National Oesophago-Gastric Cancer Audit 2016

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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.

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. As part of this it supports audit and the evaluation of clinical effectiveness for surgery. Registered Charity no: 212808.

The RCS analysed the data and wrote the content of the 2016 Annual Report.

The Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS) is the speciality society that represents upper gastrointestinal surgeons. It is one of the key partners leading the Audit.

The British Society of Gastroenterology (BSG) is the speciality society of gastroenterologists. It is one of the key partners leading the Audit.

The Royal College of Radiologists (RCR) is the professional body for clinical radiologists and clinical oncologists. It is one of the key partners leading the Audit.

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

National Oesophago-Gastric Cancer Audit 2016

An audit of the care received by people with Oesophago-Gastric Cancer in England and Wales
2016 Annual Report

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Acknowledgements

The National Oesophago-Gastric Cancer Audit (NOGCA) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit Programme (NCA). 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 NCA 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.

We would like to acknowledge the support of the many hospitals that participated in this audit and thank them for the considerable time that their staff devoted to collecting and submitting the data.

We would also like to acknowledge the cancer networks who contributed on behalf of Wales.

The results about critical care in Chapter 9 were calculated using data that derive from the Intensive Care National Audit & Research Centre (ICNARC) Case Mix Programme Database. The Case Mix Programme is the national, comparative audit of patient outcomes from adult critical care coordinated by ICNARC. We thank all the staff in the critical care units participating in the Case Mix Programme. For more information on the representativeness and quality of these data, please contact ICNARC.

Disclaimer: The views and opinions expressed therein are those of the authors and do not necessarily reflect those of ICNARC.

We would particularly like to thank:

- the data linkage team at NHS Digital
- the Clinical Reference Group and Project Board.

The Audit is supported by the Clinical Audit and Registries Management Service (CARMS) Helpdesk, Rose Napper, James Thatcher, Eleanor Atkinson, Arthur Yelland and the CARMS development team who provided IT support and technical infrastructure.

Foreword

We welcome the 2016 Annual Report of the National Oesophago-Gastric Cancer Audit (NOGCA), and its findings about the current management of patients with oesophago-gastric (OG) cancer or high-grade dysplasia in England and Wales.

An audit of the care received by patients with oesophageal or stomach cancer has been part of the national programme of clinical audits since 2006. Looking back at the results from the first audit and contrasting them with the findings in this current report, it is pleasing to see how some aspects of care have greatly improved. In particular, cancer services can be proud of the lower risk of death after curative surgery, with 90-day postoperative mortality rates being 3.2 per cent for oesophagectomy and 4.1 per cent for gastrectomy. There has also been excellent uptake of neoadjuvant chemotherapy among patients with junctional tumours, and definitive chemoradiotherapy among patients with squamous cell carcinoma, reflecting the changes in clinical evidence supporting their use.

Changes in other areas are also in the right direction, albeit more modest:

- The proportion of patients diagnosed after referral from general practice has increased, and after an emergency admission has fallen slightly. This is important because the latter group of patients is more commonly diagnosed with advanced disease and so is less likely to be managed with curative intent.
- The proportion of patients managed with curative intent has increased. This may reflect the increased use of definitive oncology to treat oesophageal cancers in patients unfit for surgery as well as reflecting the fall in the proportion of patients diagnosed after an emergency admission.

There are, though, areas of care that hospital staff, commissioners and clinical networks need to focus on so that the care delivered to patients is improved. Key areas of concern are:

- A significant proportion of patients with high-grade dysplasia is managed by surveillance alone instead of endoscopic or surgical treatments as recommended.
- The variation in care across NHS trusts/health boards and across strategic clinical networks in terms of the routes to diagnosis, the reported use of staging investigations, and proportion of patients managed with curative intent. These areas should be investigated further at a local level.

We would like to thank all the hospital staff involved in the Audit, from collection and submission of data to analysis and publication of the report. We encourage the English NHS trusts and Welsh health boards to use the findings from the Audit to ensure that they meet the recommendations outlined in the report, and thereby bring further improvements in local practice.

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Executive summary

Background to the Audit

Oesophago-gastric (OG) cancer is the fifth most common cancer in the UK, affecting around 16,000 people each year. Overall, survival in England and Wales is poor, with only 15 per cent of oesophageal cancer patients and 19 per cent of gastric cancer patients surviving five years after diagnosis[1,2].

The National Oesophago-Gastric Cancer Audit (NOGCA) was established in 2006 to investigate the quality of care received by patients with OG cancer. Its long term goals were to provide a benchmark against which services could compare their performance and to identify areas where aspects of care could be improved.

The first Audit collected data on patients diagnosed between June 2007 and October 2009. The Audit was restarted in 2011 and has been collecting data on patients diagnosed with cancer since April 2011. In 2012, the Audit was extended to examine the management of patients with high grade dysplasia (HGD) of the oesophagus, a disease that often progresses to cancer.

This is the 2016 Annual Report of the National Oesophago-Gastric Cancer Audit. The Audit is commissioned by the Health Quality Improvement Partnership (HQIP), and funded by NHS England and the Welsh Government. The delivery of the Audit is overseen by a Project Board, which ensures the Audit is well-managed. Advice on the clinical direction of the Audit, the interpretation of its findings and their dissemination is provided by a Clinical Reference Group (CRG), which is formed of members representing professional medical associations as well as patient organisations (see Annex 1 for further details).

This executive summary is intended for patients, caregivers, multidisciplinary teams, senior hospital managers / medical directors and commissioners. A glossary explaining terms used in the summary can be found at the end of the report.

What the Audit measures

The NOGCA collects prospective data on all adult patients diagnosed in England and Wales with either invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach, or HGD of the oesophagus. In this report, we describe the care received by patients diagnosed with OG cancer between 1 April 2013 and 31 March 2015 and their outcomes. We also describe the care of patients with HGD diagnosed since 1 April 2012.

For patients diagnosed with OG cancer, we present detailed results on the:

- route to diagnosis
- combination of staging investigations
- planned treatments
- patterns and outcomes of curative surgery
- use of palliative radiotherapy
- longer term survival after diagnosis

For patients diagnosed with HGD, we present detailed results on:

- diagnosis
- treatment planning
- treatment modality

Results are presented at a national level, strategic clinical network (SCN) level and individual NHS trust/health board level (in the Annexes), and are primarily published to support the quality improvement activities in hospitals providing OG cancer care as well as the commissioners of cancer services. The results will also be used to guide CQC inspections. In the last year, the Audit has worked with HQIP and the CQC intelligence team to create a dashboard of four key indicators: case ascertainment, rate of diagnosis after emergency admission, the proportion of patients having curative surgery, and 90-day postoperative mortality.

Finally, this report compares the current results with the patterns and outcomes of care received by a cohort of patients diagnosed approximately five years ago. These earlier results come from the first incarnation of the National Oesophago-Gastric Cancer Audit, which collected data on patients diagnosed between 1 October 2007 and 30 June 2009.

Publication of Clinical Outcomes

In addition to the results published in this report, the Audit publishes information on surgical outcomes in England at the level of both individual consultant and NHS trust. Current outcome measures include: 30 and 90-day postoperative mortality rates for patients who undergo curative surgical procedures, and the volume of procedures and length of stay. The information is published on the NHS Choices and Association of Upper Gastro Intestinal Surgeons (AUGIS) websites.

Key indicators used in the report

Throughout the report, we compare current practice with recommendations contained in various clinical guidelines. The principal UK guideline for OG cancer is the guideline published in 2011 by the Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland (AUGIS), the British Society of Gastroenterologists (BSG), and the British Association of Surgical Oncology (BASO)[3]. We also used the BSG guideline on the management of HGD[4]. Key indicators used in this report are outlined below in two separate tables for HGD of the oesophagus and OG cancer.

Key indicators used to assess the care of patients with HGD (source: BSG guidelines[4])

Domain	Standard	Indicator
Referral and diagnosis	All patients with a diagnosis of HGD should have the diagnosis confirmed by a second pathologist	% of patients whose diagnosis was confirmed by a second pathologist
Treatment planning	All patients with HGD for whom therapy is considered should be discussed at a specialist OG cancer MDT	% discussed at MDT
	Endoscopic treatment is preferred over oesophagectomy or endoscopic surveillance	% patients who received active treatment vs surveillance alone
	Endoscopic treatment should be performed in high volume tertiary referral centres	Number of cases of HGD treated at each English NHS trust

Key indicators used to assess the care of patients with OG cancer (source: AUGIS/BSG/BASO guidelines unless otherwise stated[3])

Domain	Standard	Indicator
Referral and diagnosis	GPs should be encouraged to refer patients as early as possible	% patients diagnosed after an emergency admission
Treatment planning	All patients with OG cancer should have a CT performed as an initial staging investigation	% patients reported to have had a staging CT performed
		% curative treatment plan
	Chemotherapy alone or chemoradiotherapy plus surgery are considered equally effective for the curative management of mid/lower oesophageal squamous cell cancers	% oesophageal squamous cell cancers managed curatively with definitive oncology vs surgery
Curative surgery	Overall hospital mortality for oesophageal resections should be <10%	30 and 90-day postoperative mortality rates
	Patients should have ≥15 lymph nodes excised at the time of a curative OG resection	% patients who had ≥15 lymph nodes excised at the time of a curative OG resection
Palliative therapy	Doses of palliative radiotherapy given for oesophageal cancer should follow national guidelines (RCR guideline[5])	% patients following RCR recommended radiotherapy dose

High grade dysplasia of the oesophagus

The NOGCA started collecting data on patients with HGD of the oesophagus in April 2012. The details of 1,331 patients have been reported to the Audit over the subsequent three year period.

The BSG guidelines recommend that patients should be considered for endoscopic therapy in preference to either oesophagectomy or endoscopic surveillance. Over the three year period, we found that:

- 65.7 per cent had endoscopic treatment,
- 5.4 per cent had a surgical resection and
- 28.9 per cent underwent surveillance alone.

It is concerning to see that the proportion of patients managed by surveillance alone remains high and does not appear to have fallen since we reported on this last year. Hospitals should explore whether more patients should be receiving endoscopic treatment.

Patients managed in high volume centres who have their diagnosis confirmed by a second pathologist and have their case discussed at the multidisciplinary team (MDT) are less likely to be managed by surveillance alone. This highlights the importance of ensuring the BSG recommendations on organisational volume and the referral of patients to appropriate MDTs are followed.

OG cancer: provider participation and case ascertainment

English NHS trusts submitted clinical information for 19,866 patients diagnosed with OG cancer for the two year period between April 2013 and March 2015. This equates to an estimated 79 per cent case ascertainment for England. Of the 138 individual NHS trusts which submitted ≥10 tumour records, 51 achieved an estimated case ascertainment above 90 per cent, while another 56 achieved over 70 per cent (for individual results, see Annex 3). Welsh NHS health boards submitted clinical information for a further 1,267 cancer patients via the NHS Wales central cancer information system (CaNISC). Details of the diagnostic and treatment planning process were provided for all these individuals, not all of whom go on to receive active hospital-based therapies.

In addition to this core information, the Audit received 5,050 surgical records, 4,508 pathology records, 12,719 oncology records and 3,190 endoscopic/radiological records.

The data submitted by hospitals was linked to various national datasets. This included the Office for National Statistics (ONS) Death Registry to obtain information on survival. We also obtained additional data on patient management from the English Hospital Episode Statistics (HES) database, ICNARC Case Mix Programme, and the National Radiotherapy Dataset (RTDS).

Route to diagnosis for patients with OG cancer

Patients can be diagnosed with oesophago-gastric (OG) cancer after following a number of different pathways. These include referral from a general practitioner (GP), diagnosis after an emergency admission, following referral by another hospital consultant in a non-emergency setting, or as a result of a surveillance endoscopy.

Diagnosis after a GP referral remains the most common route, with 66 per cent of patients being directly referred by their GP. Overall, 13.7 per cent of patients were diagnosed after an emergency admission, but this rate was higher for stomach cancers (21.3 per cent) than for oesophageal cancers (10.9 per cent). A diagnosis after an emergency admission is the least desirable route to diagnosis because these patients are more likely to have advanced disease and are less likely to be considered suitable for curative therapy. The current overall rate of 13.7 per cent is lower than that observed in the 2007-09 cohort when it was 15.3 per cent, but attempts to reduce this figure further should remain a focus for hospitals and GPs.

OG cancer staging investigations

All patients with a new diagnosis of OG cancer should undergo appropriate staging investigations before decisions are made about treatment. UK guidelines recommend that all patients undergo an initial staging computerised tomography (CT) scan to look for evidence of metastatic spread (M stage), and that endoscopic ultrasound (EUS), laparoscopy and positron emission tomography (PET)-CT scan be used to stage the primary tumour (T stage) and loco-regional lymph nodes (N stage), and to look further for evidence of metastatic spread (M stage), where appropriate. Such comprehensive staging will appropriately identify patients suitable for curative treatment.

For the 2013-15 period, we found that 87.2 per cent of patients had a staging CT scan at diagnosis (higher in younger, fitter patients). Among patients managed with curative intent:

- 47.5 per cent of patients with oesophageal and Siewert I cancers were reported to have had a staging EUS performed.
- 51.0 per cent of patients with Siewert II/II cancers or gastric cancers were reported to have had a staging laparoscopy.

There was significant variation at a NHS trust/health board level, which is likely to reflect poor data submission on staging investigations by some trusts/health boards to the Audit rather than systematic variation in practice. Hospitals need to improve the capture of this information at the time of MDT meetings.

Treatment planning

Unfortunately, most patients with OG cancer are diagnosed with advanced disease, and therefore not suitable for treatment with curative intent. Furthermore, some patients with disease that might have responded to curative treatment are unable to receive it because they are too frail. Options for treatment with curative intent include surgery (with or without oncology), definitive oncology and endoscopic therapy.

Overall, 37.6 per cent of patients had a curative treatment plan, a small increase from 2007-09 when 36 per cent of patients were managed with curative intent. This proportion varied across the different tumour sites, and was lowest for stomach cancers. The proportion of patients managed with curative intent within each SCN was typically between 35 and 45 per cent, and the two networks outside this range should examine the reasons for this locally.

Over the last five years, the proportion of oesophageal squamous cell cancers (SCCs) planned to have curative therapy has increased from 31 per cent to 35 per cent, and there has been a significant increase in the use of definitive oncology (rather than surgery). Definitive oncology is particularly well-suited to treating older, frailer patients but it is being used across patients of all ages and levels of fitness, in keeping with the more recent clinical evidence.

Another area that has changed over the last five years is the planned use of peri-operative chemotherapy. The proportion of patients with stage 2/3 lower oesophageal or junctional cancers receiving perioperative chemotherapy has increased from around 82 per cent to 88 per cent, which is in line with UK guidelines.

Among patients who are unable to be managed curatively, palliative oncology remains the most frequent treatment modality. The proportion of patients who receive best supportive care ranges from 22 per cent to 46 per cent across the SCNs, and clinical networks with comparatively high rates should examine whether more patients would benefit from active treatment.

Curative surgery

Data on 4,852 curative surgical procedures were submitted to the Audit, which equates to an estimated case ascertainment of 97 per cent. Where curative surgery was performed, the proportion of patients undergoing a minimally invasive oesophagectomy has increased to 38.9 per cent from 30.0 per cent in the first audit. The proportion of gastrectomies done in this manner has remained relatively stable over time (14.9 per cent compared with 13.2 per cent in the first audit).

Audit data for patients diagnosed between April 2013 and March 2014 were linked with data from the ICNARC Case Mix Programme, which captures information on patients admitted to intensive care. Patients undergoing oesophagectomy generally needed more intensive respiratory, cardiovascular and renal support postoperatively than patients having gastrectomy. Overall mortality rates in intensive care were low, being 1.1 per cent for patients having oesophagectomy and 1.3 per cent for patients having gastrectomy.

Short term postoperative mortality has fallen significantly since the first Audit. The 90-day postoperative mortality rate has fallen:

- from 5.7 per cent (95% CI 4.8-6.8 per cent) to 3.2 per cent (95% CI 2.6-3.9 per cent) for oesophagectomy, and
- from 6.9 per cent (95% CI 5.6-8.3 per cent) to 4.1 per cent (95% CI 3.2-5.2 per cent) for gastrectomy.

Examination of the risk-adjusted 90-day mortality rates for each specialist cancer centre suggests that each is performing to a similar level.

Palliative radiotherapy

The NOGCA data was linked to the radiotherapy (RTDS) dataset for patients diagnosed between 1 April 2012 and 31 March 2013. This enabled the Audit to examine the consistency of prescribed regimens with those recommended in national guidance.

The linked dataset contained 1,103 patients who were reported to have received palliative radiotherapy for oesophageal cancer. Among these patients, 58.1 per cent followed a treatment regimen recommended by the Royal College of Radiologists (RCR).

Long-term survival for OG cancer patients

The prognosis for a patient with OG cancer is strongly dependent on cancer stage and associated treatment intent. Patients who are not suitable for curative treatment have much worse long-term survival rates than patients who can be treated. However, there are few publications that give this information due to the absence of treatment intent in many national datasets. We therefore estimated survival curves (up to four years) by these factors to provide a description of current long-term survival patterns.

In addition, we examined one year postoperative survival by English NHS trusts and Welsh health boards who undertook curative procedures on patients diagnosed between April 2012 and March 2015. Each organisation achieved comparable levels of performance, with rates falling within the expected range around the national average.

Key themes and pathway to improvement

In this year's report, we have compared the patterns of care and patient outcomes for patients diagnosed between April 2013 and March 2015 with the results produced by the first NOGCA. In some aspects of the care pathway, cancer services have made significant improvements in performance, perhaps most notably in relation to the lower risk of death after curative surgery. There have also been improvements nationally in other areas, such as (1) the proportion of patients diagnosed after an emergency admission, and (2) the proportion of patients managed with curative intent. We have also seen a large increase in the use of definitive chemotherapy among patients with oesophageal squamous cell carcinoma, and a rise in the use of combined therapies (surgery and oncology), both of which are consistent with the evolving evidence base for this disease.

		2007–09	2013–15
Route to diagnosis	% diagnosed after an emergency admission	15.3	13.7
Staging investigations	% staging CT performed	89	87
Treatment planning	% curative treatment plan	36	38
	% definitive oncology among patients with oesophageal SCC	38	52
Curative surgery	% open-shut/bypass surgery	5.0	3.9
	% minimally invasive surgery Oesophagectomy Gastrectomy	 30.0 13.2	 38.9 14.9
	% 30-day postoperative mortality rate Oesophagectomy Gastrectomy	 3.8 4.5	 1.6 1.9
	% 90-day postoperative mortality rate Oesophagectomy Gastrectomy	 5.7 6.9	 3.2 4.1

There are, though, areas of care that hospital staff, commissioners and clinical networks should focus on if care is to be improved. The first area for review is the pathway to diagnosis. While there has been a modest fall in the overall proportion of patients diagnosed after an emergency admission, there were notable differences across the strategic clinical networks, which requires investigation by local services.

The accurate staging of patients after diagnosis is important to ensure that appropriate treatment options are considered by multidisciplinary teams. Consequently, the second area for review is the reduction in the proportion of patients who were reported to have undergone a staging CT scan. Services should determine whether this is a real change in practice or whether it represents the under-reporting of investigations to the Audit.

A third area for review relates to curative surgery. Although it is encouraging to see a reduction in mortality rates after curative surgery, this represents only one aspect of surgical performance. Consequently, future reports will highlight other aspects of surgical care such as the adequacy of surgical resection and whether sufficient lymph nodes were removed during the operation. Both play an important role in determining the long-term outcomes for patients having surgery. We therefore encourage surgical units to ensure these quality indicators are reviewed on a regular basis locally.

Finally, we draw attention to the results for patients with oesophageal HGD. It is concerning to note that the number of cases of HGD reported to the NOGCA has fallen slightly over the last year (Annex 5) and reasons for this should be investigated locally. Furthermore, while most patients with oesophageal HGD underwent endoscopic treatment, in line with BSG recommendations, a quarter of patients were still being managed by surveillance alone. This proportion varies significantly across English NHS trusts (Annex 7). It is important that those organisations with a high proportion of patients not receiving active treatment should review their care pathways. Where there is a lack of local expertise or limited access to endoscopic therapy, English NHS trusts should consider referring patients to specialist OG cancer centres.

Recommendations

In each Annual Report, we seek to highlight key areas for OG cancer services (and other NHS organisations) to review with the aim of identifying ways to improve patient experience and outcomes.

When thinking about the implications of these recommendations, it is important that NHS services bear in mind that recommendations from previous years' reports may also be relevant.

Multidisciplinary teams (MDTs)

Multidisciplinary teams should review the results for their organisation to ensure care is consistent with the recommendations in national clinical guidance on patients with oesophago-gastric cancer and high grade dysplasia of the oesophagus. In particular:

1. Case ascertainment of OG cancer patients within England has stabilised at around 80 per cent (Chapter 3). While MDTs are commended for their effort in submitting data for this group of patients, steps should be taken to identify the missing 20 per cent of patients to ensure their details are submitted in the future.

2. There has been a sizeable fall in the annual number of patients with HGD reported to the NOGCA since 2012 (Chapter 4). Local MDTs need to ensure that they have clear protocols in place to ensure all cases of HGD are discussed at their OG cancer MDTs, and the details of each case are submitted to the Audit.

3. Only 65.7 per cent of patients with HGD had their disease treated endoscopically, despite the BSG recommending that all patients should be considered for this treatment (Chapter 4). MDTs should prospectively monitor their management of HGD, and ensure there is access to endoscopic treatment of Barrett's HGD.

4. A significant proportion of cases of OG cancer are diagnosed after an emergency admission (Chapter 6). It is important that NHS trusts/NHS boards monitor these rates and take steps at a local level to identify possible reasons where levels are high.

5. UK guidelines recommend that all patients with a new diagnosis of OG cancer have a staging CT scan. Reported rates are very variable across NHS trusts/health boards, which may reflect poor reporting of staging investigations to the Audit (Chapter 7). It is important that NHS organisations monitor their use of staging investigations and investigate reasons for low use. Where this is due to poor reporting, mechanisms should be put in place to improve reporting in future to ensure this information is captured (e.g. at the time of MDT meetings).

6. There is variation in the planned use of palliative treatment modalities among patients unsuitable for treatment with curative intent (Chapter 8). MDTs should review the way in which patients are offered palliative treatment options and examine whether more patients would benefit from active treatment.

7. Cancer centres performing curative surgery should regularly monitor the number of lymph nodes resected and proportion of patients with positive resection margins (Chapter 9).

8. There was variation across NHS providers in the choice of palliative radiotherapy regimens for oesophageal tumours (Chapter 10). Providers should keep their current regimens under review and evaluate their practice when new guidance on radiotherapy is published by the Royal College of Radiologists.

Medical Directors of NHS trusts/ health boards

Medical Directors should review the results for their organisation. Where areas of poor performance have been identified, it is important that these findings are discussed with their medical teams in order to identify options for improving services in future. This might involve examining whether sufficient resources are available for MDTs to provide high quality care as well as to collect and submit the data requested by the Audit.

Strategic clinical networks / commissioners and health boards

There is variation between NHS providers in the provision of various elements of care along the care pathway. SCNs and commissioners (in England) and networks and health boards (in Wales) should review the results in this report for organisations within their regions, and work with NHS providers to develop strategies for addressing any areas of variation in their region. These recommendations would also be relevant for Cancer Alliances as they are established in England. We recommend that:

1. SCNs/networks should review the number of HGD cases being treated by the hospitals within their region to ensure all cases have been uploaded to the NOGCA. SCNs/networks should ensure that patients with HGD are consistently referred to a specialist centre which has experience in managing HGD.

2. SCNs/networks should know the proportion of cases of OG cancer managed with curative intent and develop strategies to improve this figure. This may involve working across organisations to develop strategies to reduce the proportion of patients diagnosed after an emergency admission.

1. Introduction

Oesophago-gastric cancer is the fifth most common malignancy in the United Kingdom, affecting approximately 16,000 people each year. Patients typically experience symptoms when the disease has become fairly advanced, and consequently, the prognosis for most patients diagnosed with these cancers is poor. Five-year survival rates for oesophageal and gastric cancer are 15 per cent and 19 per cent, respectively[1,2].

The National Oesophago-Gastric Cancer Audit (NOGCA) was established to investigate whether the care of patients with oesophago-gastric cancer is consistent with recommended practice and to identify areas where improvements could be made in future. In addition, the Audit evaluates the care received by patients with a new diagnosis of oesophageal high grade dysplasia (HGD), due to the risk of progression to oesophageal cancer if HGD is left untreated.

The Audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and is one of six National Cancer Audits currently being undertaken in England and Wales.

The delivery of the Audit is overseen by a Project Board, and ensures the Audit is well-managed. Advice on the clinical direction of the Audit, the interpretation of its findings and their dissemination is provided by a Clinical Reference Group (CRG), which is formed of members representing professional medical associations as well as patient organisations (see Annex 1 for further details).

The Audit is designed to answer questions related to:

- the pathway of care that patients took to diagnosis
- whether clinical (pre-treatment) staging is performed to the standards specified in national clinical guidelines
- whether decisions about planned curative or palliative treatments are supported by the necessary clinical data (staging, patient fitness, etc)
- access to curative modalities for suitable patients, such as neoadjuvant chemotherapy prior to surgical resection
- the use of oncological and endoscopic/radiological palliative services
- outcomes of care for patients receiving curative and palliative therapies.

Clinical guidelines recommend that general practitioners (GPs) make an urgent referral for suspected OG cancer if patients are over 55 years and present with 'alarm symptoms' (e.g. weight loss, vomiting, dysphagia). However, one-sixth of patients are still diagnosed after an emergency admission and it is generally accepted that improving the diagnostic process is an important route to increasing survival rates. One of the challenges of this is that many of the signs and symptoms of OG cancer are non-specific and are present in large numbers of individuals without cancer. Public Health England ran its 'Be Clear on Cancer' Campaign in early 2015 to raise public awareness of OG cancers, and is one of various national initiatives aimed at improving early diagnosis rates. Another focus has been reducing provider variation in the management of patients with high grade dysplasia of the oesophagus.

Establishing the options for treatment requires patients to have a number of investigations and so determine the stage of the disease. Standard investigations currently include computed tomography (CT) scan, endoscopic ultrasound and staging laparoscopy, although it is becoming accepted that positron emission tomography (PET) is beneficial for selecting patients for curative treatment. Poor staging procedures can lead to curative treatments being attempted inappropriately.

Surgery is the mainstay of curative treatment for patients with localised disease, and is often combined with preoperative (neoadjuvant) cycles of chemotherapy and radiotherapy. A recent development has been the use of chemoradiotherapy without surgery as a curative modality but this is restricted to particular types of oesophageal tumours. Curative surgery for OG cancer is a major undertaking, and is only suitable for patients who are relatively fit. Because of this, and because many patients are diagnosed with advanced disease, only around 30 per cent of patients are candidates for a curative treatment pathway.

Patients who are not eligible for curative therapy may be treated with a range of palliative treatments. Oncological therapies (chemotherapy, radiotherapy or a combination of the two) are increasingly used, with the aim of extending life. Endoscopic/radiological therapies (e.g. stenting) are principally used for symptom control.

Various clinical guidelines support clinicians in the management of oesophageal and gastric cancer, and HGD. These guidelines are used by the Audit to determine which aspects of care to examine, and as sources of the standards of care that services should be delivering. The principal UK guidelines for OG cancer are:

- The clinical guideline published by Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland, British Society of Gastroenterologists, and the British Association of Surgical Oncology[3]
- The Scottish Intercollegiate Guideline Network (SIGN) guideline on the management of oesophageal and gastric cancer[6]

While the principal guideline for HGD is:

- The British Society of Gastroenterology guidelines on the diagnosis and management of Barrett's oesophagus[4]

These two guidelines cover the care pathway: referral, diagnosis, staging, curative and palliative treatments. The National Institute for Health and Care Excellence (NICE) has provided additional guidance on particular aspects of care, notably:

- Referral Guidelines for Suspected Cancer, and the Management of Dyspepsia in Adults in Primary Care.
- Guidance on the use of interventional procedures, such as endoscopic submucosal dissection of oesophageal tumours.

Key indicators used to assess the care of patients with HGD (source: BSG guidelines[4])

Domain	Standard	Indicator
Referral and diagnosis	All patients with a diagnosis of HGD should have the diagnosis confirmed by a second pathologist	% of patients whose diagnosis was confirmed by a second pathologist
Treatment planning	All patients with HGD for whom therapy is considered should be discussed at a specialist OG cancer MDT	% discussed at MDT
	Endoscopic treatment is preferred over oesophagectomy or endoscopic surveillance	% patients who received active treatment vs surveillance alone
	Endoscopic treatment should be performed in high volume tertiary referral centres	Number of cases of HGD treated at each English NHS trust

Key indicators used to assess the care of patients with OG cancer (source: AUGIS/BSG/BASO guidelines unless otherwise stated[3])

Domain	Standard	Indicator
Referral and diagnosis	GPs should be encouraged to refer patients as early as possible	% patients diagnosed after an emergency admission
Treatment planning	All patients with OG cancer should have a CT performed as an initial staging investigation	% patients reported to have had a staging CT performed
		% curative treatment plan
	Chemotherapy alone or chemoradiotherapy plus surgery are considered equally effective for the curative management of mid/lower oesophageal squamous cell cancers	% oesophageal squamous cell cancers managed curatively with definitive oncology vs surgery
Curative surgery	Overall hospital mortality for oesophageal resections should be <10%	30 and 90-day postoperative mortality rates
	Patients should have ≥15 lymph nodes excised at the time of a curative OG resection	% patients who had ≥15 lymph nodes excised at the time of a curative OG resection
Palliative therapy	Doses of palliative radiotherapy given for oesophageal cancer should follow national guidelines (RCR guideline[5])	% patients following RCR recommended radiotherapy dose

Aim of the 2016 Annual Report

This report aims to give an overall picture of the care provided to patients with OG cancer or oesophageal HGD by NHS services. It provides information on the:

1. Management of patients with HGD of the oesophagus
2. Routes to diagnosis for OG cancer patients, and their staging investigations
3. Treatment planning for OG cancer patients
4. Patterns of curative surgery, admissions to intensive care, and short-term outcomes
5. Use of radiotherapy in palliative treatment
6. Longer term survival after diagnosis with OG cancer.

In this year's report, we provide results on OG cancer patients diagnosed between 1 April 2013 and 31 March 2015. In addition, we compare these to the results from the first NOGCA, which evaluated patients diagnosed from 1 October 2007 to 30 June 2009. These summarise how patterns of care have changed over the last five years.

The report is primarily aimed at clinicians working within hospital cancer units. Nonetheless, the information contained in the report on patterns of care is relevant to other health care professionals, patients and the public who are interested in having an overall picture of the organisation of OG cancer services within the NHS.

The results will also be used to guide CQC inspections. In the last year, the Audit has worked with HQIP and the CQC intelligence team to create a dashboard of four key indicators: case ascertainment, rate of diagnosis after emergency admission, the proportion of patients having curative surgery, and 90-day postoperative mortality.

Policy and organisation of cancer services through strategic clinical networks (SCN)

OG cancer services within England and Wales are organized on a regional basis to provide an integrated model of care. In the period up to 2012, services were organised into Cancer Networks, with each containing one or more cancer centres that provided curative surgical treatment and specialist radiology, oncology and palliative services to all patients living in the area. Diagnostic services and most palliative services continued to be provided by individual NHS trusts/health boards (units) within the network areas.

