National Oesophago-Gastric Cancer Audit 2018

Version 2: March 2019

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

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Healthcare Quality Improvement Partnership

Commissioned by Healthcare Quality Improvement Partnership

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The Association of Upper GI Surgeons is the speciality society that represents upper gastrointestinal surgeons. It is one of the key partners leading the Audit.

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BRITISH SOCIETY OF GASTROENTEROLOGY

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

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

NHS Digital

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

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This version of the report includes revisions to figures on average length of stay in hospital after curative surgery, and figures on CT scanning for NHS trusts / local health boards in Annex 8

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Contents

Acknowledgements

The National Oesophago-Gastric Cancer Audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies www.hqip.org.uk/national-programmes.

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 local health boards who contributed on behalf of Wales.

We would particularly like to thank:

- Mr John Taylor and the Oesophageal Patients Association
- The members of the Clinical Reference Group and Project Board (see Annex 1 for full list of members)
- The data linkage team at NHS Digital

The Audit is supported by the Clinical Audit and Registries Management Service (CARMS), Arthur Yelland and Claire Meace, and the Clinical Audit Platform (CAP) development team who provided IT support and technical infrastructure.

Foreword

The 2018 Annual Report from the National Oesophago-Gastric (OG) Cancer Audit provides up-to-date information on the quality of OG cancer care provided by NHS organisations in England and Wales. Its results are a reflection of the dedication shown by staff at NHS trusts and Welsh local health boards, as well as the Audit team at NHS Digital and the Clinical Effectiveness Unit.
The members of the Clinical Reference Group also deserve thanks for providing expert guidance and advice.

Sufficient time has now passed for the Audit to describe trends in patterns of care over a five-year period, between April 2012 and March 2017. During this time, many improvements have been demonstrated. Now, more patients with high-grade dysplasia (HGD) are receiving active treatment compared with five years ago. This report also documents the evolution of staging investigations, with an increased use of PET-CT scans among patients who are candidates for curative treatment.

The Audit is also giving us a unique opportunity to see how outcomes have changed over time. Patients' chances of surviving curative surgery have improved significantly over the last 10 years, although their risk of having a complication has not changed.

In addition to these successes, the Audit highlights some areas for improvement. The median waiting time from referral to receiving curative surgery between April 2015 and March 2017 was over 3 months, and the delays for patients going straight to surgery without neo-adjuvant therapy are concerning. It is imperative that commissioners and members of the multidisciplinary team (MDT) review care pathways to minimise delays to treatment. The variation across Cancer Alliances / Welsh regions in the use of PET-CT among patients with planned curative treatment suggests that those with unusually low or high rates should review whether these rates are consistent with current clinical evidence.

For patients receiving palliative treatment, the Audit also reveals regional variations in the choice of treatments. Some patients receiving supportive care or endoscopic therapy could potentially have been eligible for oncological treatments. Improvements in the selection process of patients for palliative treatments are required to ensure that patients receive an appropriately tailored treatment strategy. The Audit has also highlighted considerable variation among Cancer Alliances in the choice of triple or double therapy regimens among older patients.

An exciting development for the future of the audit is its merger with the National Bowel Cancer Audit to form the National Gastrointestinal Audit Programme. We look forward to the National OG Cancer Audit continuing to develop under this new programme.

"Weighing the pig won't make it fatter" is a well known phrase in performance management. The golden rules of measurement are, "no measurement without recording, no recording without analysis, and no analysis without action." A national quality improvement programme for OG cancer surgery is now overdue to disseminate the lessons learned by the best performing teams and thereby stimulate further improvements in outcomes for patients.

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Executive Summary

The National Oesophago-Gastric Cancer Audit (NOGCA) was established to investigate the quality of care received by patients with oesophago-gastric (OG) cancer in England and Wales. It aims to provide information for NHS cancer services so that they can benchmark their performance and identify areas where aspects of care could be improved. Around 13,000 people are diagnosed with OG cancer in England and Wales annually. It is the fifth most common type of cancer, and patients are often diagnosed with more advanced disease compared with other cancers. Only 15% of people with oesophageal cancer and 19% of people with gastric cancer survive 5 years after diagnosis, compared with 85% for women diagnosed with breast cancer.

NOGCA collects prospective data on adult patients diagnosed in England and Wales with invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach, or high-grade dysplasia (HGD) of the oesophagus. Stakeholder groups, including patient representatives from the Oesophageal Patients Association, have been involved in the development of the Audit.

