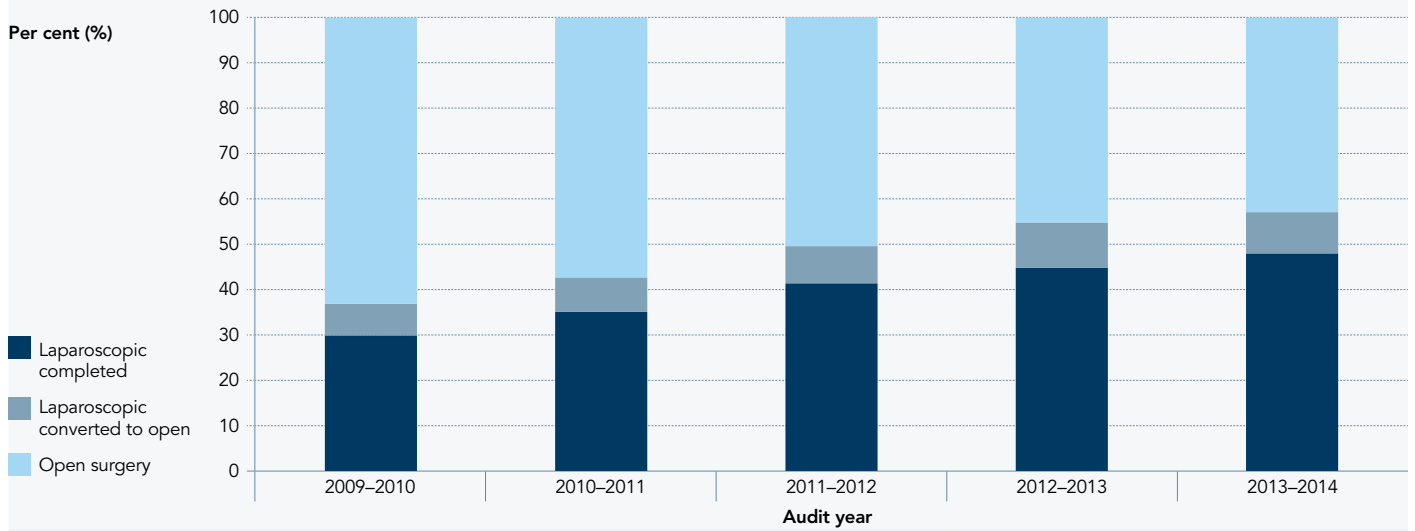
[Table S4.2](#) in the supportive document describes the surgical access of patients undergoing major surgery according to patient and tumour characteristics. The majority of patients undergoing urgent or emergency surgery had open surgery. In addition patients with advanced cancer or a high ASA grade were also more likely to have an open resection.

Laparoscopic access by Strategic Clinical Network is presented in [Figure 4.7](#). There appears to be a trend towards higher rates of completed laparoscopic resection in the South of England. However, it is noteworthy that the Northern Strategic Clinical Network had the highest rate of completed laparoscopic resections. Use of laparoscopic surgery varies widely between Trusts/hospitals with laparoscopic surgery being used in less than 40 per cent of patients in 36 Trusts, and in over 80 per cent of patients in 23 Trusts ([Table 7.3](#)).

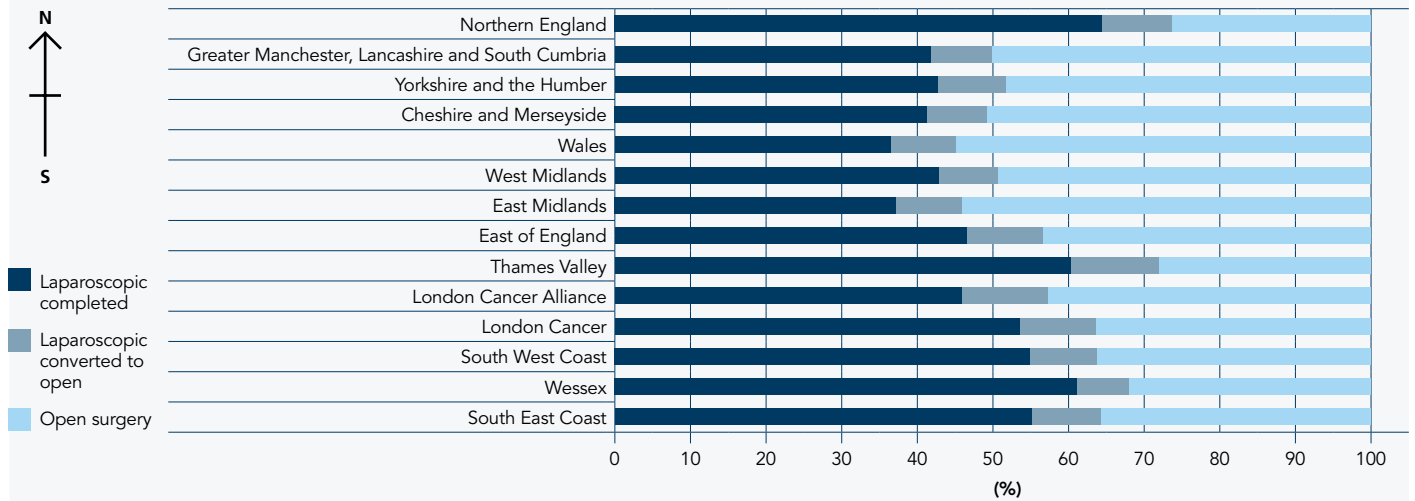
#### Recommendations:

- In line with the current NICE guidance, suitable patients should be offered the opportunity for a laparoscopic resection
- Steps should be undertaken to investigate the disparity in the use of laparoscopic surgery between Strategic Clinical Networks and Trusts/hospitals.

**Figure 4.6**  
Surgical access by Audit year



**Figure 4.7**  
Surgical access by English Strategic Clinical Network/Wales



## 5. Survival

### Survival – NBOCA 2015

- Overall two year survival was 67 per cent for the 30,075 colorectal cancer patients diagnosed between 1 April 2011 and 31 March 2012
- Patients who did not undergo resection had a two year survival of less than half that of those who did undergo resection
- Two year survival was 91 per cent in those who underwent a local excision, 82 per cent in those who underwent a major resection and 36 per cent in patients with no cancer resection.

### 5.1 Q: What is the two year survival of patients with colorectal cancer and how does this vary according to geographic region?

#### Why is this important?

For the vast majority of colorectal cancer patients, survival and cure remain the primary concern after diagnosis. Whilst 90 day mortality is used to capture death related to surgery, longer-term mortality will also capture death from the cancer itself as well as from other causes. Although conventionally five years of follow-up is used to determine when an individual with colorectal cancer is cured, the majority of patients that develop recurrent disease do so within the first two years of follow-up. 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.

#### Section aim

- To describe the two year survival and trends over time for patients diagnosed with colorectal cancer between 2009/10 and 2011/12 according to treatment type
- To describe the geographical variation in two year survival in all of these patients
- To examine the geographical variation in two year survival following risk adjustment in patients undergoing major resection.

A redesign of the Audit dataset has allowed more complete information to be collected, including staging data, on patients diagnosed with bowel cancer since April 2013 who do not undergo major resection. Until two year survival using these new data items can be examined, variation in two year mortality for all patients will not be reported back to Strategic Clinical Networks. Comparisons are only made between Strategic Clinical Networks and between Trusts/hospitals on patients undergoing a major resection.

#### Results

##### Two year survival

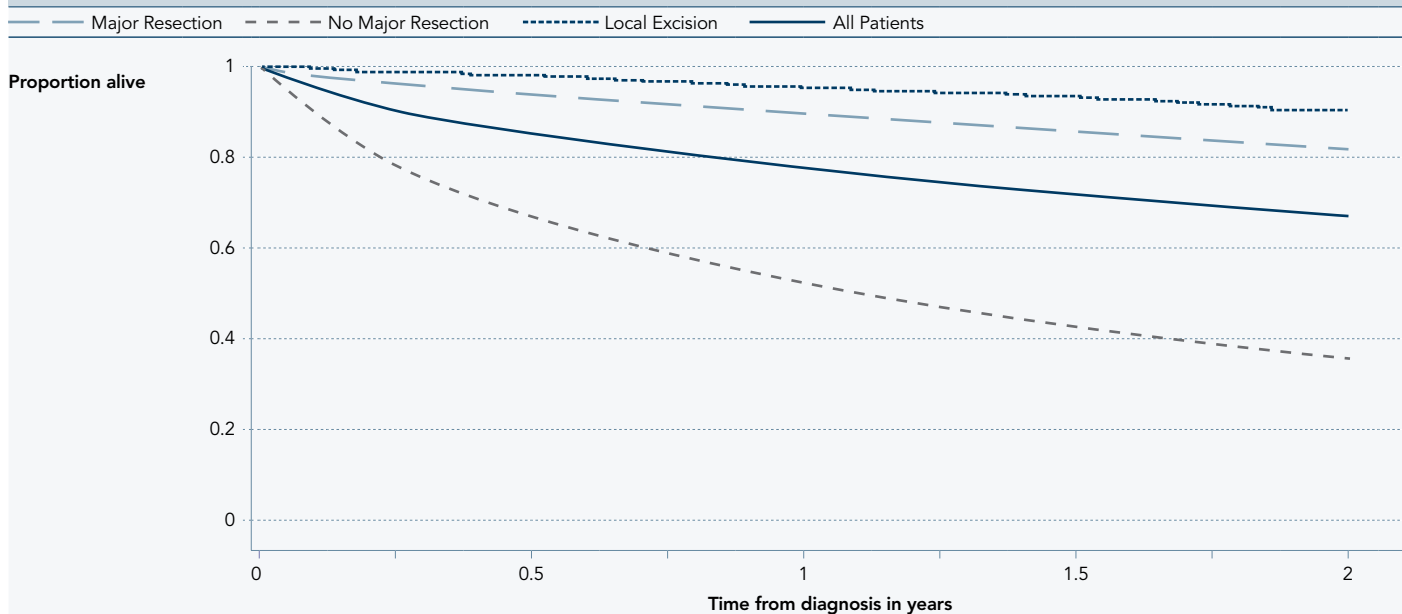
30,075 patients were reported to the Audit with a diagnosis of colorectal cancer between 2011 and 2012. Two year survival for all patients diagnosed between 2009/10 and 2011/12 has been stable at 67 per cent (Table 5.1).

Two year survival in those undergoing major resection and associated oncology therapy has increased from 80 per cent in 2009/10 to 82 per cent in 2011/12. The two year survival in those undergoing local excision was 90 per cent and in patients with no resection 36 per cent (Figure 5.1). The comparatively poor survival in those with no surgical treatment highlights the importance of diagnosing colorectal cancer at a stage where it is possible to resect the tumour with curative intent.

**Table 5.1**  
Two year survival over time for all patients diagnosed between 1 April 2009 and 31 March 2012

		2009-10		2010-11		2011-12	
		N	%	N	%	N	%
<b>All patients</b>		<b>27,079</b>		<b>28,801</b>		<b>30,075</b>	
<b>Died within 24 months of diagnosis</b>	Yes	8,972	33.3	9,534	33.2	9,822	32.7
	No	18,008	66.7	19,193	66.8	20,183	67.3
	Missing (% of total)	99 (0.4)		74 (0.3)		70 (0.2)	
<b>Underwent Major resection</b>		<b>16,625</b>	<b>61.4</b>	<b>18,907</b>	<b>65.6</b>	<b>19,190</b>	<b>63.8</b>
<b>Died within 24 months of diagnosis</b>	Yes	3,328	20.1	3,638	19.3	3,448	18.0
	No	13,259	79.9	15,232	80.7	15,700	82.0
	Missing (% of total)	38 (0.1)		37 (0.1)		42 (0.1)	
<b>Underwent local excision</b>		<b>744</b>	<b>2.7</b>	<b>1,007</b>	<b>3.5</b>	<b>1,104</b>	<b>3.6</b>
<b>Died within 24 months of diagnosis</b>	Yes	69	9.3	102	10.1	105	9.5
	No	675	90.7	905	89.9	999	90.5
	Missing (% of total)	0 (0.0)		0 (0.0)		0 (0.0)	
<b>No excision of tumour</b>		<b>9,710</b>	<b>35.9</b>	<b>8,887</b>	<b>30.9</b>	<b>9,781</b>	<b>32.5</b>
<b>Died within 24 months of diagnosis</b>	Yes	5,575	57.8	5,794	65.5	6,269	64.3
	No	4,074	42.2	3,056	34.5	3,484	35.7
	Missing (% of total)	61 (0.2)		37 (0.1)		28 (0.1)	

**Figure 5.1**  
Kaplan-Meier survival curve over two years for all patients diagnosed between 1 April 2011 and 31 March 2012 (England and Wales)



## Geographical variation

### All patients

There was a large variation in two year patient survival according to Strategic Clinical Network/Nation as shown in Figure 5.2. This variation is of concern as it is more than would be expected by chance alone, with two networks falling above (i.e. worse) and two falling below (i.e. better) the outer limits. The estimates are not adjusted for patient case-mix and there are many potential causes of the variation. Potential explanations include differences between regions in the completeness and accuracy of data submitted to the Audit, differences in patient characteristics such as deprivation and co-morbidity, the impact of the NHS Bowel Cancer Screening Programme, health-seeking behaviour, the quality of primary care, the selection of patients for major resection and the quality of surgery, short- and long-term care of patients after surgery, including surveillance.

Another important factor to take into account is the cause of death. As a proportion of these deaths will likely be secondary to diseases other than colorectal cancer, data on cause of death may help to understand some of the regional variation in all-cause mortality. The Audit plans to publish a separate report on long-term cancer-specific mortality.

### Major resection

The risk-factors used in the adjustment of 90 day mortality were used to adjust two year mortality for case-mix. Each risk-factor may have a very different effect on the risk of death soon after surgery compared to its effect on longer-term mortality and therefore the effect of each risk factor was modelled separately at 0 to three months after surgery and three to 24 months after surgery, as explained in the Statistical Analysis Section in Section 2.9 (further details also available in the 2014 Annual Report Table 4.3).

Figure 5.2

Observed two year mortality for all patients (with and without resection) diagnosed between 1 April 2011 and 31 March 2012, by English Strategic Clinical Network/Wales, including Trusts/MDT with more than ten operations

The results cannot be used for regional comparisons

Observed two year mortality by network/nation

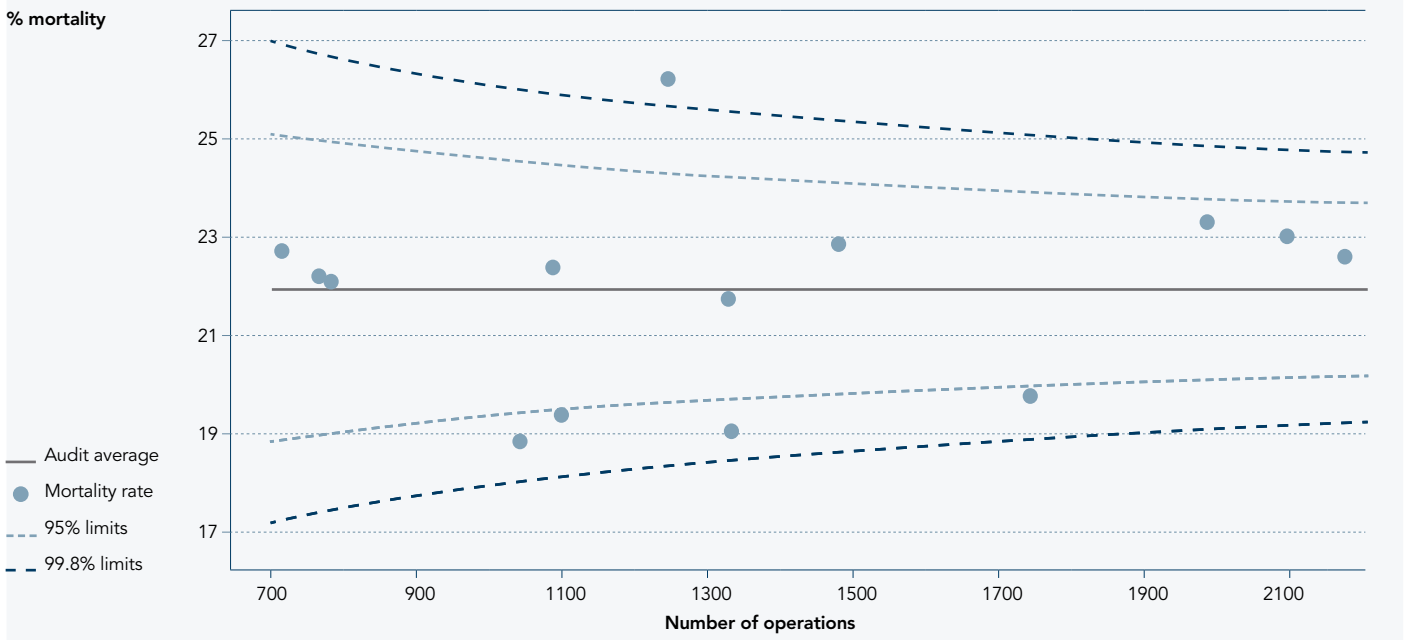


Figures 5.3 and 5.4 show observed and adjusted two year mortality amongst patients undergoing a major resection by Strategic Clinical Network and by Trust/hospital. Across all Trusts/hospitals (and all Strategic Clinical Networks), two year mortality was 22 per cent.

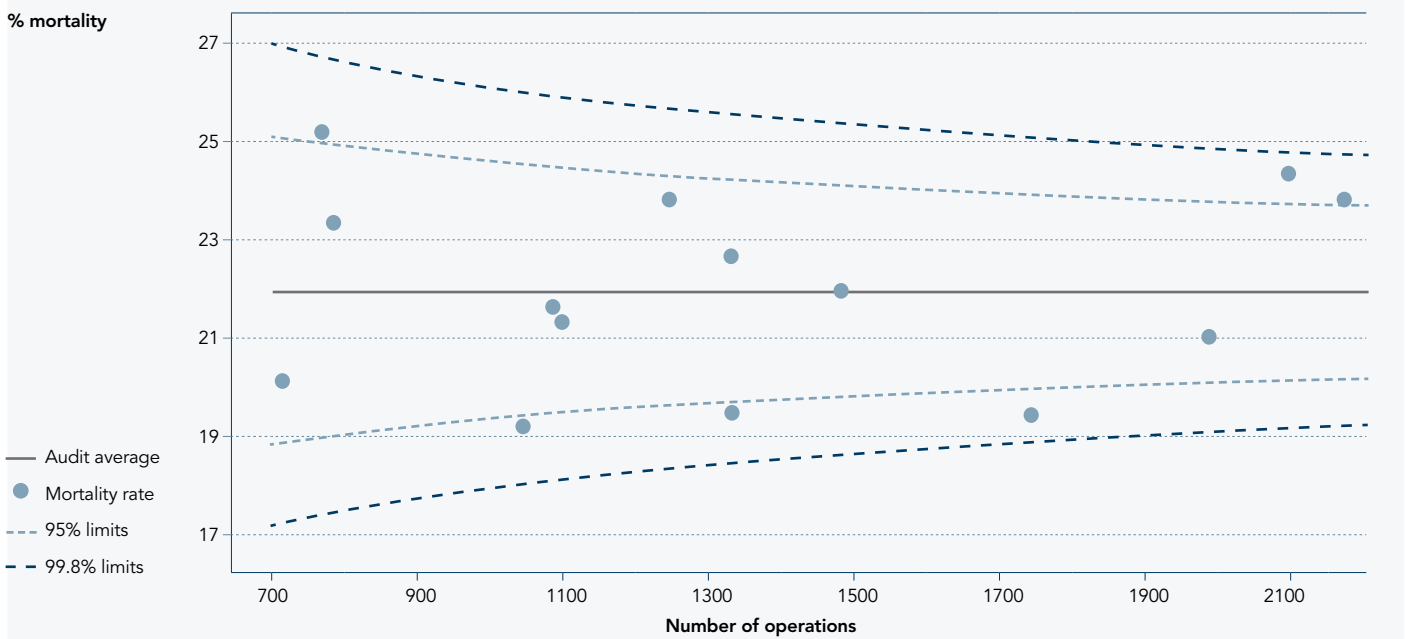
There was substantial variability in the estimates, particularly between Trusts/hospitals, although the range in two year mortality estimates for patients having a major resection was not as wide as that in two year mortality estimates of all patients (Figures 5.2 and 5.3).

**Figure 5.3**  
Observed and adjusted two year surgical outcomes for patients undergoing a major surgical resection between 1 April 2011 and 31 March 2012, by English Strategic Clinical Network/ Wales, including Trusts/MDT with more than ten operations

**Observed two year mortality by network/nation**



**Adjusted two year mortality by network/nation**



No Strategic Clinical Networks fell above the outer limits and three fell above the inner limits. These Strategic Clinical Networks have not previously been an outlier for two year mortality. Three Trusts/hospitals fell above the outer limits, of which two Trusts have previously been an outlier for two year mortality. A further ten Trusts fell above the inner limits. These Strategic Clinical Networks and Trusts/hospitals were all informed, and all of them responded. See [Appendix 1](#) for details.