Strategic clinical networks were established in England in 2013 to work across commissioners, providers and voluntary organisations to bring cohesion, leadership, and innovation to four key health challenges including cancer. SCNs are supported by network teams based on their geographical locations. The themes of the SCNs are aligned with the NHS Outcomes framework, focusing on prevention, end of life care, urgent and emergency care and rehabilitation.

Throughout this report, we present information at the level of SCNs for England and at the level of two separate networks for Wales when the organisation of care is across various services due to the centralisation of specialist services.

2. Methods

Inclusion criteria

The Audit prospectively collects both clinical and demographic details for patients diagnosed with invasive epithelial oesophago-gastric (OG) cancer (ICD-10 codes C15 and C16), or high grade dysplasia (HGD) of the oesophagus. Patients are eligible for inclusion if they were diagnosed in an NHS hospital in England or Wales, and were aged 18 or over at diagnosis. This information was combined with other available datasets to provide a rich description of the care process and to minimise the burden of data collection on clinical staff.

Data collection

All NHS trusts in England involved in the care of both curative and palliative OG cancer patients are required to upload patient information into the Clinical Audit Platform (CAP) managed by NHS Digital. Information on the care pathway and outcomes are entered prospectively either manually or via a 'csv' file generated from other information systems. As many hospitals can be involved in the care of one patient, the hospital responsible for diagnosis or treatment uploads the relevant data, which is then anonymised by NHS Digital. Data for each patient is then collated and analysed by the Clinical Effectiveness Unit (CEU), Royal College of Surgeons. Information on the pro-forma for data collection, and the data dictionary are available from www.digital.nhs.uk/og.

Welsh data was provided by the Cancer Network Information System Cymru (CaNISC). This dataset did not provide access to information on surgical complication rates or on patients diagnosed with oesophageal HGD, as a result this data is not reported for Welsh patients.

Linkage to other data sets

The Audit dataset is linked to various other national datasets. This process reduces the burden of data collection, enables the quality of the data submitted by hospitals to be checked by comparing data items shared by the different datasets, and allows the Audit to derive a richer set of results.

The Audit dataset was linked to extracts from the:

1. Office for National Statistics (ONS) Death Register to provide accurate statistics on cancer survival
2. Hospital Episode Statistics (HES) to provide additional information on hospital care both before and after the date of diagnosis, and to validate activity data provided by hospitals (e.g. dates of procedures)
3. Intensive Care National Audit & Research Centre (ICNARC) Case Mix Programme Database, to describe care received in critical care by patients having surgery
4. National Radiotherapy Dataset (RTDS) to provide a richer description of radiotherapy practices

Data were linked using a hierarchical deterministic approach, which involved matching patient records using various patient identifiers (NHS number, sex, date of birth, and postcode).

Use of Hospital Episode Statistics to calculate Audit case ascertainment

Hospitals Episode Statistics (HES) is the national hospital administrative database for all acute NHS trusts in England. Each HES record describes the period during which an admitted patient is under the care of a hospital consultant (an episode). Clinical information is captured using the International Classification of Disease (ICD-10) diagnostic codes and the Classification of Surgical Operations and Procedures (OPCS-4). The records of an individual patient are allocated the same anonymised identifier which enables the care given to patients to be followed over time.

Patients with oesophago-gastric (OG) cancer were identified in HES by searching records for the ICD-10 diagnosis codes C15 and C16 in the first diagnostic field. As it is possible for a patient to have multiple HES episodes during a single admission to hospital, in order to determine the number of OG cancer patients in HES over the relevant timeframe, the date of diagnosis was taken as the admission date of the episode in HES where OG cancer was first recorded in the first diagnostic field.

Statistical analysis of data

The results of the Audit are presented at different levels:

1. strategic clinical network (SCN) level for England, with Wales considered as two separate networks (North and South), and
2. NHS trust/health board level.

The values of the various process and outcome indicators are typically expressed as rates and are presented as percentages. Averages and rates are typically presented with 95 per cent confidence intervals (CI) to describe their level of precision. When shown graphically, network rates are plotted against the overall national rate, with networks ordered according to the number of patients on whom data were submitted. English patients were allocated to the SCN based on their NHS trust of diagnosis and not by region of residence. Welsh patients were similarly allocated to either North or South Wales.

In descriptive analyses of continuous variables, the distribution of values are described using appropriate statistics (e.g. mean and standard deviation or median and interquartile range). We follow the Office for National Statistics policy on the publication of small numbers to minimise the risk of patient identification from these aggregate results.

The statistical significance of differences between patient groups or geographical regions were tested using appropriate tests (such as a t-test for the difference between two continuous variables and a chi-squared test for the differences between proportions). Long term patient survival was described using Kaplan-Meier curves and the statistical significance of differences between patient groups was assessed using the log rank test.

We derived risk-adjusted 30-day and 90-day mortality rates for patients who underwent curative surgery for each NHS trust/health board. The rates were adjusted to take into account differences in the casemix of patients treated at each centre using a flexible parametric survival model. This model was used to estimate the risk of death for each individual having surgery, and these were then added to calculate the predicted number of deaths for each NHS trust/health board. The regression models included the following patient characteristics: age at diagnosis, gender, comorbidities, performance status, overall stage of tumour, site of tumour and ASA grade.

We present the organisational mortality rates using funnel plots. Two funnel limits were used that indicate the ranges within which 95.0 per cent (representing a difference of two standard deviations from the national rate) or 99.8 per cent (representing a difference of three standard deviations) would be expected to fall if variation was due only to sampling error. The control limits were calculated using the "exact" Binomial method. Following convention, we use the 99.8 per cent limits to identify 'outliers' as it is unlikely for an NHS organisation to fall beyond these limits solely by chance.

If the Audit identifies an NHS organisation as an outlier, we follow the process outlined in the Department of Health "Detection and Management of Outliers" policy, published in January 2011. This policy involves giving the organisation an opportunity to review their data to ensure it is complete and free of errors. If the organisation remains an outlier after this review, the Audit will contact the organisation's clinical governance lead, Medical Director and Chief Executive. The CQC will also be informed.

The results of NHS trusts/health boards with a case volume of less than ten were not included in the funnel plots because such small samples lead to unreliable statistical estimates due to the play of chance.

3. Participation

The records of patients diagnosed with OG cancer or HGD for this report were extracted from the Clinical Audit Platform (CAP) system after the final submission deadline. Overall, 141 English NHS trusts and six Welsh NHS health boards submitted patient data.

The number of OG cancer records submitted by organisations in England and Wales between April 2013 and March 2015 are summarised in Table 3-1.

In 2001, the Department of Health recommended the centralisation of specialist OG cancer services. This has been an ongoing process, resulting in a gradual decrease in the number of NHS trusts treating OG cancer patients from the 154 NHS trusts in England in the first audit to the 141 now.

Table 3-1 shows the number of records submitted in the two audit periods.

Table 3-1
Number of data forms entered in England and Wales by audit year

	2007–09		2013–15	
	England	Wales	England	Wales
Number of tumour record	16,264	1,015	19,866	1,267
Estimated case ascertainment (%)	(71)		(79)	
Number of surgical records	3,515	Not Reported	4,853	197
Case ascertainment (%)	(82)		(97)	
Number of pathology records	Not Reported		4,354	154
Number of endoscopic/palliative record*	3,249		2,991	199
Oncological records*				
Number of curative records	3,630		5,257	195
Number of palliative records	4,328		7,050	217

* The numbers of oncological and endoscopic/palliative records were jointly reported for England and Wales in 2007-09. We report these figures separately in 2013-15.

Case ascertainment was calculated for individual English NHS trusts by comparing the number of tumour records in the Audit dataset with the number of patients identified within the Hospital Episode Statistics database over the relevant time frame. Case ascertainment was not calculated for Welsh organisations as denominators were not available to the Audit.

The estimated number of cases of OG cancer in HES was 25,377 for the 2013-15 data collection period. Combined with the 19,866 Audit tumour records submitted by English NHS trusts, this gives an overall case ascertainment of 79 per cent. This is an increase from the first audit period, when case ascertainment was estimated to be 71 per cent.

Similarly, using HES as a gold standard, case ascertainment of surgical records for English hospitals is estimated to be 97 per cent for the current data collection period, an increase from 82 per cent in 2007-09.

It is not possible to quantify submission of oncological records and endoscopic/palliative records as we do not have a reliable denominator. The proportion of pathology records returned after surgery was 4,354/4,853 (90 per cent) in England and 154/197 (80 per cent) in Wales in 2013-15. It is important that NHS trusts/health boards return all pathology records to assess the effectiveness of surgical procedures.

Case ascertainment of tumour records by English NHS trust is given in Annex 3.

Completeness of submitted surgical records

Data from the surgical records is used to examine the pattern of curative and surgical practice among specialist cancer centres. The data is also used to derive consultant level surgical outcome information that the Audit produces for the NHS England Clinical Outcomes Publication initiative. Hence, it is important that these records are complete and free from data errors.

The completeness of surgical records by trusts/health boards is given in Annex 4. The clinical audit platform (CAP), which was introduced in 2012, introduced a number of data validation rules which make all but one of the risk adjustment items mandatory – the current exception is the comorbidities variable but this was made mandatory from April 2016.

Length of stay is another important aspect of patient care. In the first instance, length of stay is calculated as the difference between the date of operation and date of discharge. For a proportion of patients, the discharge date is missing from the submitted audit data (as date of discharge is not mandatory) or both the date of operation and date of discharge contain errors which leads to an invalid length of stay. In these cases, length of stay can be calculated reliably using the corresponding fields in the linked hospital episode statistics (HES) records.

Key findings

Case ascertainment for both tumour records and surgical records have improved markedly since the first audit and we are grateful for the diligence and effort of the hospital staff who have contributed towards the improvement in data collection.

We thank the Clinical Audit Support Unit for the developments made on CAP which has improved data quality and completeness, by gradually introducing changes to the system after feedback from the NHS trusts/health boards and CEU staff.

4. Management of HGD patients in England

In a small proportion of patients with Barrett's oesophagus, the cells become increasingly abnormal, a condition called dysplasia. The most severe form of dysplasia, known as high grade dysplasia (HGD), is a recognised risk factor for oesophageal cancer, with around 5.6 per cent of patients diagnosed with HGD going on to develop oesophageal cancer each year after diagnosis[7].

Until recently, oesophagectomy was the only treatment option available for HGD. This was associated with significant morbidity and mortality, and patients were frequently recommended to undergo regular surveillance endoscopy as a way to manage the risk of progression to cancer and patients would only have surgery if this was detected.

Over the last ten years, less invasive endoscopic treatments have been developed, including endoscopic resection and radiofrequency ablation. Consequently, in the most recent BSG guidance, endoscopic treatment is recommended as the first line treatment for HGD in preference to either surgery or surveillance alone[4].

Previous surveys have reported significant variation in the management of HGD[8-11]. In order to optimize the care of patients with HGD across the country, the BSG have made the following additional recommendations regarding its management:

- **Systematic biopsies should be taken every 2cm from the segment of Barrett's oesophagus at endoscopy, as well as of any visible nodules**. It is important to ensure this rigorous biopsy regimen is followed in order to optimise detection of dysplasia.
- **Once a diagnosis of HGD is made, this should be confirmed by at least one other specialist gastrointestinal pathologist.** This is because the grading of the degree of dysplasia present can be subjective, and studies have shown that the risk of progression to cancer is significantly higher among patients whose diagnosis of HGD is confirmed by two pathologists.
- **All patients with a diagnosis of HGD should be discussed at a specialist multi-disciplinary team meeting (MDT), prior to treatment.** This is to ensure the patient is considered for the most appropriate treatment option.

To assess the standard of care for patients with HGD across England, the NOGCA has been collecting information on all patients with a new diagnosis of HGD since 1 April 2012.

Participation in HGD component

For patients diagnosed with OG cancer, it is possible to estimate the case ascertainment of the Audit in England by comparing the number of cases recorded in the NOGCA with the number of cases recorded in Hospital Episode Statistics (HES). Unfortunately, this is not possible for the HGD component of the Audit because there is no ICD-10 code specific to the diagnosis of HGD that hospitals can use to identify these patients in HES. Moreover, there is no other national data collection that captures these cases. In lieu of this, the NOGCA monitors the number of cases reported to the Audit each year (Table 4-1). For the last year, the number of cases has fallen compared to the two earlier years. This is disappointing because it is likely to reflect a drop in reporting of cases rather than a change in the underlying incidence of the disease.

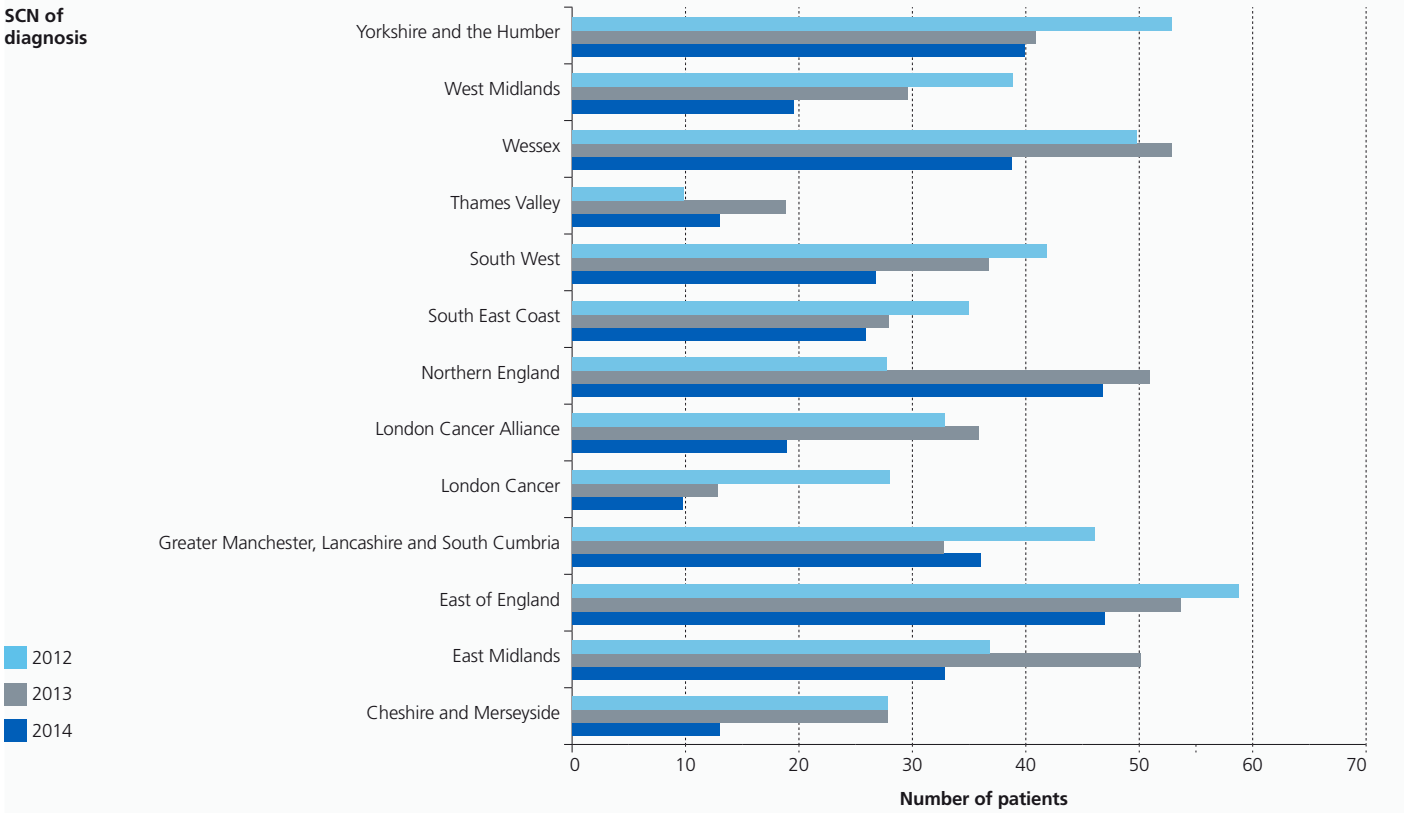
Table 4-1
Number of cases of HGD diagnosed by year of diagnosis, in England

Year of diagnosis	Number of HGD cases submitted to NOGCA
2012 – 13	488
2013 – 14	473
2014 – 15	370
Total	**1331**

Figure 4-1 describes the number of cases submitted to the Audit by hospitals within each English SCN. The numbers for each network should not vary significantly each year, and where this is evident, it is likely to reflect a change in case ascertainment. There was a concerning drop in the number of cases reported at several SCNs. Annex 5 describes the number of cases diagnosed at each English NHS trust by year of diagnosis.

Annex 6 provides information about the completeness of the data submitted to the Audit.

Figure 4-1
Number of cases of HGD diagnosed by year of diagnosis and SCN, in England



Patient characteristics and referral pathway

The characteristics of patients diagnosed with HGD are described in Table 4-2. There is a weak trend towards an increasing proportion of patients being diagnosed as a result of a surveillance endoscopy from 44.0 per cent to 50.9 per cent, but this was not statistically significant (p=0.16).

For patients diagnosed since 1 April 2014, we have been collecting data on comorbid conditions suffered by patients with HGD. Overall, 112 (42.4 per cent) patients have at least one comorbid condition, the most common being cardiovascular disease, which affected 51 patients (19.3 per cent).

Table 4-2
Characteristics of patients diagnosed with HGD by year of diagnosis, in England

	2012 – 2013	2013 – 2014	2014 – 2015	Total
Number of patients	488	473	370	1331
Male, n (%)	348 (71.3)	349 (73.9)	291 (78.7)	988 (74.3)
Median (IQR) age in years	72 (65-79)	72 (64-79)	71 (64-78)	72 (64-79)
Source of referral, n (%)				
Symptomatic	247 (56.0)	234 (53.2)	168 (49.1)	649 (53.1)
Surveillance	194 (44.0)	206 (46.8)	174 (50.9)	574 (46.9)
Missing	47	33	28	108

Diagnosis and treatment planning

The number of patients diagnosed with HGD at each English NHS trust was quite low. Only six (4.3 per cent) trusts diagnosed a total of 30 or more patients over the three years. There were 21 NHS trusts that diagnosed between 15 and 30 patients, while the remaining 112 (80.6 per cent) diagnosed less than 15 patients over the three years (equivalent to less than five per year). While incomplete case ascertainment may affect these figures slightly, they show that many organisations are treating few cases each year.

Once an initial diagnosis of HGD is made, it is recommended that this diagnosis is confirmed by a second pathologist. This was reported to have occurred for 1,038 (78.0 per cent) patients, and this proportion did not vary significantly by year of diagnosis.

Endoscopic findings at the time of diagnosis were not mandatory for the first two years of the Audit, and consequently, these fields were variably completed. Changes have been made to the dataset such that this information is now mandatory for entry of patients into the Audit.

Overall, the length of Barrett's oesophagus was recorded for 427 (31.2 per cent) patients. When reported, the median circumferential length of Barrett's oesophagus was 4cm (IQR 2-7), with 35.6 per cent of patients having a short segment of Barrett's (< 3cm) and 12.4 per cent having a very long segment of Barrett's (10cm or more).

The endoscopic appearance of the Barrett's was described for 732 (55.0 per cent) patients:

- 55.6 per cent of patients were reported to have nodular disease,
- 40.0 per cent had flat mucosa and
- 4.4 per cent had a depressed lesion.

Analysis of the pathology specimen in 638 cases (47.9 per cent) revealed that:

- 38.7 per cent of cases had a multifocal lesion and
- 61.3 per cent had a unifocal lesion.

As 48.4 per cent of cases had HGD lesions that were both flat and unifocal, it is important that a systematic biopsy protocol is followed at endoscopy to optimise detection of areas of dysplasia. The Audit began collecting data on this last year. Among the 154 patients in which biopsy technique data were available, quadratic biopsies were reported to have been taken in 68.6 per cent of patients.

Treatment Planning

There were 115 NHS trusts that had responsibility for the treatment of patients with HGD. Of these, the average number of patients treated was less than five cases per year at 91 trusts (79.1 per cent), and only 13 (11.3 per cent) treated the equivalent of ten or more cases per year. The BSG guideline currently recommends that the management of HGD is limited to NHS trusts treating 15 or more cases each year. Only six trusts (5.2 per cent) treated this number of patients in every year of data collection.

Once a diagnosis of HGD is made, it is important that the case is discussed at an upper GI MDT to ensure that the most appropriate treatment is selected for the patient. This was reported to occur in 87.4 per cent of cases. There was no significant change in this proportion by year of diagnosis.

Treatment modality

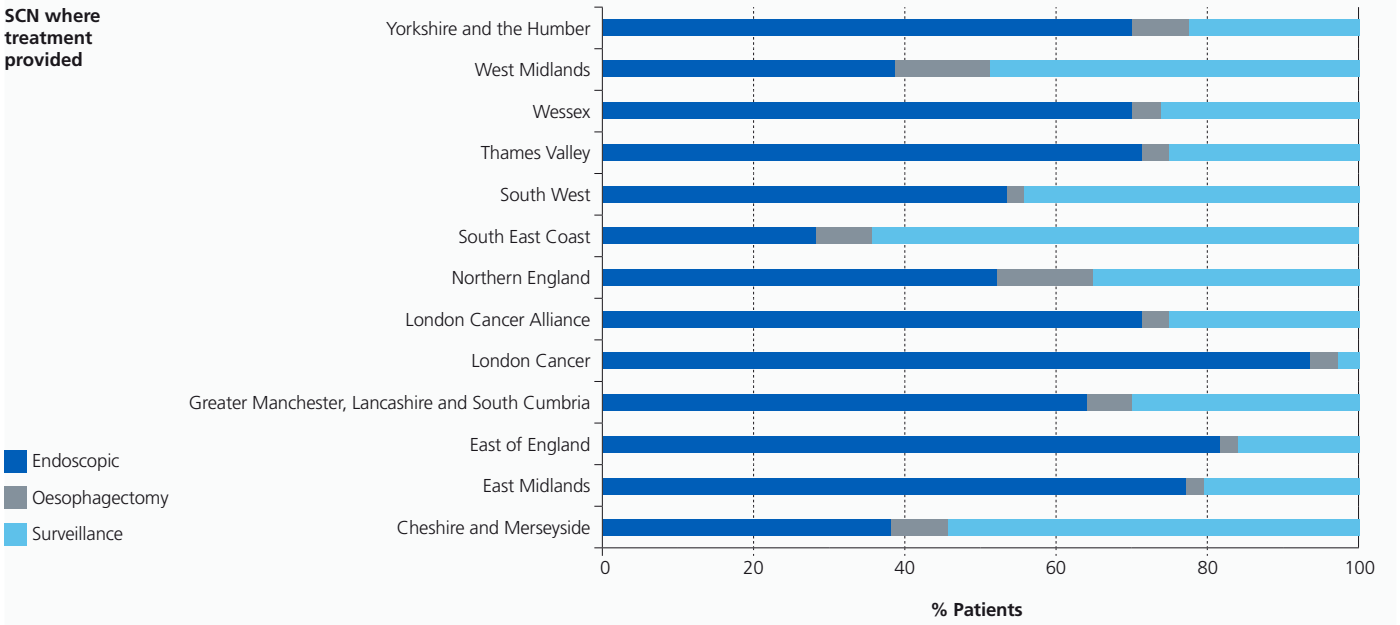
In the most recent BSG guidance, endoscopic treatment is recommended as the first line treatment for HGD in preference to either surgery or surveillance alone[4]. The pattern of care across NHS trusts reveals endoscopic treatment is now used for the majority of patients. Among the 1255 (94.3 per cent) patients with known primary treatment modality:

- 65.7 per cent of patients had a plan of endoscopic therapy,
- 5.4 per cent of patients had a plan of surgery, and
- 28.9 per cent of patients had a plan of surveillance alone.

When the choice of modality was endoscopic therapy, the most common treatments were endoscopic mucosal resection (69.0 per cent) and radiofrequency ablation (24.4 per cent).

While the majority of patients were recommended to have active endoscopic treatment, there was significant variation in the choice of treatment modality across SCNs (Figure 4 2). Within some networks, the proportion of patients planned to have active treatment exceeded 80 per cent, but in others, more than 50 per cent of patients are planned to have surveillance only. The proportion of patients managed by surveillance alone did not vary significantly by year of diagnosis. Annex 7 describes the management of patients with HGD by the NHS trust.

Figure 4-2
Choice of treatment modality for patients diagnosed 2012–15 by SCN where treatment given, in England



The use of surveillance was related to various patient characteristics. These included: increased age at diagnosis ($p<0.001$) and a presence of comorbidities ($p=0.006$). The use of surveillance was also more common when patient's had a short (< 3cm) segment of Barrett's oesophagus ($p=0.04$). Whether a lesion was unifocal or multifocal did not affect the proportion of patients managed by surveillance.

We also explored whether hospital factors were associated with the use of surveillance.

We found that surveillance was more common among:

- patients who had not had their diagnosis confirmed by a second pathologist (42.3 per cent vs 21.1 per cent, $p<0.001$)
- patients who did not have their plan discussed at an MDT (46.9 per cent vs 24.9 per cent, $p<0.001$)
- trusts treating less than 15 patients each year ($p<0.001$) (Table 4-3).

Table 4-3
Choice of treatment plan according to the number of patients the trust treated over three years, in England

Number of patients treated at trust	Active treatment		Surveillance alone		Overall	
	n	%	n	%	n	%
Less than 15	206	56.1	161	43.9	367	100
15 - 30	147	62.0	90	38.0	237	100
30 or more	539	82.8	112	17.2	651	100
Total	**892**	**71.1**	**363**	**28.9**	**1,255**	**100**

It is concerning that such a high proportion of patients are managed by surveillance alone. We made changes to the Audit dataset in the last year to enable us to explore the reasons for this; NHS trusts are now required to document the reason for surveillance. Currently, the data is this field is very limited. The reasons reported so far are that surveillance was planned due to patient choice (42.4 per cent) or because the patient was unfit for surgery or endoscopic therapy (57.6 per cent).

Use of Endoscopic Mucosal Resection/ Endoscopic Submucosal Dissection

Overall 605 patients were recorded to have an Endoscopic Mucosal Resection/Endoscopic Submucosal Dissection (EMR/ESD) as their planned primary treatment modality. Among the 573 with data on the outcome of the EMR/ESD:

- 68.4 per cent of patients were reported to have had a complete excision
- 33.0 per cent of patients had their histological diagnosis upgraded to intramucosal or submucosal cancer,
- 12.6 per cent of patients had no evidence of HGD or cancer was found in the EMR/ESD resected specimen.

Key findings

It is concerning to see that the proportion of patients managed by surveillance alone is still high and does not appear to be falling over time. The reasons for this need to be explored at a local level.

We note that patients managed in high volume centres who have their diagnosis confirmed by a second pathologist and have their case discussed at the MDT were less likely to be managed by surveillance alone. This highlights the importance of ensuring the BSG recommendations on organisational volume and the referral of patients to appropriate MDTs are followed.

The continued use of surveillance also highlights the importance of hospitals using the Audit to monitor their practice. In this respect, it is disappointing to see a fall in the number of HGD cases reported to the Audit over the last three years. This drop-off needs to be investigated at a local level to ensure processes are in place to ensure high case ascertainment.

Recommendations

It is important that NHS trusts/health boards have clear protocols in place to ensure all cases of HGD are referred to the UGI MDT. MDT lists should then be reviewed on an annual basis to ensure all cases of HGD are reported to the NOGCA in order to maximise the case ascertainment of the Audit.

MDTs should prospectively monitor their management of patients with HGD, where they only deal with a few cases of HGD each year it is important that they consider referral of these cases to their local specialist centre to ensure the patient has all treatment options made available to them.

5. Patients with OG cancer

This chapter describes the cohort of patients diagnosed with OG cancer between 1 April 2013 and 31 March 2015. It also presents information about the patient cohort enrolled during the 21 months of the first audit – patients diagnosed between 1 October 2007 and 30 June 2009.

Overall 21,133 were diagnosed between 2013-5. Approximately half of the patients had a tumour of the distal oesophagus or GOJ while one in three patients had tumour located in the stomach (Table 5-1).

Table 5-1
Distribution of OG cancer tumours across the various sites by audit year, in England and Wales

Site	n (%)		Sub–site	n (%)	
	2007 – 2009	2013 – 2015		2007 – 2009	2013 – 2015
Oesophagus	8,826 (51.1)	11,670 (54.7)	Upper third	673 (8)	880 (8)
			Middle third	2,209 (25)	2,810 (24)
			Lower third	5,944 (67)	7,980 (68)
G-O junction	3,146 (18.2)	3,670 (17.4)	Siewert I	1,299 (41)	1,379 (38)
			Siewert II	860 (27)	1,272 (35)
			Siewert III	987 (31)	1,019 (28)
Stomach	5,307 (30.7)	5,791 (27.4)	Fundus	694 (13)	644 (11)
			Body	2,670 (5)	3,253 (56)
			Antrum	1,329 (25)	1,190 (21)
			Pylorus	614 (12)	704 (12)
Total	**17,279**	**21,133**		**17,279**	**21,133**

Tumours of the G-O junction are described using the 3 category Siewert classification [Siewert et al 1996]:

I. Adenocarcinoma of the distal oesophagus, the centre of which is within 2-5cm proximal to the anatomical cardia. It may infiltrate the gastro-oesophageal junction from above.

II. True junctional adenocarcinoma, the centre of which is within 2cm above or below of the anatomical cardia.

III. Subcardial gastric adenocarcinoma the centre of which is within the 5cm distal to the anatomical cardia. It may infiltrate the gastro-oesophageal junction from below.

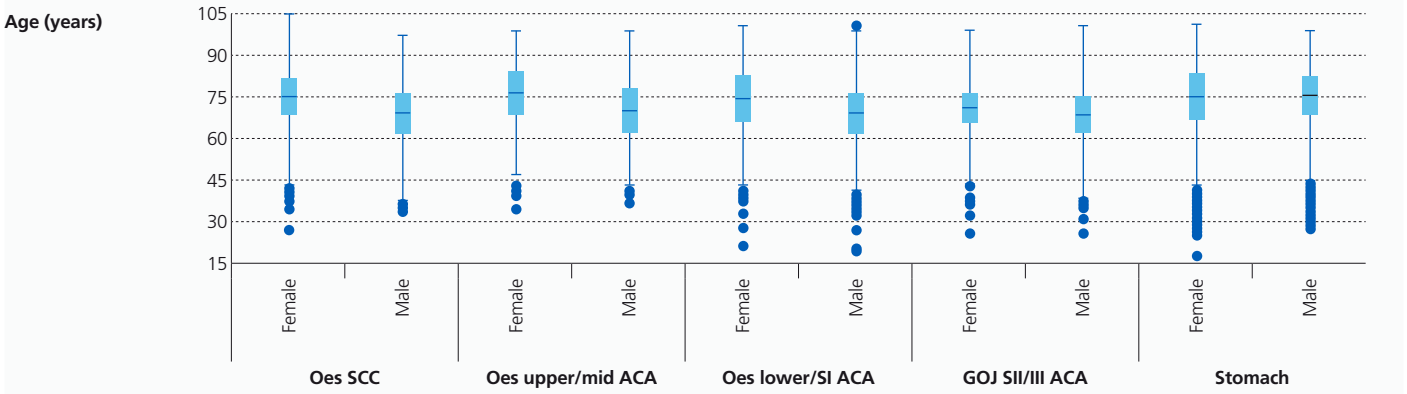
The two cohorts were fairly similar in the distribution of the tumours across the various anatomical sites. There was a small change in the number of tumours around the G-O junction (the lower third of oesophagus and Siewert I region) as well as a small decrease in the number of stomach tumours between the two cohorts. This is consistent with the trends in incidence that have been observed over the last 30 years.