In this tenth annual report, we focus on the care received by patients diagnosed between 1 April 2015 and 31 March 2017 and their outcomes. All NHS trusts participated in the audit, and tumour case ascertainment was close to 80%. Results are presented at a national level, at regional level (using the Cancer Alliance areas for England) and at individual NHS trust / local health board level. We also describe changes in key indicators of care over the five years since the current audit began.

The report is written for four key audiences, those who deliver, receive, commission and regulate care, and is designed to support quality improvement activities in hospitals as well as the commissioners of cancer services. Data are also provided to the Care Quality Commission (CQC) to inform their inspection packs. In addition to this report, the Audit publishes information on surgical outcomes for individual consultants within English NHS trusts.

This information on clinical outcomes can be found on the following websites.

www.NOGCA.org.uk
: This is the Audit's main website

www.augis.org/outcomes-data-2017
: Consultant-level surgical outcomes are published each year on the Association of Upper Gastrointestinal Surgeons website

www.nhs.uk/Service-Search/performance/search
: Information is available for the full range of NHS services, including the Audit's surgical results

https://www.hqip.org.uk/national-programmes/clinical-audit-benchmarking/
: HQIP's National Clinical Audit Benchmarking website provides access to trust-level audit performance data for a range of specialities.

The Audit is commissioned by the Health Quality Improvement Partnership (HQIP), funded by NHS England and the Welsh Government, and delivered by the Royal College of Surgeons of England in partnership with NHS Digital, the Royal College of Radiologists (RCR), the British Society of Gastroenterology (BSG) and the Association of Upper Gastrointestinal Surgeons (AUGIS). The delivery of the Audit is overseen by a Project Board. A Clinical Reference Group (CRG), whose members represent professional medical associations and patient organisations, provides advice to the Audit team on the clinical direction of the Audit, the interpretation of its findings and how these can be disseminated effectively.

Key Findings & Recommendations

High-grade dysplasia of the oesophagus

Guidance on the diagnosis and management of patients with HGD of the oesophagus was published by the BSG in 2014 [BSG/Fitzgerald et al 2014[1]], which updated NICE clinical guidance on endoscopy treatment for Barrett's oesophagus [NICE 2010[2]] and provided additional recommendations in relation to diagnosis and treatment. Among the recommendations, clinical standards relating to four key areas of care were identified:

Diagnosis: all cases of suspected HGD should be confirmed by two gastrointestinal pathologists

Planning: all patients with HGD should be discussed by a specialist multi-disciplinary team (MDT)

Treatment: endoscopic therapy for HGD is preferred over oesophagectomy or surveillance

Providers: endoscopic treatment should be performed in high-volume tertiary centres treating at least 15 cases each year.

HGD case ascertainment

Key Finding 1: The Audit received information on 2,059 patients diagnosed with HGD in England between April 2012 and March 2017. The number of HGD records submitted to the Audit has declined each year and the number of cases per million population shows variation across regions, indicating lower case ascertainment in successive years and in some regions of England.

Recommendation

We recommend regular review of cases and submission to the Audit by local teams to improve case ascertainment in regions where it is currently low. To help hospital staff, the Audit team is working with users to improve the ease with which data can be uploaded into the data collection IT system.

HGD diagnosis

Key Finding 2: 86% of patients with HGD had their original diagnosis confirmed by a second pathologist. This proportion remained fairly constant over the three years for which data are available.

Recommendation

Where appropriate, MDTs should ensure that cases of suspected HGD have been confirmed by a second pathologist.

HGD treatment planning

Key Finding 3: 86% of newly diagnosed cases of HGD were discussed at an Upper GI MDT meeting. This proportion did not change between 2012–13 and 2016–17.

Recommendation:

NHS trusts / local health boards should ensure there are clear protocols with neighbouring hospitals for the referral of all cases of HGD to the specialist MDT. Local audits should be undertaken to identify the reasons why cases are not discussed and to take any required action.

HGD treatment

Key Finding 4: Among patients diagnosed between 2012 and 2017, 65% received endoscopic treatment for HGD, 4% had a surgical resection, and 17% were placed on a surveillance regimen. The proportion of patients on surveillance declined from 27% in 2012–13 to 15% in 2016–17. The proportion of patients receiving active treatment for HGD has increased over five years, but shows considerable variation across Cancer Alliances, ranging from 37% to 96%.