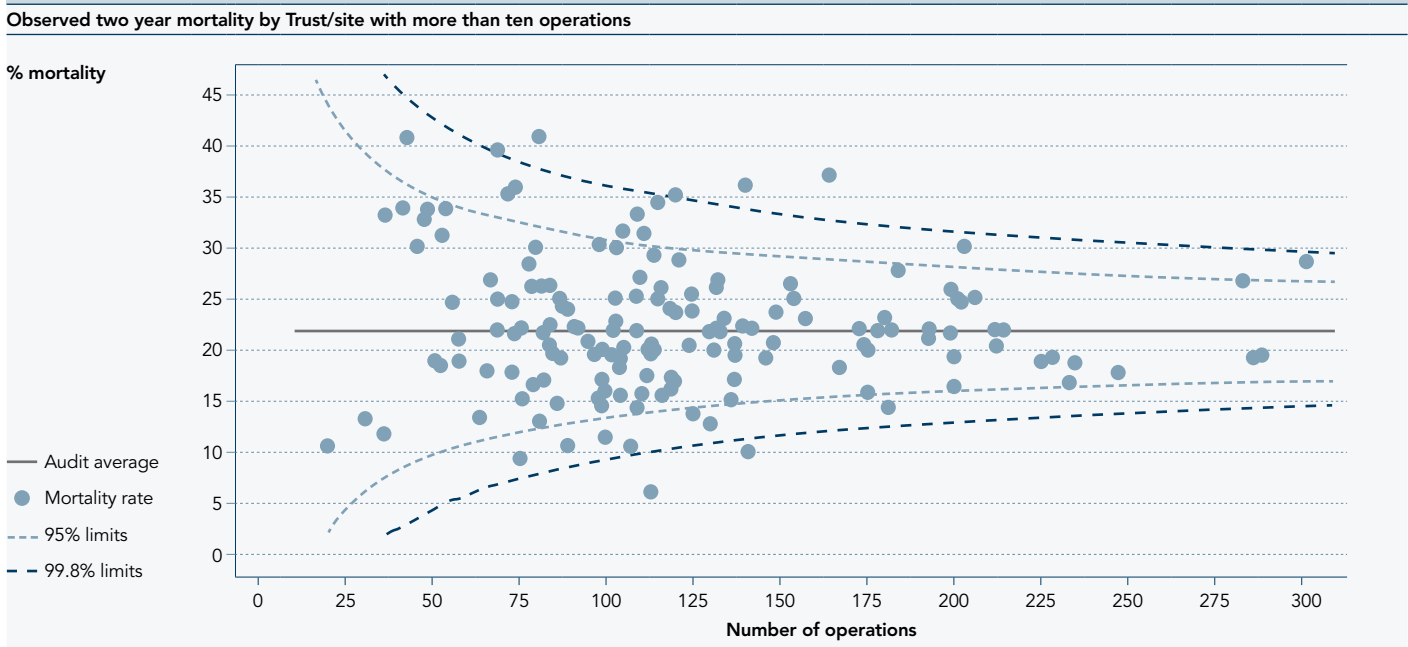
Three networks and ten Trusts fell below the inner limits for two year mortality. One network and three Trusts/hospitals have persistently been below the inner limits on two year mortality over the last two Audit periods.

Cause specific mortality will be investigated further as part of a short report regarding two year mortality published later this Audit year.

### Recommendations

- As patients who do not receive major resection have significantly poorer long-term outcomes, patients presenting with stage IV colorectal cancer should be referred to anatomical site specific MDT if both the primary and metastatic tumours are considered potentially resectable, in accordance with NICE guidelines.

**Figure 5.4**  
Observed and adjusted two year mortality for patients undergoing a major resection between 1 April 2011 and 31 March 2012, by Trust/hospital with more than ten operations



## 6. Rectal cancer

### Rectal cancer – NBOCA 2015

- Of patients diagnosed with rectal cancer, 24 per cent were reported to receive neo-adjuvant chemoradiotherapy and 11 per cent neo-adjuvant radiotherapy prior to major resection
- 36 per cent of patients receiving neo-adjuvant chemoradiotherapy prior to major resection had their surgery four to six months after diagnosis and 38 per cent between six and eight months after diagnosis
- 60 per cent of major resections were anterior resection, 26 per cent APER and 14 per cent Hartmann's
- 77 per cent of anterior resections had a covering stoma
- At 18 months 27 per cent of patients still had a 'temporary' stoma after anterior resection.

### 6.1 Q: How are patients with rectal cancer treated? Pathways of care

#### Why is this important?

The treatment of patients with rectal cancer has characteristics that make the patient pathway quite distinct from that followed by patients with colonic cancer. This has resulted in complex and quite variable approaches to rectal cancer treatment.

As rectal cancer is treated within the confines of the pelvis, patients are more prone to local recurrence. Attempting to prevent this begins pre-operatively with the use of MRI staging to identify threatened margins and lymph node involvement. This determines the need for pre-operative treatment (usually radiotherapy and/or chemotherapy). The need for post-operative treatment is, in part, decided by pathological examination of the resected specimen to assess completeness of tumour excision (which also acts as a measure quality assurance of surgical technique), termed the circumferential resection margin.

The challenge in rectal cancer treatment is to achieve both a good functional outcome for the patient and to reduce the risk of local recurrence. Variations are seen in both the type and extent of use of neo-adjuvant treatment, but also in the timings of that treatment. Commonly used treatment protocols include:

- straight to resectional surgery
- organ preservation using minimally invasive surgical techniques or contact radiotherapy
- neo-adjuvant 'short course' pre-operative radiotherapy (SCPRT) over five days, followed either by an early resection or a delay and then a resection
- neo-adjuvant 'long course' pre-operative chemoradiotherapy (LCPCRT), where chemotherapy and radiotherapy are given over five weeks. This allows for tumour response and shrinkage and is followed by resection six -12 weeks later, delayed resection or close observation without surgery if there is a complete clinical response
- specialist palliative care which may involve radiotherapy, chemotherapy or best supportive care.

#### Section aim

- To describe the treatment pathways of patients diagnosed with rectal cancer undergoing major resection between April 2013 and March 2014
- To describe the patient and tumour characteristics according to treatment pathway of those diagnosed with rectal cancer and undergoing major resection
- To describe geographical variation in the treatment pathways of patients diagnosed with rectal cancer and undergoing major resection.

## Results

### Pathways of care

Surgical resection of the rectum remains the foremost intervention for the treatment of rectal cancer, with 4,978 out of 9,048 (55 per cent) of rectal cancer patients diagnosed between 1 April 2013 and 31 March 2014 undergoing major resection. Of these patients, around 40 per cent were reported to have received neo-adjuvant treatment prior to major resection and 35 per cent to have received some form of pre-operative radiotherapy. Around two thirds of patients receiving preoperative radiotherapy were reported to have received concurrent chemotherapy.

#### NICE clinical guidelines 131, December 2014

##### 1.2.1. Pre-operative management of the primary tumour

###### Patients whose primary rectal tumour appears resectable at presentation

- Discuss the risk of local recurrence, short-term and long-term morbidity and late effects with the patient after discussion in the multidisciplinary team (MDT). [2011]
- Do not offer short-course pre-operative radiotherapy (SCPRT) or chemoradiotherapy to patients with low-risk operable rectal cancer, unless as part of a clinical trial. [2011]
- Consider SCPRT then immediate surgery for patients with moderate-risk operable rectal cancer. Consider pre-operative chemoradiotherapy with an interval to allow tumour response and shrinkage before surgery for patients with tumours that are borderline between moderate and high risk. [2011]
- Offer pre-operative chemoradiotherapy with an interval before surgery to allow tumour response and shrinkage (rather than SCPRT), to patients with high-risk operable rectal cancer (see [table 1](#) for risk groups). [2011]

### Neo-adjuvant chemoradiotherapy

As would be expected, patients recorded as receiving chemoradiotherapy prior to major resection were proportionally younger than those with no neo-adjuvant treatment. These patients had more advanced disease with proportionally higher T-stage and N-stage than those patients proceeding straight to major resection, which is in accordance with NICE guidelines to avoid offering pre-operative neo-adjuvant therapy to patients with low-risk operable rectal cancer ([box above](#)).

There was variability in the delay before surgery in patients treated with neo-adjuvant chemoradiotherapy with around 36 per cent of patients having a major resection between four and six months following diagnosis and 38 per cent between six and eight months following diagnosis.

### Neo-adjuvant radiotherapy

Similarly patients recorded as receiving radiotherapy alone prior to major resection had more advanced disease (T-stage and N-stage) than those with no neo-adjuvant treatment.

36 per cent of these patients underwent surgery within two months of diagnosis, most likely reflecting those patients treated with short course radiotherapy with no delay. Over 40 per cent of patients treated with radiotherapy alone underwent major resection over four months after diagnosis. This may reflect the cohort of patients deemed unfit for neo-adjuvant chemotherapy and therefore receiving radiotherapy with planned delay.

### Other treatment before major resection

The majority of these patients received chemotherapy prior to major resection. The proportion of patients in this treatment pathway with metastatic disease was higher at 23 per cent, when compared to patients in other pathways (around five per cent). This suggests patients with systemic disease and a small primary tumour with no margin involvement are being treated with neo-adjuvant chemotherapy. Some of these patients may undergo a further procedure such as a liver resection, in addition to resection of their rectal cancer.

### No neo-adjuvant treatment

It is not possible to determine if the 61 per cent of patients with no recorded treatment represent patients with no pre-operative treatment or the non-recording of treatment (see [Table S6.1](#) in the supportive document). Previous linkage of the National Radiotherapy Dataset from 2009-2010 to the National Cancer Data Repository showed that almost 50 per cent of patients with rectal cancer in England received pre-operative radiotherapy, compared to 35 per cent here, suggesting omissions in data on pre-operative treatments submitted to the Audit.<sup>5</sup>

A priority of the Audit is to improve data accuracy and recording of neo-adjuvant treatment and a future link to the National Radiotherapy and Chemotherapy Datasets will allow further understanding of the use of treatment pathways in rectal cancer as well as the use of more specialised types of treatment such as intensity modulated radiotherapy (IMRT).

**Table 6.1**  
Patient characteristics by treatment type, for 4,978 rectal cancer patients diagnosed between 1 April 2013 and 31 March 2014 who underwent a major resection

		No treatment recorded before major resection		CRT before major resection		RT before major resection		Other treatment before major resection*	
		Number	%	Number	%	Number	%	Number	%
<b>Total rectal cancer patients</b>		<b>3,042</b>		<b>1,181</b>		<b>537</b>		<b>218</b>	
<b>Sex</b>	Male	1,963	64.6	792	67.1	344	64.1	136	63.0
	Female	1,075	35.4	389	32.9	193	35.9	80	37.0
	Missing (% of total)	4 (0.1)		0 (0.0)		0 (0.0)		2 (0.9)	
<b>Age-group</b>	≤65 yrs	1,057	34.7	581	49.2	211	39.3	122	56.0
	65-74 yrs	1,097	36.1	374	31.7	165	30.7	71	32.6
	75-84 yrs	769	25.3	211	17.9	145	27.0	22	10.1
	85+ yrs	119	3.9	15	1.3	16	3.0	3	1.4
<b>Pre-treatment TNM T-stage</b>	T1	161	5.3	12	1.0	11	2.0	3	1.4
	T2	1,043	34.3	167	14.1	95	17.7	21	9.6
	T3	1,302	42.8	741	62.7	326	60.7	146	67.0
	T4	204	6.7	184	15.6	59	11.0	28	12.8
	TX	75	2.5	8	0.7	2	0.4	0	0.0
	T9	257	8.4	69	5.8	44	8.2	20	9.2
<b>Pre-treatment TNM N-stage</b>	N0	1,693	55.7	284	24.0	167	31.1	54	24.8
	N1	756	24.9	454	38.4	198	36.9	84	38.5
	N2	263	8.6	356	30.1	121	22.5	56	25.7
	Nx	55	1.8	14	1.2	7	1.3	3	1.4
	N9	275	9.0	73	6.2	44	8.2	21	9.6
<b>Pre-treatment TNM M-stage</b>	M0	2,404	79.0	910	77.1	401	74.7	118	54.1
	M1	106	3.5	67	5.7	27	5.0	51	23.4
	Mx	168	5.5	81	6.9	39	7.3	19	8.7
	M9	364	12.0	123	10.4	70	13.0	30	13.8
<b>Time to surgery</b>	Within 2 months	2,205	73.7	148	12.7	190	35.6	60	28.0
	2 to 4 months	476	15.9	70	6.0	109	20.5	29	13.6
	4 to 6 months	129	4.3	413	35.5	110	20.6	46	21.5
	6 to 8 months	148	4.9	436	37.5	98	18.4	49	22.9
	> 8 months	32	1.1	97	8.3	26	4.9	30	14.0
	Missing (% of total)	52 (1.7)		17 (1.4)		4 (0.7)		4 (1.8)	
<b>Mode of admission (from HES)</b>	Elective	2,622	95.2	861	96.6	418	96.3	127	94.8
	Emergency	133	4.8	30	3.4	16	3.7	7	5.2
	Missing (% of total)*	287 (9.4)		290 (24.6)		103 (19.2)		84 (38.5)	
<b>Comorbidities (from HES)</b>	0	1,695	61.5	590	66.2	272	62.7	97	72.4
	1	749	27.2	227	25.5	105	24.2	26	19.4
	2+	311	11.3	74	8.3	57	13.1	11	8.2
	Missing (% of total)*	287 (9.4)		290 (24.6)		103 (19.2)		84 (38.5)	

\* Chemotherapy or brachytherapy

\* Includes patients from Wales who could not be linked to Welsh equivalent of HES (PEDW)

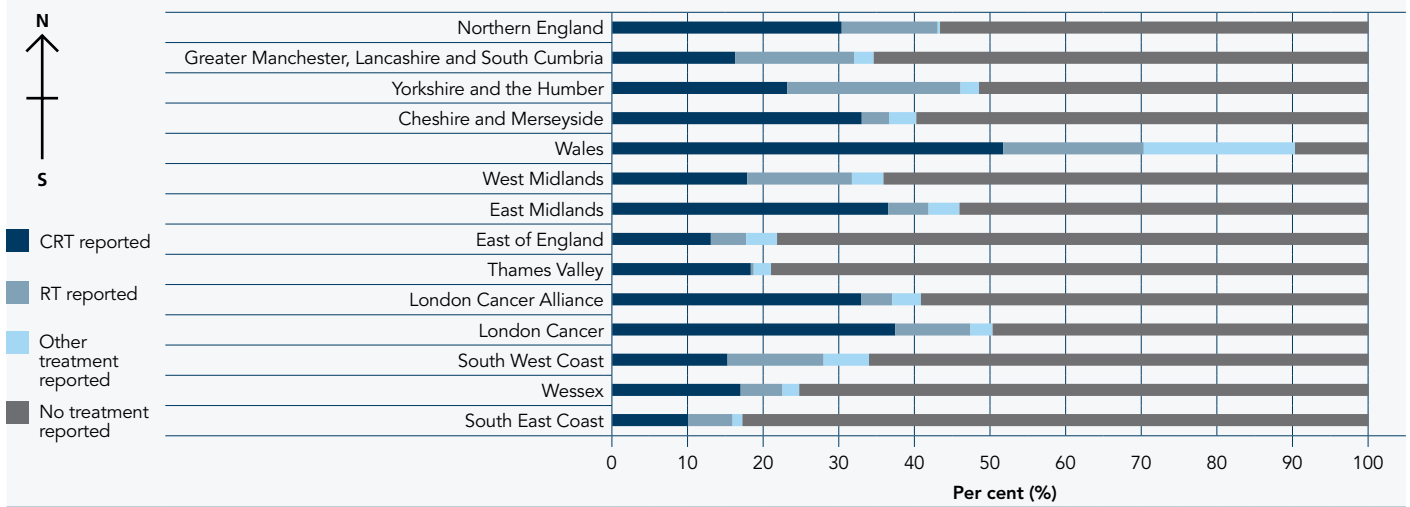
## Geographical variation

There was wide variation in the use of neo-adjuvant treatment in patients undergoing major resection by Strategic Clinical Network, from 20 to 90 per cent (Figure 6.1). There was also variation in the use of pre-operative chemoradiotherapy versus radiotherapy between regions, as well as variation in the use of "Other" preoperative treatments, primarily pre-operative chemotherapy.

The way of collecting data about the use of neo-adjuvant and adjuvant treatment changed this Audit year. This may have influenced data quality and reliability. Again future linkage to the Radiotherapy and Chemotherapy Datasets will help our understanding of these variations.

**Figure 6.1**

Treatment pathways of the 4,978 rectal cancer patients undergoing major resection by Strategic Clinical Network performing surgery, for patients diagnosed between 1 April 2013 and 31 March 2014



**Recommendations**

- Efforts should be made by Trusts/hospitals sites to improve data completeness for neo-adjuvant and adjuvant treatments in rectal cancer so that the pathways of treatment may be more accurately described and compared.

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

### Why is this important?

A significant feature of the patient experience of surgical resection for rectal cancer is the need for an intestinal stoma. If the anal canal has to be removed because of a low rectal cancer then an abdomino-perineal excision of the rectum (APER) results in a permanent colostomy. Hartmann's operation, although potentially reversible, invariably means a permanent stoma when used to treat rectal cancer in elective surgery. Many patients undergoing anterior resection also receive a diverting stoma.

Diverting stomas are used in sphincter saving surgery to reduce the consequences of anastomotic leakage, however they can themselves be associated with morbidity and poorer patient quality of life. Many surgeons would intend to reverse loop stomas often within four months of the initial surgery

### Section aim

- To describe the use of stoma in major resection for rectal cancer between April 2013 and March 2014
- To examine the continuing presence of stoma at 18 month in these patients and the geographic variation in stoma reversal

The Audit no longer collects data on whether a stoma was performed; instead data linked to HES is used to determine whether a patient received a stoma at the time of major resection. It was assumed that all patients undergoing APER or Hartmann's were given a stoma at the time of resection. These patients were followed over the subsequent 18 months in HES data to ascertain which anterior resection or Hartmann's patients underwent a further surgical procedure to close the stoma and restore intestinal continuity.

## Results

### Presence of stoma

Between April 2010 and March 2013, 83 per cent of the 13,241 rectal cancer patients had a stoma at the time of a surgical resection. In addition to all patients undergoing APER and Hartmann's, around 77 per cent of anterior resections were covered by a stoma (Table 6.2) – the large majority of these stomas consisting of an ileostomy.

Within 18 months of completed HES follow up, 65 per cent of all stomas associated with Anterior Resection had been closed.

### Geographical variation

In order to make comparisons between Strategic Clinical Networks (Figure 6.2) and between Trusts/hospitals (Figure 6.3), 18 month stoma rates for all resectional surgery (APER, Hartmann's and anterior resection) were adjusted for case-mix using the risk factors used to adjust 90 day mortality (except cancer site).

There was considerable variation between Strategic Clinical Networks with two falling above and one falling below the outer limits on adjusted 18 month stoma rate. The variation by Trust/hospital was also large, with seven Trusts/hospitals falling above and seven Trusts/hospitals falling below the outer limits. A further 15 Trusts/hospitals fell above the inner limits. Due to overlap between Audit reporting periods it is not possible to identify whether these Trusts/hospitals are persistent outliers.