Overall, men were more likely to be diagnosed with oesophageal adenocarcinomas than women (Table 5-2). In contrast, the proportion of men and women diagnosed with oesophageal SCCs is roughly equal. The distribution of patient age by type of tumour and patient sex is shown in Figure 5-1, and is similar to that in 2007-09. Overall age group at diagnosis did not change significantly over time, and Figure 5-1 clearly shows it is a disease of older age. In 2013-15, only ten per cent of patients were under 56 years in 2013-15 and only 1 per cent of patients were under 40 years.

Table 5-2
Summary of patient characteristics by type of tumour in 2013-15 patient cohort, in England and Wales

	Oes SCC	Oes upper/mid ACA	Oes lower/SI ACA	GOJ SII/SIII ACA	Stomach
Ratio Female : Male	1:0.94	1:2.6	1:4.0	1:3.5	1:1.8
Median age (years)					
Male	70	71	69	70	75
Female	74	77	75	72	76
Performance status ≥3, %	16	13	12	11	18
Patients with ≥1 comorbidity, %	33	32	36	36	37

Figure 5-1
Distribution of patient ages at diagnosis, grouped by type of tumour and patient sex



* The limits of the box shows 25th, 50th (median) and 75th percentiles. The outer limits show the minimum or maximum age unless the patient ages are high or low compared to the spread of the interquartile range. These distance values are shown as circles.

6. Routes to diagnosis

Patients can be diagnosed with oesophago-gastric (OG) cancer after following a number of different pathways. These include referral from a general practitioner (GP), diagnosis after an emergency admission, following referral by another hospital consultant from a non-emergency setting, or as a result of a surveillance gastroscopy. The NOGCA previously reported that patients diagnosed as a result of an emergency admission were significantly less likely to be considered for curative therapy[12].

In this chapter, we present results on whether the proportion of patients diagnosed after an emergency admission has changed since 2007-09, the relationship between route to diagnosis and treatment intent, and the variation in the proportion of patients diagnosed after an emergency admission by strategic clinical network (SCN).

Audit findings

Since 2007-09, there has been a small decline in the proportion of patients diagnosed as a result of emergency admission (Table 6-1), from 15.3 per cent (95% CI 14.6-16.0 per cent) to 13.7 per cent (95% CI 13.2-14.2 per cent).

Table 6-1
Changes in route to diagnosis over time, in England and Wales

Route to diagnosis	2007 – 2009		2013 – 2015	
	n	%	n	%
Emergency admission	1,682	15.3	2,706	13.7
GP referral	7,342	66.6	12,945	65.6
Other hospital consultant	1,994	18.1	3,792	19.2
Open Access endoscopy*	-		184	0.9
Barrett's surveillance*	-		118	0.6
Total	**11,018**	**100**	**19,745**	**100**
Missing	1,208		2,783	

*Changes made to the dataset with the 2nd NOGCA led to the introduction of two new options for source of referral, open access endoscopy and Barrett's surveillance

Despite the small reduction over time, a significant proportion of patients are still being diagnosed after an emergency admission. It is important that steps are taken to try and reduce this figure further because patients referred by this route are less likely to be managed with curative intent (Table 6-2).

While 39.5 per cent of patients diagnosed as a result of a referral by a general practitioner (the most common route) are managed with curative intent, the proportion of patients that are managed curatively if diagnosed after an emergency admission was only 17.1 per cent. This probably reflects that these patients are more likely to have late stage disease at diagnosis.

Table 6-2
Treatment intent by source of referral for patients diagnosed 2013–15, in England and Wales

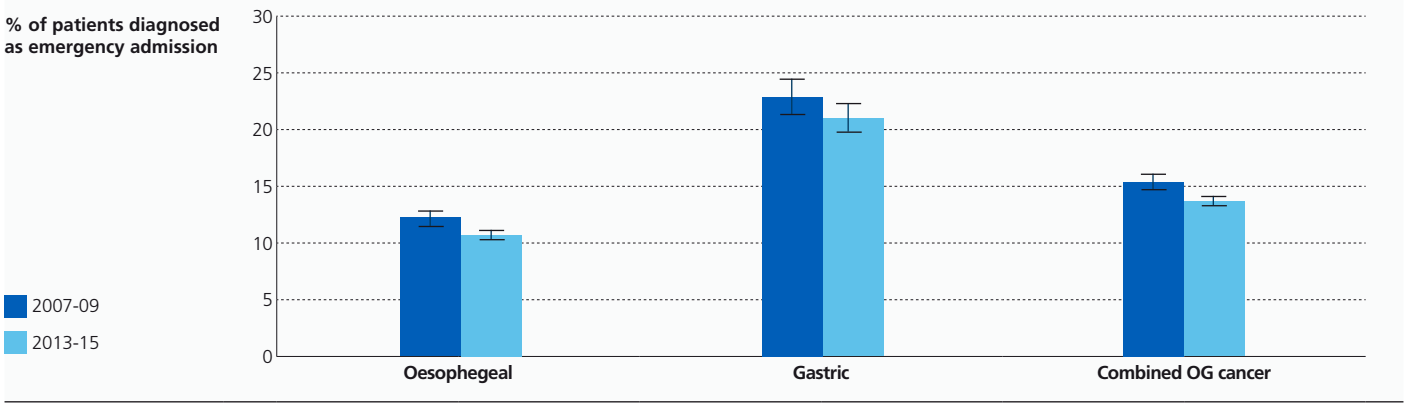
Source of referral	Curative intent		Palliative intent		Total	
	n	%	n	%	n	%
Emergency admission	463	17.1	2,243	82.9	2,706	100
GP referral	5,117	39.5	7,829	60.5	12,945	100
Other hospital consultant	1,624	42.8	2,168	57.2	3,792	100
Open Access endoscopy	97	52.7	87	47.3	184	100
Barrett's surveillance	95	80.5	23	19.5	118	100
Total	**7,396**		**12,349**		**19,745**	
Missing	555		840		1,388	

The route to diagnosis followed by a patient was associated with various patient characteristics. Diagnosis after an emergency admission was more common among:

- patients with stomach cancers compared to oesophageal cancers (21.3 per cent vs 10.9 per cent, p<0.001) (see Figure 6-1)
- patients who were older (10.8 per cent patients <60 years vs 28.7 per cent patients ≥90 years, p<0.001)
- patients with a poorer performance status (10.8 per cent performance status 0/1/2 vs 31.1 per cent performance status 3/4, p<0.001)

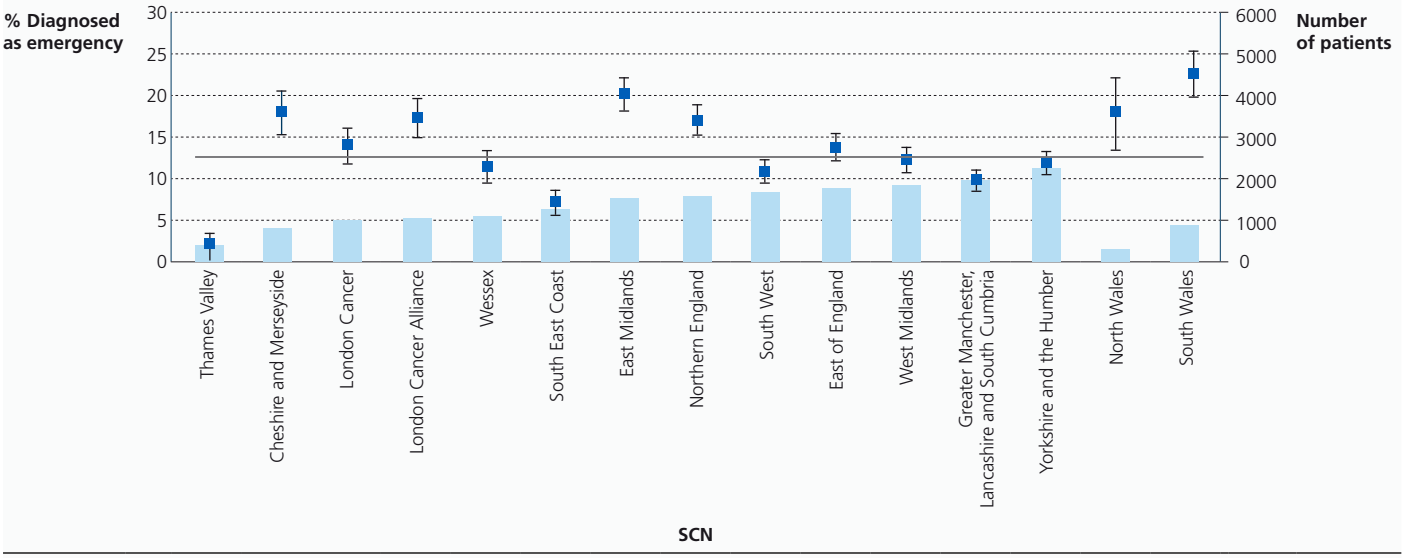
The associations between this route to diagnosis and these patient factors are unchanged since the 2009 NOGCA report.

Figure 6-1
Proportion of patients diagnosed after an emergency admission by OG cancer site and year of diagnosis, in England and Wales



There was significant variation across the networks in the proportion of patients diagnosed after an emergency admission. Figure 6-2 shows these proportions for patients diagnosed during 2013-15. Annex 8 reports the proportion of patients diagnosed as a result of an emergency admission by NHS trust/health board of diagnosis.

Figure 6-2
Crude proportion of patients diagnosed between 2013-2015 after an emergency admission by SCN, in England and Wales



** Overall average for England and Wales was 13.7 per cent. The calculation was based on cases which had complete data on source of referral.

Time to diagnosis

The NHS cancer plan 2000 introduced the following targets in cancer diagnosis[13]:

- Patients should be seen within 14 days of referral by their GP with suspected cancer.
- Patients should receive treatment for their cancer within 62 days of referral by their GP with suspected cancer.
- All cancers to be treated within 31 days of decision to treat.

Within NOGCA, we examined the relationship between the time between referral by the GP and diagnosis of OG cancer.

For patients diagnosed during 2013-15, the priority of referral was known for 12,892 patients. Of these, 9,907 (76.9 per cent) patients were two week wait (2WW) referrals. Only 45.6 per cent of patients the 2WW referrals had a diagnosis of cancer made within 14 days, while 79.9 per cent had a diagnosis made within 28 days.

Within the context of the Audit, it is not known where the delays occur in the pathway from GP referral to diagnosis. Patients may undergo the relevant diagnostic test within 14 days of referral, but there may be delays in receiving histological confirmation of the diagnosis. It is therefore important that NHS trusts/health boards continue to monitor delays between referral and diagnosis and examine reasons for these delays at a local level.

Key findings

As highlighted in the 2009 NOGCA report, patients diagnosed as a result of an emergency admission were significantly less likely to be managed with curative intent than those diagnosed through any other referral route. It is therefore encouraging that the proportion of patient diagnosed after an emergency admission has fallen slightly since the 2007-09, from 15.3 per cent to 13.7 per cent.

Nonetheless, this report highlights that there is still significant variation across SCNs in the route to diagnosis. It is therefore important that the strategic clinical networks and NHS trusts/health boards identified as having a high proportion of patients diagnosed after an emergency admission investigate possible reasons for this. In the future, the Care Quality Commission (CQC) will use this measure as part of the information used to prepare for inspection visits.

There are still significant delays between referral and diagnosis for GP referrals, even for those patients coming through the two week wait suspected cancer pathway.

Recommendations

A significant proportion of cases of OG cancer are diagnosed after an emergency admission. It is important that NHS trusts/NHS boards monitor these rates and take steps at a local level to identify possible reasons for this where levels are high.

7. Staging investigations

Once a diagnosis of oesophago-gastric (OG) cancer is made, patients need to undergo appropriate staging investigations to determine the extent of the disease and whether it is potentially amenable to curative therapy. The initial element of staging aims to look for evidence of metastatic disease. If the tumour has not spread and curative therapy is being considered, more precise staging is recommended with the use of endoscopic ultrasound (EUS) and staging laparoscopy as appropriate.

The UK guidelines for the management of oesophageal and gastric cancer[3] recommend the following staging investigations:

- CT scan of chest/abdomen and pelvis to provide an initial assessment, and look for evidence of metastatic spread.
- Endoscopic resection, if there is evidence of T1 disease or nodular high grade dysplasia to assess the depth of tumour invasion.
- Endoscopic ultrasound (EUS) for oesophageal, gastro-oesophageal junction (GOJ) and selected gastric cancers to provide more accurate assessment of T-stage and look for evidence of local nodal involvement. The addition of fine-needle aspiration may further improve the diagnostic accuracy.
- Positron emission tomography (PET)-CT to assess for evidence of more distant nodal disease.
- Laparoscopy for all gastric cancers and selected lower oesophageal and GOJ tumours. This allows direct visualisation for low volume hepatic and peritoneal metastases, and assessment of the degree of local spread.

Studies have shown that EUS is superior in staging the tumour size (T stage) compared to PET and CT[14]. However, for identifying spread to the lymph node system (N stage), and whether there is metastatic spread (M stage), a recent systematic review and meta-analysis[15] suggested that EUS, CT and PET each play their own distinctive role.

For the 2007-09 cohort of patients, it was reported that 89 per cent of patients had an initial staging CT scan recorded in the Audit database, although there was some variability in the reported use of CT scans across regional cancer networks. Those with low proportions seemed to have incomplete data submission and this did not seem to be flagging differences in clinical practice. However, the use of EUS and staging laparoscopy where appropriate were unexpectedly low, with only 62 per cent of patients having an EUS and 49 per cent having a staging laparoscopy. These low figures were felt to reflect both under-reporting of the use of these investigations as well as variation in clinical practice.

In this chapter, we report on the current use of staging investigations.

Audit results

The quality of data submitted to the Audit on staging investigations varied across different NHS trusts/health boards. We therefore excluded from analysis of staging:

- NHS trusts/health boards with less than half of patients reported as having had an initial staging CT scans, and
- NHS trusts/health boards where no patients were reported to have had an EUS or staging laparoscopy where appropriate.

Overall, 87.2 per cent of patients diagnosed between 2013–15 had a CT scan performed as part of initial staging investigations. This compares to 89 per cent of patients diagnosed between 2007-09. As in previous years, patients were more likely to have had a CT scan if they were younger and had a better performance status.

Among patients managed with curative intent:

- 47.5 per cent of patients with oesophageal and Siewert I cancers were reported to have had a staging EUS performed.
- 51.0 per cent of patients with Siewert II/II cancers or gastric cancers were reported to have had a staging laparoscopy.

The equivalent figure reported in the 2013 NOGCA report for patients diagnosed between 2011-12 were 62 per cent and 57 per cent.

There appears to be a concerning downwards trend in reported use of staging investigations over time. This is unlikely to reflect a systematic change in clinical practice, and it more likely to reflect poor reporting of staging investigations. Further inspection of the data reveals that there are a number of NHS trusts/health boards which are particularly poor at reporting use of staging investigations. Differences between organisations in the reporting of CT staging is described in Annex 9.

Key findings in staging investigations

There appears to have been a significant decline in the reported use of staging investigations over time. NHS trusts/health boards should therefore look at their use of staging investigations where this is reported to be low, and investigate whether this is a real finding or due to under-reporting of staging investigations. Where the latter is the case trusts/health boards must take steps to address this in future.

Recommendations

UK guidelines recommend that all patients with a new diagnosis of OG cancer have a staging CT scan. It is important that NHS organisations monitor their use of staging investigations and investigate reasons for low use. Where this is due to poor reporting, mechanisms should be put in place to improve reporting in future to ensure this information is captured (e.g. at the time of MDT meetings).

8. Treatment planning

Once staging investigations are complete, a decision has to be made about whether the disease is amenable to therapy with curative intent. This decision will take into account the extent of the disease and whether or not the patient is sufficiently fit to undergo the planned treatment.

Curative treatment options depend on the site and extent of the cancer[3]. The principal treatment option is surgery, but this places considerable strain on the patient and their suitability may be affected by the presence of comorbidities, their degree of frailty, as well as other factors such as nutritional status. Patient preferences will also influence the decision.

Recommendations for treatment in current guidelines are summarised in the box below.

Early oesophageal and gastric cancers:

- Endoscopic mucosal resection or submucosal dissection may be considered if the tumour is limited to the mucosa or most superficial layer of the submucosa, and there is no evidence of local or distant spread.

Oesophageal SCC:

- Definitive chemoradiation for proximal oesophageal tumours.
- For tumours of the middle or lower oesophagus either chemoradiotherapy alone or combined with surgery.

Oesophageal adenocarcinoma and GOJ tumours:

- Preoperative chemotherapy or chemoradiation is recommended to improve long term survival after surgery, compared to surgery alone.
- Peri-operative chemotherapy (pre and postoperative) can also be recommended as it increases survival for Siewert II and III cancers.

Gastric cancer:

- Peri-operative chemotherapy is recommended to improve survival compared to surgery alone.
- In patients at high risk of recurrence who have not had neoadjuvant chemotherapy, adjuvant chemoradiotherapy may be considered as it has been shown to improve survival in non-Western populations.

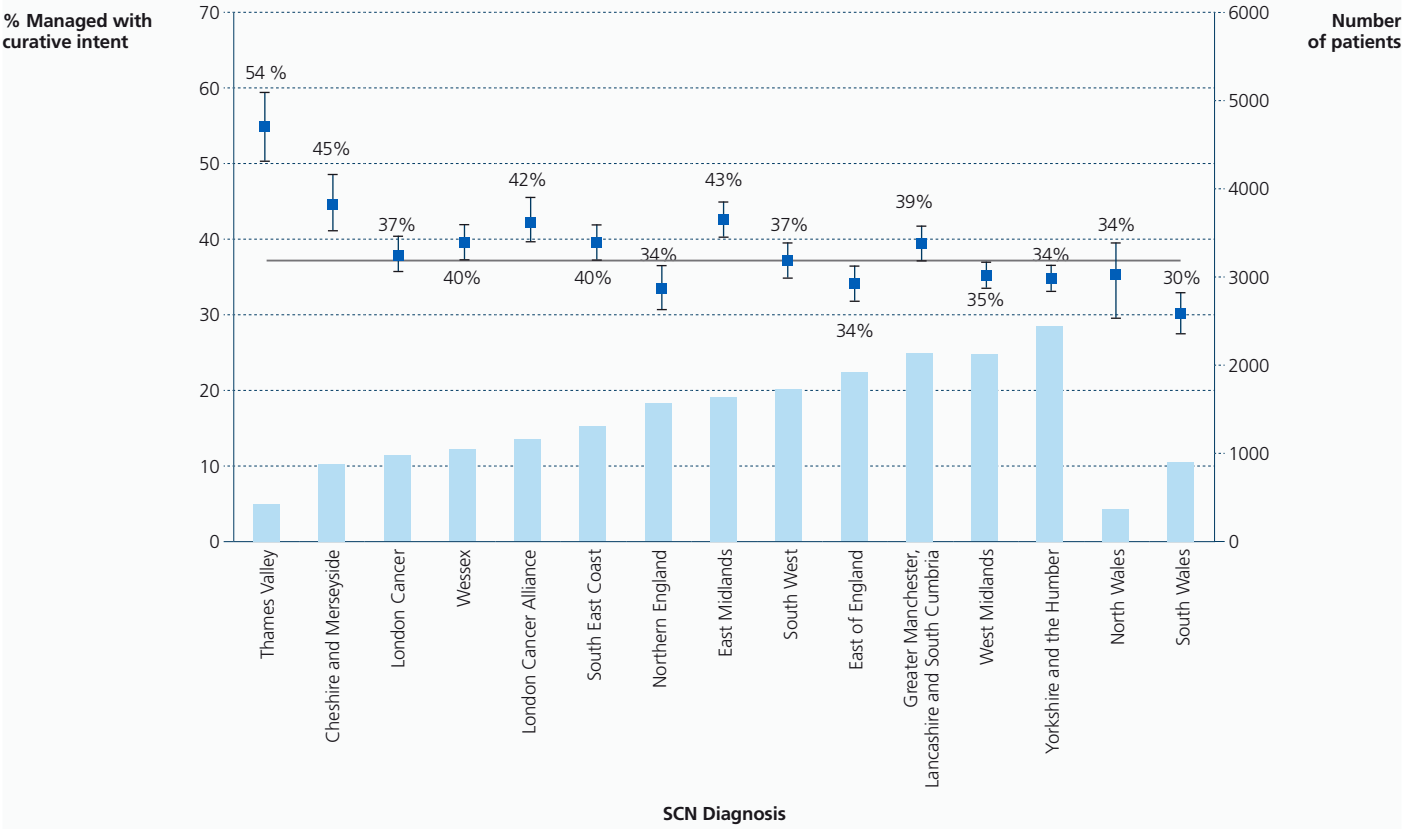
Curative treatment

While the aim in treating any cancers should always be cure, this is not possible for the majority of OG cancers due to their advanced stage at diagnosis. This section describes the changes in the proportion of patients managed with curative intent and choice of curative treatment modality over time.

Overall, the proportion of patients diagnosed between 2013-15 and managed with curative intent was 37.6 per cent (95% CI 36.9-38.2 per cent). This is a slight increase on the proportion observed in the first audit; among patients diagnosed between 2007-09, 36 per cent (95% CI 35.2-36.7 per cent) were managed with curative intent.

There was some variation across SCNs in the proportion of patients managed with curative intent, with the majority ranging from between 35 per cent and 45 per cent (Figure 8-1). The high proportion reported by Thames Valley is likely to reflect their comparatively low level of case ascertainment.

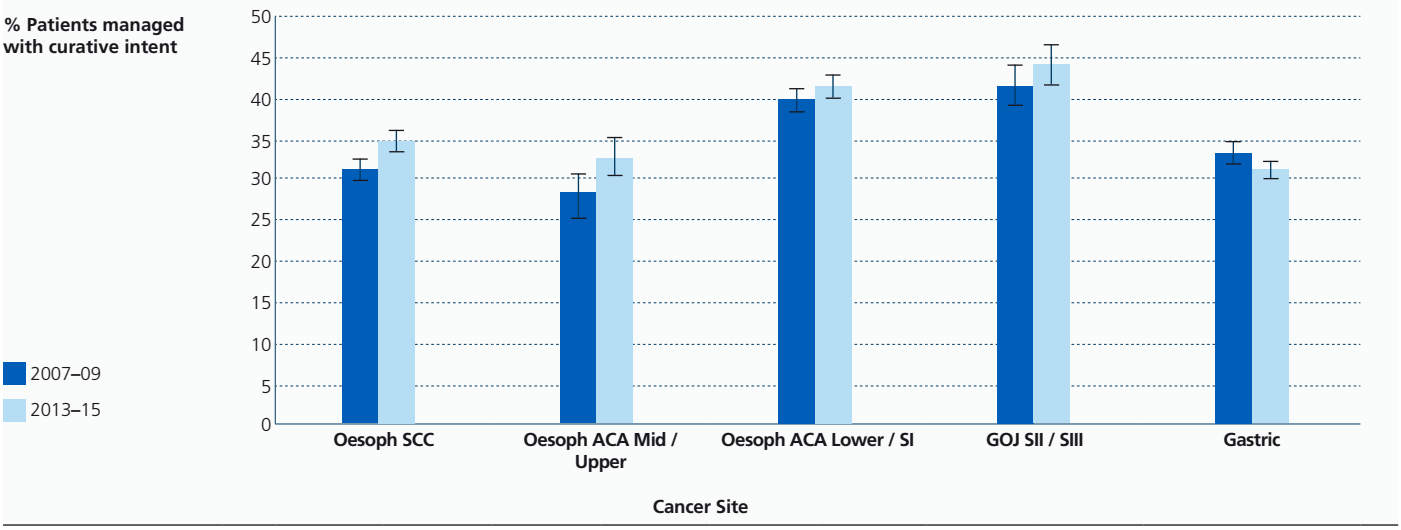
Figure 8-1
Proportion of patients diagnosed between 2013–15 managed with curative intent by SCN, in England and Wales



** Overall average for England and Wales was 37.6 per cent

The proportion of patients managed with curative intent is related to tumour type and site. Contrasting the proportions for the 2013-15 cohort with those from the first audit shows that the proportion of patients managed with curative intent has increased by a small amount for oesophageal tumours but is slightly lower for those in the stomach (Figure 8-2). The differences only reach statistical significance for oesophageal squamous cell cancers (SCCs), however.

Figure 8-2
Proportion of patients managed with curative intent by tumour type and audit year, in England and Wales



The changes in the proportion of patients with oesophageal SCCs being managed with curative intent may reflect changes in available and recommended treatment modalities for this type of tumour. During the 2000s, there was increasing evidence that definitive chemoradiotherapy was an effective treatment for oesophageal SCC, and guidelines were updated to reflect this. For example, the 2011 AUGIS/BSG/BASO guideline recommends[3]:

- For localised SCC of the upper oesophagus, chemoradiotherapy is the definitive treatment of choice.
- Localised SCC of middle/lower third may be treated with chemoradiotherapy alone or chemoradiotherapy plus surgery.

More recent trials have raised the possibility of using definitive oncology as a potential curative treatment option for oesophageal ACAs in patients considered unfit for surgery[16].

Table 8-1 highlights how OG cancer services have responded to this evidence over the period covered by the two audits. The proportion of patients with oesophageal SCCs managed with definitive oncology (chemoradiotherapy) has increased substantially since the first audit, with a corresponding decline in the use of surgery (Table 8-1).

Table 8-1
Curative treatment modality for oesopheal SCCs by audit year, in England and Wales

	2007 - 2009		2013 - 2015	
	%	95% CI	%	95% CI
Definitive oncology	38	34.8 - 41.2	52	49.3 - 54.7
Surgery	60	56.7 - 63.2	46	43.7 - 49.1
Endoscopic	2	1.2 - 3.2	2	1.0 - 2.4
Total	**927**		**1,331**	
Missing	101		223	

One possible explanation for the change is the increasing use of definitive oncology among patients who would be considered unfit for surgery. Table 8-2 describes the characteristics of patients with oesophageal SCCs managed with surgery vs definitive oncology and reveals a greater proportion of older and more frail patients among those managed with definitive oncology compared to patients considered for surgery.

Table 8-2
Patients characteristics for patients with oesophageal SCCs diagnosed between 2013–15 and managed with curative intent, in England and Wales

	Surgery ± oncology	Definitive oncology	P-value
Sex, Male (%)	47.2	43.8	0.22
Age, median (IQR)	66 (59-73)	70 (63-76)	**<0.001**
Performance status 0/1 (%)	90.3	83.0	**<0.001**
No comorbidities (%)	65.1	64.5	0.821

Another area of change over the last five years has been in the use of peri-operative chemotherapy for locally advanced cancers. Clinical trials have demonstrated that its use is associated with significant survival benefit in locally advanced oesophageal, GOJ and gastric cancers[3]. Contrasting the data from the two audit cohorts reveals that the proportion of patients with stage 2/3 oesophageal adenocarcinoma receiving peri-operative chemotherapy has increased on the already high figures reported for both lower oesophageal and GOJ tumours since the 2010 report (Table 8-3).

Table 8-3
Percentage of patients with stage 2/3 disease undergoing surgery alone or surgery combined with peri-operative chemotherapy by audit year, in England and Wales

	2007 – 2009		2013 – 2015	
	Surgery alone (%)	Surgery + peri-operative chemotherapy (%)	Surgery alone (%)	Surgery + peri-operative chemotherapy (%)
Upper/mid oesophagus	21	79	22	78
Lower oesophagus/Siewert I	17	83	14	86
GOJ Siewert II/III	18	82	11	89

* % in this table are row percentages for each patient cohort by site and year of diagnosis

Palliative treatment

The majority of patients with OG cancer are managed with palliative intent. Palliative treatment options aim to both reduce the impact of patient symptoms and improve the length and quality of life for patients. Therapeutic options include endoscopic stenting, palliative oncology, palliative surgery and best supportive care

In the period between 2013 and 2015, the most common planned palliative modality was palliative oncology, corresponding to about one-half of all patients (Table 8-4). This figure has not changed greatly since the first audit cohort.

Table 8-4
Planned palliative treatment modality by audit year, in England and Wales

	2007 – 2009		2013 – 2015	
	n	%	n	%
Palliative oncology	4,725	48	6,226	49
Palliative surgery	295	3	476	4
Endoscopic/radiological palliation	1,575	16	1,492	12
Best supportive care	3,249	33	4,414	35
Total	**9,844**	**100**	**12,608**	**100**
Missing	542		581	

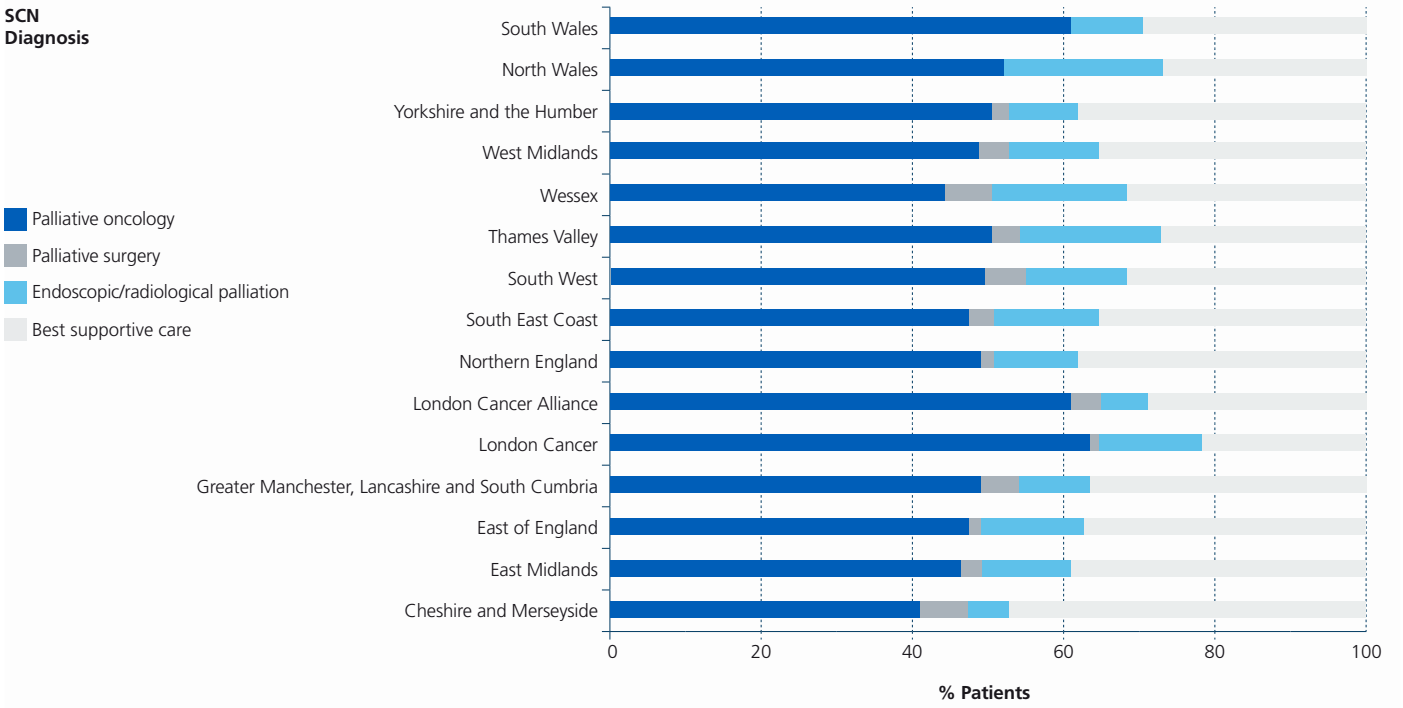
The choice of planned palliative modality varies by cancer site (Table 8-5). The proportion of patients with gastric cancer managed with best supportive care was significantly higher than for oesophageal and GOJ tumours. There was a corresponding fall in the use of palliative oncology for these patients. The proportion of patients planned to receive palliative oncology was lower among patients of greater age and of worse performance status.