Recommendation

MDTs should ensure that all patients with HGD are considered for endoscopic treatment, in line with current recommendations, and Cancer Alliances should set out clear pathways for referral to specialist treatment centres, where necessary. Those with high rates of non-treatment of HGD should consider conducting local audits to explore the reasons for this.

Key Finding 5: The majority of patients undergoing surveillance are seen within 3 months, but some are not seen for more than 6 months. Current recommendations state that patients who are not actively treated should have repeat endoscopy at 3 month (HGD) or 6 month (low-grade dysplasia) intervals.

Recommendation

Patients selected for surveillance should be monitored regularly by the MDT, in accordance with guidance.

[1] Available at: https://www.bsg.org.uk/resource/bsg-guidelines-on-the-diagnosis-and-management-of-barrett-s-oesophagus.html

[2] Available at: https://www.nice.org.uk/guidance/cg106

HGD providers

Key Finding 6: In 2016–17, only six NHS trusts (of 38 that submitted endoscopic treatment records) treated at least 15 patients. Of these only one trust treated the recommended minimum number of patients in each audit year.
The majority (75%) of trusts provided endoscopic treatment to fewer than five patients.

Recommendation
While small numbers might reflect low case ascertainment in some regions, trusts that treat fewer than five patients with HGD each year should consider referral of these patients to their local specialist centre.

Patients with oesophago-gastric cancer

Case ascertainment

Key Finding 7: All 136 acute non-specialist NHS trusts in England submitted clinical information for 19,769 patients (79% of estimated total) diagnosed with OG cancer between April 2015 and March 2017, while data on 1,263 patients treated in Wales (76% of estimated total) were supplied from the NHS Wales cancer information system (CaNISC). Case ascertainment has not changed significantly over time. The completeness of surgical records submitted to the Audit was 90% in England and 70% in Wales.

Recommendation
We recommend regular review of cases by local teams and submission to the Audit in a timely manner to minimise missing data, particularly for those patients who do not receive further hospital-based treatment. Where a patient has treatment in a cancer centre, it is important that data collection is coordinated between the diagnosing hospital and the specialist cancer centre so that tumour records and treatment records are not missed.

Patterns of care at diagnosis

Patients can be diagnosed with OG cancer after referral to secondary care via three main routes: 1) following a visit to a general practitioner, 2) after an emergency admission, or 3) from a non-emergency hospital setting. Patients diagnosed following an emergency admission are more likely to have late stage disease and therefore are less likely to receive curative therapies than those diagnosed via other routes. The proportion of patients diagnosed with early stage cancer has remained at around 12% over the five years.

Key Finding 8: Among patients diagnosed in 2015–17, 66% were diagnosed following referral from a GP, 13% after emergency admission, and 20% from a non-emergency hospital setting. There was substantial variation in emergency diagnoses by Cancer Alliance / Welsh region (ranging from 5% to 22%), likely due to a combination of patient characteristics and practitioner factors. The rate of diagnoses after emergency admission remained at 13–14% over the five years, and regional variations also persisted over time.

Recommendation
Commissioners, GP practices and NHS trusts / local health boards need to explore ways to improve rates of early diagnosis and, in particular, investigate the reasons for high rates of emergency diagnoses.

Key Finding 9: In the 2015–2017 cohort, the median time from referral to diagnosis of cancer was 14 days.
The time from referral to first treatment varied by treatment modality, with patients receiving palliative endoscopic/ radiological treatments having the shortest median times from referral to treatment. The distributions of waiting times within the various regions of England and Wales were similar, being much smaller than the range of differences between patients.

Recommendation
Together with commissioners, MDTs should review waiting times through the care pathways and discuss ways to improve the progression of patients from diagnosis through to staging and treatment.

Staging and treatment planning

Key Finding 10: It is recommended that all patients diagnosed with OG cancer undergo a CT scan to provide an initial assessment and evidence of any metastatic disease. Overall, 90% of patients diagnosed in 2015–17 had an initial CT scan. This proportion increased over five years, from 86% in 2012–13 to 90% in 2016–17. Older patients and those with poorer performance status were less likely to have a CT scan.

Recommendation
NHS trusts / local health boards should examine their use of staging investigations for OG cancer and the submission of data about these investigations where their use is reported to be low. This may require better coordination between MDT team members and data mangers in the NHS trust / local health board so that complete information is submitted to the Audit.