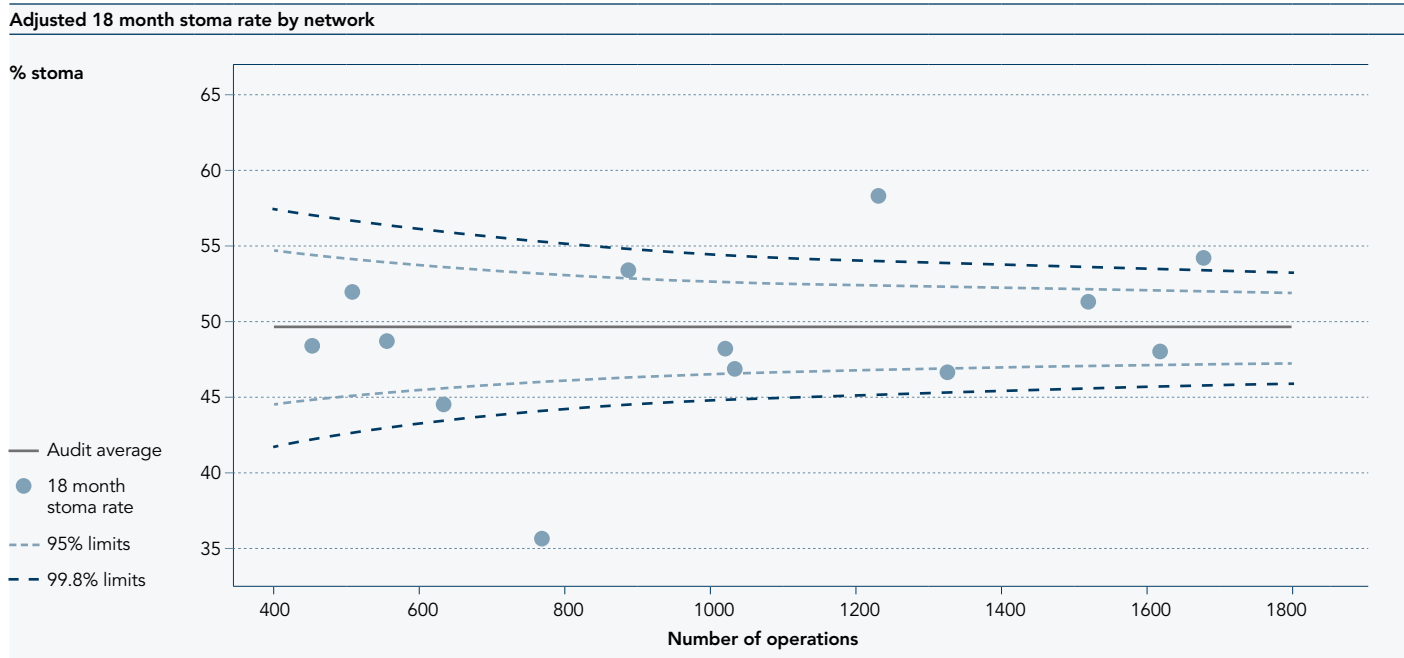
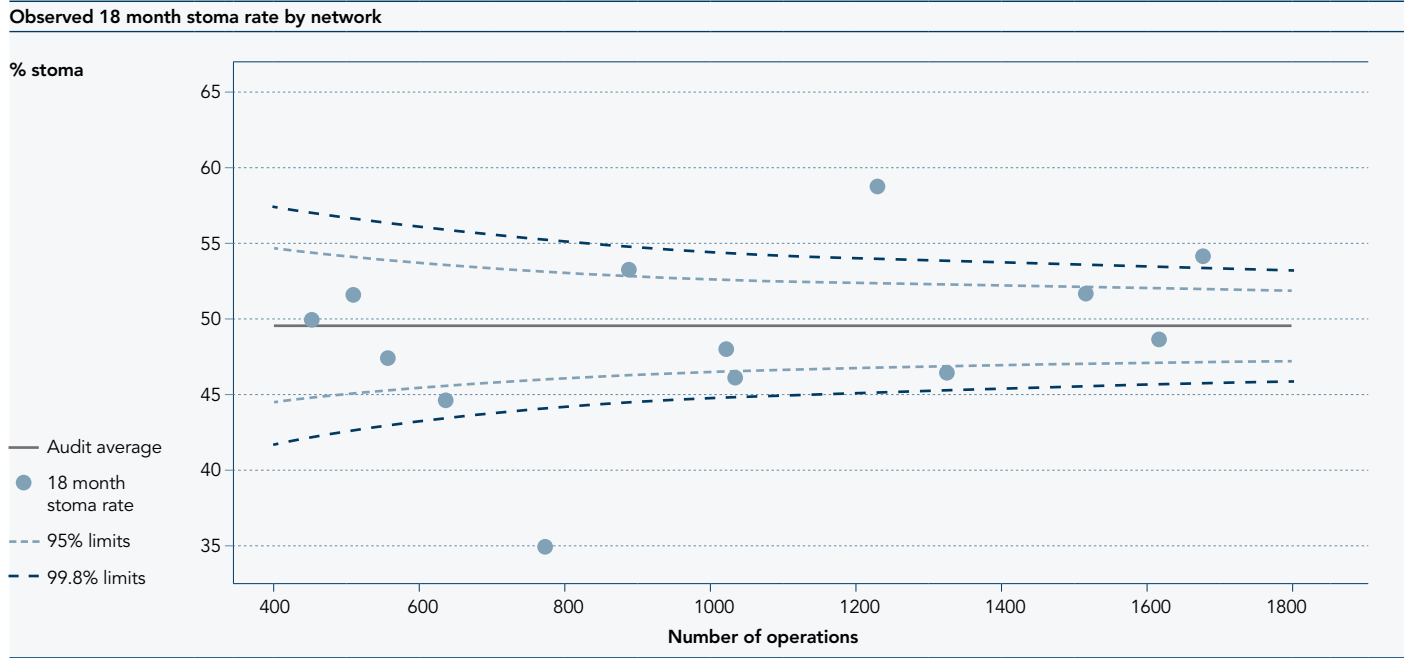
**Table 6.2**  
Description of stoma types by procedure for 13,241 rectal cancer patients linked to HES having a major resection between 1 April 2010 and 31 March 2013 at English NHS Trusts, by procedure

	Anterior resection		APER		Hartmann's		Other		
	Number	%	Number	%	Number	%	Number	%	
<b>Total rectal cancer patients undergoing major resection</b>	<b>8,680</b>		<b>3,240</b>		<b>1,015</b>		<b>306</b>		
<b>Any stoma</b>	No	2,016	23.2	0	0.0	0	0.0	235	76.8
	Yes	6,664	76.8	3,240	100.0	1,015	100.0	71	23.2
<b>Stoma location</b>	None	2,016	23.2	0	0.0	0	0.0	235	76.8
	Ileostomy	5,470	63.0	76	2.3	86	8.5	40	13.1
	Colostomy	1,194	13.8	3,164	97.7	929	91.5	31	10.1
<b>Stoma at 18 months, ignoring deaths</b>	No	6,368	73.4	0	0.0	50	4.9	246	80.4
	Yes	2,312	26.6	3,240	100.0	965	95.1	60	19.6

This analysis of stoma at 18 months includes all surgical resections for rectal cancer (APER, Hartmann's and Anterior Resection). Therefore any variation is very likely to reflect different ways of working: selection of patients for APER, the use of adjuvant therapy following anterior resection and/or resources for stoma closure after completion of cancer treatment.

All the Strategic Clinical Networks and Trusts identified as potential outliers have been informed, and all of them responded. See [Appendix 1](#) for details.

**Figure 6.2**  
Observed and adjusted 18 month stoma rate by English Strategic Clinical Network\* for rectal cancer patients undergoing a major resection between 1 April 2010 and 31 March 2013



\*Equivalent data (PEDW) not available for Wales

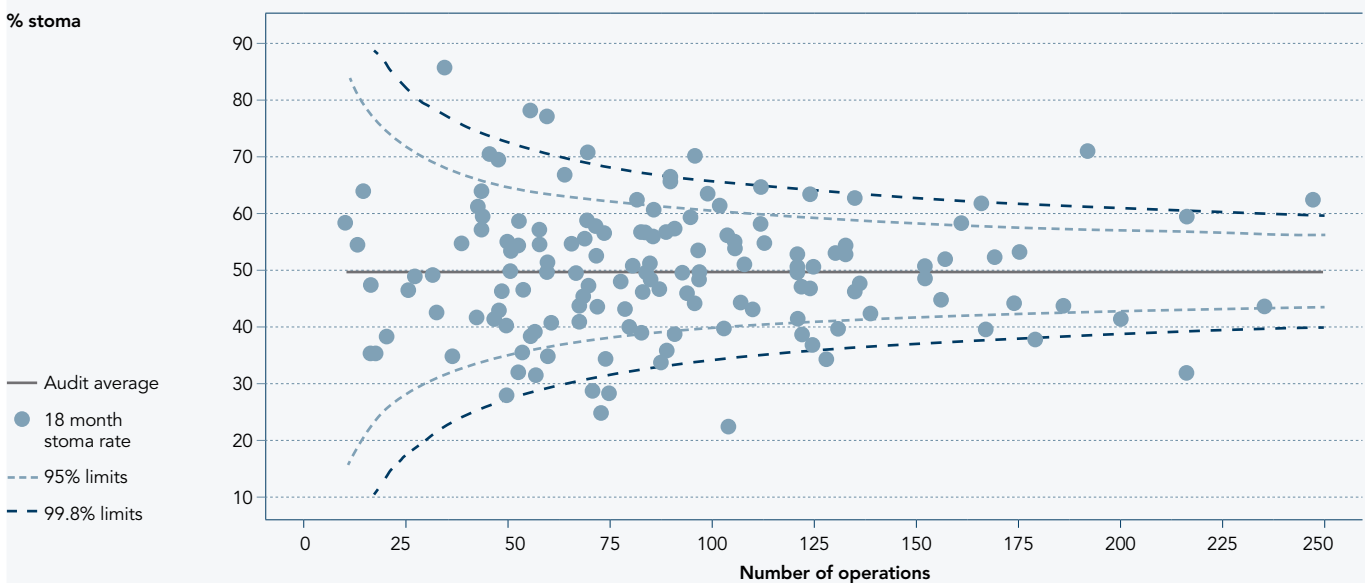
Figure 6.3

Observed and adjusted 18 month stoma rate by English Strategic Clinical Network\* for rectal cancer patients undergoing a major resection between 1 April 2010 and 31 March 2013

Observed 18 month stoma rate by Trust/site with more than ten operations



Adjusted 18 month stoma rate by Trust/site with more than ten operations



\*Equivalent data (PEDW) not available for Wales

Recommendations

- Loop stoma closure following anterior resection should be prioritised
- Clinicians should ensure that patients undergoing an anterior resection are aware that a 'temporary' stoma may not be reversed.

## 7. Colorectal Cancer Management – Trust by Trust

For the 2015 NBOCA report each Trust in England and Wales uploaded their colorectal cancer data to the HSCIC's Clinical Audit Platform (CAP). The following approach shown in the timelines below was adopted to ensure that Trusts' submission of data was as complete and accurate as possible.

### 3 November 2014

1st data submission deadline

### 19 December 2014

Communication to Trusts of planned data submission deadlines (6 February, 27 March 2015), with two rounds of feedback for the 2013/2014 dataset (January 2015 and February/March 2015)

### 23 January 2015

Feedback on data extracted in November 2014

### 6 February 2015

2nd data submission deadline and submission deadline for linkage with HES and ONS

### 11 March 2015

Communication to Trusts about delays to data sharing and data linkage with HES and ONS that mean the Audit is unable to provide feedback on the data extracted in February

### 4 June 2015

Data extracted for the 2015 Annual Report and 2015 Consultant Outcomes Publication. Details of patients in this dataset sent for linkage with HES and ONS

### 27 July 2015

Communication to Trusts that delays have been resolved and circulation of revised data feedback (6 August 2015) and submission deadlines (28 August)

### 6 August 2015

Trusts/Surgeons in England received current estimates of 90 day post-operative mortality and distribution of risk factors in the patient population eligible for Consultant Outcomes Publication

Distribution of risk factors in the equivalent patient population was later sent to Wales at MDT level

### 7 August 2015

Trusts whose adjusted 90 day post-operative mortality is above the 95 per cent and 99.8 per cent limits or who have a surgeon whose adjusted 90 day post-operative mortality is above these limits informed

### 28 August 2015

Final data submission deadline

### Trust Changes since end of data inclusion period (31 March 2014):

#### • London Cancer Network:

Barnet and Chase Farm Hospitals NHS Trust became part of the Royal Free London NHS Foundation Trust on 1 July 2014

Data listed as:

- Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital
- Royal Free London NHS Foundation Trust - Royal Free Hospital

#### • West Midlands Cancer Network:

University Hospital of North Staffordshire NHS Trust and Mid Staffordshire NHS Foundation Trust became University Hospitals of North Midlands NHS Trust on 1 November 2014

Data listed as:

- University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital
- University Hospitals of North Midlands NHS Trust – County Hospital

#### • Thames Valley Cancer Network:

Heatherwood and Wexham Park Hospitals NHS Foundation Trust became part of Frimley Health NHS Foundation Trust (listed under South East Coast Cancer Network) on 1 October 2014

Data listed as

- Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals
- Frimley Health NHS Foundation Trust - Frimley Park Hospital

#### • London Cancer Alliance:

South London Healthcare NHS Trust ceased to exist on 1 October 2013 (see <http://www.slh.nhs.uk/>):

- Data for Princess Royal University Hospital, Bromley is included under King's College Hospital NHS Foundation Trust (will be reported separately in 2016)
- Data for Queen Elizabeth Hospital, Woolwich is reported under Lewisham and Greenwich NHS Trust

Table 7.1

## Case ascertainment and data completeness according to Trust/hospital site

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

Grade	Case Ascertainment (CA)
Good	● >80% case ascertainment or data completeness
Fair	■ 50-80% case ascertainment or data completeness
Poor	▲ <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.

Network/Trust name	No. cases reported to the Audit (excluding Wales)	No. cases identified in HES	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 (%)
<b>Overall – total data</b>	<b>28,644</b>	<b>30,630</b>	<b>94 ●</b>	<b>84 ●</b>	<b>68 ■</b>	<b>19,445</b>	<b>80 ●</b>	<b>12</b>	<b>54</b>	<b>26</b>	<b>3</b>	<b>6</b>
<b>Northern England</b>	<b>1,864</b>	<b>1,920</b>	<b>97 ●</b>	<b>91 ●</b>	<b>63 ■</b>	<b>1,174</b>	<b>84 ●</b>	<b>8</b>	<b>53</b>	<b>29</b>	<b>5</b>	<b>5</b>
City Hospitals Sunderland NHS Foundation Trust	178	199	89 ●	90 ●	100 ●	96	83 ●	0	75	23	2	0
County Durham and Darlington NHS Foundation Trust	272	268	101 ●	99 ●	91 ●	164	98 ●	11	51	35	2	1
Gateshead Health NHS Foundation Trust	154	147	105 ●	86 ●	10 ▲	83	83 ●	14	34	39	6	7
North Cumbria University Hospitals NHS Trust	190	218	87 ●	48 ▲	30 ▲	115	17 ▲	13	70	15	1	2
North Tees and Hartlepool NHS Foundation Trust	227	216	105 ●	94 ●	93 ●	142	99 ●	9	47	34	10	0
Northumbria Healthcare NHS Foundation Trust	287	301	95 ●	99 ●	11 ▲	190	99 ●	11	54	29	6	0
South Tees Hospitals NHS Foundation Trust	233	241	97 ●	97 ●	48 ▲	165	64 ■	6	36	22	5	31
South Tyneside NHS Foundation Trust	99	102	97 ●	96 ●	100 ●	63	98 ●	8	52	35	5	0
The Newcastle upon Tyne Hospitals NHS Foundation Trust	223	228	98 ●	100 ●	100 ●	156	99 ●	1	62	31	6	0
<b>Greater Manchester, Lancashire and South Cumbria</b>	<b>2,740</b>	<b>2,943</b>	<b>93 ●</b>	<b>88 ●</b>	<b>69 ■</b>	<b>1,642</b>	<b>91 ●</b>	<b>12</b>	<b>54</b>	<b>29</b>	<b>3</b>	<b>2</b>
Blackpool Teaching Hospitals NHS Foundation Trust	237	217	109 ●	84 ●	9 ▲	90	87 ●	18	49	23	0	10
Bolton NHS Foundation Trust	199	208	96 ●	85 ●	84 ●	128	95 ●	12	47	37	4	1
Central Manchester University Hospitals NHS Foundation Trust	171	185	92 ●	98 ●	94 ●	120	97 ●	11	58	28	2	2
East Cheshire NHS Trust	149	137	109 ●	85 ●	99 ●	93	89 ●	11	60	23	3	3
East Lancashire Hospitals NHS Trust	202	217	93 ●	80 ■	28 ▲	133	86 ●	16	50	29	3	2
Lancashire Teaching Hospitals NHS Foundation Trust	211	273	77 ■	100 ●	69 ■	121	85 ●	17	41	31	2	8
Mid Cheshire Hospitals NHS Foundation Trust	196	195	101 ●	87 ●	99 ●	101	98 ●	11	72	15	2	0
Pennine Acute Hospitals NHS Trust	375	400	94 ●	100 ●	100 ●	199	95 ●	12	62	23	3	0
Salford Royal NHS Foundation Trust	123	152	81 ●	75 ■	90 ●	83	100 ●	16	41	40	4	0
Stockport NHS Foundation Trust	191	188	102 ●	94 ●	53 ■	112	97 ●	11	44	38	5	2
Tameside Hospital NHS Foundation Trust	128	136	94 ●	87 ●	95 ●	78	97 ●	3	65	32	0	0
The Christie NHS Foundation Trust	•	•	•	•	•	63	98 ●	21	63	14	0	2
University Hospital of South Manchester NHS Foundation Trust	132	150	88 ●	92 ●	2 ▲	89	98 ●	9	44	40	7	0
University Hospitals of Morecambe Bay NHS Foundation Trust	266	253	105 ●	67 ■	51 ■	158	74 ■	13	53	31	3	0
Wrightington, Wigan and Leigh NHS Foundation Trust	147	142	104 ●	97 ●	100 ●	74	80 ■	7	57	31	3	3
<b>Yorkshire and the Humber</b>	<b>3,158</b>	<b>3,174</b>	<b>99 ●</b>	<b>89 ●</b>	<b>71 ■</b>	<b>1,998</b>	<b>84 ●</b>	<b>15</b>	<b>53</b>	<b>27</b>	<b>3</b>	<b>2</b>
Airedale NHS Foundation Trust	108	104	104 ●	99 ●	99 ●	56	96 ●	5	75	20	0	0
Barnsley Hospital NHS Foundation Trust	95	107	89 ●	98 ●	97 ●	59	92 ●	42	41	14	3	0
Bradford Teaching Hospitals NHS Foundation Trust	174	173	101 ●	63 ■	36 ▲	128	16 ▲	1	46	41	1	11
Calderdale and Huddersfield NHS Foundation Trust	243	218	111 ●	84 ●	36 ▲	133	92 ●	12	60	24	1	3
Chesterfield Royal Hospital NHS Foundation Trust	189	178	106 ●	95 ●	79 ■	125	100 ●	20	50	27	2	0
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	283	264	107 ●	66 ■	2 ▲	178	87 ●	12	65	22	0	0
Harrogate and District NHS Foundation Trust	154	124	124 ●	87 ●	46 ▲	80	95 ●	13	66	20	1	0
Hull and East Yorkshire Hospitals NHS Trust	340	324	105 ●	89 ●	100 ●	198	60 ■	20	45	27	5	4
Leeds Teaching Hospitals NHS Trust	336	373	90 ●	96 ●	42 ▲	237	89 ●	11	49	30	6	3
Mid Yorkshire Hospitals NHS Trust	234	247	95 ●	89 ●	96 ●	153	86 ●	33	48	10	3	5
Northern Lincolnshire and Goole NHS Foundation Trust	245	268	91 ●	96 ●	98 ●	176	88 ●	5	49	39	4	3
Sheffield Teaching Hospitals NHS Foundation Trust	301	313	96 ●	94 ●	100 ●	171	90 ●	12	59	25	4	0
The Rotherham NHS Foundation Trust	157	157	100 ●	99 ●	100 ●	97	95 ●	16	54	28	2	0
York Teaching Hospital NHS Foundation Trust – The York Hospital	272	207	131 ●	95 ●	88 ●	197	98 ●	11	54	34	2	0
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	10	113	9 ▲	50 ▲	80 ■	▲	▲	▲	▲	▲	▲	▲