Table 8-5
Planned palliative treatment modality by cancer type for patients diagnosed 2013–15, in England and Wales

	Oesophageal SCC		Upper/Mid Oesoph ACA		Lower Oesoph/SI		GOJ SII/SIII		Stomach	
	n	%	n	%	n	%	n	%	n	%
Palliative oncology	1,354	50	381	48	2,159	53	699	58	1,633	43
Palliative surgery	94	4	36	5	146	4	43	4	157	4
Endoscopic/radiological palliation	459	17	120	15	601	15	94	8	218	6
Best supportive care	777	29	253	32	1,184	29	379	31	1,821	48
Total	**2,684**	**100**	**790**	**100**	**4,090**	**100**	**1,215**	**100**	**3,829**	**100**
Missing	164		49		195		59		114	

Across the SCNs, there was some variation in the choice of planned palliative modality (Figure 8-3). In London Cancer, 63.9 per cent (95% CI 60.1 - 67.6 per cent) of patients were planned to receive palliative oncology and only 21.6 per cent (95% CI 18.4 - 24.9 per cent) best supportive care. In contrast, the corresponding figures for Cheshire and Merseyside were 40.3 per cent (95% CI 35.9 - 44.8 per cent) and 47.6 per cent (95% CI 43.1 - 52.1 per cent).

Figure 8-3
Choice of palliative treatment modality by SCN for patients diagnosed 2013–15, in England and Wales



Key findings

The proportion of patients managed with curative intent has increased slightly since the first audit. The reasons for this change are probably multifactorial, and may reflect the lower proportion of patients diagnosed after an emergency admission, as well as the increased availability of less invasive curative treatment options such as definitive oncology and endoscopic therapy (for early stage disease).

Palliative oncology remains the most common palliative modality. There is some variation in the patterns of planned palliative modality across SCNs, and those with comparatively high rates of best supportive care should examine whether more patients would benefit from active treatment.

Recommendations

There was still some variation in the proportion of patients managed with curative intent across the strategic clinical networks and those networks with extreme values should investigate the reasons for this.

There is variation in the planned use of palliative treatment modalities among patients unsuitable for treatment with curative intent. MDTs should review the way in which patients are offered palliative treatment options and examine whether more patients would benefit from active treatment.

9. Curative surgery

Curative treatment patterns

In this chapter, we compare the cohort of patients diagnosed with OG cancer that had curative surgery in 2007-09 with those diagnosed in 2013-15. The total number of curative procedures performed in each audit period is described in Table 9-1. The ratio of oesophagectomies to gastrectomies has risen over this period, which may be a reflection of the increased incidence of tumours around the GOJ junction and the decrease in gastric tumours observed since the 2010 NOGCA audit report[1].

Table 9-1
Number of curative surgical procedures done by audit year, in England and Wales

	2007 – 2009		2013 – 2015	
	n	%	n	%
Oesophagectomy				
Transthoratic approach	2,100	95.5	2,910	96.0
Transhiatal approach	100	4.5	121	4.0
Gastrectomy				
Total gastrectomy	623	44.1	706	43.3
Distal gastrectomy	614	43.5	712	43.6
Other	175	12.4	214	13.1
Other Procedure				
Open-shut/bypass	191	5.0	189	3.9
Total	3,803		4,852	

The majority of oesophagectomies continue to be done by the transthoracic approach (96 per cent in 2013-15). Similarly, the majority of gastrectomies remain either total or distal gastrectomies (43.3 per cent and 43.6 per cent, respectively). It was encouraging to note that there was a statistically significant decrease in the proportion of open and shut and bypass operations since 2007-09, falling from 5.0 per cent (95% CI 4.3- 5.8 per cent) to 3.9 per cent (95% CI 2.8 - 4.5 per cent).

Table 9-2 describes the surgical approach used in these operations. There was a significant increase in the oesophagectomies performed using a minimally invasive (MI) approach over the two audit periods. There was less of a change among the gastrectomies.

Table 9-2
Type of curative surgery operation performed by audit year, in England and Wales

	Oesophagectomy				Gastrectomy			
	2007 - 2009		2013 - 2015		2007 - 2009		2013 - 2015	
	n	%	n	%	n	%	n	%
Number of procedures	2,200		3,031		1,412		1,632	
Type of operation								
Open	1,541	70.0	1,762	61.1	1,226	86.8	1,372	84.9
Minimally invasive (includes converted)	659	30.0	1,122	38.9	186	13.2	244	15.1
Total	**2,200**		**2,884**		**1,412**		**1,616**	
Unknown	0		147		0		16	

Over the last five years, the proportion of patients having planned oncological therapy in addition to surgery for oesophageal cancer has increased significantly from 72.6 per cent (95% CI 70.7-74.4 per cent) in 2007-09 to 77.3 per cent (95% CI 75.7-78.7 per cent) in 2013-15. A similar increase was observed for patients undergoing a gastrectomy, from 42.0 per cent (95% CI 39.4-44.6 per cent) in 2007-09 to 52.5 per cent (95% CI 50.0-54.9 per cent) in 2013-15.

Patients undergoing surgery with oncological therapy were younger and fitter (Table 9-3). The proportion of patients with ASA grade I or II for both modalities and surgical procedures appears to fallen since 2007-09, giving the impression that less fit patients are undergoing curative surgery. However, this change is likely to reflect a significant improvement in the quality of ASA data submitted to the Audit since the introduction of surgeon level reporting. This data item was not mandatory in 2007-09, and as a result 18.2 per cent of patients had this data item missing.

Table 9-3
Characteristics of patients who had planned curative surgery, analysed according to planned treatment modality by audit year, in England and Wales

	Oesophagectomy		Gastrectomy	
	2007 – 2009	**2013 – 2015***	**2007 – 2009**	**2013 – 2015**
Surgery only				
Number of patients	603	661	819	767
Patient age, years (IQR)	67 (60–75)	69 (62–75)	74 (69–79)	76 (69–81)
Sex, % male	74	78	65	63
Performance status 0 or 1,%	91	87	83	83
ASA grade I or II, %	78	66	70	62
Surgery and chemotherapy				
Number of patients	1,597	2,180	593	841
Patient age, years (IQR)	63 (58–69)	65 (59–71)	67 (58–72)	67 (59–74)
Sex, % male	79	81	68	70
Performance status 0 or 1,%	96	94	92	91
ASA grade I or II, %	83	73	82	71

* A small number of patients had curative surgery after failed definitive chemoradiotherapy or after surgery with chemoradiotherapy. For this reason the number of patients in the table do not add up to the total numbers who had oesophagectomy and gastrectomy in 2013-15.

Admission to critical care

The Intensive Care National Audit and Research Centre's (ICNARC) Case Mix Programme collects information on the care received by all patients admitted to critical care (both intensive care units and high dependency units). To investigate patterns of critical care use by OG patients having curative surgery, we linked the Audit dataset with the ICNARC Case Mix Programme dataset for patients diagnosed between 1 April 2013 and 31 March 2014. We restricted the linkage process to patients who had a ICNARC record where:

- the date of admission to critical care was after the date of operation (a difference of zero or one day after operation);
- the reason for admission was reported as malignant neoplasm of the oesophagus/GOJ or gastric tumour, and
- the admission type was recorded as elective.

After cleaning, there were 972/1495 (65.0 per cent) of oesophagectomies and 371/822 (45.1 per cent) of gastrectomies with a linked record.

It should be noted, though, that only 43 out of 49 NHS trusts/health boards had submitted ICNARC records, and the median proportion of linked ICNARC-audit records was 69.1 per cent (IQR 20.0 per cent to 83.0 per cent) within these NHS trusts/health boards. The characteristics of patients admitted to critical care is given in Table 9-4.

The NOGCA-ICNARC linked data shows that patients undergoing gastrectomies, who required a critical care admission, were older and frailer than patients with oesophagectomies. There was a broad range of illness severity as measured by the APACHE 11 acute physiology score (APS). The mean APS was 7.8 for oesophagectomies and 7.8 for gastrectomies.

Overall, patients undergoing oesophagectomies needed higher levels of treatment (ventilation for the first 24 hours, days of cardiovascular support, days of basic and advanced respiratory support, and renal support) than those having gastrectomy. On average, they stayed an extra two days in critical care. Critical care mortality was similar for both procedures.

The results on the use of critical care have to be interpreted with caution as not all audit records were linked to ICNARC records. In particular, the rate of linkage was lower than expected for oesophagectomies because it would be expected that all patients having this procedure would be admitted to a high dependency or intensive care unit from theatre.

Table 9-4
Patient characteristics and treatment profile of patients diagnosed with OG cancer 2013–14 and admitted to critical care after a surgical resection, in England and Wales

Patient characteristics	Oesophagectomy	Gastrectomy
Number of patients	972	371
Patient age, years, median (IQR)	66 (60-72)	72 (64-77)
Sex, % male	80.0	68.2
Performance status 0 or 1, %	90.4	83.6
ASA grade I or II, %	70.0	60.7
% Neoadjuvant therapy	67.1	22.6
APACHE 11 Acute physiology score		
Under 4 (%)	8.2	6.5
4, 5 (%)	17.0	14.6
6, 7 (%)	25.0	29.1
8, 9 (%)	22.3	23.2
10, 11 (%)	15.1	15.4
12 & over (%)	12.5	11.3
Treatment		
Length of stay, median days (IQR)	4 (2, 6)	2 (1, 4)
Basic cadiovascular support, median days (IQR)	3 (4, 6)	2 (3, 4)
% patients receiving mech. ventilation in first 24hrs	22.3	7.8
% patients receiving 1 or more days of:		
Advanced cardiovascular support	16.2	8.4
Basic respiratory support	55.9	41.8
Advanced respiratory support	29.6	12.1
Renal support	1.4	0.8
%v Mortality rate in first critical care admission (95% CI)	**1.1 (0.6-2.0)**	**1.3 (0.4-3.1)**

*The APACHE 11 score is made up of 12 physiological variables and 2 disease related variables[17].

Overall postoperative mortality

The records of patients having surgery were linked to the ONS death registry to calculate short-term mortality after curative surgery. Compared to figures for procedures performed during the first audit, in-hospital, 30-day, and 90-day postoperative mortality figures have all improved for oesophagectomy and gastrectomy for patients diagnosed between 2013 and 2015 in England and Wales (Table 9-5). The median length of stay has also decreased for both procedures.

Table 9-5
Surgical mortality by procedure and audit year in England and Wales

	Oesophagectomy		Gastrectomy	
	2007 – 2009	**2013 – 2015**	**2007 – 2009**	**2013 – 2015**
% In hospital mortality rate (95% CI)	4.5 (3.7-5.5)	1.9 (1.5-2.5)	6.0 (4.8-7.4)	2.2 (1.5-3.0)
% 30-day mortality rate (95% CI)	3.8 (3.1-4.7)	1.6 (1.2-2.1)	4.5 (3.4-5.7)	1.9 (1.3-2.7)
% 90-day mortality rate (95% CI)	5.7 (4.8-6.8)	3.2 (2.6-3.9)	6.9 (5.6-8.3)	4.1 (3.2-5.2)
Length of stay, median days (IQR)	14 (11-21)	12 (9-17)	11 (8-17)	10 (7-14)

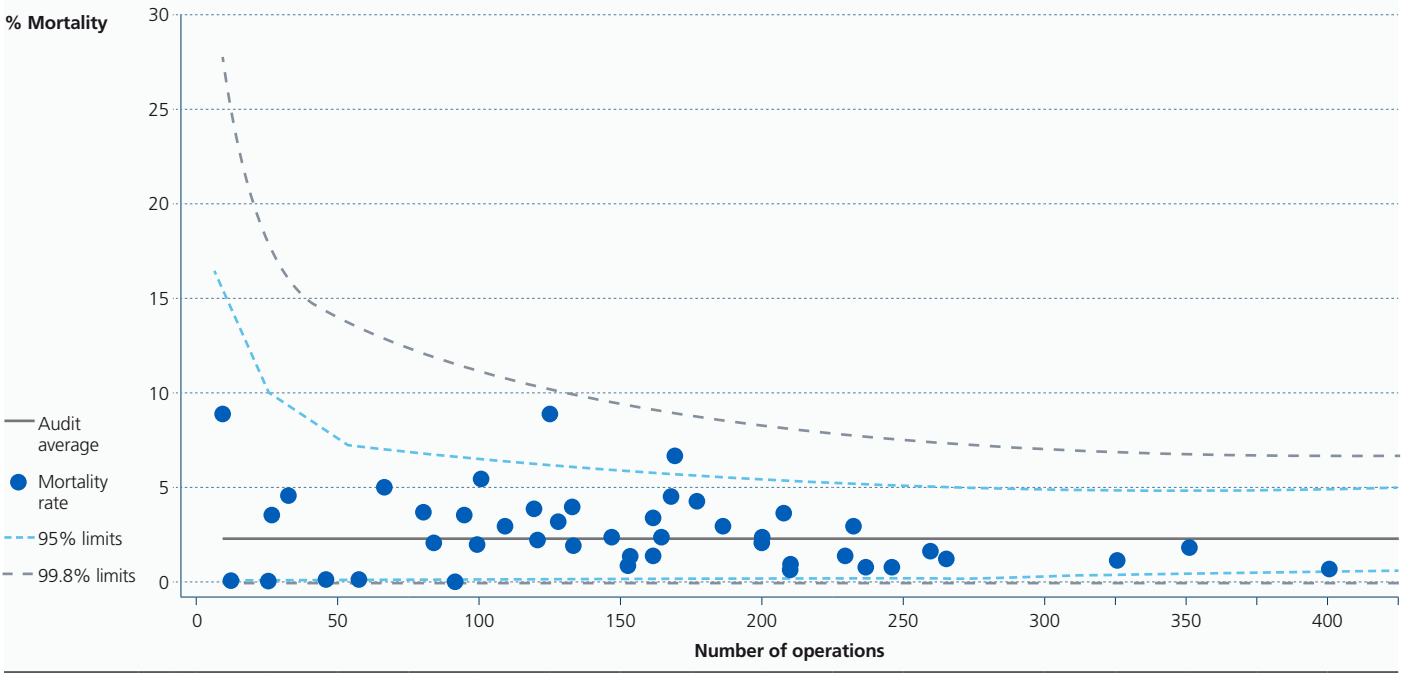
** Mortality rates shown with 95 per cent confidence intervals

Postoperative mortality by NHS organisation

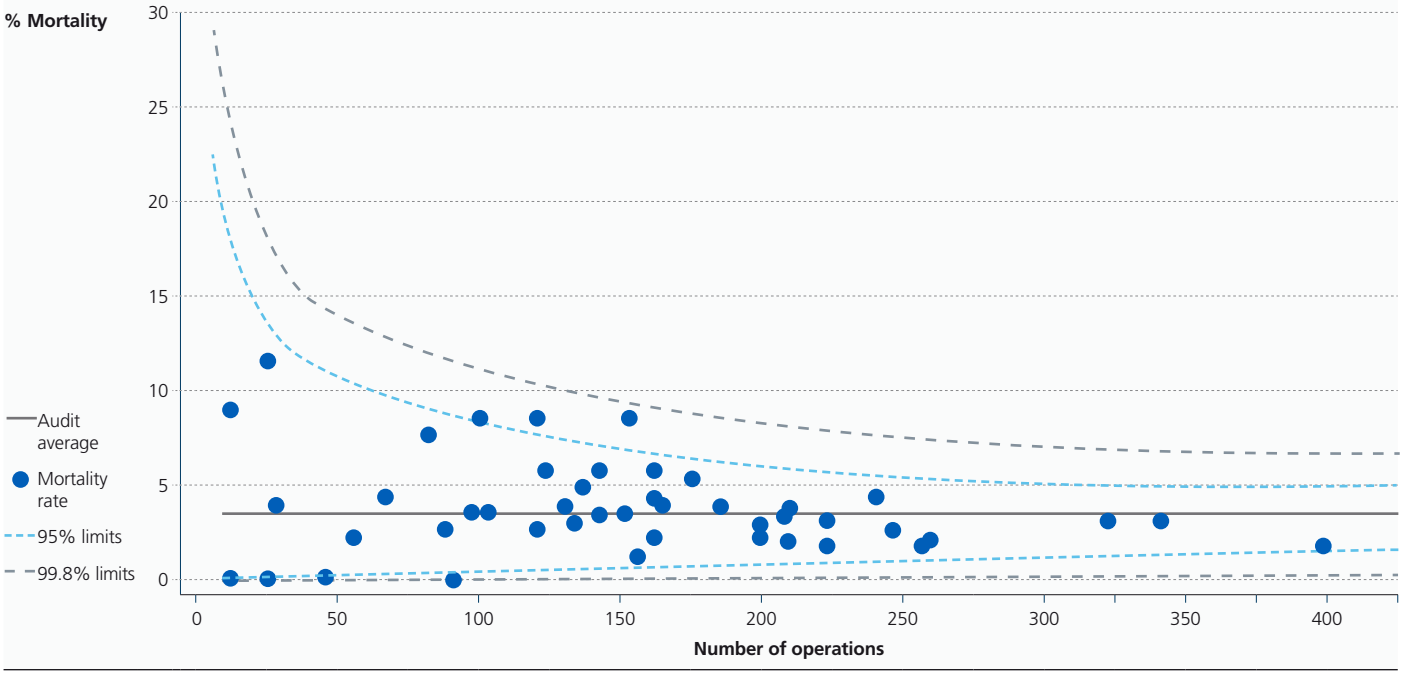
The 30-day and 90-day mortality rates were derived at NHS trusts/health boards for both England and Wales to assess their performance. The outcomes are shown in Figure 9-1, and were adjusted for the case-mix at each organisation. The risk-adjustment process took account of patient age, sex, performance status, comorbidities, TNM stage, ASA grade and site of tumour. These suggest that the underlying mortality rate is the same at each trust/health board and they are performing to the same standard.

Figure 9-1
Funnel plots of adjusted 30-day and 90-day mortality for patients diagnosed 2012-15, in England and Wales

A) 30-day mortality



B) 90-day mortality



Number of lymph nodes examined and positive resection margins

Annex 10 reports the metrics reported in England for the Clinical outcomes publication (COP) 2016 (volume, 30-day mortality, 90-day mortality) for both England and Wales, as well as the proportion of patients with adequate lymph nodes examined and proportion of patients with positive margins at the trust/health board level.

Guidelines suggest that the minimum number of lymph nodes required for staging the disease is at least 15 for both oesophagectomies and gastrectomies. Adequate lymph node resection enables more accurate staging, which may offer a survival benefit. This indicator will allow the surgical units to monitor their process of care and adherence to published standards of surgical care. We provide some initial figures on the number of lymph nodes examined, and will be undertaking further development work next year. This will focus on clarifying the most appropriate definition of the measure and the creation of a risk adjustment algorithm with adequate performance.

Guidelines recommend monitoring whether the tissue removed during an operation has evidence of the tumour along its edge (known as the margin). Patients whose resected specimen has tumour at the margins are known to have worse survival patterns than patients for whom the margin was clear. We are investigating using the proportion of patients with positive resection margins as a measure of the adequacy of surgical resection at the level of a surgical unit, and Annex 10 gives some preliminary baseline information. This measure will be used for both oesophagectomies and gastrectomies. As before, the development work requires clarification of the definition of the resection margin measure and the creation of a risk-adjustment algorithm with adequate performance.

Key findings

Over the last five years, there have been a number of changes in the pattern of curative surgery for OG cancer patients. The proportion of oesophagectomies having minimally invasive surgery has risen significantly. In addition, the proportion of patients having planned oncological therapy in addition to surgery has increased. Over the same timeframe, both short-term postoperative mortality and length of stay have decreased significantly.

Our results suggest that all NHS specialist centres in England and Wales are performing curative surgery to a similar standard of care, with all having postoperative mortality figures that fall within the expected range, given their volume of surgery. The decrease in overall mortality suggests that it would be beneficial to adopt additional outcomes for curative surgery to assess NHS trust/health board performance. Hospitals should therefore ensure pathology data on lymph nodes examined and positive resection margins are accurately recorded, to ensure these measures produce a fair description of performance.

Recommendations

Cancer centres performing curative surgery should regularly monitor the number of lymph nodes resected and proportion of patients with positive resection margins.

10. Palliative radiotherapy

Palliative oncology is the most common treatment modality for patients being managed with palliative intent. Treatment can be composed of chemotherapy and/or radiotherapy. Since April 2011, the NOGCA has had access to the National Radiotherapy Dataset (RTDS). This provides us with the opportunity to explore the radiotherapy regimens used in the management of oesophago-gastric (OG) cancer.

Since April 2009, all facilities in England have been providing radiotherapy data to the National Radiotherapy Dataset on the administration of radiotherapy, providing information on attendances and the dose given. The full dose of radiation is usually divided into a number of smaller doses called fractions. A dose fraction is administered at each treatment session to make up the full radiotherapy dose. The RTDS data for patients with OG cancer were linked to the Audit database using the patient identifiers in both datasets (e.g. NHS number, patient date of birth, sex, postcode).

The linked dataset allows us to analyse both the quality of data provided to the Audit and to investigate the use of specific dosing regimens. In the last two reports, we have focused on the use of definitive radiotherapy where treatment intent is curative. In this year's report, we extend this by exploring the use of palliative radiotherapy in England.

Palliative radiotherapy guidelines

The evidence base for the use of palliative radiotherapy for OG cancer is limited. However the recommendations for its use made by the Royal College of Radiologists are summarised in Figure 10-1 below.

Figure 10-1
RCR recommendations on use of radiotherapy in OG cancer[5]

Oesophageal cancer managed with palliative intent • 30Gy in 10 daily fractions • 20Gy in 5 daily fractions
Gastric cancer managed with palliative intent • Not a recommended treatment

Use of palliative radiotherapy for oesophageal cancer

Overall, there were 2,146 RTDS records linked to the Audit dataset between 2012–13. This dataset was further limited to 1,253 patients where initial treatment intent reported to the Audit was palliative. There is no evidence supporting the use of palliative radiotherapy for gastric cancer, so the dataset was further limited to the 1,103 patients reported to have a diagnosis of oesophageal cancer in the Audit.

Initial planned modality was known for 1041 patients, and was reported to be palliative oncology for 901 (86.6 per cent), best supportive care for 15 (1.4 per cent), palliative surgery for 61 (5.9 per cent) and endoscopic/ radiological palliation for 64 (6.2 per cent). For the remaining 62 patients, initial treatment intent was unknown or inconsistent across the data sources.

The radiotherapy regimen given was recorded in the RTDS database for 1,040 (94.3 per cent) patients. Where this was the case:

- 604 (58.1 per cent) patients followed a regimen recommended by the RCR.
- A further 118 (11.3 per cent) patients followed a commonly used regimen for palliative management, of a single 8Gy fraction, likely to be used for pain control of metastatic disease or to treat bleeding oesophageal lesions.
- Another 76 (7.3 per cent) patients used regimens most frequently adopted when treatment intent is curative, including 53 patients who had 55Gy over 25 fractions and 13 who had 55Gy over 20 fractions.

The use of the most commonly used regimens is summarised below in Table 10-1.

Table 10-1
Actual radiotherapy doses and fractions administered for oesophageal cancer where initial treatment intent recorded as palliative in audit for patients diagnosed 2012–13, in England

	Dose (Gy)	Number of fractions	Number of patients	%
Palliative evidence based doses	30	10	265	25.5
	20	5	339	32.6
Curative evidence based doses	55	25	53	5.1
	55	20	13	1.2
Other non-evidence based regimens used in >5 patients	8	1	118	11.3
	36	12	46	4.4
	27	6	22	2.1
	40	15	14	1.3
	27	9	9	0.9
	45	25	9	0.9
	10	1	7	0.7
	12	2	7	0.7
Other non-evidence-based regimens used in 5 or fewer patients			138	13.3
Total			**1,040**	**100**

Coding of palliative radiotherapy in audit

Given that RTDS data is collected automatically by radiotherapy machines at the point of administration and is therefore 100 per cent reliable (in theory), radiotherapy data collected by the Audit was compared to this dataset to assess the quality of data submitted to the Audit. The evaluation involved comparing the date radiotherapy was given, as recorded in the Audit, against the date recorded in the RTDS database.

We found:

- 754 (72.5 per cent) patients had the same date of first administration of radiotherapy in the Audit and RTDS database.
- A further 83 (8.0 per cent) patients had an audit date of administration within 14 days of that recorded in the RTDS database.

Thus, overall, 80.5 per cent of patients had a reliable date of administration of radiotherapy recorded in the Audit. The majority of English NHS trusts submitted data reliably. However, three NHS trusts/trust sites stood out as having comparatively poor quality data: Churchill Hospital, Norfolk and Norwich University Hospital and Nottingham University Hospitals NHS Trust (where 47.1 per cent, 47.8 per cent and 60.0 per cent of patients did not have date of radiotherapy administration accurately recorded in the Audit, respectively).

Review of the records further revealed there were 169 patients (16.3 per cent) reported to have received radiotherapy in the RTDS database who did not have a radiotherapy record submitted to the Audit. Table 10-2 highlights a number of trusts/trust sites which had 10 or more patients treated with radiotherapy, at which >20 per cent patients did not have a radiotherapy record submitted to the Audit.

Table 10-2
Trusts/trust sites where 10 or more patients were treated with radiotherapy for oesophageal cancer and more that 20 per cent of patients did not have a radiotherapy record submitted to the Audit for patients diagnosed 2012-13, in England

NHS trust/trust site	No. of patients without a record of radiotherapy in the Audit	No. of patients who had radiotherapy according to RTDS	% patients where no radiotherapy data recorded in audit
Churchill Hospital (RTH02)	16	34	47.1
Norfolk and Norwich University Hospital (RM102)	11	23	47.8
Nottingham University Hospitals NHS Trust (RX1CC)	9	15	60.0
North Staffordshire Hospital (RJE01)	6	17	35.3
Royal Marsden Hospital (RPY01)	5	24	20.8
Queens Hospital (RF4QH)	3	10	30.0
Weston Park Hospital (RHQWP)	12	60	20.0

Key findings

There is significant variation in choice of palliative radiotherapy regimen for oesophageal cancer. Only 58.1 per cent followed a regimen recommended by the RCR, although it is acknowledged that the evidence base for these recommendations is limited.

It should be noted that the RCR guidance is currently under review and new guidance might incorporate some of the fractionations currently used in the UK. If however, such variation persists, there should be dialogue between radiotherapy service providers and RCR to understand the reasons for this variation.

Recommendations

There was variation across NHS providers in the choice of palliative radiotherapy regimens for oesophageal tumours. Providers should keep their current regimens under review and evaluate their practice when new guidance on radiotherapy is published by the Royal College of Radiologists.

11. Survival after diagnosis and operation

The prognosis for patients after diagnosis with oesophago-gastric (OG) cancer is often poor, especially for the majority of patients who are diagnosed with advanced disease and who are not suitable for curative treatment. The latest Office for National Statistics (ONS) net-survival estimates for oesophageal cancer in England are 42.3 per cent for one year and 14.3 per cent for five years, which compares unfavourably to many other types of cancer. The rates for stomach cancer are similarly poor, being 42.3 per cent and 18.2 per cent, respectively[18]. These figures are at the lower end of recently published age-standardised survival rates for these tumours compared to other developed nations[19 & 20]. Nonetheless, national statistics also suggest that survival after diagnosis with the most common cancers has improved steadily among English patients over the past decades, and the UK has narrowed the gap with other developed nations although survival rates remain below those in the best performing nations.

Whilst ONS figures provide overall survival rates after diagnosis, the NOGCA can augment these by describing survival for particular patient subgroups. Survival among OG cancer patients is strongly associated with treatment intent and modality, but survival information is currently not available in terms of these variables on a national basis. In this chapter, we provide descriptive Kaplan-Meier survival estimates for these subgroups of OG cancer patients.

The analysis used data from patients diagnosed between April 2012 and March 2015 (n=31,417). Survival figures were derived for each patient by linking their records with date of death data obtained from the Office for National Statistics, which allowed us to trace patients' survival until April 2016.

In this analysis, survival was typically estimated for up to four years. Survival is defined as time from diagnosis to death or censoring. Some survival curves do not reach the maximum number of days because no member of the relevant group could be followed up for the maximum time. Also, due to diminishing numbers towards the far right of the analysis time axis, estimates become less reliable for longer survival times. For this reason, time was restricted to three years in some analyses.

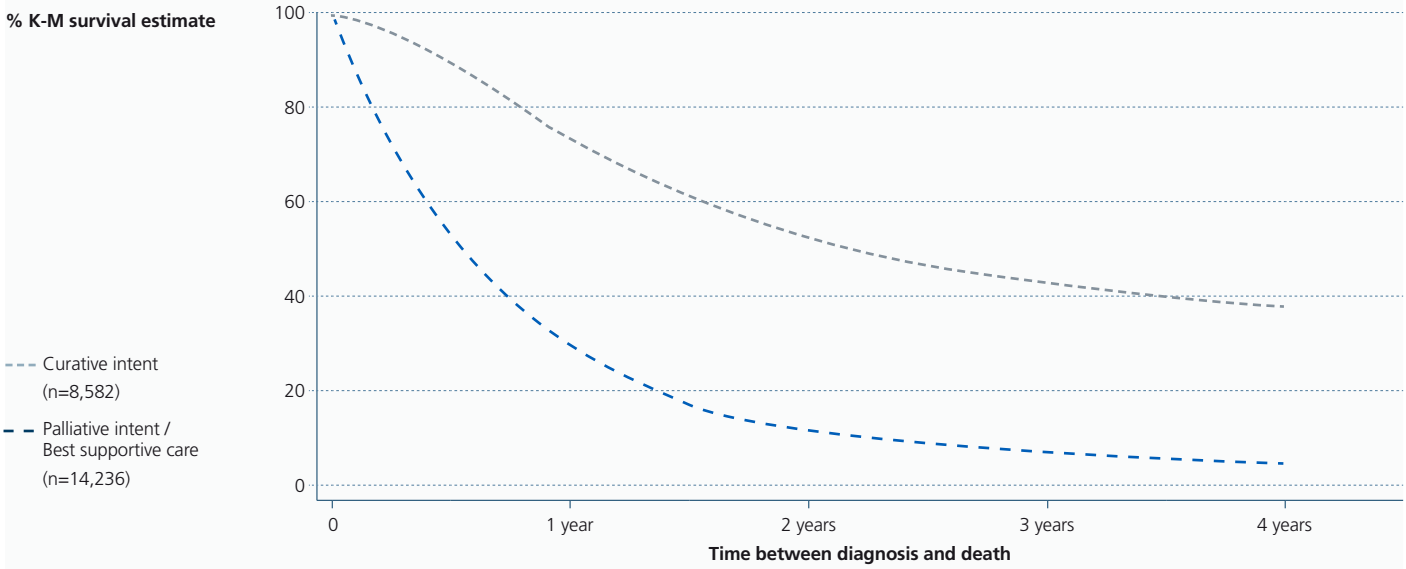
The analysis included all patients except 53 patients with unreliable date of diagnosis and death information (i.e. negative survival times) and 258 patients for whom ONS data was unavailable. These figures were not adjusted for background mortality. Given that the typical OG cancer patient is relatively old at the time of diagnosis, we can expect that cancer may not have been the cause of death in a minority of cases.