Key Finding 11: Following an initial CT scan, further staging investigations may be required to determine the location and stage of cancer. For patients with oesophageal cancer, endoscopic ultrasound (EUS) is used selectively for staging OG cancers, with PET-CT now recommended for all patients being considered for curative treatment. In the 2015–17 cohort, approximately half of patients with a curative treatment plan for oesophageal cancer had an EUS. In contrast, the reported use of PET-CT increased from 63% to 71%, which is to be welcomed. The use of EUS and PET-CT varied across England and Wales. The proportion of patients who had a laparoscopy remained at around 50% over the five year period.

Recommendation
MDTs should ensure that all OG cancers are appropriately staged according to national recommendations; in particular, MDTs should ensure that patients with oesophageal cancer being considered for radical treatment have a PET-CT scan. MDTs should also ensure that staging laparoscopy is used in appropriate cases.

Key Finding 12: Overall, 39% of patients with OG cancer diagnosed in 2015–17 had a curative treatment plan. The proportion of patients managed with curative intent varied across Cancer Alliances / Welsh regions, but these proportions were generally clustered around the national average. Not all patients with a curative treatment plan go on to receive surgery, and there is regional variation in the proportion of eligible patients who have a surgical record in NOGCA.

Recommendation
NHS organisations with large differences between the number of patients with curative treatment intent and number of surgery records should investigate the reasons for this. MDTs should consider how information about planned treatments is communicated to patients.

Key Finding 13: There was variation in the patterns of planned palliative modality across the regions, with some regions having comparatively high rates of best supportive care.

Recommendation
NHS organisations with comparatively low use of active cancer treatment among palliative patients should examine whether more patients would be suitable for these therapies.

Curative tri-modal treatment (neoadjuvant chemoradiotherapy and surgery)

Key Finding 14: Tri-modal treatment refers to the use of neoadjuvant chemoradiotherapy and surgery. Despite its more widespread use in other countries, only a very small proportion of patients receiving curative treatment in the 2013–15 cohort had tri-modal treatment (6% of all patients who had neoadjuvant therapy prior to curative surgery). More than half of these cases were treated in just five centres, and the majority of patients received dosing regimens used in previous clinical trials.

Recommendation
The upper GI community in the UK should monitor the use of neoadjuvant chemoradiotherapy before curative surgery to ensure both that it is used in suitable candidates and that evidence based recommendations for the radiotherapy and chemotherapy regimens are followed. NHS trusts / health boards are encouraged to support patient recruitment to the NeoAEGIS trial, which aims to assess the value of tri-modal treatment for oesophageal cancer.

Curative surgery

In the 2015–17 audit period, information about curative surgery was submitted for 4,291 patients (2,658 oesophagectomies and 1,633 gastrectomies). Oesophagectomies were typically performed using the transthoracic approach, while gastrectomies were generally total or distal. The distribution of surgical procedures has remained largely unchanged over five years. In particular, the proportion of open-and-shut/bypass cases has remained at around 4% during this period.

There is increasing evidence for the advantages of using enhanced recovery after surgery (ERAS) protocols, including reduced complications, improved outcomes and shorter length of hospital stay. In particular, it is thought that the adoption of ERAS protocols has contributed to the significant reduction in length of hospital stay after surgery over the last 10 years. Data items relating to ERAS were included for the first time in the 2016–17 audit. Organisations are beginning to use these items but it is too early to understand how widely ERAS is being used and what impact it is having.

Key Finding 15: All NHS trusts and local health boards achieved similar 90-day mortality after curative surgery (overall 90-day mortality rate was 3.9% for oesophagectomies and 3.3% for gastrectomies). There was one centre whose 30-day postoperative mortality rate was slightly higher than expected given the number of operations performed when compared against the national average. There was no statistically significant change in 30-day or 90-day mortality from 2012–13 to 2016–17 for either oesophagectomy or gastrectomy. There has been a steady decrease in the median length of stay in hospital after surgery over the last 10 years.

Key Finding 16: Last year, the Audit introduced results on four new surgical indicators, including the number of lymph nodes excised and examined, and the proportion of patients with a positive resection margin. However, a lack of standardisation in the preparation of surgical specimens in theatre before submission to the pathology department means that organisations cannot yet be benchmarked using these indicators.

Recommendation
Surgeons and pathologists should work towards standardisation of the way surgical specimens are collected, so that benchmarking of organisations using these indicators can be carried out in the future.