Network/Trust name	No. cases reported to the Audit (excluding Wales)	No. cases identified in HES	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 (%)
<b>Cheshire and Merseyside</b>	<b>1,309</b>	<b>1,278</b>	<b>102 ●</b>	<b>78 ■</b>	<b>73 ■</b>	<b>753</b>	<b>59 ■</b>	<b>12</b>	<b>50</b>	<b>21</b>	<b>5</b>	<b>13</b>
Aintree University Hospital NHS Foundation Trust	245	226	108 ●	71 ■	99 ●	117	90 ●	15	48	32	4	0
Countess of Chester Hospital NHS Foundation Trust	139	159	87 ●	93 ●	99 ●	104	92 ●	18	65	1	15	0
Royal Liverpool and Broadgreen University Hospitals NHS Trust	201	199	101 ●	72 ■	73 ■	76	45 ▲	0	74	24	3	0
Southport and Ormskirk Hospital NHS Trust	141	118	119 ●	89 ●	2 ▲	95	8 ▲	2	7	3	0	87
St Helens and Knowsley Hospitals NHS Trust	196	195	101 ●	58 ■	100 ●	136	43 ▲	10	57	21	5	7
Warrington and Halton Hospitals NHS Foundation Trust	181	157	115 ●	82 ●	15 ▲	96	51 ■	20	48	27	4	1
Wirral University Teaching Hospital NHS Foundation Trust	205	207	99 ●	87 ●	100 ●	129	74 ■	14	50	34	0	2
<b>Wales</b>	<b>2,018</b>	<b>No PEDW</b>	<b>No PEDW</b>	<b>75 ■</b>	<b>7 ▲</b>	<b>1,322</b>	<b>68 ■</b>	<b>7</b>	<b>53</b>	<b>31</b>	<b>5</b>	<b>5</b>
Bronglais MDT	35	No PEDW	No PEDW	57 ■	66 ■	28	36 ▲	0	54	36	7	4
Cardiff MDT	247	No PEDW	No PEDW	89 ●	4 ▲	151	70 ■	1	65	28	5	2
Nevill Hall Hospital MDT	131	No PEDW	No PEDW	78 ■	15 ▲	91	69 ■	2	46	29	2	21
Prince Charles Hospital MDT	117	No PEDW	No PEDW	100 ●	3 ▲	76	91 ●	9	61	29	1	0
Princess of Wales MDT	159	No PEDW	No PEDW	57 ■	2 ▲	116	58 ■	14	54	28	3	1
Royal Glamorgan Hospital MDT	124	No PEDW	No PEDW	71 ■	45 ▲	71	48 ▲	10	49	41	0	0
Royal Gwent Hospital MDT	239	No PEDW	No PEDW	91 ●	1 ▲	164	99 ●	4	57	32	6	1
Swansea MDT	200	No PEDW	No PEDW	72 ■	0 ▲	123	66 ■	10	44	37	7	3
West Wales General & Prince Phillip MDT	168	No PEDW	No PEDW	83 ●	5 ▲	107	67 ■	5	46	28	4	18
Withybush General MDT	86	No PEDW	No PEDW	67 ■	0 ▲	53	28 ▲	11	40	36	2	11
Ysbwyty Glan Clwydd MDT	166	No PEDW	No PEDW	62 ■	1 ▲	117	62 ■	3	49	36	10	2
Ysbwyty Gwynedd MDT	191	No PEDW	No PEDW	46 ▲	2 ▲	113	41 ▲	11	50	24	7	8
Ysbwyty Maelor MDT	155	No PEDW	No PEDW	88 ●	8 ▲	112	96 ●	13	60	23	4	0
<b>West Midlands</b>	<b>3,158</b>	<b>3,143</b>	<b>100 ●</b>	<b>81 ●</b>	<b>77 ■</b>	<b>2,029</b>	<b>69 ■</b>	<b>8</b>	<b>54</b>	<b>25</b>	<b>2</b>	<b>11</b>
George Eliot Hospital NHS Trust	90	88	102 ●	99 ●	96 ●	66	100 ●	5	50	38	8	0
Heart of England NHS Foundation Trust	408	362	113 ●	100 ●	100 ●	264	100 ●	8	73	17	2	0
Sandwell and West Birmingham Hospitals NHS Trust	223	184	121 ●	97 ●	51 ■	131	89 ●	2	44	37	7	9
Shrewsbury and Telford Hospital NHS Trust	325	335	97 ●	81 ●	98 ●	209	51 ■	12	55	25	2	6
South Warwickshire NHS Foundation Trust	160	167	96 ●	98 ●	7 ▲	109	94 ●	11	59	28	0	3
The Dudley Group NHS Foundation Trust	189	181	104 ●	57 ■	99 ●	107	37 ▲	7	54	31	1	7
The Royal Wolverhampton NHS Trust	243	251	97 ●	92 ●	100 ●	114	88 ●	9	46	32	6	6
University Hospitals Birmingham NHS Foundation Trust	165	219	75 ■	39 ▲	100 ●	123	93 ●	15	65	19	0	2
University Hospitals Coventry and Warwickshire NHS Trust	238	265	90 ●	65 ■	88 ●	145	88 ●	12	48	36	1	3
University Hospitals of North Midlands NHS Trust – County Hospital	136	131	104 ●	60 ■	8 ▲	73	34 ▲	5	49	32	8	5
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	301	335	90 ●	84 ●	100 ●	236	11 ▲	11	20	8	0	60
Walsall Healthcare NHS Trust	130	130	100 ●	31 ▲	100 ●	85	38 ▲	5	54	38	1	2
Worcestershire Acute Hospitals NHS Trust	382	369	104 ●	95 ●	22 ▲	250	88 ●	3	75	20	2	0
Wye Valley NHS Trust	162	126	129 ●	83 ●	94 ●	117	54 ■	5	53	21	4	16
<b>East Midlands</b>	<b>2,151</b>	<b>2,293</b>	<b>94 ●</b>	<b>90 ●</b>	<b>73 ■</b>	<b>1,372</b>	<b>90 ●</b>	<b>7</b>	<b>63</b>	<b>27</b>	<b>2</b>	<b>2</b>
Burton Hospitals NHS Foundation Trust	137	125	110 ●	98 ●	96 ●	94	100 ●	12	54	29	5	0
Derby Hospitals NHS Foundation Trust	286	283	101 ●	67 ■	94 ●	148	72 ■	3	68	29	0	0
Kettering General Hospital NHS Foundation Trust	200	164	122 ●	98 ●	100 ●	136	97 ●	19	60	19	1	0
Northampton General Hospital NHS Trust	172	197	87 ●	94 ●	99 ●	135	93 ●	7	56	30	2	6
Nottingham University Hospitals NHS Trust	266	319	83 ●	100 ●	98 ●	256	100 ●	0	82	15	2	0
Sherwood Forest Hospitals NHS Foundation Trust	184	216	85 ●	63 ■	2 ▲	109	51 ■	18	42	27	3	10
United Lincolnshire Hospitals NHS Trust	298	395	75 ■	96 ●	96 ●	214	89 ●	10	54	35	0	0
University Hospitals of Leicester NHS Trust	463	452	102 ●	97 ●	25 ▲	280	96 ●	0	65	32	2	1

Network/Trust name	No. cases reported to the Audit (excluding Wales)	No. cases identified in HES	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 (%)
<b>East of England</b>	<b>3,122</b>	<b>3,301</b>	<b>95</b> ●	<b>68</b> ■	<b>49</b> ▲	<b>1,994</b>	<b>62</b> ■	<b>10</b>	<b>49</b>	<b>26</b>	<b>2</b>	<b>12</b>
Basildon and Thurrock University Hospitals NHS Foundation Trust	182	225	81 ●	98 ●	99 ●	125	94 ●	19	52	26	2	0
Bedford Hospital NHS Trust	118	137	86 ●	93 ●	98 ●	68	84 ●	21	51	19	0	9
Cambridge University Hospitals NHS Foundation Trust	244	248	98 ●	84 ●	15 ▲	167	94 ●	3	54	36	2	5
Colchester Hospital University NHS Foundation Trust	259	251	103 ●	27 ▲	19 ▲	133	10 ▲	11	44	31	4	11
East and North Hertfordshire NHS Trust	212	218	97 ●	9 ▲	3 ▲	115	3 ▲	13	50	20	3	15
Hinchingbrooke Health Care NHS Trust	114	111	103 ●	85 ●	97 ●	76	89 ●	11	62	26	1	0
Ipswich Hospital NHS Trust	250	268	93 ●	85 ●	40 ▲	174	80 ●	14	40	26	2	19
James Paget University Hospitals NHS Foundation Trust	129	130	99 ●	76 ■	63 ■	88	65 ■	9	52	34	5	0
Luton and Dunstable University Hospital NHS Foundation Trust	131	183	72 ■	100 ●	76 ■	62	0 ▲	0	0	0	0	100
Mid Essex Hospital Services NHS Trust	131	165	79 ■	66 ■	95 ●	102	39 ▲	11	55	30	0	4
Norfolk and Norwich University Hospitals NHS Foundation Trust	445	424	105 ●	64 ■	43 ▲	255	74 ■	8	55	18	0	20
Peterborough and Stamford Hospitals NHS Foundation Trust	206	212	97 ●	31 ▲	78 ■	152	22 ▲	14	50	22	4	9
Southend University Hospital NHS Foundation Trust	164	174	94 ●	99 ●	2 ▲	108	100 ●	17	59	24	0	0
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	150	150	100 ●	39 ▲	83 ●	87	17 ▲	6	36	43	6	10
West Hertfordshire Hospitals NHS Trust	226	239	95 ●	84 ●	0 ▲	154	73 ■	5	49	29	0	18
West Suffolk NHS Foundation Trust	143	165	87 ●	100 ●	100 ●	104	99 ●	6	50	40	4	0
<b>Thames Valley</b>	<b>1,443</b>	<b>1,422</b>	<b>101</b> ●	<b>76</b> ■	<b>86</b> ●	<b>949</b>	<b>84</b> ●	<b>19</b>	<b>53</b>	<b>22</b>	<b>1</b>	<b>5</b>
Buckinghamshire Healthcare NHS Trust	237	215	110 ●	98 ●	96 ●	178	92 ●	43	48	8	1	1
Great Western Hospitals NHS Foundation Trust	214	221	97 ●	17 ▲	20 ▲	128	79 ■	9	38	41	2	9
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	215	197	109 ●	58 ■	100 ●	138	57 ■	15	47	14	1	22
Milton Keynes Hospital NHS Foundation Trust	105	145	72 ■	40 ▲	100 ●	74	46 ▲	3	59	26	8	4
Oxford University Hospitals NHS Trust	403	378	107 ●	98 ●	99 ●	243	97 ●	19	62	20	0	0
Royal Berkshire NHS Foundation Trust	254	265	96 ●	97 ●	94 ●	179	98 ●	9	58	32	1	0
<b>London Cancer Alliance</b>	<b>1,947</b>	<b>2,534</b>	<b>77</b> ■	<b>89</b> ●	<b>79</b> ■	<b>1,336</b>	<b>82</b> ●	<b>20</b>	<b>49</b>	<b>21</b>	<b>2</b>	<b>9</b>
Chelsea and Westminster Hospital NHS Foundation Trust	63	63	100 ●	92 ●	35 ▲	28	21 ▲	7	14	0	0	79
Croydon Health Services NHS Trust	119	105	113 ●	94 ●	99 ●	77	96 ●	43	43	13	1	0
Ealing Hospital NHS Trust	57	54	106 ●	100 ●	95 ●	44	91 ●	20	43	27	5	5
Epsom and St Helier University Hospitals NHS Trust	195	189	103 ●	83 ●	79 ■	85	53 ■	8	41	21	1	28
Guy's and St Thomas' NHS Foundation Trust	104	177	59 ■	78 ■	58 ■	124	57 ■	43	31	15	0	11
Imperial College Healthcare NHS Trust	220	232	95 ●	100 ●	100 ●	156	97 ●	11	51	35	3	1
King's College Hospital NHS Foundation Trust	285	297	96 ●	89 ●	83 ●	173	91 ●	14	54	24	1	6
Kingston Hospital NHS Foundation Trust	138	131	105 ●	87 ●	70 ■	94	93 ●	28	47	23	1	1
Lewisham and Greenwich NHS Trust	210	203	103 ●	98 ●	99 ●	104	99 ●	10	74	14	2	0
North West London Hospitals NHS Trust	215	227	95 ●	82 ●	21 ▲	164	65 ■	15	51	10	0	24
St George's Healthcare NHS Trust	151	202	75 ■	81 ●	92 ●	130	92 ●	25	55	13	4	3
The Hillingdon Hospitals NHS Foundation Trust	89	102	87 ●	93 ●	100 ●	64	97 ●	17	45	33	5	0
The Royal Marsden NHS Foundation Trust	•	•	•	•	•	48	94 ●	4	69	27	0	0
West Middlesex University Hospital NHS Trust	79	91	87 ●	71 ■	97 ●	44	59 ■	18	39	36	7	0
<b>London Cancer</b>	<b>1,249</b>	<b>1,343</b>	<b>93</b> ●	<b>87</b> ●	<b>97</b> ●	<b>760</b>	<b>78</b> ■	<b>21</b>	<b>48</b>	<b>26</b>	<b>3</b>	<b>2</b>
Barking, Havering and Redbridge University Hospitals NHS Trust	270	257	105 ●	75 ■	100 ●	146	66 ■	40	36	19	1	3
Barts Health NHS Trust	201	288	70 ■	92 ●	100 ●	134	58 ■	8	53	31	5	3
Homerton University Hospital NHS Foundation Trust	58	55	105 ●	100 ●	100 ●	41	98 ●	20	34	29	17	0
North Middlesex University Hospital NHS Trust	84	99	85 ●	76 ■	94 ●	41	85 ●	63	29	7	0	0
Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital	199	208	96 ●	98 ●	94 ●	129	96 ●	18	42	36	4	0
Royal Free London NHS Foundation Trust - Royal Free Hospital	98	90	109 ●	84 ●	100 ●	62	81 ●	26	63	10	2	0
The Princess Alexandra Hospital NHS Trust	143	142	101 ●	86 ●	91 ●	78	87 ●	8	60	29	1	1
The Whittington Hospital NHS Trust	77	74	104 ●	94 ●	96 ●	49	78 ■	12	59	16	0	12
University College London Hospitals NHS Foundation Trust	117	130	90 ●	90 ●	100 ●	80	75 ■	4	55	39	3	0

Network/Trust name	No. cases reported to the Audit (excluding Wales)	No. cases identified in HES	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 (%)
<b>South West</b>	<b>2,777</b>	<b>2,738</b>	<b>101 ●</b>	<b>91 ●</b>	<b>72 ■</b>	<b>1,727</b>	<b>91 ●</b>	<b>12</b>	<b>55</b>	<b>30</b>	<b>2</b>	<b>1</b>
Gloucestershire Hospitals NHS Foundation Trust	317	441	72 ■	79 ■	99 ●	213	79 ■	7	54	38	1	0
North Bristol NHS Trust	250	241	104 ●	98 ●	31 ▲	147	99 ●	12	58	29	1	1
Northern Devon Healthcare NHS Trust	149	143	104 ●	37 ▲	99 ●	101	70 ■	8	54	34	0	4
Plymouth Hospitals NHS Trust	286	253	113 ●	99 ●	74 ■	180	97 ●	14	56	29	1	0
Royal Cornwall Hospitals NHS Trust	302	277	109 ●	100 ●	19 ▲	195	98 ●	14	49	32	3	2
Royal Devon and Exeter NHS Foundation Trust	288	252	114 ●	100 ●	99 ●	180	100 ●	9	58	29	3	0
Royal United Hospitals Bath NHS Foundation Trust	248	249	100 ●	100 ●	98 ●	172	100 ●	15	56	26	3	0
Salisbury NHS Foundation Trust	105	107	98 ●	96 ●	27 ▲	64	98 ●	16	53	23	6	2
South Devon Healthcare NHS Foundation Trust	222	197	113 ●	100 ●	18 ▲	136	99 ●	10	54	33	3	0
Taunton and Somerset NHS Foundation Trust	209	207	101 ●	77 ■	99 ●	117	80 ●	16	50	30	3	2
University Hospitals Bristol NHS Foundation Trust	188	157	120 ●	99 ●	98 ●	94	99 ●	12	65	21	2	0
Weston Area Health NHS Trust	104	100	104 ●	90 ●	89 ●	64	88 ●	14	52	30	3	2
Yeovil District Hospital NHS Foundation Trust	108	114	95 ●	88 ●	100 ●	61	59 ■	0	52	34	5	8
<b>Wessex</b>	<b>1,525</b>	<b>1,541</b>	<b>99 ●</b>	<b>95 ●</b>	<b>70 ■</b>	<b>975</b>	<b>87 ●</b>	<b>10</b>	<b>59</b>	<b>22</b>	<b>3</b>	<b>6</b>
Dorset County Hospital NHS Foundation Trust	133	133	100 ●	80 ■	100 ●	83	88 ●	14	53	30	2	0
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	116	204	57 ■	90 ●	100 ●	77	10 ▲	4	39	10	3	44
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	139	119	117 ●	94 ●	100 ●	87	92 ●	10	60	24	2	3
Isle of Wight NHS Trust	104	82	127 ●	96 ●	89 ●	63	83 ●	16	49	22	0	13
Poole Hospital NHS Foundation Trust	164	170	96 ●	99 ●	99 ●	103	100 ●	12	57	29	2	0
Portsmouth Hospitals NHS Trust	350	336	104 ●	98 ●	49 ▲	209	91 ●	7	67	17	2	7
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	238	217	110 ●	95 ●	1 ▲	150	95 ●	7	65	27	1	0
University Hospital Southampton NHS Foundation Trust	276	280	99 ●	100 ●	88 ●	196	97 ●	12	60	21	5	2
<b>South East Coast</b>	<b>2,201</b>	<b>2,625</b>	<b>84 ●</b>	<b>87 ●</b>	<b>87 ●</b>	<b>1,413</b>	<b>87 ●</b>	<b>12</b>	<b>58</b>	<b>24</b>	<b>3</b>	<b>4</b>
Ashford and St Peter's Hospitals NHS Foundation Trust	154	177	87 ●	92 ●	100 ●	107	78 ■	6	69	25	0	0
Brighton and Sussex University Hospitals NHS Trust	182	205	89 ●	79 ■	100 ●	54	76 ■	28	31	28	7	6
Dartford and Gravesham NHS Trust	123	158	78 ■	74 ■	97 ●	88	99 ●	11	50	33	6	0
East Kent Hospitals University NHS Foundation Trust	437	433	101 ●	81 ●	71 ■	236	83 ●	12	57	29	2	0
East Sussex Healthcare NHS Trust	250	283	88 ●	82 ●	100 ●	140	76 ■	15	60	21	2	1
Frimley Health NHS Foundation Trust - Frimley Park Hospital	133	240	55 ■	96 ●	44 ▲	128	95 ●	1	68	29	2	0
Maidstone and Tunbridge Wells NHS Trust	253	267	95 ●	93 ●	73 ■	184	83 ●	11	43	27	2	17
Medway NHS Foundation Trust	56	191	29 ▲	91 ●	98 ●	54	94 ●	22	48	22	6	2
Royal Surrey County Hospital NHS Foundation Trust	140	158	89 ●	89 ●	100 ●	91	76 ■	10	62	14	0	14
Surrey and Sussex Healthcare NHS Trust	155	194	80 ■	88 ●	99 ●	104	99 ●	8	75	15	2	0
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	171	164	104 ●	98 ●	100 ●	120	99 ●	8	62	25	6	0
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	147	155	95 ●	97 ●	100 ●	107	99 ●	24	55	16	5	0

\* For the purposes of the Audit, the following recorded tumour stages are considered to be missing data: Tx, T9, Nx, N9, Mx, M9  
† New data item. May not have been collected by Trust/MDT prior to being informed was to be included  
▲ Too few cases to report

Table 7.2

**Management of all patients reported to the Audit according to Trust/hospital site**

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

Diagnosing Network/Trust Name	Number of patients reported to the Audit	Seen by clinical nurse specialist (%)	Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
<b>Overall</b>	<b>30,663</b>	<b>93</b>	<b>63</b>	<b>4</b>	<b>15</b>	<b>17</b>
<b>Northern England</b>	<b>1,864</b>	<b>94</b>	<b>62</b>	<b>6</b>	<b>19</b>	<b>13</b>
City Hospitals Sunderland NHS Foundation Trust	178	83	51	12	22	15
County Durham and Darlington NHS Foundation Trust	272	100	60	6	24	10
Gateshead Health NHS Foundation Trust	154	93	60	6	8	26
North Cumbria University Hospitals NHS Trust	190	89	56	5	6	33
North Tees and Hartlepool NHS Foundation Trust	227	92	71	5	16	7
Northumbria Healthcare NHS Foundation Trust	287	96	69	5	22	5
South Tees Hospitals NHS Foundation Trust	233	93	63	6	13	18
South Tyneside NHS Foundation Trust	99	100	63	8	21	8
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	223	99	63	3	31	3
<b>Greater Manchester, Lancashire and South Cumbria</b>	<b>2,740</b>	<b>95</b>	<b>60</b>	<b>5</b>	<b>15</b>	<b>20</b>
Blackpool Teaching Hospitals NHS Foundation Trust	237	92	45	7	8	41
Bolton NHS Foundation Trust	199	91	67	6	16	11
Central Manchester University Hospitals NHS Foundation Trust	171	93	75	9	9	6
East Cheshire NHS Trust	149	95	67	5	17	11
East Lancashire Hospitals NHS Trust	202	96	60	3	15	22
Lancashire Teaching Hospitals NHS Foundation Trust	211	100	56	4	24	17
Mid Cheshire Hospitals NHS Foundation Trust	196	97	59	3	9	29
Pennine Acute Hospitals NHS Trust	375	100	55	5	15	25
Salford Royal NHS Foundation Trust	123	100	65	0	20	15
Stockport NHS Foundation Trust	191	98	57	2	23	18
Tameside Hospital NHS Foundation Trust	128	93	62	6	18	14
University Hospital of South Manchester NHS Foundation Trust	132	95	62	8	23	6
University Hospitals of Morecambe Bay NHS Foundation Trust	266	71	65	7	6	23
Wrightington, Wigan and Leigh NHS Foundation Trust	147	96	54	6	13	27
<b>Yorkshire and the Humber</b>	<b>3,158</b>	<b>83</b>	<b>63</b>	<b>5</b>	<b>16</b>	<b>16</b>
Airedale NHS Foundation Trust	108	81	51	3	24	22
Barnsley Hospital NHS Foundation Trust	95	98	64	5	16	15
Bradford Teaching Hospitals NHS Foundation Trust	174	3	72	7	2	19
Calderdale and Huddersfield NHS Foundation Trust	243	80	64	7	5	25
Chesterfield Royal Hospital NHS Foundation Trust	189	95	66	3	24	7
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	283	99	64	2	11	24
Harrogate and District NHS Foundation Trust	154	92	70	9	15	6
Hull and East Yorkshire Hospitals NHS Trust	340	91	63	6	16	16
Leeds Teaching Hospitals NHS Trust	336	65	61	6	15	18
Mid Yorkshire Hospitals NHS Trust	234	88	59	2	22	17
Northern Lincolnshire and Goole NHS Foundation Trust	245	95	66	4	13	16
Sheffield Teaching Hospitals NHS Foundation Trust	301	82	55	10	26	9
The Rotherham NHS Foundation Trust	157	97	63	6	21	10
York Teaching Hospital NHS Foundation Trust - The York Hospital	272	98	68	1	17	14
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	10	83	40	0	0	60
<b>Cheshire and Merseyside</b>	<b>1,309</b>	<b>99</b>	<b>57</b>	<b>4</b>	<b>13</b>	<b>26</b>
Aintree University Hospital NHS Foundation Trust	245	99	57	4	13	26
Countess of Chester Hospital NHS Foundation Trust	139	100	69	1	13	17
Royal Liverpool and Broadgreen University Hospitals NHS Trust	201	100	39	4	16	40
Southport and Ormskirk Hospital NHS Trust	141	100	67	4	2	26
St Helens and Knowsley Hospitals NHS Trust	196	99	61	7	11	21
Warrington and Halton Hospitals NHS Foundation Trust	181	99	53	3	17	27
Wirral University Teaching Hospital NHS Foundation Trust	205	97	60	5	17	19