Unadjusted estimates of survival from time of diagnosis

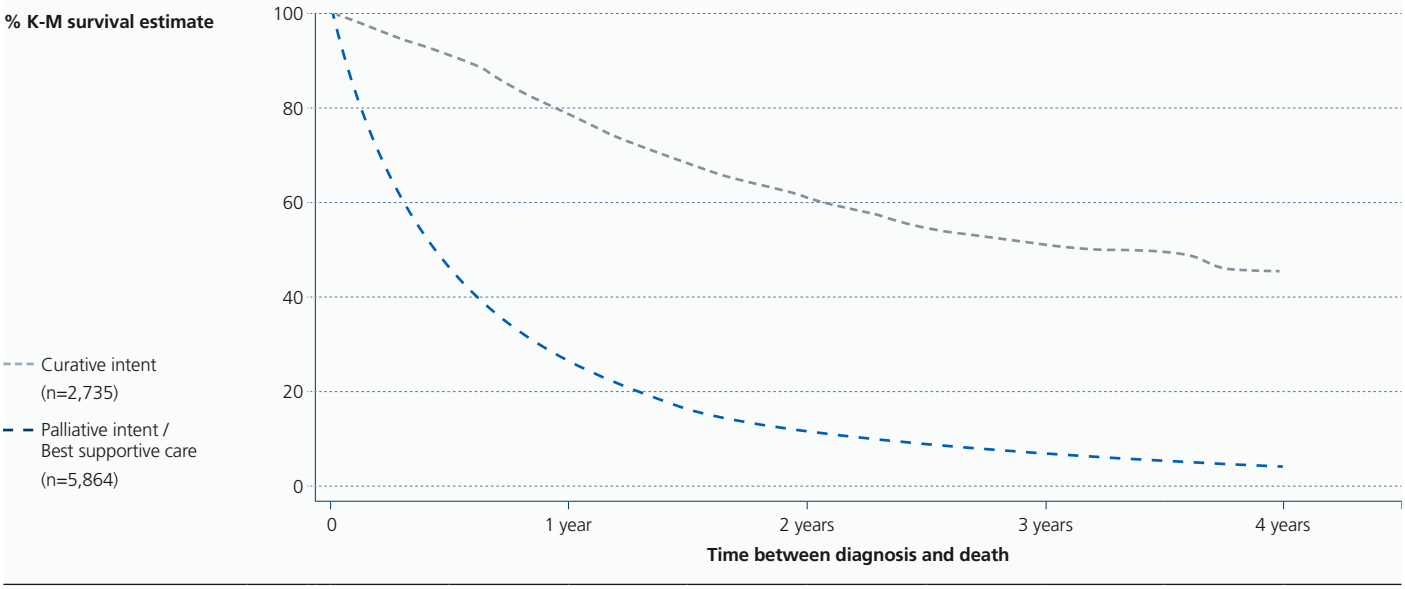
Figure 11-1 shows the overall pattern of survival for both oesophageal/junctional tumours and stomach tumours, stratified by treatment intent. As expected, patients treated with curative intent achieve much better survival rates than patients who receive palliative treatment.

Figure 11-1
Patient survival from diagnosis stratified by treatment intent, in England and Wales

Oesophageal/Junctional tumours by treatment intent



Stomach tumours by treatment intent



The one year survival rates for patients receiving palliative treatment or best supportive care are considerably lower in both groups (Table 11-1), with less than one third of patients living for a year after diagnosis, compared to around three quarters of patients who have curative treatment. However, patients deemed suitable for curative treatment are not a homogenous group. We therefore stratified the curative group by pre-treatment TNM stage. Figure 11-2 highlights the relevance of cancer stage for survival of patients who receive curative treatment.

Table 11-1
Proportion of patients estimated to survive one year from diagnosis by treatment intent, in England and Wales

Tumour type and treatment intent	Oesophageal/Junctional		Stomach	
	% survived one year	95% CI	% survived one year	95% CI
Curative intent	73.9	72.9-74.8	78.4	76.8-79.9
Palliative intent/Best supportive care	29.2	28.5-30.0	25.7	24.6-26.8

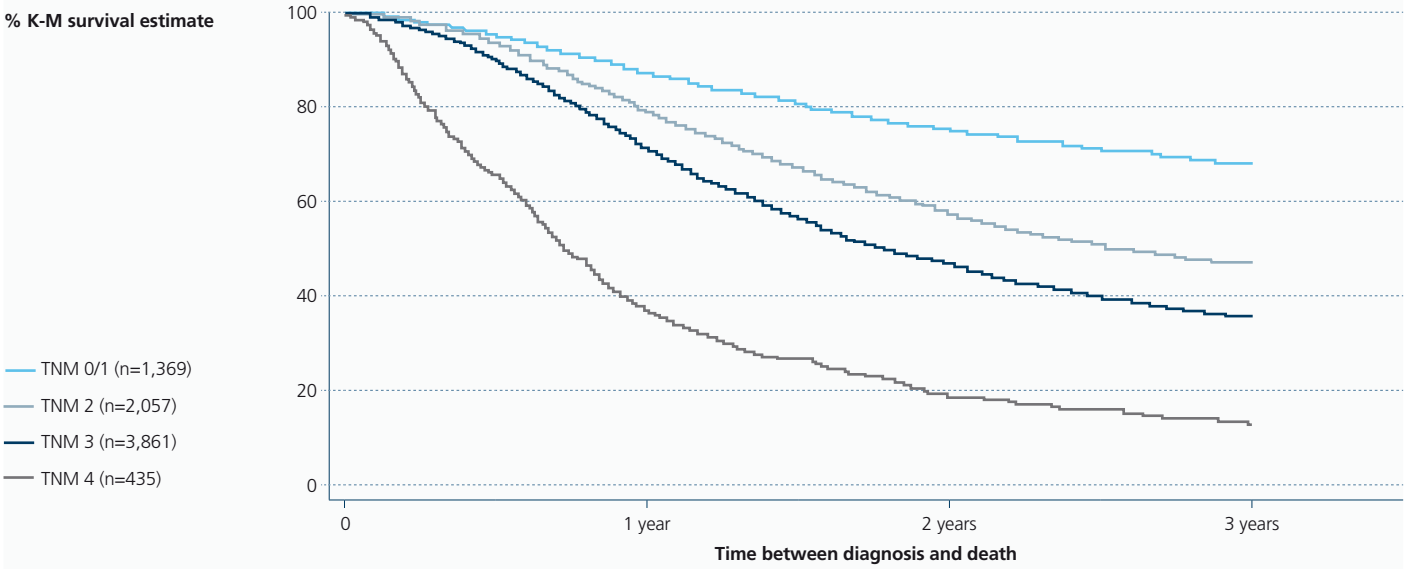
While nearly three quarters of patients with TNM stages 0 or 1 (tumours in their early stages) can expect to be alive approximately three years after treatment, this proportion falls dramatically as stage of cancer at diagnosis increases.

Staging at the time of diagnosis involves considerable uncertainty and the pre-treatment stage may not be accurate for some patients. Consequently, it is often deemed appropriate to stratify patients undergoing curative surgery by the pathological stage based on the resected tumour. Pathological TNM stages should therefore provide the best predictive information for survival after diagnosis and for patients who undergo curative surgery.

Figure 11-3 describes the survival patterns for patients who had curative surgery, stratified by pathological stage. Since only few patients who had surgery were classified stage 4 based on their pathology, this category was merged with TNM 3. Interestingly, for those patients with pathological TNM 0/1 and 2, long-term survival is considerably better than for patients with those stages as a result of pre-treatment staging investigations. Whether this is a result of inaccuracies in the pre-treatment stage or tumour down-sizing due to neoadjuvant therapy is unclear.

Figure 11-2
Survival among patients with a curative treatment intent, stratified by pre-treatment TNM stage, for patients diagnosed between 2012–15 in England and Wales

Oesophageal/Junctional tumours treated with curative intent by TNM stage



Stomach tumours treated with curative intent by TNM stage

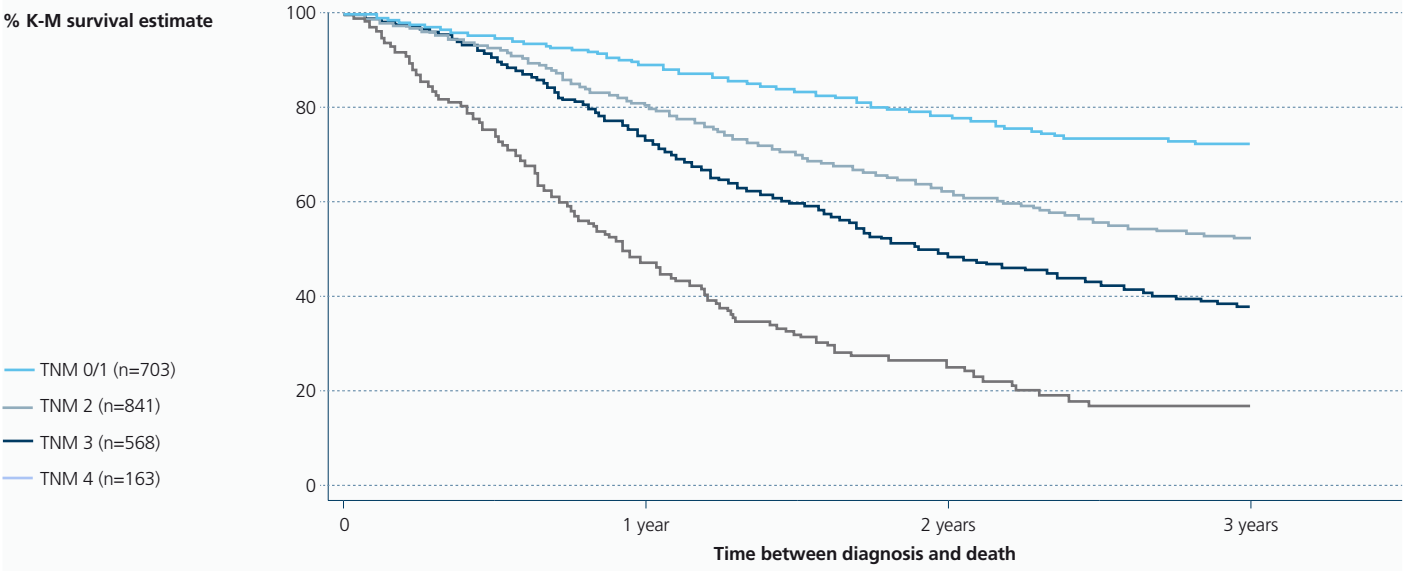
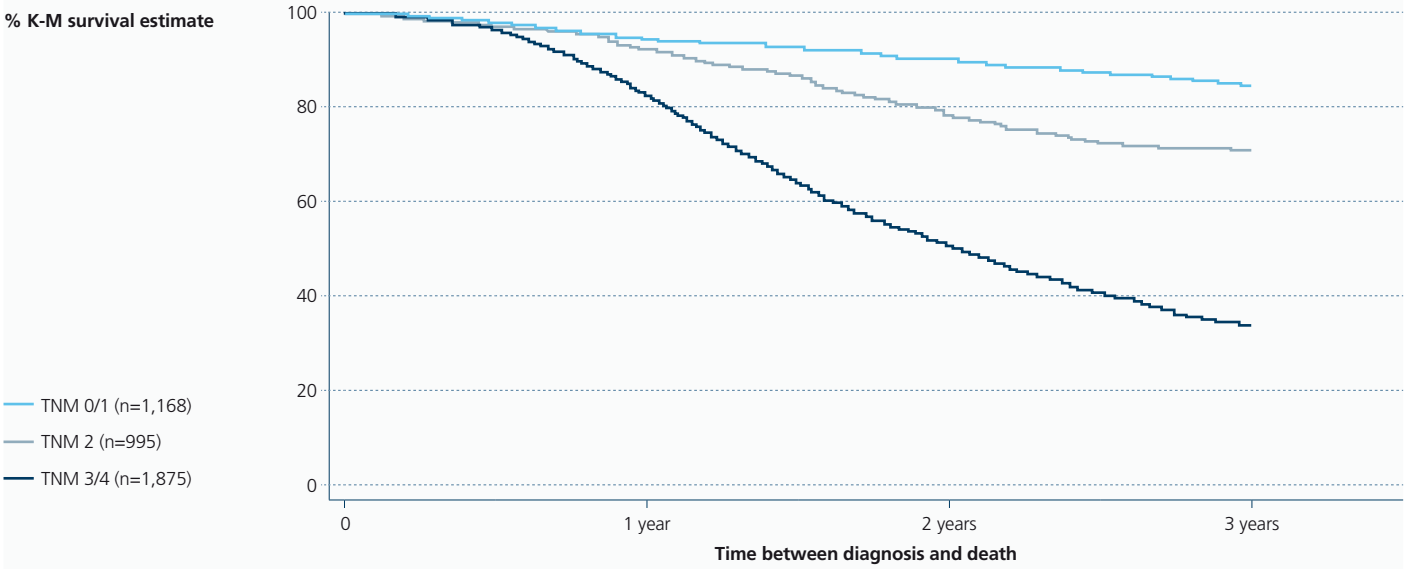
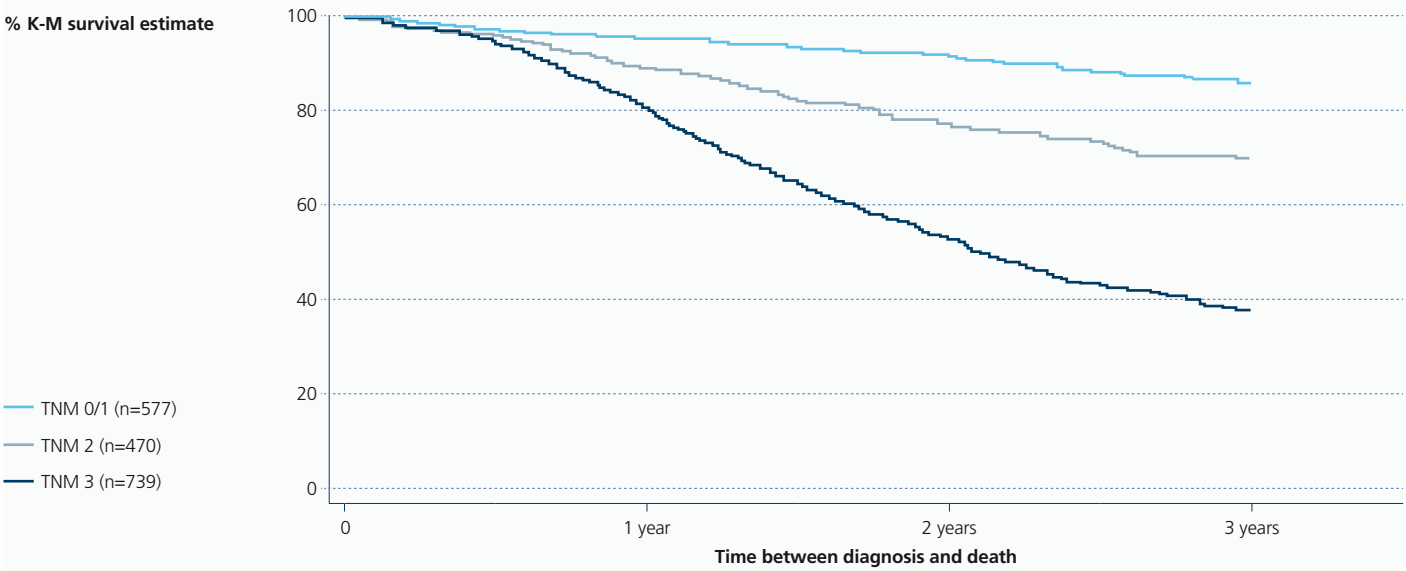


Figure 11-3
Survival among patients undergoing curative surgery, stratified by postoperative TNM stage, for patients diagnosed between 2012–15 in England and Wales

Oesophageal/Junctional tumours treated with curative intent by TNM stage



Stomach tumours treated with curative intent by TNM stage



Survival estimates after operation at organisational level

The final part of our analysis examines whether there were differences in one year survival at NHS trust/health board level for patients having curative surgery in English NHS trusts and Welsh health boards performing these operations. To improve the comparability of the survival rates, the organisational figures were adjusted for patient sex, age, postoperative TNM stage, site of tumour, presence of comorbidities, and fitness (performance status) using logistic regression. Of the 6,855 patients potentially eligible for the analysis, 635 were excluded due to insufficient follow-up time (i.e. date of surgery after April 2015) and 151 were excluded because of incomplete data on the patient factors used to risk-adjust the figures.

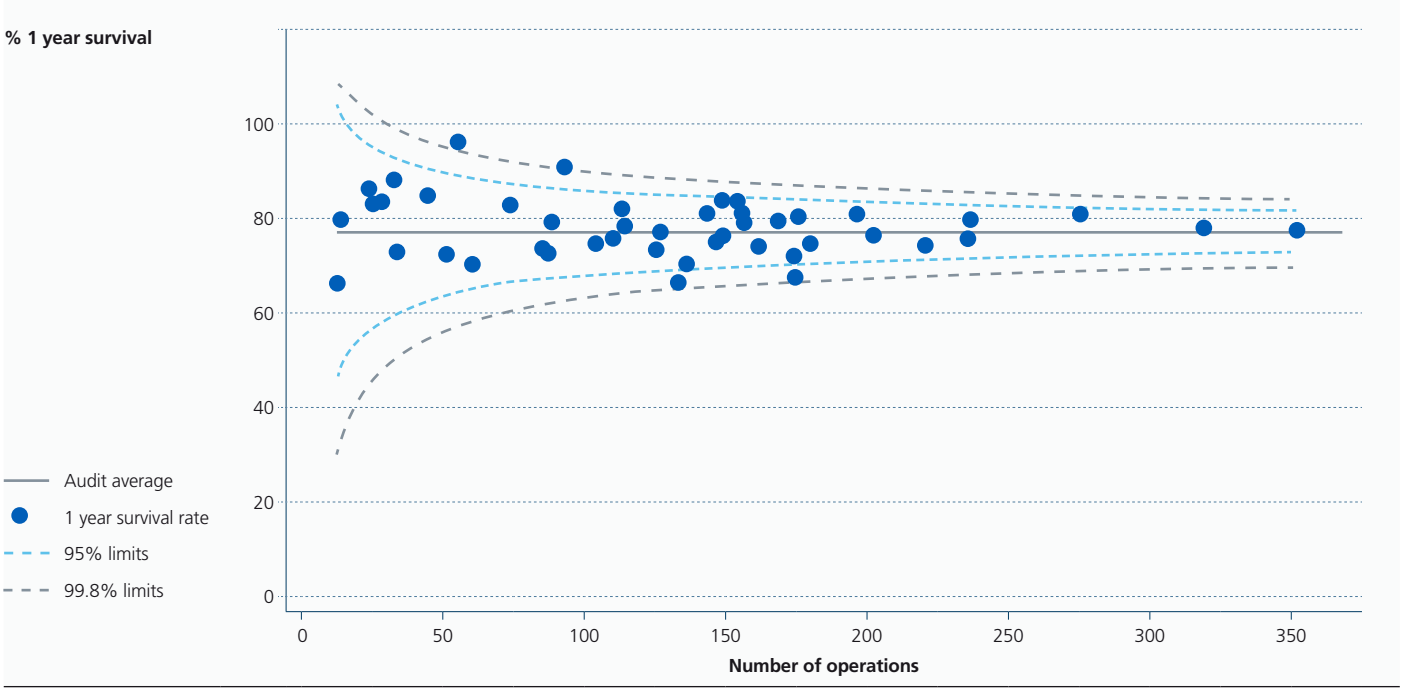
Figure 11-4 shows the adjusted one year survival rates for the 46 NHS trusts/health boards that had at least ten operations with sufficient follow-up time. The funnel plot reveals that all trusts were performing to a similar standard, with the possible exception of one NHS trust that has a higher than expected survival rate.

The adjusted one year survival rates across the NHS trusts/health boards are presented in Annex 11.

Key findings

The prognosis for a patient is strongly dependent on cancer stage and associated treatment intent. Patients who are not suitable for curative treatment experience much worse long-term survival rates than patients who are appropriate for treatment with curative intent. English NHS trusts and Welsh health boards performing curative operations achieved comparable levels of performance in terms of adjusted one year postoperative survival rates.

Figure 11-4
Adjusted 1 year survival rates after curative surgery by trust/health board, in England and Wales



Annex 1:
Organisation of the Audit

The project is assisted by a Clinical Reference Group (CRG), the membership of which is drawn from clinical groups involved in the management of oesophago-gastric (OG) cancer and patient organisations.

The project is overseen by a Project Board, which has senior representatives from the four participating organisations and the funding body.

Members of Clinical Reference Group		
Mike Hallisey	Consultant Surgeon Birmingham	Association of Cancer Surgeons
Paul Barham	Consultant Surgeon Bristol	Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland
Martin Richardson	Consultant Surgeon	Cancer Networks
Jane Ingham	CEO	Healthcare Quality Improvement Partnership (HQIP)
Jan van der Meulen (chair)	Professor of Clinical Epidemiology	London School of Hygiene and Tropical Medicine
Bill Allum	National OG Cancer Lead (joint)	National Cancer Action Team
Chris Carrigan	National Coordinator for Cancer Registration	National Cancer Action Team
David Kirby OBE	Chairman	Oesophageal Patients Association
Vicki Owen-Holt	Specialist Nurse	Royal College of Nursing
Nic Mapstone	Consultant Pathologist	Royal College of Pathologists
Hans-Ulrich Laasch	Consultant Radiologist	Royal College of Radiologists
Sam Ahmedzai	Emeritus Professor of Supportive Care Medicine	Palliative Care Representative
Tom Crosby	Consultant Clinical Oncologist	Clinical Oncologist in Wales and Royal College of Radiologists in UK
Nick Carroll	Consultant Radiologist and Endoscopist	UK EUS Users Group
Fiona Macharg	Specialist Dietician	British Dietetic Association Oncology Group
Greg Rubin	Professor General Practice and Primary Care	Durham University

Members of Project Board	
Dr Stuart Riley	British Society of Gastroenterologist (BSG)
Professor Mike Griffin	Association of Upper Gastroenterology Surgeons of Great Britain and Ireland (AUGIS)
Ms Alyson Whitmarsh	NHS Digital
Ms Yvonne Silove/Mr David McKinlay	Healthcare Quality Improvement Partnership (HQIP)
Professor Jan van der Meulen (chair)	London School of Hygiene and Tropical Medicine
Dr Diana Tait	Royal College of Radiologists (RCR)

Annex 2:
List of strategic clinical networks and NHS trusts/health boards in England and Wales

SCN code	SCN name	Trust name
LC	London Cancer	Barts Health NHS Trust
		Royal Free London NHS Foundation Trust
		North Middlesex University Hospital NHS Trust
		Barking, Havering and Redbridge University Hospitals NHS Trust
		The Whittington Hospital NHS Trust
		The Princess Alexandra Hospital NHS Trust
		Homerton University Hospital NHS Foundation Trust
		University College London Hospitals NHS Foundation Trust
N40	London Cancer Alliance	London North West Healthcare NHS Trust
		The Hillingdon Hospitals NHS Foundation Trust
		Kingston Hospital NHS Foundation Trust
		West Middlesex University Hospital NHS Trust
		Guy's and St Thomas' NHS Foundation Trust
		Lewisham and Greenwich NHS Trust
		Croydon Health Services NHS Trust
		St George's Healthcare NHS Trust
		King's College Hospital NHS Foundation Trust
		The Royal Marsden NHS Foundation Trust
		Chelsea and Westminster Hospital NHS Foundation Trust
		Epsom and St Helier University Hospitals NHS Trust
		Imperial College Healthcare NHS Trust
N50	Cheshire and Merseyside	Wirral University Teaching Hospital NHS Foundation Trust
		St Helens and Knowsley Hospitals NHS Trust
		Liverpool Heart and Chest Hospital NHS Foundation Trust
		Aintree University Hospital NHS Foundation Trust
		The Clatterbridge Cancer Centre NHS Foundation Trust
		Countess of Chester Hospital NHS Foundation Trust
		Royal Liverpool and Broadgreen University Hospitals NHS Trust
		Southport and Ormskirk Hospital NHS Trust
		Warrington and Halton Hospitals NHS Foundation Trust
N51	Greater Manchester, Lancashire and South Cumbria	Mid Cheshire Hospitals NHS Foundation Trust
		The Christie NHS Foundation Trust
		East Cheshire NHS Trust
		University Hospital of South Manchester NHS Foundation Trust
		Salford Royal NHS Foundation Trust
		Bolton NHS Foundation Trust
		Tameside Hospital NHS Foundation Trust
		Wrightington, Wigan and Leigh NHS Foundation Trust
		University Hospitals of Morecambe Bay NHS Foundation Trust
		Central Manchester University Hospitals NHS Foundation Trust
		Pennine Acute Hospitals NHS Trust
		Stockport NHS Foundation Trust
		Blackpool Teaching Hospitals NHS Foundation Trust
		Lancashire Teaching Hospitals NHS Foundation Trust
		East Lancashire Hospitals NHS Trust

SCN code	SCN name	Trust name
N52	Northern England	South Tyneside NHS Foundation Trust
		City Hospitals Sunderland NHS Foundation Trust
		North Cumbria University Hospitals NHS Trust
		Gateshead Health NHS Foundation Trust
		The Newcastle Upon Tyne Hospitals NHS Foundation Trust
		Northumbria Healthcare NHS Foundation Trust
		South Tees Hospitals NHS Foundation Trust
		North Tees and Hartlepool NHS Foundation Trus
		County Durham and Darlington NHS Foundation Trust
N53	Yorkshire and the Humber	Bradford Teaching Hospitals NHS Foundation Trust
		York Teaching Hospital NHS Foundation Trust
		Harrogate and District NHS Foundation Trust
		Airedale NHS Foundation Trust
		Barnsley Hospital NHS Foundation Trust
		The Rotherham NHS Foundation Trust
		Chesterfield Royal Hospital NHS Foundation Trust
		Sheffield Teaching Hospitals NHS Foundation Trust
		Northern Lincolnshire and Goole NHS Foundation Trust
		Doncaster and Bassetlaw Hospitals NHS Foundation Trust
		Leeds Teaching Hospitals NHS Trust
		Hull and East Yorkshire Hospitals NHS Trust
		Calderdale and Huddersfield NHS Foundation Trust
		Mid Yorkshire Hospitals NHS Trust
N54	East of England	Southend University Hospital NHS Foundation Trust
		Bedford Hospital NHS Trust
		Luton and Dunstable University Hospital NHS Foundation Trust
		The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
		Basildon and Thurrock University Hospitals NHS Foundation Trust
		Colchester Hospital University NHS Foundation Trust
		Peterborough and Stamford Hospitals NHS Foundation Trust
		James Paget University Hospitals NHS Foundation Trust
		Ipswich Hospital NHS Trust
		West Suffolk NHS Foundation Trust
		Cambridge University Hospitals NHS Foundation Trust
		Norfolk and Norwich University Hospitals NHS Foundation Trust
		Mid Essex Hospital Services NHS Trust
		Hinchingbrooke Health Care NHS Trust
		West Hertfordshire Hospitals NHS Trust
		East and North Hertfordshire NHS Trust
N55	East Midlands	Burton Hospitals NHS Foundation Trust
		Sherwood Forest Hospitals NHS Foundation Trust
		Kettering General Hospital NHS Foundation Trust
		Northampton General Hospital NHS Trust
		Derby Hospitals NHS Foundation Trust
		United Lincolnshire Hospitals NHS Trust
		University Hospitals of Leicester NHS Trust
		Nottingham University Hospitals NHS Trust

SCN code	SCN name	Trust name
N56	West Midlands	Walsall Healthcare NHS Trust
		South Warwickshire NHS Foundation Trust
		University Hospitals of North Midlands NHS Trust
		University Hospitals Coventry and Warwickshire NHS Trust
		The Royal Wolverhampton NHS Trust
		Wye Valley NHS Trust
		George Eliot Hospital NHS Trust
		The Dudley Group NHS Foundation Trust
		Heart of England NHS Foundation Trust
		University Hospitals Birmingham NHS Foundation Trust
		Worcestershire Acute Hospitals NHS Trust
		Sandwell and West Birmingham Hospitals NHS Trust
		Shrewsbury and Telford Hospital NHS Trust
N57	South West	Weston Area Health NHS Trust
		Yeovil District Hospital NHS Foundation Trust
		University Hospitals Bristol NHS Foundation Trust
		South Devon Healthcare NHS Foundation Trust
		Taunton and Somerset NHS Foundation Trust
		Northern Devon Healthcare NHS Trust
		Royal United Hospital Bath NHS Trust
		Royal Cornwall Hospitals NHS Trust
		Royal Devon and Exeter NHS Foundation Trust
		Plymouth Hospitals NHS Trust
		Gloucestershire Hospitals NHS Foundation Trust
		North Bristol NHS Trust
N58	South East Coast	Royal Surrey County Hospital NHS Foundation Trust
		Frimley Park Hospital NHS Foundation Trust
		Dartford and Gravesham NHS Trust
		Medway NHS Foundation Trust
		Ashford and St Peter's Hospitals NHS Foundation Trust
		Surrey and Sussex Healthcare NHS Trust
		East Kent Hospitals University NHS Foundation Trust
		Maidstone and Tunbridge Wells NHS Trust
		East Sussex Healthcare NHS Trust
		Brighton and Sussex University Hospitals NHS Trust
		Western Sussex Hospitals NHS Foundation Trust
N59	Thames Valley	Milton Keynes Hospital NHS Foundation Trust
		Royal Berkshire NHS Foundation Trust
		Great Western Hospitals NHS Foundation Trust
		Oxford University Hospitals NHS Trust
		Buckinghamshire Healthcare NHS Trust
N60	Wessex	Isle of Wight NHS Trust
		Dorset County Hospital NHS Foundation Trust
		Poole Hospital NHS Foundation Trust
		The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
		University Hospital Southampton NHS Foundation Trust
		Portsmouth Hospitals NHS Trust
		Hampshire Hospitals NHS Foundation Trust
		Salisbury NHS Foundation Trust
NWW	North Wales	Betsi Cadwaladr University Local Health Boar
SWCN	South Wales	Abertawe Bro Morgannwg University Local Health Board
		Cardiff & Vale University Local Health Board
		Cwm Taf University Local Health Board
		Aneurin Bevan University Local Health Board
		Hywel Dda University Local Health Board

Annex 3:
Levels of case ascertainment for English NHS trusts (over 2013-15, 2 years of data)

Estimates of the number of patients diagnosed in England with oesophago-gastric (OG) cancer were derived from the number of patients whose first record with OG cancer (ICD code: C15/C16) in Hospital Episode Statistics (HES) was within the audit period. HES data does not provide a gold-standard for comparison, but can give an indication on major discrepancies between patients submitted in the Audit and patients documented to be receiving care for OG cancer in HES. Trusts submitting less than 10 cases in the 2 year period were excluded from the comparison.