Non-curative treatments

Key Finding 17: Nearly two-thirds of patients with OG cancer were managed with palliative intent. Among non-curative treatment options, palliative oncology was most commonly used, but there was large variation in the choice of palliative treatments across the regions in England and Wales. Among patients receiving palliative oncology, chemotherapy was most frequently used (68%). Just over 50% of patients completed the course of treatment, with non-completion being generally due to progressive disease or acute chemotherapy toxicity. Among patients receiving best supportive care (no active treatment beyond conservative measures to achieve symptom control) or endoscopic/radiological therapies, over 50% survived beyond three months and therefore may have been candidates for palliative oncological treatments.

Recommendation
The selection process of patients for palliative chemotherapy requires improvement. In particular, services should explore the reasons why patients chosen to receive this treatment were unable to complete the regimen and why patients who were sufficiently fit to be candidates for chemotherapy received best supportive care.

Current guidelines recommend the use of triplet regimens (including a platinum-based agent, a fluoropyrimidine and an anthracycline) as a first line option for patients being treated with palliative chemotherapy [Allum et al 2011]. These have been shown to improve overall survival compared to doublet regimens (including a platinum-based agent and a fluoropyrimidine), although whether this benefit is outweighed by the risk of greater toxicity has been questioned [Wagner et al 2017].

Key Finding 18: There is considerable regional variation in the use of doublet and triplet regimens, especially among patients aged 80 years and over being treated with palliative oncology.

Recommendation
Attempts should be made to develop a more consistent approach to the use of systemic therapy regimens, especially in older patients with advanced OG cancer, through the development of practice guidelines and/or participation in clinical trials.

Future of the Audit

The National OG Cancer Audit was re-commissioned in 2018, together with the current National Bowel Cancer Audit (NBOCA), as the three-year National Gastrointestinal (GI) Cancer Audit Programme. The new programme will reflect a change in how the two current Audits are managed and delivered but the new programme will continue to have distinct work streams for bowel and OG cancer, and an audit with a distinct identity will continue to publish information on the delivery of care to patients with OG cancer.

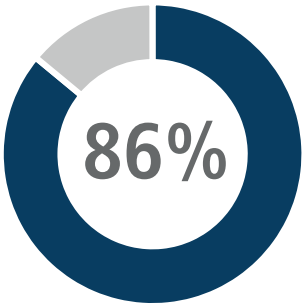
The new GI Audit will introduce more frequent quality reporting, which will be published on the NOGCA and NBOCA websites. The specific format and content of these reports are currently being planned.

High-grade dysplasia

The Audit received information about

2,059

patients in England who were diagnosed with high-grade dysplasia of the oesophagus between April 2012 and March 2017.



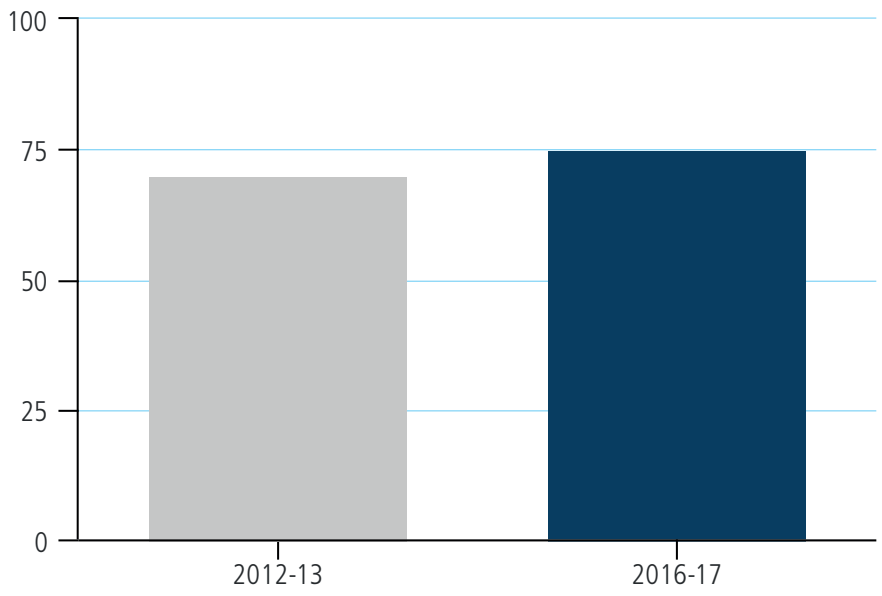
Multidisciplinary team

The majority of patients were discussed at a multidsciplinary team meeting, but this proportion has not changed over time.