Diagnosing Network/Trust Name	Number of patients reported to the Audit	Seen by clinical nurse specialist (%)	Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
<b>Wales</b>	<b>2,018</b>	<b>100</b>	<b>66</b>	<b>3</b>	<b>9</b>	<b>23</b>
Bronglais MDT	35	100	77	0	0	23
Cardiff MDT	247	100	61	4	11	25
Nevill Hall Hospital MDT	131	100	69	1	3	27
Prince Charles Hospital MDT	117	100	65	3	11	21
Princess of Wales MDT	159	100	74	4	10	13
Royal Glamorgan Hospital MDT	124	100	57	1	15	27
Royal Gwent Hospital MDT	239	100	69	3	10	18
Swansea MDT	200	100	62	4	6	28
West Wales General & Prince Phillip MDT	168	100	64	3	12	21
Withybush General MDT	86	100	62	1	9	28
Ysbwyty Glan Clwydd MDT	166	100	70	4	9	17
Ysbwyty Gwynedd MDT	191	100	60	2	6	32
Ysbwyty Maelor MDT	155	100	74	3	9	14
<b>West Midlands</b>	<b>3,158</b>	<b>95</b>	<b>65</b>	<b>4</b>	<b>17</b>	<b>15</b>
George Eliot Hospital NHS Trust	90	93	73	1	18	8
Heart of England NHS Foundation Trust	408	99	65	5	25	5
Sandwell and West Birmingham Hospitals NHS Trust	223	99	59	3	26	13
Shrewsbury and Telford Hospital NHS Trust	325	100	65	5	15	15
South Warwickshire NHS Foundation Trust	160	87	68	4	20	8
The Dudley Group NHS Foundation Trust	189	96	56	3	22	20
The Royal Wolverhampton NHS Trust	243	93	48	5	17	30
University Hospitals Birmingham NHS Foundation Trust	165	94	75	0	10	15
University Hospitals Coventry and Warwickshire NHS Trust	238	99	60	3	31	7
University Hospitals of North Midlands NHS Trust – County Hospital	136	94	54	5	13	28
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	301	100	78	0	6	15
Walsall Healthcare NHS Trust	130	95	65	2	13	20
Worcestershire Acute Hospitals NHS Trust	382	91	66	7	10	16
Wye Valley NHS Trust	162	95	72	3	10	15
<b>East Midlands</b>	<b>2,151</b>	<b>91</b>	<b>64</b>	<b>5</b>	<b>20</b>	<b>11</b>
Burton Hospitals NHS Foundation Trust	137	95	69	2	26	2
Derby Hospitals NHS Foundation Trust	286	80	52	6	22	19
Kettering General Hospital NHS Foundation Trust	200	82	75	5	11	9
Northampton General Hospital NHS Trust	172	98	73	4	13	10
Nottingham University Hospitals NHS Trust	266	67	63	5	24	8
Sherwood Forest Hospitals NHS Foundation Trust	184	100	59	1	13	27
United Lincolnshire Hospitals NHS Trust	298	99	73	2	19	6
University Hospitals of Leicester NHS Trust	463	98	59	6	23	11
<b>East of England</b>	<b>3,122</b>	<b>90</b>	<b>64</b>	<b>3</b>	<b>12</b>	<b>20</b>
Basildon and Thurrock University Hospitals NHS Foundation Trust	182	100	70	6	19	4
Bedford Hospital NHS Trust	118	100	59	3	19	19
Cambridge University Hospitals NHS Foundation Trust	244	100	72	2	12	13
Colchester Hospital University NHS Foundation Trust	259	100	69	3	2	26
East and North Hertfordshire NHS Trust	212	82	54	1	0	44
Hinchingbrooke Health Care NHS Trust	114	99	69	4	20	6
Ipswich Hospital NHS Trust	250	94	58	3	14	25
James Paget University Hospitals NHS Foundation Trust	129	83	61	2	19	17
Luton and Dunstable University Hospital NHS Foundation Trust	131	100	48	1	16	35
Mid Essex Hospital Services NHS Trust	131	97	66	4	11	19
Norfolk and Norwich University Hospitals NHS Foundation Trust	445	72	60	7	8	25
Peterborough and Stamford Hospitals NHS Foundation Trust	206	94	74	0	7	18
Southend University Hospital NHS Foundation Trust	164	94	63	5	24	8
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	150	73	59	2	17	22
West Hertfordshire Hospitals NHS Trust	226	100	70	3	15	12
West Suffolk NHS Foundation Trust	143	99	68	3	17	13

Diagnosing Network/Trust Name	Number of patients reported to the Audit	Seen by clinical nurse specialist (%)	Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
<b>Thames Valley</b>	<b>1,443</b>	<b>94</b>	<b>66</b>	<b>4</b>	<b>14</b>	<b>16</b>
Buckinghamshire Healthcare NHS Trust	237	93	76	1	15	8
Great Western Hospitals NHS Foundation Trust	214	90	60	2	6	32
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	215	88	65	5	13	17
Milton Keynes Hospital NHS Foundation Trust	105	100	72	3	0	25
Oxford University Hospitals NHS Trust	403	77	59	6	17	18
Royal Berkshire NHS Foundation Trust	254	100	69	7	21	3
<b>London Cancer Alliance</b>	<b>1,947</b>	<b>90</b>	<b>67</b>	<b>3</b>	<b>16</b>	<b>15</b>
Chelsea and Westminster Hospital NHS Foundation Trust	63	92	52	6	19	22
Croydon Health Services NHS Trust	119	3	65	1	24	10
Ealing Hospital NHS Trust	57	92	81	4	12	4
Epsom and St Helier University Hospitals NHS Trust	195	100	46	1	23	30
Guy's and St Thomas' NHS Foundation Trust	104	100	87	0	0	13
Imperial College Healthcare NHS Trust	220	100	72	2	9	16
King's College Hospital NHS Foundation Trust	285	99	59	5	23	13
Kingston Hospital NHS Foundation Trust	138	86	66	7	16	12
Lewisham and Greenwich NHS Trust	210	100	55	3	27	15
North West London Hospitals NHS Trust	215	100	75	3	5	17
St George's Healthcare NHS Trust	151	99	90	0	5	5
The Hillingdon Hospitals NHS Foundation Trust	89	99	73	6	18	3
West Middlesex University Hospital NHS Trust	79	100	57	1	14	28
<b>London Cancer</b>	<b>1,249</b>	<b>95</b>	<b>61</b>	<b>3</b>	<b>18</b>	<b>18</b>
Barking, Havering and Redbridge University Hospitals NHS Trust	270	82	54	3	20	23
Barts Health NHS Trust	201	97	67	2	10	20
Homerton University Hospital NHS Foundation Trust	58	100	74	2	17	7
North Middlesex University Hospital NHS Trust	84	100	55	0	12	33
Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital	199	97	65	5	25	6
Royal Free London NHS Foundation Trust - Royal Free Hospital	98	95	61	0	26	13
The Princess Alexandra Hospital NHS Trust	143	90	57	3	6	34
The Whittington Hospital NHS Trust	77	98	65	4	21	10
University College London Hospitals NHS Foundation Trust	117	100	64	4	26	6
<b>South West</b>	<b>2,777</b>	<b>96</b>	<b>62</b>	<b>5</b>	<b>19</b>	<b>14</b>
Gloucestershire Hospitals NHS Foundation Trust	317	100	67	8	18	8
North Bristol NHS Trust	250	99	52	3	28	17
Northern Devon Healthcare NHS Trust	149	100	70	4	15	11
Plymouth Hospitals NHS Trust	286	90	63	5	20	12
Royal Cornwall Hospitals NHS Trust	302	96	65	5	14	17
Royal Devon and Exeter NHS Foundation Trust	288	99	61	6	21	12
Royal United Hospitals Bath NHS Foundation Trust	248	91	69	4	16	11
Salisbury NHS Foundation Trust	105	92	60	2	25	13
South Devon Healthcare NHS Foundation Trust	222	99	62	3	16	19
Taunton and Somerset NHS Foundation Trust	209	100	55	7	22	15
University Hospitals Bristol NHS Foundation Trust	188	98	60	7	14	19
Weston Area Health NHS Trust	104	99	63	6	12	19
Yeovil District Hospital NHS Foundation Trust	108	98	58	6	19	16
<b>Wessex</b>	<b>1,525</b>	<b>96</b>	<b>64</b>	<b>4</b>	<b>17</b>	<b>15</b>
Dorset County Hospital NHS Foundation Trust	133	100	61	2	23	14
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	116	96	66	5	9	20
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	139	99	63	8	17	12
Isle of Wight NHS Trust	104	93	64	1	18	16
Poole Hospital NHS Foundation Trust	164	90	66	7	18	10
Portsmouth Hospitals NHS Trust	350	94	60	6	22	12
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	238	100	63	1	11	25
University Hospital Southampton NHS Foundation Trust	276	96	70	2	14	14

Diagnosing Network/Trust Name	Number of patients reported to the Audit	Seen by clinical nurse specialist (%)	Major Resection Treatment Pathway (%)	Too Little Treatment Pathway (%)	Too Much/ Too Frail Treatment Pathways (%)	Not Known/ Other Treatment Pathway (%)
<b>South East Coast</b>	<b>2,201</b>	<b>89</b>	<b>65</b>	<b>5</b>	<b>11</b>	<b>19</b>
Ashford and St Peter's Hospitals NHS Foundation Trust	154	92	70	5	16	10
Brighton and Sussex University Hospitals NHS Trust	182	96	47	7	7	40
Dartford and Gravesham NHS Trust	123	98	73	5	13	9
East Kent Hospitals University NHS Foundation Trust	437	100	56	4	2	38
East Sussex Healthcare NHS Trust	250	100	50	4	24	23
Frimley Health NHS Foundation Trust - Frimley Park Hospital	133	100	95	4	0	1
Maidstone and Tunbridge Wells NHS Trust	253	89	73	3	13	10
Medway NHS Foundation Trust	56	100	95	0	4	2
Royal Surrey County Hospital NHS Foundation Trust	140	100	66	12	8	14
Surrey and Sussex Healthcare NHS Trust	155	91	67	6	14	14
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	171	45	70	5	18	6
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	147	77	67	3	20	10

Table 7.3

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

Diagnosing Network/Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Laparoscopic surgery attempted (%)	Length of hospital stay > five days (%)
<b>Overall</b>	<b>19,445</b>	<b>10</b>	<b>16</b>	<b>17</b>	<b>57</b>	<b>69</b>
<b>Northern England</b>	<b>1,174</b>	<b>9</b>	<b>16</b>	<b>17</b>	<b>74</b>	<b>61</b>
City Hospitals Sunderland NHS Foundation Trust	96	10	18	17	89	76
County Durham and Darlington NHS Foundation Trust	164	7	18	14	54	60
Gateshead Health NHS Foundation Trust	83	3	14	16	89	58
North Cumbria University Hospitals NHS Trust	115	21	17	15	75	55
North Tees and Hartlepool NHS Foundation Trust	142	11	14	19	83	55
Northumbria Healthcare NHS Foundation Trust	190	14	14	16	51	66
South Tees Hospitals NHS Foundation Trust	165	8	17	20	87	60
South Tyneside NHS Foundation Trust	63	6	17	14	76	48
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	156	8	18	21	81	61
<b>Greater Manchester, Lancashire and South Cumbria</b>	<b>1,642</b>	<b>8</b>	<b>14</b>	<b>15</b>	<b>50</b>	<b>76</b>
Blackpool Teaching Hospitals NHS Foundation Trust	90	9	13	12	64	78
Bolton NHS Foundation Trust	128	3	16	11	31	73
Central Manchester University Hospitals NHS Foundation Trust	120	7	13	16	40	76
East Cheshire NHS Trust	93	11	29	18	49	74
East Lancashire Hospitals NHS Trust	133	17	14	16	24	82
Lancashire Teaching Hospitals NHS Foundation Trust	121	11	4	13	53	87
Mid Cheshire Hospitals NHS Foundation Trust	101	4	14	16	73	75
Pennine Acute Hospitals NHS Trust	199	6	16	20	68	73
Salford Royal NHS Foundation Trust	83	5	12	14	67	86
Stockport NHS Foundation Trust	112	9	19	15	29	88
Tameside Hospital NHS Foundation Trust	78	1	8	14	65	73
The Christie NHS Foundation Trust	63	13	0	14	46	77
University Hospital of South Manchester NHS Foundation Trust	89	7	10	19	58	78
University Hospitals of Morecambe Bay NHS Foundation Trust	158	4	19	13	45	75
Wrightington, Wigan and Leigh NHS Foundation Trust	74	18	20	17	45	42
<b>Yorkshire and the Humber</b>	<b>1,998</b>	<b>11</b>	<b>13</b>	<b>18</b>	<b>52</b>	<b>74</b>
Airedale NHS Foundation Trust	56	9	9	28	82	69
Barnsley Hospital NHS Foundation Trust	59	6	14	18	10	83
Bradford Teaching Hospitals NHS Foundation Trust	128	17	10	19	83	73
Calderdale and Huddersfield NHS Foundation Trust	133	11	6	17	33	77
Chesterfield Royal Hospital NHS Foundation Trust	125	10	8	16	23	82
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	178	6	11	15	87	54
Harrogate and District NHS Foundation Trust	80	12	11	17	91	58
Hull and East Yorkshire Hospitals NHS Trust	198	16	24	15	24	89
Leeds Teaching Hospitals NHS Trust	237	11	13	19	74	76
Mid Yorkshire Hospitals NHS Trust	153	10	16	16	54	80
Northern Lincolnshire and Goole NHS Foundation Trust	176	11	14	16	44	83
Sheffield Teaching Hospitals NHS Foundation Trust	171	15	10	29	34	72
The Rotherham NHS Foundation Trust	97	13	12	16	59	66
York Teaching Hospital NHS Foundation Trust - The York Hospital	197	5	14	21	37	70
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	▲	▲	▲	▲	▲	▲
<b>Cheshire and Merseyside</b>	<b>753</b>	<b>12</b>	<b>17</b>	<b>17</b>	<b>49</b>	<b>68</b>
Aintree University Hospital NHS Foundation Trust	117	7	12	17	38	78
Countess of Chester Hospital NHS Foundation Trust	104	15	20	16	45	46
Royal Liverpool and Broadgreen University Hospitals NHS Trust	76	6	12	18	36	90
Southport and Ormskirk Hospital NHS Trust	95	21	12	13	48	75
St Helens and Knowsley Hospitals NHS Trust	136	17	22	18	57	67
Warrington and Halton Hospitals NHS Foundation Trust	96	7	25	17	50	72
Wirral University Teaching Hospital NHS Foundation Trust	129	9	17	20	63	62

Diagnosing Network/Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Laparoscopic surgery attempted (%)	Length of hospital stay > five days (%)
<b>Wales</b>	<b>1,322</b>	<b>14</b>	<b>19</b>	<b>15</b>	<b>45</b>	<b>No PEDW</b>
Bronglais MDT	28	13	29	16	64	No PEDW
Cardiff MDT	151	13	20	14	64	No PEDW
Nevill Hall Hospital MDT	91	13	18	17	44	No PEDW
Prince Charles Hospital MDT	76	8	9	12	83	No PEDW
Princess of Wales MDT	116	29	2	17	21	No PEDW
Royal Glamorgan Hospital MDT	71	14	11	14	27	No PEDW
Royal Gwent Hospital MDT	164	16	25	15	35	No PEDW
Swansea MDT	123	14	30	17	38	No PEDW
West Wales General & Prince Phillip MDT	107	9	18	15	58	No PEDW
Withybush General MDT	53	27	17	15	62	No PEDW
Ysbwyty Glan Clwydd MDT	117	24	31	15	38	No PEDW
Ysbwyty Gwynedd MDT	113	13	13	14	54	No PEDW
Ysbwyty Maelor MDT	112	5	15	20	29	No PEDW
<b>West Midlands</b>	<b>2,029</b>	<b>12</b>	<b>19</b>	<b>18</b>	<b>51</b>	<b>70</b>
George Eliot Hospital NHS Trust	66	20	21	19	48	70
Heart of England NHS Foundation Trust	264	3	17	20	63	68
Sandwell and West Birmingham Hospitals NHS Trust	131	9	28	22	21	76
Shrewsbury and Telford Hospital NHS Trust	209	10	11	17	43	64
South Warwickshire NHS Foundation Trust	109	13	21	14	61	77
The Dudley Group NHS Foundation Trust	107	25	10	19	38	60
The Royal Wolverhampton NHS Trust	114	15	23	19	28	84
University Hospitals Birmingham NHS Foundation Trust	123	13	11	20	71	59
University Hospitals Coventry and Warwickshire NHS Trust	145	16	22	22	39	79
University Hospitals of North Midlands NHS Trust – County Hospital	73	11	19	15	56	68
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	236	34	15	15	72	66
Walsall Healthcare NHS Trust	85	34	46	16	36	72
Worcestershire Acute Hospitals NHS Trust	250	8	20	21	66	69
Wye Valley NHS Trust	117	11	20	14	23	76
<b>East Midlands</b>	<b>1,372</b>	<b>12</b>	<b>17</b>	<b>16</b>	<b>46</b>	<b>69</b>
Burton Hospitals NHS Foundation Trust	94	16	11	19	68	53
Derby Hospitals NHS Foundation Trust	148	19	23	17	22	67
Kettering General Hospital NHS Foundation Trust	136	14	19	17	49	64
Northampton General Hospital NHS Trust	135	8	29	16	51	70
Nottingham University Hospitals NHS Trust	256	6	16	14	58	66
Sherwood Forest Hospitals NHS Foundation Trust	109	17	10	16	55	69
United Lincolnshire Hospitals NHS Trust	214	15	15	17	34	79
University Hospitals of Leicester NHS Trust	280	13	14	13	41	74
<b>East of England</b>	<b>1,994</b>	<b>12</b>	<b>16</b>	<b>16</b>	<b>57</b>	<b>70</b>
Basildon and Thurrock University Hospitals NHS Foundation Trust	125	4	13	16	69	75
Bedford Hospital NHS Trust	68	17	15	15	50	73
Cambridge University Hospitals NHS Foundation Trust	167	8	10	17	62	63
Colchester Hospital University NHS Foundation Trust	133	13	12	15	86	59
East and North Hertfordshire NHS Trust	115	75	15	20	61	79
Hinchingbrooke Health Care NHS Trust	76	13	5	17	99	60
Ipswich Hospital NHS Trust	174	13	15	12	25	69
James Paget University Hospitals NHS Foundation Trust	88	3	36	15	63	76
Luton and Dunstable University Hospital NHS Foundation Trust	62	8	21	19	47	85
Mid Essex Hospital Services NHS Trust	102	9	14	18	75	68
Norfolk and Norwich University Hospitals NHS Foundation Trust	255	18	13	16	34	77
Peterborough and Stamford Hospitals NHS Foundation Trust	152	12	20	16	55	63
Southend University Hospital NHS Foundation Trust	108	13	21	22	77	69
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	87	31	16	15	37	80
West Hertfordshire Hospitals NHS Trust	154	12	18	15	71	74
West Suffolk NHS Foundation Trust	104	7	28	18	35	64

Diagnosing Network/Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Laparoscopic surgery attempted (%)	Length of hospital stay > five days (%)
<b>Thames Valley</b>	<b>949</b>	<b>12</b>	<b>13</b>	<b>18</b>	<b>72</b>	<b>64</b>
Buckinghamshire Healthcare NHS Trust	178	13	7	17	71	53
Great Western Hospitals NHS Foundation Trust	128	6	11	19	48	73
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	138	10	13	16	64	69
Milton Keynes Hospital NHS Foundation Trust	74	9	30	17	72	71
Oxford University Hospitals NHS Trust	243	22	12	20	84	63
Royal Berkshire NHS Foundation Trust	179	4	14	17	80	59
<b>London Cancer Alliance</b>	<b>1,336</b>	<b>10</b>	<b>14</b>	<b>18</b>	<b>57</b>	<b>73</b>
Chelsea and Westminster Hospital NHS Foundation Trust	28	4	4	24	46	92
Croydon Health Services NHS Trust	77	11	13	15	52	68
Ealing Hospital NHS Trust	44	14	15	17	50	86
Epsom and St Helier University Hospitals NHS Trust	85	2	12	14	9	68
Guy's and St Thomas' NHS Foundation Trust	124	14	9	17	53	83
Imperial College Healthcare NHS Trust	156	9	26	21	71	71
King's College Hospital NHS Foundation Trust	173	10	14	14	66	68
Kingston Hospital NHS Foundation Trust	94	10	10	16	51	70
Lewisham and Greenwich NHS Trust	104	6	13	19	20	79
North West London Hospitals NHS Trust	164	10	12	28	81	68
St George's Healthcare NHS Trust	130	13	17	20	55	66
The Hillingdon Hospitals NHS Foundation Trust	64	13	14	15	72	81
The Royal Marsden NHS Foundation Trust	48	9	6	17	40	100
West Middlesex University Hospital NHS Trust	44	12	9	18	82	42
<b>London Cancer</b>	<b>760</b>	<b>10</b>	<b>22</b>	<b>17</b>	<b>64</b>	<b>76</b>
Barking, Havering and Redbridge University Hospitals NHS Trust	146	5	43	15	66	76
Barts Health NHS Trust	134	4	13	19	87	76
Homerton University Hospital NHS Foundation Trust	41	23	22	16	46	87
North Middlesex University Hospital NHS Trust	41	3	20	12	85	89
Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital	129	9	15	15	72	76
Royal Free London NHS Foundation Trust - Royal Free Hospital	62	16	26	17	52	65
The Princess Alexandra Hospital NHS Trust	78	12	12	19	36	64
The Whittington Hospital NHS Trust	49	13	35	17	65	76
University College London Hospitals NHS Foundation Trust	80	15	14	19	40	87
<b>South West</b>	<b>1,727</b>	<b>6</b>	<b>15</b>	<b>18</b>	<b>64</b>	<b>60</b>
Gloucestershire Hospitals NHS Foundation Trust	213	5	17	23	49	67
North Bristol NHS Trust	147	10	18	21	87	48
Northern Devon Healthcare NHS Trust	101	3	16	18	76	53
Plymouth Hospitals NHS Trust	180	2	17	18	42	75
Royal Cornwall Hospitals NHS Trust	195	11	13	18	76	54
Royal Devon and Exeter NHS Foundation Trust	180	6	17	14	58	66
Royal United Hospitals Bath NHS Foundation Trust	172	3	19	19	72	64
Salisbury NHS Foundation Trust	64	5	5	16	89	44
South Devon Healthcare NHS Foundation Trust	136	10	16	14	58	60
Taunton and Somerset NHS Foundation Trust	117	4	9	16	78	39
University Hospitals Bristol NHS Foundation Trust	94	5	12	15	46	63
Weston Area Health NHS Trust	64	12	16	15	30	73
Yeovil District Hospital NHS Foundation Trust	61	5	23	21	77	76
<b>Wessex</b>	<b>975</b>	<b>7</b>	<b>14</b>	<b>18</b>	<b>68</b>	<b>60</b>
Dorset County Hospital NHS Foundation Trust	83	8	19	19	71	65
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	77	19	14	17	58	73
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	87	11	15	15	67	59
Isle of Wight NHS Trust	63	8	13	18	35	65
Poole Hospital NHS Foundation Trust	103	9	14	21	76	49
Portsmouth Hospitals NHS Trust	209	9	12	20	88	62
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	150	4	7	16	61	54
University Hospital Southampton NHS Foundation Trust	196	4	18	18	62	64