Note: Three trusts were not included in the Annex, as they are tertiary treatment centres only.

Key

- ● data completeness >80%
- ■ data completeness between 60-80%
- ▲ data completeness <60%

SCN name	SCN code	Trust code	Trust name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
London Cancer	**LC**	**R1H**	Barts Health NHS Trust	201 to 250	216	81 to 90 ●
		RAL	Royal Free London NHS Foundation Trust	201 to 250	194	81 to 90 ●
		RAP	North Middlesex University Hospital NHS Trust	51 to 100	146	>90 ●
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	251 to 300	220	81 to 90 ●
		RKE	The Whittington Hospital NHS Trust	51 to 100	59	>90 ●
		RQW	The Princess Alexandra Hospital NHS Trust	51 to 100	29	0 to 40 ▲
		RQX	Homerton University Hospital NHS Foundation Trust	51 to 100	50	71 to 80 ■
		RRV	University College London Hospitals NHS Foundation Trust	151 to 200	124	61 to 70 ■
London Cancer Alliance	**N40**	**R1K**	London North West Healthcare NHS Trust	151 to 200	50	0 to 40 ▲
		RAS	The Hillingdon Hospitals NHS Foundation Trust	51 to 100	47	61 to 70 ■
		RAX	Kingston Hospital NHS Foundation Trust	51 to 100	88	>90 ●
		RFW	West Middlesex University Hospital NHS Trust	<50	55	>90 ●
		RJ1	Guy's and St Thomas' NHS Foundation Trust	201 to 250	94	0 to 40 ▲
		RJ2	Lewisham and Greenwich NHS Trust	151 to 200	136	81 to 90 ●
		RJ6	Croydon Health Services NHS Trust	51 to 100	76	>90 ●
		RJ7	St George's Healthcare NHS Trust	101 to 150	113	81 to 90 ●
		RJZ	King's College Hospital NHS Foundation Trust	151 to 200	137	81 to 90 ●
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	51 to 100	52	81 to 90 ●
		RVR	Epsom and St Helier University Hospitals NHS Trust	101 to 150	153	>90 ●
		RYJ	Imperial College Healthcare NHS Trust	201 to 250	261	>90 ●
Cheshire and Merseyside	**N50**	**RBL**	Wirral University Teaching Hospital NHS Foundation Trust	201 to 250	195	>90 ●
		RBN	St Helens and Knowsley Hospitals NHS Trust	151 to 200	150	81 to 90 ●
		REM	Aintree University Hospital NHS Foundation Trust	201 to 250	183	81 to 90 ●
		RJR	Countess of Chester Hospital NHS Foundation Trust	101 to 150	102	>90 ●
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	201 to 250	121	51 to 60 ▲
		RVY	Southport and Ormskirk Hospital NHS Trust	101 to 150	45	0 to 40 ▲
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	101 to 150	86	61 to 70 ■
Greater Manchester, Lancashire and South Cumbria	**N51**	**RBT**	Mid Cheshire Hospitals NHS Foundation Trust	101 to 150	131	81 to 90 ●
		RJN	East Cheshire NHS Trust	51 to 100	94	>90 ●
		RM2	University Hospital of South Manchester NHS Foundation Trust	151 to 200	125	81 to 90 ●
		RM3	Salford Royal NHS Foundation Trust	151 to 200	101	61 to 70 ■
		RMC	Bolton NHS Foundation Trust	101 to 150	152	>90 ●
		RMP	Tameside Hospital NHS Foundation Trust	101 to 150	78	51 to 60 ▲
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	101 to 150	131	>90 ●
		RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	201 to 250	111	51 to 60 ▲
		RW3	Central Manchester University Hospitals NHS Foundation Trust	151 to 200	198	>90 ●
		RW6	Pennine Acute Hospitals NHS Trust	301 to 350	303	>90 ●
		RWJ	Stockport NHS Foundation Trust	101 to 150	93	71 to 80 ■
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	151 to 200	165	>90 ●
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	201 to 250	210	>90 ●
		RXR	East Lancashire Hospitals NHS Trust	201 to 250	212	>90 ●

SCN name	SCN code	Trust code	Trust name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
Northern England	**N52**	**RE9**	South Tyneside NHS Foundation Trust	51 to 100	79	>90 ●
		RLN	City Hospitals Sunderland NHS Foundation Trust	101 to 150	123	>90 ●
		RNL	North Cumbria University Hospitals NHS Trust	151 to 200	163	81 to 90 ●
		RR7	Gateshead Health NHS Foundation Trust	101 to 150	120	>90 ●
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	301 to 350	191	51 to 60 ▲
		RTF	Northumbria Healthcare NHS Foundation Trust	201 to 250	234	>90 ●
		RTR	South Tees Hospitals NHS Foundation Trust	251 to 300	271	>90 ●
		RVW	North Tees and Hartlepool NHS Foundation Trust	151 to 200	180	>90 ●
		RXP	County Durham and Darlington NHS Foundation Trust	251 to 300	249	>90 ●
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust	151 to 200	188	>90 ●
		RCB	York Teaching Hospital NHS Foundation Trust	251 to 300	203	71 to 80 ■
		RCD	Harrogate and District NHS Foundation Trust	51 to 100	96	>90 ●
		RCF	Airedale NHS Foundation Trust	51 to 100	70	71 to 80 ■
		RFF	Barnsley Hospital NHS Foundation Trust	101 to 150	124	>90 ●
		RFR	The Rotherham NHS Foundation Trust	101 to 150	106	>90 ●
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	101 to 150	143	>90 ●
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	351 to 400	258	61 to 70 ■
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	201 to 250	226	>90 ●
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	251 to 300	202	71 to 80 ■
		RR8	Leeds Teaching Hospitals NHS Trust	351 to 400	243	61 to 70 ■
		RWA	Hull and East Yorkshire Hospitals NHS Trust	301 to 350	237	71 to 80 ■
		RWY	Calderdale and Huddersfield NHS Foundation Trust	201 to 250	142	61 to 70 ■
		RXF	Mid Yorkshire Hospitals NHS Trust	251 to 300	203	71 to 80 ■
East of England	**N54**	**RAJ**	Southend University Hospital NHS Foundation Trust	101 to 150	122	>90 ●
		RC1	Bedford Hospital NHS Trust	51 to 100	96	>90 ●
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	101 to 150	121	81 to 90 ●
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	101 to 150	110	>90 ●
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	101 to 150	126	>90 ●
		RDE	Colchester Hospital University NHS Foundation Trust	151 to 200	147	>90 ●
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	151 to 200	118	71 to 80 ■
		RGP	James Paget University Hospitals NHS Foundation Trust	101 to 150	123	>90 ●
		RGQ	Ipswich Hospital NHS Trust	101 to 150	140	>90 ●
		RGR	West Suffolk NHS Foundation Trust	51 to 100	101	>90 ●
		RGT	Cambridge University Hospitals NHS Foundation Trust	251 to 300	191	71 to 80 ■
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	301 to 350	292	81 to 90 ●
		RQ8	Mid Essex Hospital Services NHS Trust	201 to 250	42	0 to 40 ▲
		RQQ	Hinchingbrooke Health Care NHS Trust	51 to 100	57	81 to 90 ●
		RWG	West Hertfordshire Hospitals NHS Trust	151 to 200	55	0 to 40 ▲
		RWH	East and North Hertfordshire NHS Trust	151 to 200	132	81 to 90 ●
East Midlands	**N55**	**RJF**	Burton Hospitals NHS Foundation Trust	101 to 150	109	>90 ●
		RK5	Sherwood Forest Hospitals NHS Foundation Trust	151 to 200	166	81 to 90 ●
		RNQ	Kettering General Hospital NHS Foundation Trust	101 to 150	126	>90 ●
		RNS	Northampton General Hospital NHS Trust	101 to 150	117	81 to 90 ●
		RTG	Derby Hospitals NHS Foundation Trust	301 to 350	253	81 to 90 ●
		RWD	United Lincolnshire Hospitals NHS Trust	251 to 300	162	51 to 60 ▲
		RWE	University Hospitals of Leicester NHS Trust	351 to 400	349	81 to 90 ●
		RX1	Nottingham University Hospitals NHS Trust	301 to 350	364	>90 ●

SCN name	SCN code	Trust code	Trust name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
West Midlands	**N56**	**RBK**	Walsall Healthcare NHS Trust	101 to 150	44	0 to 40 ▲
		RJC	South Warwickshire NHS Foundation Trust	51 to 100	71	71 to 80 ■
		RJE	University Hospitals of North Midlands NHS Trust	451 to 500	284	61 to 70 ■
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	251 to 300	191	71 to 80 ■
		RL4	The Royal Wolverhampton NHS Trust	201 to 250	170	81 to 90 ●
		RLQ	Wye Valley NHS Trust	<50	108	>90 ●
		RLT	George Eliot Hospital NHS Trust	51 to 100	64	61 to 70 ■
		RNA	The Dudley Group NHS Foundation Trust	151 to 200	177	81 to 90 ●
		RR1	Heart of England NHS Foundation Trust	351 to 400	333	81 to 90 ●
		RRK	University Hospitals Birmingham NHS Foundation Trust	251 to 300	124	41 to 50 ▲
		RWP	Worcestershire Acute Hospitals NHS Trust	251 to 300	252	>90 ●
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	101 to 150	151	>90 ●
		RXW	Shrewsbury and Telford Hospital NHS Trust	201 to 250	176	81 to 90 ●
South West	**N57**	**RA3**	Weston Area Health NHS Trust	51 to 100	61	81 to 90 ●
		RA4	Yeovil District Hospital NHS Foundation Trust	51 to 100	59	81 to 90 ●
		RA7	University Hospitals Bristol NHS Foundation Trust	201 to 250	198	81 to 90 ●
		RA9	South Devon Healthcare NHS Foundation Trust	151 to 200	148	81 to 90 ●
		RBA	Taunton and Somerset NHS Foundation Trust	101 to 150	124	>90 ●
		RBZ	Northern Devon Healthcare NHS Trust	51 to 100	75	81 to 90 ●
		RD1	Royal United Hospital Bath NHS Trust	151 to 200	93	61 to 70 ■
		REF	Royal Cornwall Hospitals NHS Trust	201 to 250	195	81 to 90 ●
		RH8	Royal Devon and Exeter NHS Foundation Trust	201 to 250	195	>90 ●
		RK9	Plymouth Hospitals NHS Trust	201 to 250	208	81 to 90 ●
		RTE	Gloucestershire Hospitals NHS Foundation Trust	301 to 350	256	71 to 80 ■
		RVJ	North Bristol NHS Trust	101 to 150	126	81 to 90 ●
South East Coast	**N58**	**RA2**	Royal Surrey County Hospital NHS Foundation Trust	151 to 200	97	51 to 60 ▲
		RDU	Frimley Park Hospital NHS Foundation Trust	251 to 300	91	0 to 40 ▲
		RN7	Dartford and Gravesham NHS Trust	101 to 150	98	81 to 90 ●
		RPA	Medway NHS Foundation Trust	101 to 150	75	51 to 60 ▲
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	101 to 150	76	61 to 70 ■
		RTP	Surrey and Sussex Healthcare NHS Trust	101 to 150	92	71 to 80 ■
		RVV	East Kent Hospitals University NHS Foundation Trust	301 to 350	167	41 to 50 ▲
		RWF	Maidstone and Tunbridge Wells NHS Trust	201 to 250	191	81 to 90 ●
		RXC	East Sussex Healthcare NHS Trust	151 to 200	159	81 to 90 ●
		RXH	Brighton and Sussex University Hospitals NHS Trust	151 to 200	133	61 to 70 ■
		RYR	Western Sussex Hospitals NHS Foundation Trust	201 to 250	221	>90 ●
Thames Valley	**N59**	**RD8**	Milton Keynes Hospital NHS Foundation Trust	51 to 100	60	71 to 80 ■
		RHW	Royal Berkshire NHS Foundation Trust	151 to 200	26	0 to 40 ▲
		RN3	Great Western Hospitals NHS Foundation Trust	101 to 150	98	71 to 80 ■
		RTH	Oxford University Hospitals NHS Trust	301 to 350	118	0 to 40 ▲
		RXQ	Buckinghamshire Healthcare NHS Trust	101 to 150	113	>90 ●
Wessex	**N60**	**R1F**	Isle of Wight NHS Trust	<50	72	>90 ●
		RBD	Dorset County Hospital NHS Foundation Trust	101 to 150	92	81 to 90 ●
		RD3	Poole Hospital NHS Foundation Trust	101 to 150	99	71 to 80 ■
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	151 to 200	176	>90 ●
		RHM	University Hospital Southampton NHS Foundation Trust	201 to 250	181	81 to 90 ●
		RHU	Portsmouth Hospitals NHS Trust	301 to 350	262	71 to 80 ■
		RN5	Hampshire Hospitals NHS Foundation Trust	151 to 200	156	81 to 90 ●
		RNZ	Salisbury NHS Foundation Trust	101 to 150	98	>90 ●

Annex 4:
Data completeness for surgical and pathology records by NHS trust/health board, England and Wales (over 2013-2015, 2 years of data)

Completeness of data entered by each NHS trust/health board for key fields was calculated for all patients who had a surgical record submitted. We calculated the proportion with complete data on complications, death in hospital and date of discharge/death. Furthermore all patients who had surgery should have a corresponding pathology record, so we analysed the proportion who did for each NHS trust/health board.

Trusts/health boards submitting records for less than 10 surgical resections in the 2 year period were excluded from the comparison.

Note: N/A Welsh data is extracted directly from CaNISC, and the data source does not provide any details as to complications occurring in Wales.

SCN name	SCN code	Trust code	Trust name
London Cancer	**LC**	**R1H**	Barts Health NHS Trust
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust
		RRV	University College London Hospitals NHS Foundation Trust
London Cancer Alliance	**N40**	**RPY**	The Royal Marsden NHS Foundation Trust
		RYJ	Imperial College Healthcare NHS Trust
		RJ1	Guy's and St Thomas' NHS Foundation Trust
Cheshire and Merseyside	**N50**	**REM**	Aintree University Hospital NHS Foundation Trust
		RBQ	Liverpool Heart and Chest Hospital NHS Foundation Trust
Greater Manchester	**N51**	**RM2**	University Hospital of South Manchester NHS Foundation Trust
		RW3	Central Manchester University Hospitals NHS Foundation Trust
		RM3	Salford Royal NHS Foundation Trust
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust
Northern England	**N52**	**RTR**	South Tees Hospitals NHS Foundation Trust
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust
		RWA	Hull and East Yorkshire Hospitals NHS Trust
		RR8	Leeds Teaching Hospitals NHS Trust
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust
East of England	**N54**	**RWG**	West Hertfordshire Hospitals NHS Trust
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust
		RQ8	Mid Essex Hospital Services NHS Trust
		RGT	Cambridge University Hospitals NHS Foundation Trust
East Midlands	**N55**	**RTG**	Derby Hospitals NHS Foundation Trust
		RWE	University Hospitals of Leicester NHS Trust
		RX1	Nottingham University Hospitals NHS Trust
West Midlands	**N56**	**RJE**	University Hospitals of North Midlands NHS Trust
		RR1	Heart of England NHS Foundation Trust
		RKB	University Hospitals Coventry and Warwickshire NHS Trust
		RRK	University Hospitals Birmingham NHS Foundation Trust
South West	**N57**	**RTE**	Gloucestershire Hospitals NHS Foundation Trust
		RA7	University Hospitals Bristol NHS Foundation Trust
		RK9	Plymouth Hospitals NHS Trust
South East Coast	**N58**	**RWF**	Maidstone and Tunbridge Wells NHS Trust
		RXH	Brighton and Sussex University Hospitals NHS Trust
		RA2	Royal Surrey County Hospital NHS Foundation Trust
Thames Valley	**N59**	**RHW**	Royal Berkshire NHS Foundation Trust
		RN3	Great Western Hospitals NHS Foundation Trust
		RTH	Oxford University Hospitals NHS Trust
Wessex	**N60**	**RDZ**	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
		RHM	University Hospital Southampton NHS Foundation Trust
		RHU	Portsmouth Hospitals NHS Trust
North Wales	**NWW**	**7A1**	Betsi Cadwaladr University Local Health Board
South Wales	**SWCN**	**7A3**	Abertawe Bro Morgannwg University Local Health Board
		7A4	Cardiff & Vale University Local Health Board

Key	
Complications	% with death in hospital, % with date of discharge/death, matched pathology
● data completeness ≥80%	● data completeness ≥90%
■ data completeness between 75-79%	■ data completeness between 80-90%
▲ data completeness <75%	▲ data completeness <80%

	Number of surgical cases	% with any complications	% with death in hospital	% with date of discharge/death	% with matched pathology record
	62	98.4 ●	98.4 ●	98.4 ●	93.5 ●
	63	96.8 ●	95.2 ●	87.3 ■	81.0 ■
	120	100.0 ●	100.0 ●	100.0 ●	100.0 ●
	96	100.0 ●	100.0 ●	96.9 ●	99.0 ●
	109	98.2 ●	99.1 ●	94.5 ●	89.9 ■
	221	1.4 ▲	52.5 ▲	97.7 ●	92.8 ●
	89	43.8 ▲	95.5 ●	96.6 ●	92.1 ●
	132	85.6 ●	100.0 ●	100.0 ●	89.4 ■
	34	100.0 ●	100.0 ●	94.1 ●	97.1 ●
	90	87.8 ●	100.0 ●	100.0 ●	93.3 ●
	186	100.0 ●	100.0 ●	100.0 ●	89.2 ■
	202	98.0 ●	99.0 ●	100.0 ●	88.6 ■
	160	100.0 ●	100.0 ●	99.4 ●	85.6 ■
	264	100.0 ●	100.0 ●	100.0 ●	97.0 ●
	109	0.0 ▲	88.1 ■	88.1 ■	85.3 ■
	109	47.7 ▲	82.6 ■	80.7 ■	83.5 ■
	165	4.8 ▲	98.8 ●	99.4 ●	92.7 ●
	181	96.1 ●	100.0 ●	99.4 ●	99.4 ●
	84	89.3 ●	91.7 ●	86.9 ■	90.5 ●
	104	100.0 ●	100.0 ●	76.0 ▲	98.1 ●
	138	21.7 ▲	20.3 ▲	10.9 ▲	14.5 ▲
	147	78.9 ■	100.0 ●	93.9 ●	95.2 ●
	80	97.5 ●	98.8 ●	97.5 ●	93.8 ●
	128	97.7 ●	97.7 ●	97.7 ●	85.2 ■
	253	97.6 ●	97.6 ●	98.0 ●	92.1 ●
	20	10.0 ▲	0.0 ▲	10.0 ▲	50.0 ▲
	80	88.8 ●	71.3 ▲	95.0 ●	97.5 ●
	123	98.4 ●	100.0 ●	99.2 ●	88.6 ■
	132	78.8 ■	99.2 ●	3.8 ▲	88.6 ■
	118	97.5 ●	99.2 ●	99.2 ●	91.5 ●
	141	80.9 ●	99.3 ●	98.6 ●	100.0 ●
	241	88.4 ●	98.8 ●	99.6 ●	92.5 ●
	13	53.8 ▲	100.0 ●	100.0 ●	92.3 ●
	31	32.3 ▲	77.4 ▲	77.4 ▲	41.9 ▲
	97	61.9 ▲	84.5 ■	91.8 ●	99.0 ●
	12	100.0 ●	100.0 ●	100.0 ●	91.7 ●
	15	100.0 ●	100.0 ●	93.3 ●	46.7 ▲
	152	97.4 ●	96.1 ●	90.1 ●	86.2 ■
	77	87.0 ●	89.6 ■	81.8 ■	83.1 ■
	108	79.6 ■	95.4 ●	98.1 ●	91.7 ●
	116	100.0 ●	96.6 ●	97.4 ●	98.3 ●
	87	N/A	98.9 ●	94.3 ●	79.3 ▲
	26	N/A	96.2 ●	100.0 ●	80.8 ■
	70	N/A	84.3 ■	100.0 ●	84.3 ■

Annex 5:
Number of cases of HGD diagnosed at each English NHS trust by year of diagnosis (over 2012-15, 3 years of data)

The BSG recommend that the treatment of HGD is limited to trusts treating 15 or more cases each year [4]. This Annex looks at the number of cases of HGD diagnosed at each trust.

Key	
Audit year	Total
● ≥5	● ≥30
■ 5 to 14	■ 15 to 29
▲ <5	▲ <15

SCN name	SCN code	Trust code	Trust name	Cases in 2012-13	Cases in 2013-14	Cases in 2014-15	Total cases 2012-15
London Cancer	LC	RAP	North Middlesex University Hospital NHS Trust	0 ▲	0 ▲	1 ▲	1 ▲
		RKE	The Whittington Hospital NHS Trust	1 ▲	0 ▲	1 ▲	2 ▲
		RAL	Royal Free London NHS Foundation Trust	2 ▲	1 ▲	0 ▲	3 ▲
		RQW	The Princess Alexandra Hospital NHS Trust	2 ▲	2 ▲	0 ▲	4 ▲
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	3 ▲	4 ▲	0 ▲	7 ▲
		R1H	Barts Health NHS Trust	7 ■	1 ▲	2 ▲	10 ▲
		RRV	University College London Hospitals NHS Foundation Trust	13 ■	5 ■	6 ■	24 ■
London Cancer Alliance	N40	RYQ	South London Healthcare NHS Trust	0 ▲	0 ▲	1 ▲	1 ▲
		RAS	The Hillingdon Hospitals NHS Foundation Trust	0 ▲	0 ▲	2 ▲	2 ▲
		RJ7	St George's Healthcare NHS Trust	2 ▲	0 ▲	0 ▲	2 ▲
		RPY	The Royal Marsden NHS Foundation Trust	2 ▲	0 ▲	1 ▲	3 ▲
		R1K	London North West Healthcare NHS Trust	3 ▲	0 ▲	1 ▲	4 ▲
		RAX	Kingston Hospital NHS Foundation Trust	1 ▲	2 ▲	1 ▲	4 ▲
		RFW	West Middlesex University Hospital NHS Trust	2 ▲	2 ▲	0 ▲	4 ▲
		RJ6	Croydon Health Services NHS Trust	1 ▲	2 ▲	1 ▲	4 ▲
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	3 ▲	3 ▲	1 ▲	7 ▲
		RVR	Epsom and St Helier University Hospitals NHS Trust	3 ▲	3 ▲	1 ▲	7 ▲
		RJ1	Guy's and St Thomas' NHS Foundation Trust	5 ■	2 ▲	2 ▲	9 ▲
		RJZ	King's College Hospital NHS Foundation Trust	1 ▲	5 ■	3 ▲	9 ▲
		RJ2	Lewisham and Greenwich NHS Trust	5 ■	6 ■	1 ▲	12 ▲
		RYJ	Imperial College Healthcare NHS Trust	4 ▲	10 ■	4 ▲	18 ■
Cheshire and Merseyside	N50	RVY	Southport and Ormskirk Hospital NHS Trust	2 ▲	1 ▲	0 ▲	3 ▲
		RBN	St Helens and Knowsley Hospitals NHS Trust	2 ▲	2 ▲	0 ▲	4 ▲
		RBL	Wirral University Teaching Hospital NHS Foundation Trust	0 ▲	5 ■	0 ▲	5 ▲
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	5 ■	0 ▲	0 ▲	5 ▲
		RJR	Countess of Chester Hospital NHS Foundation Trust	0 ▲	1 ▲	6 ■	7 ▲
		REM	Aintree University Hospital NHS Foundation Trust	1 ▲	1 ▲	6 ■	8 ▲
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	18 ●	18 ●	1 ▲	37 ●
Greater Manchester, Lancashire and South Cumbria	N51	RJN	East Cheshire NHS Trust	0 ▲	0 ▲	1 ▲	1 ▲
		RM2	University Hospital of South Manchester NHS Foundation Trust	0 ▲	1 ▲	0 ▲	1 ▲
		RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	0 ▲	0 ▲	1 ▲	1 ▲
		RMC	Bolton NHS Foundation Trust	0 ▲	1 ▲	1 ▲	2 ▲
		RBT	Mid Cheshire Hospitals NHS Foundation Trust	0 ▲	3 ▲	0 ▲	3 ▲
		RWJ	Stockport NHS Foundation Trust	1 ▲	1 ▲	1 ▲	3 ▲
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	0 ▲	2 ▲	2 ▲	4 ▲
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	2 ▲	1 ▲	4 ▲	7 ▲
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	3 ▲	5 ■	4 ▲	12 ▲
		RXR	East Lancashire Hospitals NHS Trust	9 ■	2 ▲	2 ▲	13 ▲
		RM3	Salford Royal NHS Foundation Trust	6 ■	4 ▲	8 ■	18 ■
		RW6	Pennine Acute Hospitals NHS Trust	15 ●	0 ▲	4 ▲	19 ■
		RW3	Central Manchester University Hospitals NHS Foundation Trust	10 ■	13 ■	8 ■	31 ●
Northern England	N52	RE9	South Tyneside NHS Foundation Trust	0 ▲	1 ▲	2 ▲	3 ▲
		RLN	City Hospitals Sunderland NHS Foundation Trust	2 ▲	1 ▲	2 ▲	5 ▲
		RNL	North Cumbria University Hospitals NHS Trust	4 ▲	6 ■	3 ▲	13 ▲
		RR7	Gateshead Health NHS Foundation Trust	1 ▲	8 ■	4 ▲	13 ▲
		RTF	Northumbria Healthcare NHS Foundation Trust	3 ▲	8 ■	2 ▲	13 ▲
		RTR	South Tees Hospitals NHS Foundation Trust	4 ▲	7 ■	5 ■	16 ■
		RVW	North Tees and Hartlepool NHS Foundation Trust	1 ▲	5 ■	11 ■	17 ■
		RXP	County Durham and Darlington NHS Foundation Trust	3 ▲	5 ■	9 ■	17 ■
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	10 ■	10 ■	9 ■	29 ■

SCN name	SCN code	Trust code	Trust name	Cases in 2012-13	Cases in 2013-14	Cases in 2014-15	Total cases 2012-15
Yorkshire and the Humber	N53	RCF	Airedale NHS Foundation Trust	1 ▲	1 ▲	1 ▲	3 ▲
		RFF	Barnsley Hospital NHS Foundation Trust	0 ▲	1 ▲	2 ▲	3 ▲
		RFR	The Rotherham NHS Foundation Trust	0 ▲	3 ▲	1 ▲	4 ▲
		RWY	Calderdale and Huddersfield NHS Foundation Trust	3 ▲	1 ▲	0 ▲	4 ▲
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	0 ▲	4 ▲	1 ▲	5 ▲
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	0 ▲	2 ▲	3 ▲	5 ▲
		RCD	Harrogate and District NHS Foundation Trust	2 ▲	2 ▲	3 ▲	7 ▲
		RWA	Hull and East Yorkshire Hospitals NHS Trust	3 ▲	2 ▲	2 ▲	7 ▲
		RCB	York Teaching Hospital NHS Foundation Trust	1 ▲	1 ▲	6 ■	8 ▲
		RAE	Bradford Teaching Hospitals NHS Foundation Trust	6 ■	3 ▲	1 ▲	10 ▲
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	6 ■	5 ■	3 ▲	14 ▲
		RXF	Mid Yorkshire Hospitals NHS Trust	8 ■	1 ▲	5 ■	14 ▲
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	5 ■	7 ■	5 ■	17 ■
		RR8	Leeds Teaching Hospitals NHS Trust	18 ●	8 ■	7 ■	33 ●
East of England	N54	RQ8	Mid Essex Hospital Services NHS Trust	0 ▲	0 ▲	1 ▲	1 ▲
		RC1	Bedford Hospital NHS Trust	0 ▲	1 ▲	1 ▲	2 ▲
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	0 ▲	3 ▲	0 ▲	3 ▲
		RAJ	Southend University Hospital NHS Foundation Trust	2 ▲	1 ▲	2 ▲	5 ▲
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	0 ▲	1 ▲	4 ▲	5 ▲
		RGR	West Suffolk NHS Foundation Trust	2 ▲	1 ▲	2 ▲	5 ▲
		RGQ	Ipswich Hospital NHS Trust	3 ▲	2 ▲	1 ▲	6 ▲
		RQQ	Hinchingbrooke Health Care NHS Trust	3 ▲	3 ▲	1 ▲	7 ▲
		RWH	East and North Hertfordshire NHS Trust	3 ▲	1 ▲	3 ▲	7 ▲
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	6 ■	3 ▲	0 ▲	9 ▲
		RGP	James Paget University Hospitals NHS Foundation Trust	3 ▲	2 ▲	4 ▲	9 ▲
		RDE	Colchester Hospital University NHS Foundation Trust	2 ▲	3 ▲	6 ■	11 ▲
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	0 ▲	8 ■	4 ▲	12 ▲
		RWG	West Hertfordshire Hospitals NHS Trust	3 ▲	6 ■	3 ▲	12 ▲
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	17 ●	0 ▲	0 ▲	17 ■
		RGT	Cambridge University Hospitals NHS Foundation Trust	14 ■	19 ●	15 ●	48 ●
East Midlands	N55	RK5	Sherwood Forest Hospitals NHS Foundation Trust	2 ▲	0 ▲	0 ▲	2 ▲
		RNQ	Kettering General Hospital NHS Foundation Trust	0 ▲	3 ▲	0 ▲	3 ▲
		RWD	United Lincolnshire Hospitals NHS Trust	0 ▲	3 ▲	0 ▲	3 ▲
		RNS	Northampton General Hospital NHS Trust	1 ▲	2 ▲	1 ▲	4 ▲
		RJF	Burton Hospitals NHS Foundation Trust	2 ▲	3 ▲	1 ▲	6 ▲
		RTG	Derby Hospitals NHS Foundation Trust	3 ▲	4 ▲	2 ▲	9 ▲
		RWE	University Hospitals of Leicester NHS Trust	5 ■	12 ■	5 ■	22 ■
		RX1	Nottingham University Hospitals NHS Trust	24 ●	23 ●	24 ●	71 ●
West Midlands	N56	RLQ	Wye Valley NHS Trust	1 ▲	0 ▲	0 ▲	1 ▲
		RNA	The Dudley Group NHS Foundation Trust	1 ▲	0 ▲	0 ▲	1 ▲
		RJC	South Warwickshire NHS Foundation Trust	1 ▲	1 ▲	1 ▲	3 ▲
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	3 ▲	1 ▲	1 ▲	5 ▲
		RJE	University Hospitals of North Midlands NHS Trust	6 ■	2 ▲	0 ▲	8 ▲
		RLT	George Eliot Hospital NHS Trust	2 ▲	2 ▲	2 ▲	6 ▲
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	5 ■	0 ▲	1 ▲	6 ▲
		RXW	Shrewsbury and Telford Hospital NHS Trust	1 ▲	5 ■	0 ▲	6 ▲
		RL4	The Royal Wolverhampton NHS Trust	3 ▲	10 ■	3 ▲	16 ■
		RWP	Worcestershire Acute Hospitals NHS Trust	7 ■	7 ■	4 ▲	18 ■
		RR1	Heart of England NHS Foundation Trust	9 ■	2 ▲	8 ■	19 ■