Submissions to the Audit

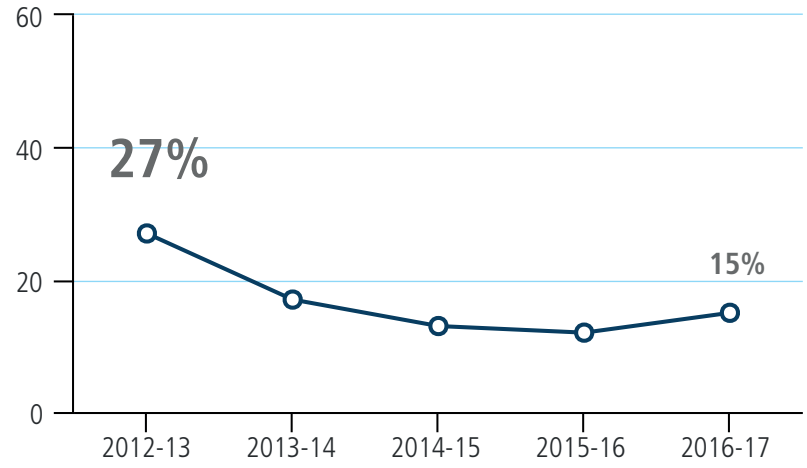
The number of HGD cases submitted to the Audit has declined over five years. Some regions in England may have very low case ascertainment.

Active treatment



Between 2012-13 and 2016-17, the proportion of patients receiving active treatment (endoscopic or surgical treatment) for high-grade dysplasia increased from 70% to 75%.

Surveillance



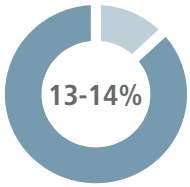
Between 2012-13 and 2016-17, the proportion of patients undergoing surveillance for high-grade dysplasia declined from 27% to 15%.

Oesophago-gastric cancer

The Audit received information about

21,032

patients in England & Wales who were diagnosed with oesophago-gastric cancer between April 2015 and March 2017.



of patients were diagnosed following an emergency admission to hospital.

Waiting times for treatment

Waiting times were longest for patients having curative surgery.

On average, these patients received treatment 94 days after referral, compared to 62 days for patients undergoing neoadjuvant treatment.

Palliative treatments

Only 56% of patients undergoing palliative chemotherapy completed their treatment.

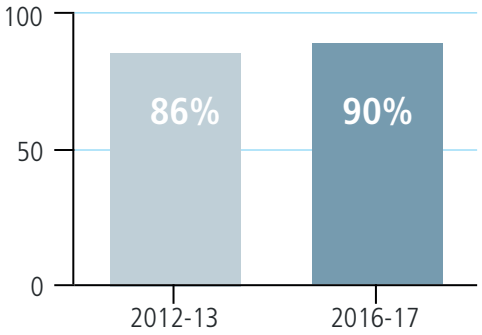
Early diagnosis

12%

of patients were diagnosed with early-stage OG cancer. This proportion has remained unchanged since 2012-13.

Staging investigations

90% of patients had an initial CT scan to assess the spread of cancer. This proportion has increased from 86% in 2012-13.



Outcomes of curative surgery

There has been a steady improvement in the median length of hospital stay after curative surgery, from 12 days to 10 days.

Mortality rates after curative surgery remain at low levels, with over 96% of patients alive 90 days after surgery.

This figure was similar across NHS hospitals in England and Wales.

1. Introduction

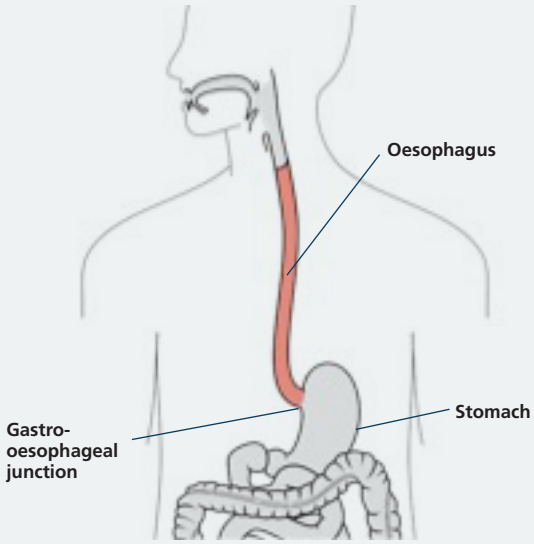
The National Oesophago-Gastric Cancer Audit (NOGCA) was established to evaluate the care of patients with oesophago-gastric (OG) cancer in England and Wales and to help NHS services identify areas where improvements could be made. In addition, the Audit evaluates the care received by patients with a new diagnosis of oesophageal high-grade dysplasia (HGD) because there is a 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 five national cancer audits being undertaken in England and Wales.