Diagnosing Network/Trust Name	No. patients having major surgery	Patients with distant metastases at time of surgery (%)	Major surgery carried out as urgent or emergency (%)	Median number of lymph nodes excised	Laparoscopic surgery attempted (%)	Length of hospital stay > five days (%)
<b>South East Coast</b>	<b>1,413</b>	<b>10</b>	<b>16</b>	<b>17</b>	<b>64</b>	<b>64</b>
Ashford and St Peter's Hospitals NHS Foundation Trust	107	11	18	14	58	65
Brighton and Sussex University Hospitals NHS Trust	54	14	7	17	72	56
Dartford and Gravesham NHS Trust	88	9	23	18	55	81
East Kent Hospitals University NHS Foundation Trust	236	14	15	16	89	43
East Sussex Healthcare NHS Trust	140	6	14	18	40	70
Frimley Health NHS Foundation Trust - Frimley Park Hospital	128	14	21	21	78	56
Maidstone and Tunbridge Wells NHS Trust	184	10	16	17	51	76
Medway NHS Foundation Trust	54	8	13	16	65	63
Royal Surrey County Hospital NHS Foundation Trust	91	11	26	21	89	23
Surrey and Sussex Healthcare NHS Trust	104	4	8	15	49	82
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	120	8	9	15	56	67
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	107	7	21	15	74	72

▲ Too few cases to report

**Table 7.4**  
**Outcomes of patients who had major surgery according to Trust/hospital site (excludes those recorded as <18 years or ICD-10 code C18.1**  
**(Malignant neoplasm of appendix)**

Network/Trust Name	No. patients having major surgery	Observed 90 day mortality (%)	Adjusted 90 day mortality (%)	No. patients having major surgery linked to HES	Observed 90 day unplanned readmission rate (%)	Adjusted 90 day unplanned readmission rate (%)	No. patients having major resection 1 Apr 11- 31 Mar12	Observed two year mortality (%)	Adjusted two year mortality (%)
<b>Overall - total data</b>	<b>19,304</b>	<b>3.9</b>	<b>3.9</b>	<b>16,270</b>	<b>19.9</b>	<b>19.9</b>	<b>19,087</b>	<b>22.0</b>	<b>22.0</b>
<b>Northern England</b>	<b>1,052</b>	<b>3.5</b>	<b>3.2</b>	<b>984</b>	<b>19.6</b>	<b>18.9</b>	<b>1,330</b>	<b>19.1</b>	<b>19.6</b>
City Hospitals Sunderland NHS Foundation Trust	94	5.3	5.8	88	19.3	17.7	95	21.0	20.4
County Durham and Darlington NHS Foundation Trust	161	5.0	5.7	152	26.3	25.4	206	25.3	30.0
Gateshead Health NHS Foundation Trust	81	1.2	1.1	77	19.5	18.9	107	10.8	12.2
North Cumbria University Hospitals NHS Trust	115	4.3	†	112	23.2	†	113	19.8	19.4
North Tees and Hartlepool NHS Foundation Trust	142	6.3	4.7	133	23.3	22.3	141	10.4	10.4
Northumbria Healthcare NHS Foundation Trust	190	3.2	2.9	179	15.6	15.0	235	18.9	24.0
South Tees Hospitals NHS Foundation Trust	165	1.2	1.0	154	17.5	17.4	180	23.3	20.3
South Tyneside NHS Foundation Trust	63	6.5	4.6	56	16.1	15.9	79	16.9	12.9
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	156	1.3	1.1	145	17.9	17.6	174	20.7	19.6
<b>Greater Manchester, Lancashire and South Cumbria</b>	<b>1,631</b>	<b>3.4</b>	<b>3.8</b>	<b>1,488</b>	<b>18.1</b>	<b>17.8</b>	<b>1,478</b>	<b>22.9</b>	<b>22.0</b>
Blackpool Teaching Hospitals NHS Foundation Trust	89	3.4	5.3	85	16.5	17.2	133	22.0	27.0
Bolton NHS Foundation Trust	127	7.1	7.9	121	20.7	20.5	105	31.6	33.7
Central Manchester University Hospitals NHS Foundation Trust	119	1.7	1.9	108	19.4	18.6	103	25.2	23.1
East Cheshire NHS Trust	92	3.3	2.9	77	13.0	13.5	69	22.2	27.7
East Lancashire Hospitals NHS Trust	133	3.8	4.5	122	18.0	17.4	154	25.2	18.7
Lancashire Teaching Hospitals NHS Foundation Trust	121	3.3	4.5	109	14.7	13.9	140	20.1	†
Mid Cheshire Hospitals NHS Foundation Trust	100	1.0	1.5	87	19.5	19.2	66	18.2	29.6
Pennine Acute Hospitals NHS Trust	198	4.0	5.0	186	18.8	18.2	199	26.0	22.0
Salford Royal NHS Foundation Trust	82	1.2	1.2	76	15.8	15.4	81	13.3	16.3
Stockport NHS Foundation Trust	110	5.5	4.7	105	23.8	23.2	109	14.7	13.9
Tameside Hospital NHS Foundation Trust	78	5.1	6.0	73	19.2	18.6	69	39.5	35.9
The Christie NHS Foundation Trust	62	0.0	0.0	49	18.4	16.3	51	19.1	19.5
University Hospital of South Manchester NHS Foundation Trust	89	1.1	0.9	81	25.9	25.7	92	22.4	14.0
University Hospitals of Morecambe Bay NHS Foundation Trust	158	3.8	3.8	140	16.4	16.8	148	20.9	24.7
Wrightington, Wigan and Leigh NHS Foundation Trust	73	4.1	3.4	69	8.7	8.7	99	20.2	19.1
<b>Yorkshire and the Humber</b>	<b>1,851</b>	<b>3.8</b>	<b>4.2</b>	<b>1,728</b>	<b>20.4</b>	<b>20.1</b>	<b>2,167</b>	<b>22.7</b>	<b>23.9</b>
Airedale NHS Foundation Trust	56	3.6	4.1	52	19.2	18.5	75	9.8	10.3
Barnsley Hospital NHS Foundation Trust	58	0.0	0.0	57	22.8	24.6	82	26.4	27.2
Bradford Teaching Hospitals NHS Foundation Trust	127	3.9	†	117	20.5	†	103	30.0	30.4
Calderdale and Huddersfield NHS Foundation Trust	131	3.8	4.5	122	13.1	13.5	137	19.7	26.6
Chesterfield Royal Hospital NHS Foundation Trust	125	6.4	7.5	119	23.5	22.9	130	13.1	21.1
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	176	2.8	4.5	167	18.0	18.1	182	22.1	23.6
Harrogate and District NHS Foundation Trust	79	3.8	4.7	78	16.7	16.0	73	18.1	20.2
Hull and East Yorkshire Hospitals NHS Trust	196	4.1	4.2	183	20.8	19.6	199	21.8	19.1
Leeds Teaching Hospitals NHS Trust	235	4.3	3.4	221	17.6	17.1	283	26.9	24.7
Mid Yorkshire Hospitals NHS Trust	151	2.0	2.0	142	30.3	31.1	202	24.8	24.6
Northern Lincolnshire and Goole NHS Foundation Trust	172	7.0	6.1	160	24.4	22.8	140	36.1	28.4
Sheffield Teaching Hospitals NHS Foundation Trust	171	4.1	4.7	152	19.1	18.6	225	19.1	19.8
The Rotherham NHS Foundation Trust	97	3.1	4.0	92	25.0	24.7	84	22.8	29.0
York Teaching Hospital NHS Foundation Trust - The York Hospital	194	2.6	3.0	182	17.0	17.3	178	22.0	30.1
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	▲	▲	▲	▲	▲	▲	74	21.8	26.2
<b>Cheshire and Merseyside</b>	<b>653</b>	<b>3.7</b>	<b>3.5</b>	<b>584</b>	<b>19.3</b>	<b>19.1</b>	<b>784</b>	<b>22.2</b>	<b>23.4</b>
Aintree University Hospital NHS Foundation Trust	116	3.4	3.3	103	21.4	22.0	114	20.1	24.7
Countess of Chester Hospital NHS Foundation Trust	103	1.0	0.8	100	15.0	15.3	100	16.3	18.6
Royal Liverpool and Broadgreen University Hospitals NHS Trust	76	3.9	5.5	53	11.3	11.2	111	31.4	37.3
Southport and Ormskirk Hospital NHS Trust	95	3.2	†	85	12.9	†	89	24.1	18.6
St Helens and Knowsley Hospitals NHS Trust	135	6.7	5.1	129	18.6	17.8	131	20.2	22.6
Warrington and Halton Hospitals NHS Foundation Trust	96	4.2	4.4	89	25.8	23.4	109	22.0	24.8
Wirral University Teaching Hospital NHS Foundation Trust	127	2.4	2.6	110	20.9	21.4	130	22.0	20.5

Network/Trust Name	No. patients having major surgery	Observed 90 day mortality (%)	Adjusted 90 day mortality (%)	No. patients having major surgery linked to HES	Observed 90 day unplanned readmission rate (%)	Adjusted 90 day unplanned readmission rate (%)	No. patients having major resection 1 Apr 11- 31 Mar12	Observed two year mortality (%)	Adjusted two year mortality (%)
<b>Wales</b>	<b>1,313</b>	<b>6.7</b>	<b>4.9</b>	<b>No PEDW</b>	<b>No PEDW</b>	<b>No PEDW</b>	<b>1,244</b>	<b>26.3</b>	<b>23.9</b>
Bronglais MDT	28	7.1	3.5	No PEDW	No PEDW	No PEDW	36	12.1	10.1
Cardiff MDT	148	6.1	5.1	No PEDW	No PEDW	No PEDW	119	17.6	16.5
Nevill Hall Hospital MDT	91	6.6	5.4	No PEDW	No PEDW	No PEDW	80	30.0	25.4
Prince Charles Hospital MDT	76	6.6	7.6	No PEDW	No PEDW	No PEDW	76	22.3	27.5
Princess of Wales MDT	116	6.0	5.1	No PEDW	No PEDW	No PEDW	120	35.2	30.9
Royal Glamorgan Hospital MDT	71	5.6	4.5	No PEDW	No PEDW	No PEDW	72	35.3	23.3
Royal Gwent Hospital MDT	164	7.9	4.9	No PEDW	No PEDW	No PEDW	157	23.3	24.7
Swansea MDT	122	8.2	5.1	No PEDW	No PEDW	No PEDW	132	26.3	24.7
West Wales General & Prince Phillip MDT	106	5.7	4.2	No PEDW	No PEDW	No PEDW	84	26.4	26.3
Withybush General MDT	53	7.5	6.5	No PEDW	No PEDW	No PEDW	49	33.8	27.8
Ysbwyty Glan Clwydd MDT	116	7.8	4.1	No PEDW	No PEDW	No PEDW	98	30.3	20.2
Ysbwyty Gwynedd MDT	110	7.3	5.0	No PEDW	No PEDW	No PEDW	109	33.4	29.4
Ysbwyty Maelor MDT	112	4.5	4.4	No PEDW	No PEDW	No PEDW	112	17.7	19.9
<b>West Midlands</b>	<b>1,780</b>	<b>4.4</b>	<b>4.1</b>	<b>1,610</b>	<b>22.0</b>	<b>21.6</b>	<b>1,981</b>	<b>23.4</b>	<b>21.1</b>
George Eliot Hospital NHS Trust	65	3.1	2.4	58	22.4	20.5	58	19.1	21.4
Heart of England NHS Foundation Trust	260	3.8	4.8	225	24.4	24.4	214	22.1	20.9
Sandwell and West Birmingham Hospitals NHS Trust	129	8.5	5.4	108	28.7	27.6	124	20.7	15.7
Shrewsbury and Telford Hospital NHS Trust	208	3.4	3.6	196	22.4	22.3	233	17.1	19.3
South Warwickshire NHS Foundation Trust	108	3.7	3.3	101	16.8	16.3	97	19.7	17.0
The Dudley Group NHS Foundation Trust	107	3.7	3.7	95	26.3	27.1	119	24.1	18.2
The Royal Wolverhampton NHS Trust	114	1.8	1.4	107	23.4	22.3	142	22.3	18.6
University Hospitals Birmingham NHS Foundation Trust	122	0.0	0.0	113	21.2	20.7	139	22.6	22.1
University Hospitals Coventry and Warwickshire NHS Trust	145	4.1	3.7	140	22.1	20.8	125	23.9	18.6
University Hospitals of North Midlands NHS Trust – County Hospital	73	8.2	5.6	63	22.2	22.1	69	25.1	22.3
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	233	4.7	†	221	28.1	†	203	30.1	27.6
Walsall Healthcare NHS Trust	83	13.3	8.6	75	25.3	23.6	53	31.3	26.5
Worcestershire Acute Hospitals NHS Trust	249	3.6	4.0	228	18.0	18.3	301	28.8	24.6
Wye Valley NHS Trust	117	5.1	4.1	101	15.8	15.9	104	18.4	19.3
<b>East Midlands</b>	<b>1,352</b>	<b>4.1</b>	<b>4.3</b>	<b>1,224</b>	<b>22.1</b>	<b>21.9</b>	<b>1,098</b>	<b>19.5</b>	<b>21.4</b>
Burton Hospitals NHS Foundation Trust	92	4.3	3.3	77	15.6	15.1	104	19.3	16.5
Derby Hospitals NHS Foundation Trust	145	6.9	6.4	129	17.8	17.9	113	6.4	10.4
Kettering General Hospital NHS Foundation Trust	133	3.8	3.8	120	18.3	18.9	121	28.9	40.5
Northampton General Hospital NHS Trust	133	3.0	2.7	122	18.9	18.2	99	17.5	17.5
Nottingham University Hospitals NHS Trust	251	3.2	4.3	227	24.7	25.0	212	20.6	27.2
Sherwood Forest Hospitals NHS Foundation Trust	108	2.8	3.1	102	19.6	20.0	105	20.5	22.9
United Lincolnshire Hospitals NHS Trust	213	7.0	6.9	198	29.8	29.4	56	24.7	22.6
University Hospitals of Leicester NHS Trust	277	2.5	3.0	249	22.1	21.5	288	19.7	18.5
<b>East of England</b>	<b>1,585</b>	<b>3.5</b>	<b>3.5</b>	<b>1,454</b>	<b>19.1</b>	<b>18.9</b>	<b>2,090</b>	<b>23.1</b>	<b>24.4</b>
Basildon and Thurrock University Hospitals NHS Foundation Trust	125	3.2	3.8	106	17.9	18.6	112	20.1	26.0
Bedford Hospital NHS Trust	68	1.5	1.7	66	15.2	14.2	86	15.0	23.8
Cambridge University Hospitals NHS Foundation Trust	167	2.4	2.2	156	19.9	19.3	200	19.7	22.0
Colchester Hospital University NHS Foundation Trust	130	2.3	†	127	24.4	†	175	16.1	18.4
East and North Hertfordshire NHS Trust	115	3.5	†	104	20.2	†	137	20.9	19.8
Hinchingbrooke Health Care NHS Trust	75	1.3	1.4	72	12.5	12.5	42	33.9	34.1
Ipswich Hospital NHS Trust	173	6.9	6.7	162	19.1	19.5	184	27.9	31.5
James Paget University Hospitals NHS Foundation Trust	88	3.4	2.5	82	19.5	20.3	81	40.7	31.5
Luton and Dunstable University Hospital NHS Foundation Trust	62	4.8	†	60	20.0	†	*	*	*
Mid Essex Hospital Services NHS Trust	99	2.0	2.6	90	22.2	21.7	132	26.9	23.5
Norfolk and Norwich University Hospitals NHS Foundation Trust	250	2.8	3.2	240	15.0	15.3	286	19.4	20.3
Peterborough and Stamford Hospitals NHS Foundation Trust	151	4.0	4.1	141	18.4	18.1	134	23.2	25.4
Southend University Hospital NHS Foundation Trust	108	5.6	5.8	98	27.6	27.0	153	26.5	31.4
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	83	2.4	†	78	25.6	†	109	25.4	25.9
West Hertfordshire Hospitals NHS Trust	154	2.6	2.2	144	24.3	22.3	149	23.8	24.2
West Suffolk NHS Foundation Trust	103	5.8	4.4	96	18.8	18.7	110	27.1	24.0