SCN name	SCN code	Trust code	Trust name	Cases in 2012-13	Cases in 2013-14	Cases in 2014-15	Total cases 2012-15
South West	N57	RVJ	North Bristol NHS Trust	0 ▲	1 ▲	0 ▲	1 ▲
		RD1	Royal United Hospital Bath NHS Trust	1 ▲	0 ▲	1 ▲	2 ▲
		RA3	Weston Area Health NHS Trust	4 ▲	0 ▲	0 ▲	4 ▲
		RBA	Taunton and Somerset NHS Foundation Trust	2 ▲	2 ▲	0 ▲	4 ▲
		RBZ	Northern Devon Healthcare NHS Trust	0 ▲	2 ▲	2 ▲	4 ▲
		RA9	South Devon Healthcare NHS Foundation Trust	2 ▲	2 ▲	1 ▲	5 ▲
		RA7	University Hospitals Bristol NHS Foundation Trust	1 ▲	7 ■	0 ▲	8 ▲
		RH8	Royal Devon and Exeter NHS Foundation Trust	4 ▲	1 ▲	9 ■	14 ▲
		REF	Royal Cornwall Hospitals NHS Trust	4 ▲	7 ■	6 ■	17 ■
		RK9	Plymouth Hospitals NHS Trust	13 ■	5 ■	0 ▲	18 ■
		RTE	Gloucestershire Hospitals NHS Foundation Trust	11 ■	10 ■	8 ■	29 ■
South East Coast	N58	RA2	Royal Surrey County Hospital NHS Foundation Trust	1 ▲	1 ▲	0 ▲	2 ▲
		RXH	Brighton and Sussex University Hospitals NHS Trust	2 ▲	0 ▲	0 ▲	2 ▲
		RXC	East Sussex Healthcare NHS Trust	5 ■	0 ▲	0 ▲	5 ▲
		RTP	Surrey and Sussex Healthcare NHS Trust	3 ▲	2 ▲	2 ▲	7 ▲
		RN7	Dartford and Gravesham NHS Trust	2 ▲	1 ▲	5 ■	8 ▲
		RYR	Western Sussex Hospitals NHS Foundation Trust	3 ▲	2 ▲	4 ▲	9 ▲
		RPA	Medway NHS Foundation Trust	7 ■	0 ▲	3 ▲	10 ▲
		RDU	Frimley Park Hospital NHS Foundation Trust	8 ■	6 ■	3 ▲	17 ■
		RVV	East Kent Hospitals University NHS Foundation Trust	5 ■	5 ■	7 ■	17 ■
		RWF	Maidstone and Tunbridge Wells NHS Trust	4 ▲	13 ■	4 ▲	21 ■
Thames Valley	N59	RXQ	Buckinghamshire Healthcare NHS Trust	1 ▲	0 ▲	0 ▲	1 ▲
		RN3	Great Western Hospitals NHS Foundation Trust	0 ▲	3 ▲	0 ▲	3 ▲
		RHW	Royal Berkshire NHS Foundation Trust	1 ▲	4 ▲	1 ▲	6 ▲
		RD8	Milton Keynes Hospital NHS Foundation Trust	0 ▲	9 ■	2 ▲	11 ▲
		RTH	Oxford University Hospitals NHS Trust	3 ▲	1 ▲	8 ■	12 ▲
Wessex	N60	RD3	Poole Hospital NHS Foundation Trust	0 ▲	1 ▲	1 ▲	2 ▲
		RBD	Dorset County Hospital NHS Foundation Trust	0 ▲	2 ▲	1 ▲	3 ▲
		R1F	Isle of Wight NHS Trust	5 ■	2 ▲	2 ▲	9 ▲
		RNZ	Salisbury NHS Foundation Trust	2 ▲	5 ■	3 ▲	10 ▲
		RN5	Hampshire Hospitals NHS Foundation Trust	3 ▲	4 ▲	5 ■	12 ▲
		RHM	University Hospital Southampton NHS Foundation Trust	6 ■	9 ■	8 ■	23 ■
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	8 ■	14 ■	6 ■	28 ■
		RHU	Portsmouth Hospitals NHS Trust	26 ●	16 ●	13 ■	55 ●

Annex 6:
Completeness of data submissions to the HGD dataset by English NHS trust (over 2012-15, 3 years of data)

Completeness of data entered by each English NHS trust for key HGD fields was calculated for fields where data submission was non-mandatory or where the data item was mandatory but the option of 'not known' or 'not applicable' was available. This data is based on trust where HGD was **diagnosed**.

NHS trust submitting records for less than 10 patients with HGD were excluded from the comparison.

Key

- ● data completeness ≥80%
- ■ data completeness 60-79%
- ▲ data completeness <60%

SCN name	SCN code	Trust code	Trust name
London Cancer	**LC**	**RRV**	University College London Hospitals NHS Foundation Trust
		R1H	Barts Health NHS Trust
London Cancer Alliance	**N40**	**RYJ**	Imperial College Healthcare NHS Trust
		RJ2	Lewisham and Greenwich NHS Trust
Cheshire and Merseyside	**N50**	**RQ6**	Royal Liverpool and Broadgreen University Hospitals NHS Trust
Greater Manchester, Lancashire and South Cumbria	**N51**	**RW3**	Central Manchester University Hospitals NHS Foundation Trust
		RW6	Pennine Acute Hospitals NHS Trust
		RM3	Salford Royal NHS Foundation Trust
		RXR	East Lancashire Hospitals NHS Trust
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust
Northern England	**N52**	**RTD**	The Newcastle upon Tyne Hospitals NHS Foundation Trust
		RVW	North Tees and Hartlepool NHS Foundation Trust t
		RXP	County Durham and Darlington NHS Foundation Trust
		RTR	South Tees Hospitals NHS Foundation Trust
		RNL	North Cumbria University Hospitals NHS Trust
		RR7	Gateshead Health NHS Foundation Trust
		RTF	Northumbria Healthcare NHS Foundation Trust
Yorkshire and the Humber	**N53**	**RR8**	Leeds Teaching Hospitals NHS Trust
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust
		RXF	Mid Yorkshire Hospitals NHS Trust
		RAE	Bradford Teaching Hospitals NHS Foundation Trust
East of England	**N54**	**RGT**	Cambridge University Hospitals NHS Foundation Trust
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust
		RWG	West Hertfordshire Hospitals NHS Trust
		RDE	Colchester Hospital University NHS Foundation Trust
East Midlands	**N55**	**RX1**	Nottingham University Hospitals NHS Trust
		RWE	University Hospitals of Leicester NHS Trust
West Midlands	**N56**	**RR1**	Heart of England NHS Foundation Trust
		RWP	Worcestershire Acute Hospitals NHS Trust
		RL4	The Royal Wolverhampton NHS Trust
South West	**N57**	**RTE**	Gloucestershire Hospitals NHS Foundation Trust
		RK9	Plymouth Hospitals NHS Trust
		REF	Royal Cornwall Hospitals NHS Trust
		RH8	Royal Devon and Exeter NHS Foundation Trust
South East Coast	**N58**	**RWF**	Maidstone and Tunbridge Wells NHS Trust
		RDU	Frimley Park Hospital NHS Foundation Trust
		RVV	East Kent Hospitals University NHS Foundation Trust
		RPA	Medway NHS Foundation Trust
Thames Valley	**N59**	**RTH**	Oxford University Hospitals NHS Trust
		RD8	Milton Keynes Hospital NHS Foundation Trust
Wessex	**N60**	**RHU**	Portsmouth Hospitals NHS Trust
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
		RHM	University Hospital Southampton NHS Foundation Trust
		RN5	Hampshire Hospitals NHS Foundation Trust
		RNZ	Salisbury NHS Foundation Trust

	Mandatory items (% of responses that NOT 'not known' or 'not applicable')						Non-mandatory (% of responses that are complete for non-mandatory variables)			
	Number of cases	% Route to Referral	% Appearance of HGD e.g. flat or nodular	% Presence of Barretts segment	% HGD lesion e.g. unifocal, multifocal	% Diagnosis confirmed by a second pathologist	% Length of circumfer-ential columnar lining	% Maximum length of columnar lining	% Date of agreed treatment plan	% Treatment plan agreed at MDT
	24	96 ●	88 ●	92 ●	88 ●	92 ●	54 ▲	71 ■	79 ■	100 ●
	10	100 ●	70 ■	90 ●	60 ■	90 ●	50 ▲	50 ▲	80 ●	100 ●
	18	100 ●	89 ●	100 ●	89 ●	83 ●	83 ●	89 ●	94 ●	100 ●
	12	100 ●	33 ▲	58 ▲	33 ▲	100 ●	25 ▲	25 ▲	50 ▲	92 ●
	37	95 ●	54 ▲	70 ■	73 ■	32 ▲	8 ▲	27 ▲	97 ●	84 ●
	31	100 ●	52 ▲	100 ●	84 ●	45 ▲	0 ▲	0 ▲	100 ●	100 ●
	19	100 ●	47 ▲	37 ▲	21 ▲	95 ●	37 ▲	37 ▲	84 ●	100 ●
	18	89 ●	94 ●	100 ●	83 ●	89 ●	78 ■	78 ■	100 ●	100 ●
	13	100 ●	38 ▲	85 ●	92 ●	100 ●	15 ▲	15 ▲	77 ■	100 ●
	12	92 ●	67 ■	50 ▲	50 ▲	42 ▲	33 ▲	33 ▲	100 ●	100 ●
	29	100 ●	28 ▲	97 ●	0 ▲	100 ●	0 ▲	0 ▲	100 ●	100 ●
	17	94 ●	76 ■	82 ●	12 ▲	88 ●	35 ▲	47 ▲	100 ●	100 ●
	17	100 ●	59 ▲	100 ●	59 ▲	100 ●	35 ▲	35 ▲	100 ●	100 ●
	16	100 ●	19 ▲	25 ▲	6 ▲	19 ▲	13 ▲	13 ▲	56 ▲	50 ▲
	13	92 ●	23 ▲	85 ●	0 ▲	92 ●	0 ▲	0 ▲	100 ●	100 ●
	13	100 ●	8 ▲	85 ●	0 ▲	92 ●	0 ▲	0 ▲	100 ●	100 ●
	13	100 ●	23 ▲	77 ■	8 ▲	92 ●	0 ▲	0 ▲	92 ●	92 ●
	33	88 ●	61 ■	85 ●	55 ▲	94 ●	18 ▲	18 ▲	94 ●	100 ●
	17	94 ●	76 ■	82 ●	29 ▲	76 ■	29 ▲	35 ▲	100 ●	94 ●
	14	100 ●	86 ●	100 ●	57 ▲	93 ●	64 ■	93 ●	100 ●	100 ●
	14	86 ●	57 ▲	71 ■	14 ▲	50 ▲	29 ▲	14 ▲	93 ●	93 ●
	10	50 ▲	30 ▲	50 ▲	0 ▲	90 ●	10 ▲	20 ▲	100 ●	90 ●
	48	100 ●	98 ●	98 ●	98 ●	98 ●	67 ■	88 ●	90 ●	100 ●
	17	100 ●	100 ●	100 ●	100 ●	88 ●	82 ●	82 ●	29 ▲	100 ●
	12	100 ●	75 ■	100 ●	75 ■	92 ●	67 ■	75 ■	92 ●	100 ●
	12	92 ●	100 ●	100 ●	100 ●	92 ●	100 ●	100 ●	75 ■	100 ●
	11	100 ●	45 ▲	73 ■	64 ■	73 ■	27 ▲	18 ▲	100 ●	100 ●
	71	80 ●	27 ▲	94 ●	4 ▲	99 ●	37 ▲	49 ▲	99 ●	96 ●
	22	100 ●	68 ■	100 ●	86 ●	100 ●	45 ▲	36 ▲	91 ●	100 ●
	19	100 ●	21 ▲	53 ▲	16 ▲	84 ●	5 ▲	0 ▲	84 ●	95 ●
	18	100 ●	44 ▲	94 ●	39 ▲	33 ▲	22 ▲	22 ▲	100 ●	100 ●
	16	100 ●	13 ▲	63 ■	6 ▲	75 ■	6 ▲	0 ▲	100 ●	94 ●
	29	93 ●	90 ●	90 ●	79 ■	83 ●	0 ▲	0 ▲	100 ●	100 ●
	18	100 ●	6 ▲	28 ▲	0 ▲	22 ▲	0 ▲	0 ▲	0 ▲	33 ▲
	17	88 ●	0 ▲	6 ▲	6 ▲	65 ■	0 ▲	0 ▲	71 ■	100 ●
	14	100 ●	50 ▲	100 ●	50 ▲	100 ●	86 ●	86 ●	100 ●	100 ●
	21	95 ●	62 ■	95 ●	71 ■	86 ●	52 ▲	76 ■	67 ■	100 ●
	17	100 ●	59 ▲	100 ●	94 ●	100 ●	71 ■	65 ■	94 ●	100 ●
	17	71 ■	24 ▲	65 ■	53 ▲	82 ●	41 ▲	47 ▲	76 ■	82 ●
	10	30 ▲	30 ▲	30 ▲	30 ▲	20 ▲	20 ▲	30 ▲	30 ▲	80 ●
	12	92 ●	33 ▲	100 ●	33 ▲	100 ●	67 ■	67 ■	92 ●	92 ●
	11	91 ●	9 ▲	45 ▲	9 ▲	100 ●	9 ▲	9 ▲	100 ●	91 ●
	55	73 ■	2 ▲	49 ▲	2 ▲	18 ▲	0 ▲	0 ▲	93 ●	85 ●
	28	96 ●	79 ■	100 ●	39 ▲	75 ■	75 ■	75 ■	100 ●	100 ●
	23	100 ●	100 ●	100 ●	100 ●	100 ●	30 ▲	70 ■	100 ●	100 ●
	12	75 ■	100 ●	100 ●	100 ●	58 ▲	33 ▲	42 ▲	92 ●	92 ●
	10	100 ●	80 ●	100 ●	80 ●	100 ●	10 ▲	20 ▲	100 ●	100 ●

Annex 7:
Management of high grade dysplasia (HGD) by English NHS trust (over 2012-15, 3 years of data)

At an NHS trust level the management of patients with HGD was compared to The British Society of Gastroenterology guidelines. This data is based on NHS trust where HGD was **diagnosed**.

NHS trusts submitting records for less than 10 HGD records in the three year period were excluded from the comparison.

Key

Audit year

● ≥90%

■ 80-89%

▲ <80%

SCN name	SCN code	Trust code	Trust name	Number of cases	% HGD plan discussed at MDT	% Treatment plan for active treatment
London Cancer	**LC**	**R1H**	Barts Health NHS Trust	10	90 ●	86 ■
		RRV	University College London Hospitals NHS Foundation Trust	24	88 ■	100 ●
London Cancer Alliance	**N40**	**RJ2**	Lewisham and Greenwich NHS Trust	12	82 ■	63 ▲
		RYJ	Imperial College Healthcare NHS Trust	18	94 ●	100 ●
Cheshire and Merseyside	**N50**	**RQ6**	Royal Liverpool and Broadgreen University Hospitals NHS Trust	37	61 ▲	54 ▲
Greater Manchester, Lancashire and South Cumbria	**N51**	**RM3**	Salford Royal NHS Foundation Trust	18	94 ●	72 ▲
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	12	75 ▲	64 ▲
		RW3	Central Manchester University Hospitals NHS Foundation Trust	31	97 ●	81 ■
		RW6	Pennine Acute Hospitals NHS Trust	19	79 ▲	64 ▲
		RXR	East Lancashire Hospitals NHS Trust	13	69 ▲	42 ▲
Northern England	**N52**	**RNL**	North Cumbria University Hospitals NHS Trust	13	100 ●	75 ▲
		RR7	Gateshead Health NHS Foundation Trust	13	100 ●	54 ▲
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	29	97 ●	83 ■
		RTF	Northumbria Healthcare NHS Foundation Trust	13	100 ●	70 ▲
		RTR	South Tees Hospitals NHS Foundation Trust	16	100 ●	69 ▲
		RVW	North Tees and Hartlepool NHS Foundation Trust	17	76 ▲	50 ▲
		RXP	County Durham and Darlington NHS Foundation Trust	17	94 ●	47 ▲
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust	10	100 ●	70 ▲
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	14	100 ●	100 ●
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	17	94 ●	81 ■
		RR8	Leeds Teaching Hospitals NHS Trust	33	91 ●	79 ▲
		RXF	Mid Yorkshire Hospitals NHS Trust	14	92 ●	62 ▲
East of England	**N54**	**RDD**	Basildon and Thurrock University Hospitals NHS Foundation Trust	12	100 ●	55 ▲
		RDE	Colchester Hospital University NHS Foundation Trust	11	82 ■	50 ▲
		RGT	Cambridge University Hospitals NHS Foundation Trust	48	98 ●	100 ●
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	17	100 ●	100 ●
		RWG	West Hertfordshire Hospitals NHS Trust	12	100 ●	100 ●
East Midlands	**N55**	**RWE**	University Hospitals of Leicester NHS Trust	22	86 ■	64 ▲
		RX1	Nottingham University Hospitals NHS Trust	71	96 ●	85 ■
West Midlands	**N56**	**RL4**	The Royal Wolverhampton NHS Trust	16	80 ■	57 ▲
		RR1	Heart of England NHS Foundation Trust	19	89 ■	22 ▲
		RWP	Worcestershire Acute Hospitals NHS Trust	18	50 ▲	44 ▲
South West	**N57**	**REF**	Royal Cornwall Hospitals NHS Trust	17	76 ▲	15 ▲
		RH8	Royal Devon and Exeter NHS Foundation Trust	14	86 ■	71 ▲
		RK9	Plymouth Hospitals NHS Trust	18	17 ▲	6 ▲
		RTE	Gloucestershire Hospitals NHS Foundation Trust	29	83 ■	86 ■
South East Coast	**N58**	**RDU**	Frimley Park Hospital NHS Foundation Trust	17	88 ■	88 ■
		RPA	Medway NHS Foundation Trust	10	88 ■	10 ▲
		RVV	East Kent Hospitals University NHS Foundation Trust	17	64 ▲	73 ▲
		RWF	Maidstone and Tunbridge Wells NHS Trust	21	86 ■	84 ■
Thames Valley	**N59**	**RD8**	Milton Keynes Hospital NHS Foundation Trust	11	100 ●	50 ▲
		RTH	Oxford University Hospitals NHS Trust	12	100 ●	75 ▲
Wessex	**N60**	**RDZ**	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	28	64 ▲	71 ▲
		RHM	University Hospital Southampton NHS Foundation Trust	23	100 ●	96 ●
		RHU	Portsmouth Hospitals NHS Trust	55	85 ■	69 ▲
		RN5	Hampshire Hospitals NHS Foundation Trust	12	73 ▲	64 ▲
		RNZ	Salisbury NHS Foundation Trust	10	100 ●	57 ▲

Annex 8:
Diagnosis after emergency admissions by NHS trust/health board, in England and Wales (over 2013-15, 2 years of data)

The proportion of missing data on referral source and the adjusted referral rates were calculated for each NHS trust/health board. If a patient had a missing record for this data item, then it was assumed that the admission was not an emergency referral for the calculation of adjusted referral rate by NHS trust/health board. Rates were adjusted for age and gender.

NHS trusts/health boards submitting less than 10 records in the two year period were excluded from comparison.

Key	
Missing referral source	Adjusted emergency admissions
● <10%	● <15%
■ 10-15%	■ 15-20%
▲ >15%	▲ >20%

SCN name	SCN code	Trust code	Trust name	Number of cases	% Missing referral source	% Adjusted rate of diagnosis after emergency admissions
London Cancer	**LC**	**R1H**	Barts Health NHS Trust	216	5.1 ●	25.0 ▲
		RAL	Royal Free London NHS Foundation Trust	194	1.5 ●	5.7 ●
		RAP	North Middlesex University Hospital NHS Trust	146	0.0 ●	4.8 ●
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	220	0.5 ●	26.5 ▲
		RKE	The Whittington Hospital NHS Trust	59	0.0 ●	19.6 ■
		RQW	The Princess Alexandra Hospital NHS Trust	29	6.9 ●	10.5 ●
London Cancer Alliance	**N40**	**RQX**	Homerton University Hospital NHS Foundation Trust	50	2.0 ●	0.0 ●
		RRV	University College London Hospitals NHS Foundation Trust	124	0.8 ●	2.7 ●
		R1K	London North West Healthcare NHS Trust	50	12.0 ■	0.0 ●
		RAS	The Hillingdon Hospitals NHS Foundation Trust	47	0.0 ●	28.4 ▲
		RAX	Kingston Hospital NHS Foundation Trust	88	8.0 ●	21.7 ▲
		RFW	West Middlesex University Hospital NHS Trust	55	12.7 ■	9.2 ●
		RJ1	Guy's and St Thomas' NHS Foundation Trust	94	87.2 ▲	1.3 ●
		RJ2	Lewisham and Greenwich NHS Trust	136	36.8 ▲	6.8 ●
		RJ6	Croydon Health Services NHS Trust	76	7.9 ●	13.3 ●
		RJ7	St George's Healthcare NHS Trust	113	4.4 ●	18.1 ■
		RJZ	King's College Hospital NHS Foundation Trust	137	5.1 ●	20.5 ▲
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	52	9.6 ●	18.5 ■
		RVR	Epsom and St Helier University Hospitals NHS Trust	153	3.9 ●	30.1 ▲
		RYJ	Imperial College Healthcare NHS Trust	261	10.7 ■	10.0 ●
Cheshire and Merseyside	**N50**	**RBL**	Wirral University Teaching Hospital NHS Foundation Trust	195	2.6 ●	26.1 ▲
		RBN	St Helens and Knowsley Hospitals NHS Trust	150	5.3 ●	21.9 ▲
		REM	Aintree University Hospital NHS Foundation Trust	183	14.8 ■	17.9 ■
		RJR	Countess of Chester Hospital NHS Foundation Trust	102	5.9 ●	12.9 ●
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	121	10.7 ■	12.3 ●
		RVY	Southport and Ormskirk Hospital NHS Trust	45	0.0 ●	0.0 ●
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	86	8.1 ●	7.0 ●
Greater Manchester, Lancashire and South Cumbria	**N51**	**RBT**	Mid Cheshire Hospitals NHS Foundation Trust	131	15.3 ▲	12.5 ●
		RJN	East Cheshire NHS Trust	94	0.0 ●	7.1 ●
		RM2	University Hospital of South Manchester NHS Foundation Trust	125	0.0 ●	28.6 ▲
		RM3	Salford Royal NHS Foundation Trust	101	1.0 ●	13.3 ●
		RMC	Bolton NHS Foundation Trust	152	0.0 ●	21.3 ▲
		RMP	Tameside Hospital NHS Foundation Trust	78	1.3 ●	16.4 ■
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	131	1.5 ●	3.0 ●
		RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	111	10.8 ■	0.0 ●
		RW3	Central Manchester University Hospitals NHS Foundation Trust	198	21.2 ▲	1.0 ●
		RW6	Pennine Acute Hospitals NHS Trust	303	3.6 ●	3.6 ●
		RWJ	Stockport NHS Foundation Trust	93	0.0 ●	0.0 ●
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	165	0.6 ●	14.7 ●
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	210	18.1 ▲	1.5 ●
		RXR	East Lancashire Hospitals NHS Trust	212	0.0 ●	17.0 ■

SCN name	SCN code	Trust code	Trust name	Number of cases	% Missing referral source	% Adjusted rate of diagnosis after emergency admissions
Northern England	**N52**	**RE9**	South Tyneside NHS Foundation Trust	79	0.0 ●	18.9 ■
		RLN	City Hospitals Sunderland NHS Foundation Trust	123	0.0 ●	8.9 ●
		RNL	North Cumbria University Hospitals NHS Trust	163	0.0 ●	9.9 ●
		RR7	Gateshead Health NHS Foundation Trust	120	0.8 ●	13.2 ●
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	191	0.5 ●	23.2 ▲
		RTF	Northumbria Healthcare NHS Foundation Trust	234	0.4 ●	20.2 ▲
		RTR	South Tees Hospitals NHS Foundation Trust	271	1.5 ●	16.1 ■
		RVW	North Tees and Hartlepool NHS Foundation Trust	180	1.1 ●	22.8 ▲
		RXP	County Durham and Darlington NHS Foundation Trust	249	0.4 ●	16.1 ■
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust	188	5.3 ●	2.7 ●
		RCB	York Teaching Hospital NHS Foundation Trust	203	49.8 ▲	0.0 ●
		RCD	Harrogate and District NHS Foundation Trust	96	0.0 ●	14.4 ●
		RCF	Airedale NHS Foundation Trust	70	4.3 ●	2.8 ●
		RFF	Barnsley Hospital NHS Foundation Trust	124	0.0 ●	20.1 ▲
		RFR	The Rotherham NHS Foundation Trust	106	0.0 ●	16.4 ■
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	143	0.7 ●	21.1 ▲
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	258	0.4 ●	13.2 ●
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	226	0.0 ●	20.6 ▲
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	202	1.5 ●	14.0 ●
		RR8	Leeds Teaching Hospitals NHS Trust	243	3.7 ●	5.5 ●
		RWA	Hull and East Yorkshire Hospitals NHS Trust	237	8.4 ●	10.4 ●
		RWY	Calderdale and Huddersfield NHS Foundation Trust	142	4.2 ●	6.7 ●
		RXF	Mid Yorkshire Hospitals NHS Trust	203	7.4 ●	10.5 ●
East of England	**N54**	**RAJ**	Southend University Hospital NHS Foundation Trust	122	0.0 ●	22.9 ▲
		RC1	Bedford Hospital NHS Trust	96	0.0 ●	11.0 ●
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	121	24.8 ▲	6.6 ●
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	110	0.0 ●	18.6 ■
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	126	2.4 ●	14.4 ●
		RDE	Colchester Hospital University NHS Foundation Trust	147	0.0 ●	3.3 ●
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	118	1.7 ●	6.5 ●
		RGP	James Paget University Hospitals NHS Foundation Trust	123	0.0 ●	17.3 ■
		RGQ	Ipswich Hospital NHS Trust	140	32.9 ▲	8.6 ●
		RGR	West Suffolk NHS Foundation Trust	101	2.0 ●	12.2 ●
		RGT	Cambridge University Hospitals NHS Foundation Trust	191	30.9 ▲	1.7 ●
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	292	0.0 ●	23.9 ▲
		RQ8	Mid Essex Hospital Services NHS Trust	42	7.1 ●	8.4 ●
		RQQ	Hinchingbrooke Health Care NHS Trust	57	0.0 ●	0.0 ●
		RWG	West Hertfordshire Hospitals NHS Trust	55	16.4 ▲	9.2 ●
		RWH	East and North Hertfordshire NHS Trust	132	34.1 ▲	14.2 ●
East Midlands	**N55**	**RJF**	Burton Hospitals NHS Foundation Trust	109	12.8 ■	6.1 ●
		RK5	Sherwood Forest Hospitals NHS Foundation Trust	166	0.0 ●	21.9 ▲
		RNQ	Kettering General Hospital NHS Foundation Trust	126	0.8 ●	16.2 ■
		RNS	Northampton General Hospital NHS Trust	117	0.0 ●	19.1 ■
		RTG	Derby Hospitals NHS Foundation Trust	253	0.8 ●	21.1 ▲
		RWD	United Lincolnshire Hospitals NHS Trust	162	37.0 ▲	15.5 ■
		RWE	University Hospitals of Leicester NHS Trust	349	0.3 ●	17.8 ■
		RX1	Nottingham University Hospitals NHS Trust	364	1.1 ●	24.8 ▲

SCN name	SCN code	Trust code	Trust name	Number of cases	% Missing referral source	% Adjusted rate of diagnosis after emergency admissions
West Midlands	**N56**	**RBK**	Walsall Healthcare NHS Trust	44	22.7 ▲	10.0 ●
		RJC	South Warwickshire NHS Foundation Trust	71	22.5 ▲	8.0 ●
		RJE	University Hospitals of North Midlands NHS Trust	284	14.1 ■	5.4 ●
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	191	1.6 ●	16.9 ■
		RL4	The Royal Wolverhampton NHS Trust	170	2.4 ●	12.7 ●
		RLQ	Wye Valley NHS Trust	108	0.0 ●	9.4 ●
		RLT	George Eliot Hospital NHS Trust	64	0.0 ●	9.6 ●
		RNA	The Dudley Group NHS Foundation Trust	177	1.7 ●	0.0 ●
		RR1	Heart of England NHS Foundation Trust	333	39.6 ▲	20.0 ▲
		RRK	University Hospitals Birmingham NHS Foundation Trust	124	23.4 ▲	13.8 ●
		RWP	Worcestershire Acute Hospitals NHS Trust	252	0.4 ●	14.2 ●
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	151	19.2 ▲	9.1 ●
		RXW	Shrewsbury and Telford Hospital NHS Trust	176	8.0 ●	0.0 ●
South West	**N57**	**RA3**	Weston Area Health NHS Trust	61	0.0 ●	13.9 ●
		RA4	Yeovil District Hospital NHS Foundation Trust	59	1.7 ●	5.1 ●
		RA7	University Hospitals Bristol NHS Foundation Trust	198	0.5 ●	5.3 ●
		RA9	South Devon Healthcare NHS Foundation Trust	148	0.7 ●	15.3 ■
		RBA	Taunton and Somerset NHS Foundation Trust	124	0.8 ●	0.0 ●
		RBZ	Northern Devon Healthcare NHS Trust	75	8.0 ●	1.3 ●
		RD1	Royal United Hospital Bath NHS Trust	93	14.0 ■	3.1 ●
		REF	Royal Cornwall Hospitals NHS Trust	195	10.3 ■	2.1 ●
		RH8	Royal Devon and Exeter NHS Foundation Trust	195	0.0 ●	21.0 ▲
		RK9	Plymouth Hospitals NHS Trust	208	2.4 ●	16.8 ■
		RTE	Gloucestershire Hospitals NHS Foundation Trust	256	0.8 ●	16.1 ■
		RVJ	North Bristol NHS Trust	126	0.0 ●	6.9 ●
South East Coast	**N58**	**RA2**	Royal Surrey County Hospital NHS Foundation Trust	97	4.1 ●	3.2 ●
		RDU	Frimley Park Hospital NHS Foundation Trust	91	5.5 ●	0.0 ●
		RN7	Dartford and Gravesham NHS Trust	98	4.1 ●	28.4 ▲
		RPA	Medway NHS Foundation Trust	75	13.3 ■	13.1 ●
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	76	7.9 ●	7.8 ●
		RTP	Surrey and Sussex Healthcare NHS Trust	92	3.3 ●	6.9 ●
		RVV	East Kent Hospitals University NHS Foundation Trust	167	3.6 ●	3.6 ●
		RWF	Maidstone and Tunbridge Wells NHS Trust	191	9.9 ●	2.6 ●
		RXC	East Sussex Healthcare NHS Trust	159	15.7 ▲	0.6 ●
		RXH	Brighton and Sussex University Hospitals NHS Trust	133	9.8 ●	3.7 ●
		RYR	Western Sussex Hospitals NHS Foundation Trust	221	0.0 ●	10.4 ●
Thames Valley	**N59**	**RD8**	Milton Keynes Hospital NHS Foundation Trust	60	1.7 ●	0.0 ●
		RHW	Royal Berkshire NHS Foundation Trust	26	15.4 ▲	4.6 ●
		RN3	Great Western Hospitals NHS Foundation Trust	98	11.2 ■	0.0 ●
		RTH	Oxford University Hospitals NHS Trust	118	4.2 ●	1.7 ●
		RXQ	Buckinghamshire Healthcare NHS Trust	113	2.7 ●	5.4 ●
Wessex	**N60**	**R1F**	Isle of Wight NHS Trust	72	0.0 ●	4.0 ●
		RBD	Dorset County Hospital NHS Foundation Trust	92	3.3 ●	11.4 ●
		RD3	Poole Hospital NHS Foundation Trust	99	3.0 ●	15.7 ■
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	176	6.3 ●	17.8 ■
		RHM	University Hospital Southampton NHS Foundation Trust	181	0.0 ●	10.1 ●
		RHU	Portsmouth Hospitals NHS Trust	262	2.3 ●	14.7 ●
		RN5	Hampshire Hospitals NHS Foundation Trust	156	0.6 ●	1.4 ●
		RNZ	Salisbury NHS Foundation Trust	98	0.0 ●	8.8 ●
North Wales	**NWW**	**7A1**	Betsi Cadwaladr University Local Health Board	320	0.0 ●	17.7 ■
South Wales	**SWCN**	**7A2**	Hywel Dda University Local Health Board	190	8.4 ●	18.9 ■
		7A3	Abertawe Bro Morgannwg University Local Health Board	233	0.4 ●	26.5 ▲
		7A4	Cardiff & Vale University Local Health Board	132	0.8 ●	23.6 ▲
		7A5	Cwm Taf University Local Health Board	163	0.0 ●	19.1 ■
		7A6	Aneurin Bevan University Local Health Board	229	3.5 ●	21.5 ▲

Annex 9:
Proportion of patients reported to have had an initial staging CT scan by NHS trust/health board, in England and Wales (over 2013-15, 2 years of data)

NHS trusts/health boards submitting records for less than 10 tumour records over the two year period were excluded from the comparison.

Key

Audit year
- ● ≥95%
- ■ 85-94%
- ▲ <85%

SCN name	SCN code	Trust code	Trust name	Number of cases	% Proportion with CT scan recorded
London Cancer	**LC**	**R1H**	Barts Health NHS Trust	216	82 ▲
		RAL	Royal Free London NHS Foundation Trust	194	91 ■
		RAP	North Middlesex University Hospital NHS Trust	146	98 ●
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	220	97 ●
		RKE	The Whittington Hospital NHS Trust	59	98 ●
		RQW	The Princess Alexandra Hospital NHS Trust	29	97 ●
London Cancer Alliance	**N40**	**RQX**	Homerton University Hospital NHS Foundation Trust	50	98 ●
		RRV	University College London Hospitals NHS Foundation Trust	124	97 ●
		R1K	London North West Healthcare NHS Trust	50	88 ■
		RAS	The Hillingdon Hospitals NHS Foundation Trust	47	98 ●
		RAX	Kingston Hospital NHS Foundation Trust	88	98 ●
		RFW	West Middlesex University Hospital NHS Trust	55	100 ●
		RJ1	Guy's and St Thomas' NHS Foundation Trust	94	99 ●
		RJ2	Lewisham and Greenwich NHS Trust	136	91 ■
		RJ6	Croydon Health Services NHS Trust	76	99 ●
		RJ7	St George's Healthcare NHS Trust	113	96 ●
		RJZ	King's College Hospital NHS Foundation Trust	137	99 ●
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	52	100 ●
		RVR	Epsom and St Helier University Hospitals NHS Trust	153	99 ●
		RYJ	Imperial College Healthcare NHS Trust	261	90 ■
Cheshire and Merseyside	**N50**	**RBL**	Wirral University Teaching Hospital NHS Foundation Trust	195	88 ■
		RBN	St Helens and Knowsley Hospitals NHS Trust	150	23 ▲
		REM	Aintree University Hospital NHS Foundation Trust	183	90 ■
		RJR	Countess of Chester Hospital NHS Foundation Trust	102	15 ▲
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	121	78 ▲
		RVY	Southport and Ormskirk Hospital NHS Trust	45	98 ●
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	86	91 ■
Greater Manchester, Lancashire and South Cumbria	**N51**	**RBT**	Mid Cheshire Hospitals NHS Foundation Trust	131	18 ▲
		RJN	East Cheshire NHS Trust	94	90 ■
		RM2	University Hospital of South Manchester NHS Foundation Trust	125	100 ●
		RM3	Salford Royal NHS Foundation Trust	101	100 ●
		RMC	Bolton NHS Foundation Trust	152	97 ●
		RMP	Tameside Hospital NHS Foundation Trust	78	82 ▲
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	131	93 ■
		RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	111	63 ▲
		RW3	Central Manchester University Hospitals NHS Foundation Trust	198	67 ▲
		RW6	Pennine Acute Hospitals NHS Trust	303	81 ▲
		RWJ	Stockport NHS Foundation Trust	93	60 ▲
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	165	85 ■
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	210	73 ▲
		RXR	East Lancashire Hospitals NHS Trust	212	97 ●
Northern England	**N52**	**RE9**	South Tyneside NHS Foundation Trust	79	95 ●
		RLN	City Hospitals Sunderland NHS Foundation Trust	123	88 ■
		RNL	North Cumbria University Hospitals NHS Trust	163	93 ■
		RR7	Gateshead Health NHS Foundation Trust	120	87 ▲
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	191	95 ●
		RTF	Northumbria Healthcare NHS Foundation Trust	234	97 ●
		RTR	South Tees Hospitals NHS Foundation Trust	271	59 ▲
		RVW	North Tees and Hartlepool NHS Foundation Trust	180	94 ■
		RXP	County Durham and Darlington NHS Foundation Trust	249	91 ■

SCN name	SCN code	Trust code	Trust name	Number of cases	% Proportion with CT scan recorded
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust	188	95 ●
		RCB	York Teaching Hospital NHS Foundation Trust	203	91 ■
		RCD	Harrogate and District NHS Foundation Trust	96	99 ●
		RCF	Airedale NHS Foundation Trust	70	97 ●
		RFF	Barnsley Hospital NHS Foundation Trust	124	94 ■
		RFR	The Rotherham NHS Foundation Trust	106	96 ●
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	143	85 ■
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	258	97 ●
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	226	58 ▲
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	202	96 ●
		RR8	Leeds Teaching Hospitals NHS Trust	243	54 ▲
		RWA	Hull and East Yorkshire Hospitals NHS Trust	237	89 ■
		RWY	Calderdale and Huddersfield NHS Foundation Trust	142	97 ●
		RXF	Mid Yorkshire Hospitals NHS Trust	203	88 ■
East of England	**N54**	**RAJ**	Southend University Hospital NHS Foundation Trust	122	99 ●
		RC1	Bedford Hospital NHS Trust	96	67 ▲
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	121	97 ●
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	110	74 ▲
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	126	99 ●
		RDE	Colchester Hospital University NHS Foundation Trust	147	97 ●
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	118	81 ▲
		RGP	James Paget University Hospitals NHS Foundation Trust	123	98 ●
		RGQ	Ipswich Hospital NHS Trust	140	92 ■
		RGR	West Suffolk NHS Foundation Trust	101	50 ▲
		RGT	Cambridge University Hospitals NHS Foundation Trust	191	71 ▲
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	292	89 ■
		RQ8	Mid Essex Hospital Services NHS Trust	42	98 ●
		RQQ	Hinchingbrooke Health Care NHS Trust	57	79 ▲
		RWG	West Hertfordshire Hospitals NHS Trust	55	98 ●
		RWH	East and North Hertfordshire NHS Trust	132	97 ●
East Midlands	**N55**	**RJF**	Burton Hospitals NHS Foundation Trust	109	93 ■
		RK5	Sherwood Forest Hospitals NHS Foundation Trust	166	95 ●
		RNQ	Kettering General Hospital NHS Foundation Trust	126	98 ●
		RNS	Northampton General Hospital NHS Trust	117	92 ■
		RTG	Derby Hospitals NHS Foundation Trust	253	98 ●
		RWD	United Lincolnshire Hospitals NHS Trust	162	81 ▲
		RWE	University Hospitals of Leicester NHS Trust	349	94 ■
		RX1	Nottingham University Hospitals NHS Trust	364	95 ●
West Midlands	**N56**	**RBK**	Walsall Healthcare NHS Trust	44	100 ●
		RJC	South Warwickshire NHS Foundation Trust	71	83 ▲
		RJE	University Hospitals of North Midlands NHS Trust	284	65.8 ▲
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	191	95 ●
		RL4	The Royal Wolverhampton NHS Trust	170	71 ▲
		RLQ	Wye Valley NHS Trust	108	98 ●
		RLT	George Eliot Hospital NHS Trust	64	100 ●
		RNA	The Dudley Group NHS Foundation Trust	177	62 ▲
		RR1	Heart of England NHS Foundation Trust	333	96 ●
		RRK	University Hospitals Birmingham NHS Foundation Trust	124	100 ●
		RWP	Worcestershire Acute Hospitals NHS Trust	252	93 ■
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	151	84 ▲
		RXW	Shrewsbury and Telford Hospital NHS Trust	176	77 ▲

SCN name	SCN code	Trust code	Trust name	Number of cases	% Proportion with CT scan recorded
South West	N57	RA3	Weston Area Health NHS Trust	61	90
		RA4	Yeovil District Hospital NHS Foundation Trust	59	56
		RA7	University Hospitals Bristol NHS Foundation Trust	198	81
		RA9	South Devon Healthcare NHS Foundation Trust	148	89
		RBA	Taunton and Somerset NHS Foundation Trust	124	88
		RBZ	Northern Devon Healthcare NHS Trust	75	81
		RD1	Royal United Hospital Bath NHS Trust	93	78
		REF	Royal Cornwall Hospitals NHS Trust	195	72
		RH8	Royal Devon and Exeter NHS Foundation Trust	195	95
		RK9	Plymouth Hospitals NHS Trust	208	83
		RTE	Gloucestershire Hospitals NHS Foundation Trust	256	93
		RVJ	North Bristol NHS Trust	126	89
South East Coast	N58	RA2	Royal Surrey County Hospital NHS Foundation Trust	97	71
		RDU	Frimley Park Hospital NHS Foundation Trust	91	44
		RN7	Dartford and Gravesham NHS Trust	98	99
		RPA	Medway NHS Foundation Trust	75	96
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	76	37
		RTP	Surrey and Sussex Healthcare NHS Trust	92	51
		RVV	East Kent Hospitals University NHS Foundation Trust	167	94
		RWF	Maidstone and Tunbridge Wells NHS Trust	191	52
		RXC	East Sussex Healthcare NHS Trust	159	75
		RXH	Brighton and Sussex University Hospitals NHS Trust	133	35
		RYR	Western Sussex Hospitals NHS Foundation Trust	221	92
Thames Valley	N59	RD8	Milton Keynes Hospital NHS Foundation Trust	60	43
		RHW	Royal Berkshire NHS Foundation Trust	26	96
		RN3	Great Western Hospitals NHS Foundation Trust	98	72
		RTH	Oxford University Hospitals NHS Trust	118	99
		RXQ	Buckinghamshire Healthcare NHS Trust	113	96
Wessex	N60	R1F	Isle of Wight NHS Trust	72	99
		RBD	Dorset County Hospital NHS Foundation Trust	92	68
		RD3	Poole Hospital NHS Foundation Trust	99	86
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	176	54
		RHM	University Hospital Southampton NHS Foundation Trust	181	93
		RHU	Portsmouth Hospitals NHS Trust	262	95
		RN5	Hampshire Hospitals NHS Foundation Trust	156	78
		RNZ	Salisbury NHS Foundation Trust	98	81
North Wales	NWW	7A1	Betsi Cadwaladr University Local Health Board	320	91
South Wales	SWCN	7A2	Hywel Dda University Local Health Board	190	89
		7A3	Abertawe Bro Morgannwg University Local Health Board	233	97
		7A4	Cardiff & Vale University Local Health Board	132	91
		7A5	Cwm Taf University Local Health Board	163	93
		7A6	Aneurin Bevan University Local Health Board	229	90

Annex 10:
Comparative analysis of short term outcomes after curative surgery for NHS trusts/health boards in England and Wales (over 2012-15, 3 years of data)

SCN Name	SCN Code	Trust code	Trust Name
London Cancer	LC	R1H	Barts Health NHS Trust
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust
		RRV	University College London Hospitals NHS Foundation Trust
London Cancer Alliance	N40	RJ1	Guy's and St Thomas' NHS Foundation Trust
		RPY	The Royal Marsden NHS Foundation Trust
		RYJ	Imperial College Healthcare NHS Trust
Cheshire and Merseyside	N50	RBQ	Liverpool Heart and Chest Hospital NHS Foundation Trust
		REM	Aintree University Hospital NHS Foundation Trust
Greater Manchester, Lancashire and South Cumbria	N51	RM2	University Hospital of South Manchester NHS Foundation Trust
		RM3	Salford Royal NHS Foundation Trust
		RW3	Central Manchester University Hospitals NHS Foundation Trust
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust
Northern England	N52	RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust
		RTR	South Tees Hospitals NHS Foundation Trust
Yorkshire and the Humber	N53	RAE	Bradford Teaching Hospitals NHS Foundation Trust
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust
		RR8	Leeds Teaching Hospitals NHS Trust
		RWA	Hull and East Yorkshire Hospitals NHS Trust
East of England	N54	RGT	Cambridge University Hospitals NHS Foundation Trust
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust
		RQ8	Mid Essex Hospital Services NHS Trust
		RWG	West Hertfordshire Hospitals NHS Trust
East Midlands	N55	RTG	Derby Hospitals NHS Foundation Trust
		RWE	University Hospitals of Leicester NHS Trust
		RX1	Nottingham University Hospitals NHS Trust
West Midlands	N56	RJE	University Hospitals of North Midlands NHS Trust
		RKB	University Hospitals Coventry and Warwickshire NHS Trust
		RR1	Heart of England NHS Foundation Trust
		RRK	University Hospitals Birmingham NHS Foundation Trust
South West	N57	RA7	University Hospitals Bristol NHS Foundation Trust
		RK9	Plymouth Hospitals NHS Trust
		RTE	Gloucestershire Hospitals NHS Foundation Trust
South East Coast	N58	RA2	Royal Surrey County Hospital NHS Foundation Trust
		RXH	Brighton and Sussex University Hospitals NHS Trust
Thames Valley	N59	RHW	Royal Berkshire NHS Foundation Trust
		RN3	Great Western Hospitals NHS Foundation Trust
		RTH	Oxford University Hospitals NHS Trust
Wessex	N60	RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
		RHM	University Hospital Southampton NHS Foundation Trust
		RHU	Portsmouth Hospitals NHS Trust
North Wales	NWW	7A1	Betsi Cadwaladr University Local Health Board
South Wales	SWCN	7A2	Hywel Dda University Local Health Board
		7A3	Abertawe Bro Morgannwg University Local Health Board
		7A4	Cardiff & Vale University Local Health Board

Note: We report on trust/health board volume, length of stay, 30-day and 90-day mortality (indicators reported in Clinical Outcome Publications (COP).

The methodology for the COP indicators has been established and missing data on covariates for adjustment are imputed for the analysis (see www.AUGIS.org for details).

We also report on additional outcomes being considered for the COP in 2017. These outcomes have been assessed on the same patients eligible for 2016 COP. The results reported on additional outcomes have been analysed without imputation of missing data. Hence, the number of oesophagectomies and gastrectomies may not add up to the total number of cases eligible for the 2016 COP.

Number of surgical cases	% Adjusted 30-day mortality	% Adjusted 90-day mortality	Median length of stay (days)	% patients with adequte lymph nodes examined	Number of oesophagecto-mies	% patients with positive longitudinal margins oesoph	% patients with positive circumferential margins oesoph	Number of gastrectomies	% patients with positive longitudinal margins gast
97	3.6	8.8	13	83.2	29	9.9	35.7	67	9.5
87	0.0	0.0	10	77.9	54	1.8	26.0	25	4.6
156	0.7	1.4	14	86.5	85	7.4	26.7	71	8.1
257	1.5	2.5	11	85.6	172	4.8	39.0	85	7.6
132	3.5	5.2	13	90.9	74	3.0	17.0	58	5.6
141	2.0	3.9	12	97.7	72	13.3	27.5	65	13.7
208	1.0	4.3	13	73.4	114	5.0	30.8	77	7.9
117	1.9	2.8	12	92.0	70	3.1	20.0	43	8.3
55	0.0	2.6	12.5	79.6	36	6.3	24.1	19	11.2
246	0.6	3.0	13	74.8	157	1.9	31.7	89	5.9
128	2.9	4.3	14	70.1	74	3.8	37.6	52	10.7
261	1.1	2.7	12	60.2	169	5.6	40.3	90	11.3
401	0.8	2.2	12	97.0	237	1.7	0.0	164	2.8
217	1.2	2.3	12	68.1	119	9.0	34.9	89	14.3
161	3.7	4.6	15	91.1	91	5.0	24.4	53	9.4
218	2.3	3.6	11	57.8	115	2.8	32.4	103	4.6
29	3.7	10.8	14	70.8	17	0.0	14.4	7	*
236	0.6	5.3	13	83.4	140	4.3	39.1	95	11.3
162	5.6	9.0	12	72.3	97	2.1	25.4	59	13.6
208	0.6	2.4	11	84.8	132	1.5	21.9	73	5.7
155	0.4	1.3	7.5	92.8	111	1.0	16.5	42	9.2
181	2.7	4.2	9	92.9	46	4.3	29.2	49	9.2
120	3.8	6.0	12	90.8	70	2.5	21.9	50	6.6
131	1.7	3.4	11	74.0	89	4.1	30.5	41	13.8
173	3.7	5.9	15	62.4	112	0.9	36.3	61	3.0
343	1.8	3.6	11	80.2	244	3.7	34.3	98	13.6
84	1.6	3.0	13	50.0	9	*	49.9	15	0.0
162	2.8	6.0	9	78.3	111	4.9	47.3	51	6.0
101	2.1	4.0	13	93.0	62	4.4	7.0	39	21.6
201	1.6	2.7	13	91.5	127	1.4	29.2	73	8.8
206	2.8	3.8	12	90.8	129	7.5	25.1	76	13.1
320	1.3	3.6	10	83.7	251	9.4	27.1	63	20.4
141	4.3	5.7	11	86.4	80	3.5	22.1	57	17.0
152	2.6	3.9	10	98.7	112	5.0	13.7	40	9.7
64	4.7	4.6	10	32.0	14	0.0	31.5	13	8.5
34	4.4	4.2	8	84.4	23	5.4	28.4	10	27.6
14	0.0	0.0	12.5	83.3	5	*	17.2	3	*
201	2.1	3.4	12	90.4	125	2.4	9.9	72	3.1
106	2.8	4.1	11	88.4	70	3.1	26.8	29	5.4
161	1.0	2.6	9	88.1	127	0.0	17.9	33	0.0
165	2.1	4.1	13	85.4	108	1.7	16.1	55	3.9
120	7.0	9.2	9	74.2	45	7.0	17.9	52	10.8
13	8.8	8.7	10	66.7	3	*	0.0	6	*
43	0.0	0.0	14	50.0	15	6.5	18.1	12	29.1
83	3.8	7.3	12	42.7	38	4.5	46.4	34	17.6

Footnote:

- the unadjusted proportion of patients with adequate lymph nodes resected is based on the number of patients with 15 or more resected for both oesophagectomy and gastrectomy.
- The proportion of patients with positive longitudinal margins is reported separately for oesophagectomy and gastrectomy and is adjusted for overall TNM stage and history of neo-adjuvant therapy. The proportion of patients with a positive circumferential margin for oesophagectomy is also reported after adjustment for overall TNM stage and history of neo-adjuvant therapy. These indicators are not reported if the number of oesophagectomies or gastrectomies at an organisation was under 10.

Annex 11:
Comparative analysis of 1 year survival for NHS trusts/health boards in England and Wales (over 2012-15, 3 years of data)

The overall volume of procedures based on three years of Audit data is small and as postoperative mortality is low, the power to detect true outliers is limited. Therefore, results reported for individual NHS trusts/health boards should not be considered as ultimate evidence, but rather as indicators to direct further local enquiry into the quality of care. Outcomes for NHS trusts/health boards with a volume smaller than 10 cases per year are not reported here.

SCN name	SCN code	Trust code	Trust name	Number of operations (cases diagnosed between April 2012 and March 2015) with complete data and sufficient follow-up time (365 days)	% Adjusted 1-year survival
London Cancer	**LC**	**R1H**	Barts Health NHS Trust	86	72.7
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	85	73.4
		RRV	University College London Hospitals NHS Foundation Trust	153	83.5
London Cancer Alliance	**N40**	**RJ1**	Guy's and St Thomas' NHS Foundation Trust	236	79.7
		RPY	The Royal Marsden NHS Foundation Trust	114	78.4
		RYJ	Imperial College Healthcare NHS Trust	113	81.6
Cheshire and Merseyside	**N50**	**RBQ**	Liverpool Heart and Chest Hospital NHS Foundation Trust	161	73.8
		REM	Aintree University Hospital NHS Foundation Trust	109	75.2
Greater Manchester, Lancashire and South Cumbria	**N51**	**RM2**	University Hospital of South Manchester NHS Foundation Trust	44	84.1
		RM3	Salford Royal NHS Foundation Trust	235	75.5
		RW3	Central Manchester University Hospitals NHS Foundation Trust	104	75.0
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	174	71.9
Northern England	**N52**	**RTD**	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	352	77.7
		RTR	South Tees Hospitals NHS Foundation Trust	196	80.7
Yorkshire and the Humber	**N53**	**RAE**	Bradford Teaching Hospitals NHS Foundation Trust	135	70.1
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	202	76.5
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	27	83.2
		RR8	Leeds Teaching Hospitals NHS Trust	220	74.0
		RWA	Hull and East Yorkshire Hospitals NHS Trust	132	66.3
East of England	**N54**	**RGT**	Cambridge University Hospitals NHS Foundation Trust	175	79.7
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	143	80.8
		RQ8	Mid Essex Hospital Services NHS Trust	174	67.3
		RWG	West Hertfordshire Hospitals NHS Trust	110	75.7
East Midlands	**N55**	**RTG**	Derby Hospitals NHS Foundation Trust	125	73.1
		RWE	University Hospitals of Leicester NHS Trust	168	79.1
		RX1	Nottingham University Hospitals NHS Trust	319	77.6
West Midlands	**N56**	**RJE**	University Hospitals of North Midlands NHS Trust	26	82.9
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	148	76.1
		RR1	Heart of England NHS Foundation Trust	92	90.6
		RRK	University Hospitals Birmingham NHS Foundation Trust	155	80.8
South West	**N57**	**RA7**	University Hospitals Bristol NHS Foundation Trust	146	74.9
		RK9	Plymouth Hospitals NHS Trust	275	81.0
		RTE	Gloucestershire Hospitals NHS Foundation Trust	104	74.3
South East Coast	**N58**	**RA2**	Royal Surrey County Hospital NHS Foundation Trust	126	76.7
		RXH	Brighton and Sussex University Hospitals NHS Trust	23	86.1
Thames Valley	**N59**	**RHW**	Royal Berkshire NHS Foundation Trust	33	72.5
		RN3	Great Western Hospitals NHS Foundation Trust	12	65.9
		RTH	Oxford University Hospitals NHS Trust	179	74.4
Wessex	**N60**	**RDZ**	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	73	82.3
		RHM	University Hospital Southampton NHS Foundation Trust	148	83.5
		RHU	Portsmouth Hospitals NHS Trust	156	79.1
North Wales	**NWW**	**7A1**	Betsi Cadwaladr University Local Health Board	88	78.9
South Wales	**SWCN**	**7A2**	Hywel Dda University Local Health Board	13	79.5
		7A3	Abertawe Bro Morgannwg University Local Health Board	32	87.8
		7A4	Cardiff & Vale University Local Health Board	50	72.2

12. Glossary

Adjuvant treatment – An additional therapy (e.g. chemotherapy or radiotherapy) provided to improve the effectiveness of the primary treatment (e.g. surgery). This may aim to reduce the chance of local recurrence of the cancer or to improve the patient's overall chance of survival.

AUGIS – Association of Upper GI Surgeons

BSG – British Society of Gastroenterologists

BASO – British Association of Surgical Oncology

CARMS – The Clinical Audit and Registries Management Service of NHS Digital manages a number of national clinical audits in the areas of cancer, diabetes and heart disease. It is one of the key stakeholders leading the Audit.

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).

CRG - The Audit's Clinical Reference Group is comprised of representatives of the key stakeholders in oesophago-gastric cancer care. They advise the Project Team on particular aspects of the project and provide input from the wider clinical and patient community.

CEU - The Clinical Effectiveness Unit is an academic collaboration between The Royal College of Surgeons of England and the London School of Hygiene and Tropical Medicine, and undertakes national surgical audit and research. It is one of the key stakeholders leading the Audit.

CT-scan – (Computer Tomography) an imaging modality that uses X-ray radiation to build up a 3-dimensional image of the body. It is used to detect distant abnormalities (such as metastases) but has a limited resolution, so is less useful for detecting smaller abnormalities (such as in lymph nodes).

Curative care – This is where the aim of the treatment is to cure the patient of the disease. It is not possible to do this in many patients with OG cancer and is dependent on how far the disease has spread and the patient's general health and physical condition.

Dysphagia – A symptom where the patient experiences difficulty swallowing. They often complain that the food sticks in their throat. It is the commonest presenting symptom of oesophageal cancer.

Endoscopy – An investigation whereby a telescopic camera is used to examine the inside of the digestive tract. It can be used to guide treatments such as stents (see below).

Endoscopic mucosal resection – A procedure to remove abnormal tissue from the digestive tract using a telescopic camera to guide instruments. This procedure can be used to treat high grade dysplasia of the oesophagus or early cancers.

Endoscopic palliative therapies – These are treatments that aim to relieve symptoms, such as vomiting or swallowing difficulties, by using a telescopic camera to guide instruments that can relieve the blockage. Examples include stents, laser therapy and brachytherapy.

Endoscopic ultrasound (EUS) – An investigation that uses an ultrasound probe on the end of a telescope. It is used to determine how deep into the surrounding tissues a cancer has invaded and to what extent it has spread to local lymph nodes.

Gastric – an adjective used to describe something that is related to or involves the stomach. For example, gastric cancer is another way of saying stomach cancer.

Gastrectomy – a surgical procedure to remove either a section (a partial gastrectomy) or all (a total gastrectomy) of the stomach. In a total gastrectomy, the oesophagus is connected to the small intestine.

HES – Hospital Episode Statistics is 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.

High-grade dysplasia of the oesophagus – precancerous changes in the cells of the oesophagus, which are often associated with Barratt's oesophagus.

ICD10 – International Statistical Classification of Diseases and Related Health Problems 10th Revision

Laparoscopy – This is often called "keyhole surgery" and involves inserting a small camera into the belly through a small cut, so as to either guide the operation or to look at the surface of the abdominal organs and so accurately stage the disease.

Lymph nodes – Lymph nodes are small oval bits of tissue that form part of the immune system. They are distributed throughout the body and are usually the first place to which cancers spread.

Metastases – Metastases are 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.

MDT – The multi-disciplinary team is a group of professionals from diverse specialties that works to optimise diagnosis and treatment throughout the patient pathway.

Minimally invasive surgery – A procedure performed through the skin or anatomical opening using a laparoscopic instrument rather than through an opening. Full minimally invasive oesophagectomies involve thoracoscopy for the chest-phase of the operation and laparoscopy for the abdominal phase. Oesophagectomies using minimally invasive techniques for only the abdominal or chest phase are commonly referred to as hybrid operations.

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.

NCEPOD – National Confidential Enquiry into Patient Outcome and Death. NCEPOD is an independent, government-funded body whose remit is to examine medical and surgical care, often by undertaking confidential surveys and research.

Neoplasm – A neoplasm or tumour is an abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Neoplasms may be benign (not cancerous), or malignant (cancerous).

NHS Digital – NHS Digital is the new trading name for the Health and Social Care Information Centre (HSCIC). NHS Digital is a special health authority that provides facts and figures to help the NHS and social services run effectively. The Clinical Audit and Registries Management Service (CARMS) is one of its key components.

NICE – The National Institute of Health and Care Excellence is an independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health.

Oesophagus – The portion of the digestive tract that carries food from the bottom of the throat to the top of the stomach. It is also known as the gullet or the food pipe.

Oesophagectomy – The surgical removal of all or part of the oesophagus. The procedure can be performed by opening the thorax (a trans-thoracic oesophagectomy) or through openings in the neck and abdomen (a trans-hiatal oesophagectomy).

Oncology – The branch of medicine which deals with the non-surgical treatment of cancer, such as chemotherapy and radiotherapy.

ONS – The Office for National Statistics (ONS) is the government department responsible for collecting and publishing official statistics about the UK's society and economy. This includes cancer registration data.

Pathology – The branch of medicine that deals with tissue specimens under a microscope to determine the type of disease and how far a cancer has spread within the specimen (i.e. whether a tumour has spread to the edges of the specimen or lymph nodes).

Palliative care – Palliative care is 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.

PET – An new imaging technique that detects cancer spread or metastases by looking at how fast radioactive sugar molecules are used by different parts of the body. Cancer cells use sugar at a very high rate so show up brightly on this test.

Radiology – The branch of medicine that involves the use of imaging techniques (such as X-rays, CT Scans and PET scans) to diagnose and stage clinical problems.

Radiotherapy – A treatment that uses radiation to kill tumour cells and so shrink the tumour. In most cases, it is a palliative treatment but it can be used together with surgery or chemotherapy in a small number of patients as part of an attempt at cure.

RCS – The Royal College of Surgeons of England is an independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. As part of this it supports audit and the evaluation of clinical effectiveness for surgery.

Stage – The extent to which the primary tumour has spread; the higher the stage, the more extensive the disease.

Staging – The process by which the stage (or extent of spread) of the tumour is determined through the use of various investigations.

Stent – A device used to alleviate swallowing difficulties or vomiting in patients with incurable OG cancer. It is a collapsible tube that is inserted into the area of narrowing (under either endoscopic or radiological control) that then expands and relieves the blockage.

Surgical resection – An operation whose aim is to completely remove the tumour.

Two-week wait referral – This is a referral mechanism used by General Practitioners (GPs) when they suspect the patient may have cancer.

Ultrasound – An imaging modality that uses high frequency sound waves to create an image of tissues or organs in the body.

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