Network/Trust Name	No. patients having major surgery	Observed 90 day mortality (%)	Adjusted 90 day mortality (%)	No. patients having major surgery linked to HES	Observed 90 day unplanned readmission rate (%)	Adjusted 90 day unplanned readmission rate (%)	No. patients having major resection 1 Apr 11- 31 Mar12	Observed two year mortality (%)	Adjusted two year mortality (%)
<b>Thames Valley</b>	<b>942</b>	<b>2.7</b>	<b>3.3</b>	<b>787</b>	<b>17.8</b>	<b>17.6</b>	<b>768</b>	<b>22.3</b>	<b>25.3</b>
Buckinghamshire Healthcare NHS Trust	178	1.1	2.1	129	12.4	12.5	181	14.7	18.1
Great Western Hospitals NHS Foundation Trust	126	1.6	1.5	111	18.0	18.1	115	34.4	32.4
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	136	2.9	3.0	114	21.9	21.0	37	33.2	23.5
Milton Keynes Hospital NHS Foundation Trust	73	5.5	5.0	68	14.7	14.0	82	21.9	25.6
Oxford University Hospitals NHS Trust	241	0.8	1.2	209	20.6	20.4	228	19.5	24.3
Royal Berkshire NHS Foundation Trust	179	5.6	7.3	156	16.7	16.5	125	25.5	30.6
<b>London Cancer Alliance</b>	<b>1,327</b>	<b>3.5</b>	<b>4.1</b>	<b>1,155</b>	<b>22.2</b>	<b>21.8</b>	<b>1,086</b>	<b>22.5</b>	<b>21.7</b>
Chelsea and Westminster Hospital NHS Foundation Trust	28	3.6	5.2	25	36.0	37.2	53	18.7	17.8
Croydon Health Services NHS Trust	77	0.0	0.0	63	23.8	24.1	74	35.9	31.1
Ealing Hospital NHS Trust	44	2.3	1.6	35	22.9	21.2	43	40.7	33.9
Epsom and St Helier University Hospitals NHS Trust	85	3.5	3.7	77	19.5	20.4	84	20.6	19.6
Guy's and St Thomas' NHS Foundation Trust	121	2.5	5.3	107	25.2	24.3	91	22.4	27.3
Imperial College Healthcare NHS Trust	154	5.8	5.8	121	25.6	24.5	102	19.7	21.2
King's College Hospital NHS Foundation Trust	173	2.3	2.8	155	23.2	23.2	79	26.3	25.4
Kingston Hospital NHS Foundation Trust	94	4.3	4.9	81	12.3	12.4	99	15.0	16.9
Lewisham and Greenwich NHS Trust	103	4.9	6.1	87	17.2	17.9	116	15.8	17.7
North West London Hospitals NHS Trust	162	1.9	2.8	148	20.9	20.8	120	17.3	12.4
St George's Healthcare NHS Trust	129	3.1	3.3	118	23.7	23.7	73	24.8	28.6
The Hillingdon Hospitals NHS Foundation Trust	64	10.9	8.8	54	27.8	25.1	78	28.5	21.8
The Royal Marsden NHS Foundation Trust	48	2.1	4.9	46	19.6	17.7	20	10.9	22.5
West Middlesex University Hospital NHS Trust	44	2.3	1.8	38	18.4	17.9	54	33.9	30.0
<b>London Cancer</b>	<b>752</b>	<b>4.0</b>	<b>4.1</b>	<b>631</b>	<b>23.1</b>	<b>22.9</b>	<b>716</b>	<b>22.8</b>	<b>20.2</b>
Barking, Havering and Redbridge University Hospitals NHS Trust	144	0.7	0.9	125	20.8	21.9	100	11.7	12.7
Barts Health NHS Trust	134	2.2	2.8	111	29.7	28.3	164	37.1	33.6
Homerton University Hospital NHS Foundation Trust	41	14.6	9.0	38	13.2	12.5	31	13.6	7.7
North Middlesex University Hospital NHS Trust	41	2.4	4.1	37	13.5	15.0	46	30.2	33.0
Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital	126	2.4	1.7	84	23.8	24.6	116	26.1	17.8
Royal Free London NHS Foundation Trust - Royal Free Hospital	61	1.6	1.8	42	21.4	20.8	58	21.2	18.4
The Princess Alexandra Hospital NHS Trust	78	5.1	5.9	75	28.0	26.8	89	10.9	12.3
The Whittington Hospital NHS Trust	49	14.6	11.6	45	31.1	29.9	48	32.8	23.7
University College London Hospitals NHS Foundation Trust	78	5.1	6.0	74	17.6	16.4	64	13.7	14.9
<b>South West</b>	<b>1,711</b>	<b>3.3</b>	<b>3.4</b>	<b>1,575</b>	<b>17.8</b>	<b>17.9</b>	<b>1,738</b>	<b>19.8</b>	<b>19.5</b>
Gloucestershire Hospitals NHS Foundation Trust	213	2.3	2.4	193	17.6	17.0	200	16.7	16.0
North Bristol NHS Trust	145	2.8	3.3	138	21.0	20.3	136	15.4	15.7
Northern Devon Healthcare NHS Trust	100	2.0	2.0	93	11.8	12.3	104	15.7	24.2
Plymouth Hospitals NHS Trust	178	5.6	6.7	161	21.7	22.0	167	18.5	16.4
Royal Cornwall Hospitals NHS Trust	194	6.7	5.9	178	17.4	17.2	201	25.1	26.0
Royal Devon and Exeter NHS Foundation Trust	179	4.5	3.9	160	20.0	21.3	193	21.3	22.2
Royal United Hospitals Bath NHS Foundation Trust	169	1.2	1.2	160	15.6	15.5	173	22.1	22.6
Salisbury NHS Foundation Trust	64	0.0	0.0	61	23.0	24.3	119	16.5	13.5
South Devon Healthcare NHS Foundation Trust	134	2.2	2.2	127	19.7	19.3	132	22.3	21.2
Taunton and Somerset NHS Foundation Trust	115	0.0	0.0	110	11.8	12.4	76	15.5	17.8
University Hospitals Bristol NHS Foundation Trust	92	3.3	3.9	84	13.1	13.1	82	17.3	19.4
Weston Area Health NHS Trust	64	7.8	7.9	56	17.9	17.9	88	24.3	20.2
Yeovil District Hospital NHS Foundation Trust	61	3.3	2.8	54	20.4	21.6	67	26.9	19.2
<b>Wessex</b>	<b>891</b>	<b>2.7</b>	<b>2.9</b>	<b>813</b>	<b>18.7</b>	<b>19.0</b>	<b>1,042</b>	<b>18.9</b>	<b>19.2</b>
Dorset County Hospital NHS Foundation Trust	83	7.2	6.1	80	26.3	26.6	85	19.8	17.5
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	77	0.0	0.0	73	23.3	†	110	15.9	20.0
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	87	2.3	2.5	76	14.5	15.0	115	25.2	24.6
Isle of Wight NHS Trust	63	4.8	5.2	51	13.7	14.4	87	25.1	20.7
Poole Hospital NHS Foundation Trust	101	2.0	1.9	97	24.7	24.1	98	15.6	17.6
Portsmouth Hospitals NHS Trust	208	1.4	1.8	191	19.9	19.8	247	18.0	17.4
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	150	1.3	1.5	137	16.1	16.4	125	13.9	16.7
University Hospital Southampton NHS Foundation Trust	193	3.1	3.1	175	15.4	15.9	175	20.2	20.7

Network/Trust Name	No. patients having major surgery	Observed 90 day mortality (%)	Adjusted 90 day mortality (%)	No. patients having major surgery linked to HES	Observed 90 day unplanned readmission rate (%)	Adjusted 90 day unplanned readmission rate (%)	No. patients having major resection 1 Apr 11- 31 Mar12	Observed two year mortality (%)	Adjusted two year mortality (%)
<b>South East Coast</b>	<b>1,399</b>	<b>4.3</b>	<b>4.4</b>	<b>1,260</b>	<b>18.8</b>	<b>19.2</b>	<b>1,327</b>	<b>21.8</b>	<b>22.7</b>
Ashford and St Peter's Hospitals NHS Foundation Trust	107	9.3	10.8	103	12.6	13.2	103	22.9	21.0
Brighton and Sussex University Hospitals NHS Trust	53	3.8	4.2	44	13.6	12.9	113	20.6	23.6
Dartford and Gravesham NHS Trust	88	2.3	2.0	75	16.0	16.1	87	19.4	21.1
East Kent Hospitals University NHS Foundation Trust	234	4.7	4.5	215	15.8	16.0	23	23.6	†
East Sussex Healthcare NHS Trust	139	4.3	5.3	134	14.2	15.3	212	22.1	20.7
Frimley Health NHS Foundation Trust - Frimley Park Hospital	128	3.9	3.7	117	23.1	22.3	146	19.5	19.9
Maidstone and Tunbridge Wells NHS Trust	178	1.7	1.6	161	18.0	17.7	193	22.2	23.6
Medway NHS Foundation Trust	52	7.7	6.0	46	21.7	21.4	75	30.5	†
Royal Surrey County Hospital NHS Foundation Trust	90	3.3	4.4	70	21.4	23.2	102	22.0	24.5
Surrey and Sussex Healthcare NHS Trust	103	6.8	10.0	96	29.2	31.9	114	29.3	30.6
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	120	2.5	2.4	105	21.9	22.0	137	17.4	17.7
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	107	3.7	3.4	94	22.3	23.0	120	23.8	29.9

† Adjusted estimates not reported because most patients missing ASA grade and/or TNM stage (also not included in associated Network totals)

\* Luton and Dunstable Hospital NHS Foundation Trust did not submit any data for the year 2011/12

▲ Too few cases to report

Network totals include cases at private hospitals

**Table 7.5**  
**Results for patients with rectal cancer who had major surgery according to Trust/hospital site**

Network/Trust Name	Number of patients with rectal cancer undergoing major surgery	Pre-operative treatment* (%)	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients in HES 18 month stoma estimate*	Observed 18 month stoma rate using HES (%)	Adjusted 18 month stoma rate using HES (%)
<b>Overall - total data</b>	<b>4,978</b>	<b>39</b>	<b>5</b>	<b>26</b>	<b>26</b>	<b>13,240</b>	<b>50</b>	<b>50</b>
<b>Northern England</b>	<b>323</b>	<b>43</b>	<b>4</b>	<b>9</b>	<b>28</b>	<b>1,021</b>	<b>48</b>	<b>48</b>
City Hospitals Sunderland NHS Foundation Trust	40	43	5	8	35	112	59	58
County Durham and Darlington NHS Foundation Trust	52	40	2	21	23	152	46	48
Gateshead Health NHS Foundation Trust	22	36	5	0	23	82	62	62
North Cumbria University Hospitals NHS Trust	25	68	4	0	20	74	34	34
North Tees and Hartlepool NHS Foundation Trust	40	48	5	15	35	131	40	40
Northumbria Healthcare NHS Foundation Trust	51	39	6	8	24	174	42	44
South Tees Hospitals NHS Foundation Trust	38	39	5	11	34	133	56	54
South Tyneside NHS Foundation Trust	12	8	8	0	33	53	55	54
The Newcastle upon Tyne Hospitals NHS Foundation Trust	43	51	2	0	26	110	45	43
<b>Greater Manchester, Lancashire and South Cumbria</b>	<b>431</b>	<b>35</b>	<b>5</b>	<b>34</b>	<b>28</b>	<b>1,231</b>	<b>59</b>	<b>58</b>
Blackpool Teaching Hospitals NHS Foundation Trust	22	59	0	95	36	70	70	71
Bolton NHS Foundation Trust	41	37	5	39	27	84	49	50
Central Manchester University Hospitals NHS Foundation Trust	41	41	5	20	29	85	51	49
East Cheshire NHS Trust	20	80	0	55	30	69	46	46
East Lancashire Hospitals NHS Trust	34	24	9	9	15	135	66	63
Lancashire Teaching Hospitals NHS Foundation Trust	29	45	10	31	24	96	71	70
Mid Cheshire Hospitals NHS Foundation Trust	29	3	0	93	10	60	67	77
Pennine Acute Hospitals NHS Trust	50	0	0	2	36	166	63	62
Salford Royal NHS Foundation Trust	24	0	4	8	42	58	52	54
Stockport NHS Foundation Trust	21	52	0	14	29	97	49	50
Tameside Hospital NHS Foundation Trust	23	48	0	13	22	60	57	51
The Christie NHS Foundation Trust	30	100	10	0	50	46	72	70
University Hospital of South Manchester NHS Foundation Trust	20	40	5	5	25	51	53	53
University Hospitals of Morecambe Bay NHS Foundation Trust	37	16	0	100	19	104	56	56
Wrightington, Wigan and Leigh NHS Foundation Trust	10	0	50	50	40	50	54	55
<b>Yorkshire and the Humber</b>	<b>532</b>	<b>49</b>	<b>5</b>	<b>23</b>	<b>28</b>	<b>1,677</b>	<b>54</b>	<b>54</b>
Airedale NHS Foundation Trust	12	50	8	0	33	48	71	69
Barnsley Hospital NHS Foundation Trust	11	0	9	0	36	70	59	59
Bradford Teaching Hospitals NHS Foundation Trust	30	70	0	100	30	70	53	47
Calderdale and Huddersfield NHS Foundation Trust	32	53	9	3	31	121	52	53
Chesterfield Royal Hospital NHS Foundation Trust	38	45	0	11	24	97	51	53
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	54	17	0	0	31	133	51	53
Harrogate and District NHS Foundation Trust	25	60	12	4	20	60	50	50
Hull and East Yorkshire Hospitals NHS Trust	64	63	3	61	9	156	46	45
Leeds Teaching Hospitals NHS Trust	68	69	4	6	28	247	65	62
Mid Yorkshire Hospitals NHS Trust	31	45	3	0	29	161	54	58
Northern Lincolnshire and Goole NHS Foundation Trust	47	40	4	81	38	106	57	54
Sheffield Teaching Hospitals NHS Foundation Trust	40	50	15	0	38	175	53	53
The Rotherham NHS Foundation Trust	27	63	0	4	37	53	57	59
York Teaching Hospital NHS Foundation Trust - The York Hospital	49	31	4	2	33	135	44	46
York Teaching Hospital NHS Foundation Trust – Scarborough Hospital	*	*	*	*	*	44	61	57
<b>Cheshire and Merseyside</b>	<b>194</b>	<b>40</b>	<b>6</b>	<b>62</b>	<b>19</b>	<b>509</b>	<b>52</b>	<b>52</b>
Aintree University Hospital NHS Foundation Trust	20	45	0	90	35	43	42	42
Countess of Chester Hospital NHS Foundation Trust	27	30	0	41	22	72	51	52
Royal Liverpool and Broadgreen University Hospitals NHS Trust	31	45	0	94	13	85	51	51
Southport and Ormskirk Hospital NHS Trust	24	42	4	83	8	32	50	49
St Helens and Knowsley Hospitals NHS Trust	30	67	7	80	37	113	54	55
Warrington and Halton Hospitals NHS Foundation Trust	37	14	11	14	5	83	57	57
Wirral University Teaching Hospital NHS Foundation Trust	25	48	16	52	16	81	51	51

Network/Trust Name	Number of patients with rectal cancer undergoing major surgery	Pre-operative treatment* (%)	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients in HES 18 month stoma estimate*	Observed 18 month stoma rate using HES (%)	Adjusted 18 month stoma rate using HES (%)
<b>Wales</b>	<b>350</b>	<b>90</b>	<b>6</b>	<b>13</b>	<b>34</b>	<b>No PEDW</b>	<b>No PEDW</b>	<b>No PEDW</b>
Bronglais MDT	10	90	0	50	30	No PEDW	No PEDW	No PEDW
Cardiff MDT	38	100	8	3	29	No PEDW	No PEDW	No PEDW
Nevill Hall Hospital MDT	26	92	8	8	31	No PEDW	No PEDW	No PEDW
Prince Charles Hospital MDT	26	88	8	0	35	No PEDW	No PEDW	No PEDW
Princess of Wales MDT	38	97	5	0	37	No PEDW	No PEDW	No PEDW
Royal Glamorgan Hospital MDT	16	88	19	6	44	No PEDW	No PEDW	No PEDW
Royal Gwent Hospital MDT	49	96	6	2	39	No PEDW	No PEDW	No PEDW
Swansea MDT	29	86	3	7	41	No PEDW	No PEDW	No PEDW
West Wales General & Prince Phillip MDT	25	72	0	60	40	No PEDW	No PEDW	No PEDW
Withybush General MDT	17	88	0	53	29	No PEDW	No PEDW	No PEDW
Ysbwyty Glan Clwydd MDT	30	87	10	10	37	No PEDW	No PEDW	No PEDW
Ysbwyty Gwynedd MDT	26	85	8	27	27	No PEDW	No PEDW	No PEDW
Ysbwyty Maelor MDT	20	90	0	0	15	No PEDW	No PEDW	No PEDW
<b>West Midlands</b>	<b>527</b>	<b>36</b>	<b>7</b>	<b>32</b>	<b>26</b>	<b>1,518</b>	<b>52</b>	<b>51</b>
George Eliot Hospital NHS Trust	16	44	6	0	19	47	40	41
Heart of England NHS Foundation Trust	66	36	11	0	24	167	39	39
Sandwell and West Birmingham Hospitals NHS Trust	28	7	4	21	39	125	38	37
Shrewsbury and Telford Hospital NHS Trust	70	34	3	36	24	152	50	51
South Warwickshire NHS Foundation Trust	31	29	3	0	13	79	46	43
The Dudley Group NHS Foundation Trust	30	30	7	83	43	91	56	57
The Royal Wolverhampton NHS Trust	28	54	11	11	29	122	49	47
University Hospitals Birmingham NHS Foundation Trust	35	51	11	86	23	124	63	63
University Hospitals Coventry and Warwickshire NHS Trust	36	33	6	0	8	106	54	55
University Hospitals of North Midlands NHS Trust – County Hospital	13	23	0	54	54	48	71	69
University Hospitals of North Midlands NHS Trust – Royal Stoke University Hospital	64	67	9	19	28	124	45	47
Walsall Healthcare NHS Trust	19	11	16	16	32	48	46	43
Worcestershire Acute Hospitals NHS Trust	57	16	0	79	30	192	71	71
Wye Valley NHS Trust	34	35	9	41	15	93	51	49
<b>East Midlands</b>	<b>318</b>	<b>46</b>	<b>5</b>	<b>8</b>	<b>29</b>	<b>889</b>	<b>53</b>	<b>53</b>
Burton Hospitals NHS Foundation Trust	24	38	8	0	38	94	46	46
Derby Hospitals NHS Foundation Trust	23	9	0	13	9	108	47	51
Kettering General Hospital NHS Foundation Trust	23	22	0	9	26	96	44	44
Northampton General Hospital NHS Trust	31	26	6	23	23	84	57	57
Nottingham University Hospitals NHS Trust	59	36	5	5	20	169	51	52
Sherwood Forest Hospitals NHS Foundation Trust	22	41	5	0	27	87	45	47
United Lincolnshire Hospitals NHS Trust	53	34	13	2	38	35	80	86
University Hospitals of Leicester NHS Trust	83	89	1	13	37	216	63	59
<b>East of England</b>	<b>514</b>	<b>22</b>	<b>5</b>	<b>25</b>	<b>25</b>	<b>1,618</b>	<b>49</b>	<b>48</b>
Basildon and Thurrock University Hospitals NHS Foundation Trust	32	28	3	0	44	83	45	46
Bedford Hospital NHS Trust	26	31	54	38	27	67	48	49
Cambridge University Hospitals NHS Foundation Trust	50	2	4	2	30	186	44	44
Colchester Hospital University NHS Foundation Trust	36	36	3	61	25	139	42	42
East and North Hertfordshire NHS Trust	22	9	9	41	27	99	63	64
Hinchingbrooke Health Care NHS Trust	16	0	0	6	6	26	50	46
Ipswich Hospital NHS Trust	36	47	6	14	19	103	40	40
James Paget University Hospitals NHS Foundation Trust	15	0	0	13	7	72	61	58
Luton and Dunstable University Hospital NHS Foundation Trust	21	5	0	5	24	11	64	58
Mid Essex Hospital Services NHS Trust	24	8	4	75	17	91	38	39
Norfolk and Norwich University Hospitals NHS Foundation Trust	71	11	3	13	23	235	44	44
Peterborough and Stamford Hospitals NHS Foundation Trust	43	49	5	72	33	112	69	65
Southend University Hospital NHS Foundation Trust	26	58	4	0	46	121	50	50
The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	14	14	0	93	14	90	71	66
West Hertfordshire Hospitals NHS Trust	49	14	0	12	20	107	46	44
West Suffolk NHS Foundation Trust	22	27	0	5	18	75	29	28

Network/Trust Name	Number of patients with rectal cancer undergoing major surgery	Pre-operative treatment* (%)	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)	Number of patients in HES 18 month stoma estimate*	Observed 18 month stoma rate using HES (%)	Adjusted 18 month stoma rate using HES (%)
<b>Thames Valley</b>	<b>262</b>	<b>21</b>	<b>4</b>	<b>42</b>	<b>25</b>	<b>556</b>	<b>47</b>	<b>49</b>
Buckinghamshire Healthcare NHS Trust	57	32	0	2	21	78	45	48
Great Western Hospitals NHS Foundation Trust	22	9	14	86	27	78	47	48
Frimley Health NHS Foundation Trust - Heatherwood and Wexham Park Hospitals	38	32	3	66	37	39	54	55
Milton Keynes Hospital NHS Foundation Trust	20	20	10	45	10	66	56	55
Oxford University Hospitals NHS Trust	72	0	0	79	21	200	40	41
Royal Berkshire NHS Foundation Trust	51	35	8	0	27	95	57	59
<b>London Cancer Alliance</b>	<b>343</b>	<b>41</b>	<b>9</b>	<b>12</b>	<b>19</b>	<b>636</b>	<b>45</b>	<b>45</b>
Chelsea and Westminster Hospital NHS Foundation Trust	5	20	20	0	0	17	35	35
Croydon Health Services NHS Trust	18	39	0	0	22	37	35	35
Ealing Hospital NHS Trust	2	50	50	0	50	15	67	64
Epsom and St Helier University Hospitals NHS Trust	16	13	13	19	25	57	32	31
Guy's and St Thomas' NHS Foundation Trust	45	36	9	9	11	64	67	67
Imperial College Healthcare NHS Trust	38	34	24	34	16	74	58	56
King's College Hospital NHS Foundation Trust	35	71	9	3	17	44	59	59
Kingston Hospital NHS Foundation Trust	22	18	5	0	18	33	39	43
Lewisham and Greenwich NHS Trust	28	46	11	25	18	54	48	47
North West London Hospitals NHS Trust	40	25	8	3	23	71	27	29
St George's Healthcare NHS Trust	38	34	8	0	13	50	28	28
The Hillingdon Hospitals NHS Foundation Trust	19	32	11	0	32	43	60	61
The Royal Marsden NHS Foundation Trust	26	88	0	8	27	21	33	38
West Middlesex University Hospital NHS Trust	11	55	0	91	27	53	36	32
<b>London Cancer</b>	<b>171</b>	<b>50</b>	<b>7</b>	<b>32</b>	<b>26</b>	<b>454</b>	<b>50</b>	<b>48</b>
Barking, Havering and Redbridge University Hospitals NHS Trust	35	77	0	69	34	69	55	55
Barts Health NHS Trust	37	38	19	46	22	121	45	41
Homerton University Hospital NHS Foundation Trust	7	86	14	14	43	18	39	35
North Middlesex University Hospital NHS Trust	7	14	14	0	14	14	57	54
Royal Free London NHS Foundation Trust - Barnet and Chase Farm Hospital	28	43	7	4	21	89	58	57
Royal Free London NHS Foundation Trust - Royal Free Hospital	13	31	0	23	23	28	46	49
The Princess Alexandra Hospital NHS Trust	16	31	0	25	19	54	35	35
The Whittington Hospital NHS Trust	9	78	0	44	67	17	53	47
University College London Hospitals NHS Foundation Trust	19	53	5	5	11	44	61	64
<b>South West</b>	<b>433</b>	<b>34</b>	<b>4</b>	<b>31</b>	<b>27</b>	<b>1,325</b>	<b>46</b>	<b>47</b>
Gloucestershire Hospitals NHS Foundation Trust	58	19	3	0	14	179	38	38
North Bristol NHS Trust	43	44	2	63	16	122	40	39
Northern Devon Healthcare NHS Trust	17	18	6	65	29	72	42	43
Plymouth Hospitals NHS Trust	48	69	6	2	33	102	61	61
Royal Cornwall Hospitals NHS Trust	43	37	2	51	33	157	51	52
Royal Devon and Exeter NHS Foundation Trust	47	26	2	2	38	136	46	48
Royal United Hospitals Bath NHS Foundation Trust	54	24	7	7	26	130	53	53
Salisbury NHS Foundation Trust	20	15	5	0	20	83	37	39
South Devon Healthcare NHS Foundation Trust	33	27	0	100	33	89	35	36
Taunton and Somerset NHS Foundation Trust	22	45	0	95	27	86	62	60
University Hospitals Bristol NHS Foundation Trust	18	44	17	6	11	61	41	41
Weston Area Health NHS Trust	17	59	0	24	41	58	60	57
Yeovil District Hospital NHS Foundation Trust	12	0	0	83	33	50	40	40
<b>Wessex</b>	<b>271</b>	<b>25</b>	<b>5</b>	<b>26</b>	<b>20</b>	<b>772</b>	<b>35</b>	<b>36</b>
Dorset County Hospital NHS Foundation Trust	19	16	0	100	5	56	38	38
Hampshire Hospitals NHS Foundation Trust - Basingstoke and North Hampshire Hospital	24	4	8	88	8	104	22	22
Hampshire Hospitals NHS Foundation Trust - Royal Hampshire County Hospital	15	20	7	13	7	68	40	41
Isle of Wight NHS Trust	16	19	6	0	31	57	37	39
Poole Hospital NHS Foundation Trust	22	14	5	5	18	60	33	35
Portsmouth Hospitals NHS Trust	74	20	7	0	16	216	31	32
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	46	30	4	59	20	88	33	34
University Hospital Southampton NHS Foundation Trust	53	45	4	2	36	121	51	50

Network/Trust Name	Number of patients with rectal cancer undergoing major surgery	Pre-operative treatment* (%)	Positive margins reported (%)	Records missing status of margins (%)	APER rate (%)		Number of patients in HES 18 month stoma estimate*	Observed 18 month stoma rate using HES (%)	Adjusted 18 month stoma rate using HES (%)
<b>South East Coast</b>	<b>308</b>	<b>17</b>	<b>4</b>	<b>23</b>	<b>26</b>		<b>1,034</b>	<b>46</b>	<b>47</b>
Ashford and St Peter's Hospitals NHS Foundation Trust	24	0	13	79	8		49	45	46
Brighton and Sussex University Hospitals NHS Trust	19	53	0	100	32		90	64	65
Dartford and Gravesham NHS Trust	12	33	17	0	17		51	49	50
East Kent Hospitals University NHS Foundation Trust	45	0	4	11	29		56	79	78
East Sussex Healthcare NHS Trust	30	17	0	17	40		125	50	51
Frimley Health NHS Foundation Trust - Frimley Park Hospital	31	0	3	29	13		128	34	34
Maidstone and Tunbridge Wells NHS Trust	49	20	0	0	31		131	40	40
Medway NHS Foundation Trust	14	43	0	7	14		97	47	48
Royal Surrey County Hospital NHS Foundation Trust	13	8	0	92	23		68	40	44
Surrey and Sussex Healthcare NHS Trust	20	50	5	5	25		73	25	25
Western Sussex Hospitals NHS Foundation Trust - St Richard's Hospital	32	16	3	3	34		80	39	40
Western Sussex Hospitals NHS Foundation Trust - Worthing Hospital	19	11	16	0	21		86	56	56

\* York Teaching Hospital NHS Foundation Trust – Scarborough Hospital did not submit data for this measure

# References

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5. Morris E, Finan P, Thomas J, Spencer K, Lawton S, Adams R, et al. Using the National Radiotherapy Dataset within the National Cancer Data Repository to investigate patterns of use of radiotherapy in the management of surgically treated rectal cancer across the English NHS. *European Journal of Cancer Care*. 2015;24(S1):20-1.

# Appendix 1 – Outlier Communications

Two Year Mortality			
NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Kettering General Hospital NHS Foundation Trust	<p>A number of factors were raised at our patient safety advisory group (PSAG), however the problem appears to be one of incomplete data. The source of this sits with us as a Trust.</p> <ol style="list-style-type: none"> <li>1. The period covered related to March 2011 – April 2012 (Informed but suspect it is April 11 to March 12)</li> <li>2. The data completion (we used the association of coloproctologists forms) is poor.</li> <li>3. Data was 68 per cent complete vs the standard of 80 per cent</li> <li>4. We have 0 laparoscopic procedures recorded – incorrect</li> <li>5. Only 70-80 per cent of our cases are said to have had a CT – all our cases receive a CT as part of the work up.</li> <li>6. All our cases are discussed at MDT – does not fit with the data which suggest that MDT review is incomplete.</li> <li>7. At KGH 20 per cent patient recorded as ASA1 cf national position of 12 per cent (KGH should be in line with the national position)</li> <li>8. At KGH 13 per cent ASA3 cf 25 per cent nationally.</li> <li>9. The risk adjustment according to ASA grade would therefore not reflect the true risk adjusted position – data quality issue.</li> <li>10. T4 tumours 0 per cent at KGH (incorrect)</li> <li>11. LN status not identified in 17 per cent of patient (data quality issue)</li> </ol> <p>It appears that not all data fields have been uploaded.</p> <p>This is a historic position which will repeat itself in the next round. We have taken action and changed all the data capture which is then placed on the Somerset data base (position for the last 2 years). In addition all the raw data collection is collated on a single record which follows the patient journey and this is populated by the CR surgeons.</p> <p>I have attended the MDT for some years now and all patients are discussed, have a LN status and CT.</p> <p>The following 2 actions will be carried out:</p> <ol style="list-style-type: none"> <li>1. Identify all patients in this cohort that have died and to carry out a retrospective case review</li> <li>2. Use Dr Foster mortality tool for further triangulation and identify deaths within 30 days in this cohort.</li> </ol> <p>We will complete this work in two months.</p> <p>While it is easy to blame data for poor outcomes, there is in this case a very real issue of incomplete and poor data quality (issue lies with us).</p> <p>Finally we will prospectively work to provide more complete data for the next Audit round, however it will be subject to current limitations.</p> <p>Future Audits will provide a clear accurate picture on outcomes.</p>	*	*
Royal Liverpool and Broadgreen University Hospitals NHS Trust	<p>The Royal Liverpool and Broadgreen University Hospitals NHS Trust have made the following recommendations:</p> <p><b>The Lead Clinician with the MDT should ensure accurate and complete data collection with reference to ASA Charlson score and 'T' stage</b></p> <p>MDT to engage with Audit Department and Medical Director to ensure accurate coding to ensure accurate upload and arrange a process for clinical sign off.</p> <p>MDT Lead and Medical Director are responsible for this action</p> <p><b>MDT data collection should be reviewed monthly by each Surgeon so the data can be actively monitored</b></p> <p>MDT to engage with Audit team to have monthly uploads of data to NBOCA with Caldicott sign in for surgeons</p> <p>MDT Lead, Audit Lead, and Colorectal Surgeons are responsible for this action</p> <p><b>Management of emergency cases, advanced cancer T3 and T4, advanced ASA grade needs attention with regard to type of surgery and type of surgeon. All deaths in this Audit were at an advanced stage.</b></p> <p>Arrangements for care of emergencies should be by Colorectal Surgeons and not by non colorectal surgeons unless there is no alternative.</p> <p>Elderly patients need special consideration pre and post operatively with a focus on critical care.</p> <p>Advanced 'T' stage cancers should receive the best adjuvant treatment wherever possible.</p> <p>Laparoscopic surgery may not be the best option for T4 and advanced cancers.</p> <p>MDT Lead, Division Lead, and Trust Management are responsible for this action</p>		

NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Barts Health NHS Trust	<p>Barts Health received a potential outlier notification in 2013 for Newham and the Royal London in connection with two year mortality rate within colorectal surgery. A further potential outlier notification was received in 2014 for 2 year mortality extended to Whipps Cross also. There has now been a third notification that Barts Health is an outlier for two year mortality covering the index period 2011-2012. I have attached the original report and actions devised for the 2014 notification</p> <p>Given that the first notification was only received in 2013 the implementation of the action plan will not be affecting our results from surgery performed in 2011/2012. From our own data there has been reduction mortality in the years following this and although we are still in the follow up period we are expecting to align the Barts Health data with the National average. This data is included below.</p> <p>Of the 121 patients reviewed over the two periods of investigation, 50 had a cause of death that was directly attributable to the cancer with at least a further eight where this was suspected. It has been demonstrated through the work of the Public Health department in Tower Hamlets that patients with advance colon cancer are more likely to present late.</p> <p>53 patients died through non-cancer pathology and ten patients were seen where the cause of death was unknown. Any cases with post-operative complications are regularly reviewed as part of the local multi-disciplinary team meetings taking place weekly at each site.</p> <p>As previously discussed, the quality of the Somerset and Open Exeter data contributing to the Audit has been reviewed, especially concerning data completeness. Much information needed to inform the risk factors for patients has not previously been included which has affected our performance.</p>	*	*

18 Month Stoma Rates			
Strategic Clinical Networks	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Greater Manchester, Lancashire and South Cumbria	No response		*
Yorkshire and the Humber	As Clinical Director for the Yorkshire and the Humber Strategic Clinical Networks I have followed this email trail with interest and have noted the view that Y&H appear to be outliers. We are content that the matter has been brought to the attention of the relevant Trusts that are responsible for the clinical quality of their services and consider this to be the appropriate way to address the outlier issue. I hope this will reassure you that the matter has been properly attended to.		*

NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Worcestershire Acute Hospitals NHS Trust	<p>The Worcestershire Acute NHS Trust remains committed to improving its data entry into the NBoCAP database.</p> <p>This process has improved since the creation of the countywide Colorectal MDT and the single-site resection unit for the Trust (based at the Worcestershire Royal Hospital) - both of which were fully developed by September 2013.</p> <p>The Trust remains concerned over its outlier status for 18 month stoma rate - which currently comprises data from its pre-centralisation era.</p> <p>Recent internal Audits of 18 month stoma rates for 2013-14 and 2014-15 show rates of 57 per cent and 55 per cent (data still in evolution) respectively which gives the Trust confidence that its outlier status will resolve with the addition in time of these dataset time periods.</p> <p>The latest report figures have already been discussed internally and furthermore will be discussed with representatives of local commissioners at its Quality Governance Committee meeting in December 2015.</p>	*	*
Leeds Teaching Hospitals NHS Trust	<p>Thank you for the opportunity to appraise the data related to the Leeds Teaching Hospital NHS Trust colorectal team's 18 month stoma rate which on face value appears to be high (65 per cent). We have carefully audited the 247 rectal cancers patients particularly concentrating on the 161 patient stated to have a stoma at 18 months. We have identified a number of patients where that data is incorrect and they had their stoma reversed in a timely manner or never had a stoma in the first place (n=8). We also have identified patients who had emergency surgery, non resectional surgery (ie palliative stomas) and different diseases eg squamous cell carcinoma, retrorectal tumours or recurrent rectal cancer and therefore should not be included in the analysis (n=6). Our practice also includes a number of tertiary referred cases requiring our particular expertise in locally advanced cancers, cases which usually require exenteration and therefore by necessity a permanent stoma. With these factors in mind recalculating the 18 month stoma rate with the corrected data, excluding the other cases but including the tertiary referrals, gives us a rate of 60.9 per cent. Excluding the 21 tertiary referral cases completely gives a rate of 57.3 per cent. We have put measures in place to prospectively monitor this and continue to strive to improve the accuracy of the uploaded data.</p>	*	*

18 Month Stoma Rates			
NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
United Lincolnshire Hospitals NHS Trust	<p>Following the receipt of this letter I requested you for more detailed data which you have kindly supplied in the form of an excel sheet to my nhs.net account. The data makes it clear that you have used 35 patients in your analysis. Once again, the data does not sound right as the numbers very small compared to the actual workload of the Trust.</p> <p>I have forwarded your worksheet and various emails to our own IT department who have analysed the data on similar lines and found a wide variation between the NBCA figures and the Trust's own data.</p> <p>According to our figures, the 18 month stoma rates are at 20.1 per cent which is significantly better than your finding of a stoma rate of 80 per cent.</p> <p>It is not my intention to blame any particular agency or analyst for the data analysis by the NBCA. It is clear that our Trust was unable to submit accurate and verified data to the NBCA in the time period that was analysed. However it also means the data that has been supplied suffers from fatal errors as it appears to relate to a very small sample of patients.</p> <p>It is my request that the NBCA should re-analyse the data or ask for a fresh data submission from the Trust so that all our cases can be included correctly in the Audit.</p> <p>I would be grateful if you could re-consider publication of this data in view of my representation to you. I am copying various interested parties into this post including the lead clinician for the colorectal MDT for Boston, medical director, deputy medical director, as well as our senior information analyst who will be able to provide you with any further details which might be helpful in arriving at a conclusion which is acceptable to all parties.</p>		
East Kent Hospitals University NHS Foundation Trust	<p>I have asked colorectal surgeons within the Trust to look at the reported adjusted 18 month stoma rate of 77.98 per cent and the reported unadjusted 18 month stoma rate of 78.57 per cent. One of the colorectal surgeons has provided me with Margate site data from the following sources:</p> <ol style="list-style-type: none"> <li>1. Our stoma nurse team</li> <li>2. Our enhanced recovery register which keeps a log of all the elective colorectal resections</li> </ol> <p>Permanent colostomy 30 Ileostomies nine</p>		
Mid Cheshire Hospitals NHS Foundation Trust	<p>A local Audit has been undertaken to assess whether the information held by the NBCA is a true reflection of local practice, and if so the reasons for this. The aim of this Audit is to clarify whether those patients flagged by the NBCA as not undergoing reversal of ileostomy truly do have an unreversed ileostomy in situ and the reason for this. Of the 60 patients flagged by NBCA, only ten (17 per cent) in fact have an ileostomy in place. The remainder either never had one or has subsequently undergone reversal. The majority of reversals were performed within 18 months. Of those who have not undergone a reversal of ileostomy, the main reason was not being medically fit. One of these patients is now on the waiting list having received treatment for their medical condition of concern. Others chose to keep their stoma and one has been found to have an anastomotic stricture preventing reversal. Of the patients who have undergone reversal of ileostomy but not within 18 months, one was delayed due to a liver metastectomy in the interim and another was found during workup to have an anastomotic stricture. This patient underwent revision anterior resection before proceeding to reversal of ileostomy. One reversal of ileostomy appears to have been performed at another centre where the patient was attending for management of metastatic disease therefore timing is not known. Therefore, of all patients identified only four (seven per cent) have not undergone reversal of a defunctioning ileostomy within 18 months of resection without a clinical reason.</p> <p><b>Conclusion and Recommendations</b></p> <p>The Trust does perform satisfactorily regarding reversal of ileostomies following resection for colorectal cancer. The key issue identified is accurate recording of data such that patients were either recorded as having a different operation than the one performed or failure to record a reversal of ileostomy. The data period spans five years, and the most recent patients flagged underwent their original operations in March 2013. Recently changes have already been made regarding recording of cancer management data including a quarterly report being sent to individual surgeons within our unit to check. It is therefore expected that recent data submitted to the NBCA will be more accurate. This report will be submitted to the NBCA so that the data in the final national report regarding performance at MCFT is accurate. Ongoing participation in national Audit will ensure that performance will remain satisfactory.</p>		

18 Month Stoma Rates			
NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Blackpool Teaching Hospitals NHS Foundation Trust	<p>We understand that the data used to identify presence of the stomas in rectal cancer patients at 18 months after original resection surgery is based on the hospital-based HESS system rather than the cancer specific NBOCA data system. Although the NBOCA data has been validated by clinical teams, coding information on the HESS system has not been verified by clinicians, and this undoubtedly led to inaccuracy of the HESS data especially the study data dating back to historic data from 2010. Even analysing the HESS data that was used to produce this report by your team, we noted that there were at least ten per cent data inaccuracy in the group of patients with presence of stomas at 18 months (for example, stoma closure were not coded, cases were not rectal cancer related, nor original operation did not involve stoma creation but being coded as one on the HESS system). In addition, patients' factors needed to be accounted for in the report including patients' co-morbidities, and patients' choice (for example, stoma preference in view of expected poor bowel function after surgery, or patients' preference not to reverse the temporary stoma during the study period). Moreover, we had expansion of the colorectal surgeons in the recent years, and the data may not truly reflect current trends. Overall, we as a group of colorectal surgeons at the Blackpool, Fylde &amp; Wyre Trust feel that our stoma rate at 18 months is in accordance with the national level, and is not significantly different from other areas in the UK. We are currently in the process of attempting to match non-validated HESS data with the NBOCA data.</p> <p>We have undertaken a wider analysis of the data to understand:</p> <ol style="list-style-type: none"> <li>1. Out of the 70 patients included in the stoma Audit (that you kindly sent through to us), did all of the patients meet the criteria</li> <li>2. From all of the patients submitted to the NBOCAP Audit between 01.04.2010 – 31.03.13, were there any patients that should have been included in the Stoma Audit, however, were omitted.</li> </ol> <ol style="list-style-type: none"> <li>1. For the 70 patients included in your Stoma Audit, our analysis showed: <ul style="list-style-type: none"> <li>• Of the 21 patients recorded as having no Stoma, there were two patients missing who were wrongly recorded in the stoma group as one patient never had any stoma and the other one had stoma closed within 18 months , which should take the total number to 23</li> <li>• Of the 49 patients recorded as having a Stoma, five patients were incorrectly included (two patients had sigmoid cancer, one had anal cancer two other patients had no stoma at 18 months included in the other group) which should reduce the total number of the stoma group to 44</li> <li>• This is a total of <b>67</b> patients</li> </ul> </li> <li>2. We have taken an extract from the NBOCAP database and analysed those patients that were not included in the Stoma Audit, which indicated: <ul style="list-style-type: none"> <li>• A further 27 patients with No Stoma</li> <li>• A further 14 patients with a Stoma</li> <li>• This is a total of <b>41</b> patients</li> </ul> </li> </ol> <p>This gives an overall total of <b>108</b> patients for inclusion in the Stoma Audit for Blackpool Teaching Hospitals, with 58 patients having a Stoma at 18 months, which gives the Trust a percentage of 54 per cent more in line with national levels</p>		

18 Month Stoma Rates			
NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
Lancashire Teaching Hospitals NHS Foundation Trust	<p>As clinical lead for colorectal surgery I have reviewed the records of the 68 patients who have been identified in the Audit as still having a stoma 18 months after a rectal cancer resection with a stoma from a total of 96 patients identified as having undergone such surgery. Twenty nine of these patients (42.6 per cent) underwent AP resection due to the proximity of the tumour to the anal sphincters. Ten patients (14.7 per cent) underwent a low Hartmann's resection. In nine of these there was a decision that an anastomosis would be high risk either due to severe co-morbidity or to the condition of the low rectum. In one case where the procedure was carried out as an emergency a re-anastomosis would have been technically possible but the patient developed progressive metastatic disease and was referred for ongoing palliative chemotherapy.</p> <p>Twenty eight of the patients identified as having stomas at 18 months underwent anterior resection with a primary anastomosis. In nine patients the primary reason for delay or non-closure was due to anastomotic complications. In six patients the cause was illness or death. Six patients chose to either not have their stoma closed or to delay the closure. Four patients developed metastatic disease of whom one had a delayed stoma closure following recovery from liver resection and three did not undergo stoma closure due to disease progression. Three patients who potentially could have undergone stoma closure within the 18 month post op period underwent stoma closure just out with this period (23 days, one month and two months). In two of these patients chemotherapy contributed to the delay but in one the delay appears to have been mainly due to waiting list issues.</p> <p>The AP resection rate in this Audit was 30 per cent which is slightly higher than the national average in the last NBOCAP Audit. It should be borne in mind however that this unit is a tertiary referral centre in the network and attracts referrals of patients with complex low tumours. We endeavour wherever possible to find options for patients with low tumours which avoid permanent stoma formation including monitoring of patients with complete response to radiotherapy and Transanal Endoscopic Microsurgery for early cancers.</p> <p>On review of the records of the patients in whom a low Hartmann's procedure was performed, this decision appears to have been reasonable on clinical grounds.</p> <p>In patients who underwent anterior resection there was a 15.7 per cent rate of anastomotic complications including a 10.5 per cent rate of anastomotic leaks delaying or preventing stoma closure. These rates are in keeping with published figures regarding expected complications from low anterior resection.</p> <p>Overall in all but three of patients a sound clinical reasons or reasons of patient preference for delayed or non-closure of stomas at 18 months could be identified. Two of these patients had chemotherapy and required recovery time following this before committing to further surgery and all of these patients had stoma closure within 20 months</p>		

90 Day Readmissions			
NHS Trusts	Comment	Outlier 2013 Annual Report	Outlier 2014 Annual Report
United Lincolnshire Hospitals NHS Trust	<p>According to the data supplied by you to my NHS.net account, a total of 198 patients were used to analyse the emergency readmissions within 90 days. I am assuming that these patients provided the baseline on which these assumptions has been made.</p> <p>This has come as a major surprise as United Lincolnshire Hospitals is a large Trust and 198 colonic resections over a three year seems to be a very small number indeed! The Trust diagnoses approximately 330 colorectal cancers per year and there seems to be a major sampling problem with the analysis.</p> <p>As a consequence, I have requested the IT department at our Trust to look into this data using the same codes as yourself and they have supplied me with figures which are at complete variation.</p> <p>During the period 2010 to 2013 the 90 day readmission rate was 18.44 per cent. This is our unadjusted rate and likely to fall further when subjected to the same adjustment as the NBCA. Obviously we do not have the resources to carry out the same analysis on the data. However the data suggests that our readmission rates at 18.44 per cent are actually LOWER than the national average of 19.9 per cent</p>		

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