The Audit is designed to evaluate the care pathway followed by patients once they have been diagnosed with either OG cancer or HGD, and 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 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.

OG cancer is the fifth most common type of cancer in the UK, with around 13,000 people diagnosed each year in England and Wales. Over the last 25 years, the incidence of oesophageal cancer in the UK has increased by around 6%, with a particularly notable increase in cancers located at the gastro-oesophageal junction (see Figure 1.1). During the same period, the incidence of stomach cancers has decreased by around 50% [Cancer Research UK, 2018b].

Figure 1.1
Upper gastrointestinal tract



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. New guidance on the management of oesophageal and gastric cancer from the National Institute for Health and Care Excellence (NICE) was published in January 2018 [NICE 2018]. In addition, recommendations on the delivery of care for OG cancer and HGD patients is contained in:

- The clinical guideline published by the Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland, the British Society of Gastroenterology, and the British Association of Surgical Oncology [Allum et al 2011]
- The Scottish Intercollegiate Guideline Network (SIGN) guideline on the management of oesophageal and gastric cancer [SIGN 2006]
- The British Society of Gastroenterology guidelines on the diagnosis and management of Barrett's oesophagus [BSG/Fitzgerald et al 2014]
- NICE has provided additional guidance on specific 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

1.1 Overview of the 2018 Annual Report

The aim of this report is to give an overall picture of the care provided by NHS services to adult patients with OG cancer or oesophageal HGD. Cancer patients were eligible for inclusion if they were diagnosed with invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach (ICD10 codes C15 and C16), and were aged 18 years or over. Patients with endocrine tumours or gastrointestinal stromal tumours (GISTs) were not included in the Audit due to the different behaviour and management of these tumours. In relation to both oesophageal HGD and OG cancer, the report focuses on the experience and outcomes of patients diagnosed between 1 April 2015 and 31 March 2017.

The report is aimed at those who provide, receive, commission and regulate OG cancer care. This includes clinicians and other health care professionals working within hospital cancer units, clinical commissioners, and regulators, as well as patients and the public who are interested in knowing how OG cancer services are delivered within the NHS. A separate Patient Report aimed specifically at people receiving OG cancer care, their families and caregivers will be published on the NOGCA website.

The Audit is run by the Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland (AUGIS), the Royal College of Radiologists (RCR), the British Society of Gastroenterology (BSG), NHS Digital and the Clinical Effectiveness Unit of the Royal College of Surgeons of England. The delivery of the Audit is overseen by a Project Board whose role is to ensure 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 the Oesophageal Patients Organisation (see Annex 1 for further details).

The methods used to produce the results in this report are described in Annex 2.

1.2 Regional organisation of OG cancer services

OG cancer services within England and Wales are organised 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 provide curative surgical treatment and specialist radiology, oncology and palliative services to all patients living in the area. Diagnostic services and non-specialist palliative services continued to be provided by individual NHS trusts (units) within the cancer network areas. The English Cancer Networks were replaced in 2013 with Strategic Clinical Networks, and the Audit has been publishing regional results at this level for the last few years. For Wales, we have been publishing results for two regional cancer networks. These existed until 2016, after which the Welsh cancer networks were merged into a single network with responsibility for implementing the new Welsh cancer strategy.

This report presents results for English NHS services with regions using the Cancer Alliance and the National Cancer Vanguards [NHS England 2016]. The Cancer Alliances and Vanguard regions are responsible for organising services across the whole pathways of care for local populations, with the aim of reducing variation in treatment for all people with cancer across the country. For Wales, we have adopted an approach that recognises the three strong regional relationships between services, defining areas labelled as: Abertawe Bro Morgannwg (ABMU), Betsi Cadwaladr (North Wales) and South Wales Cardiff region.

The geographical boundaries of the 19 English Cancer Alliances / Vanguard regions are as shown in Figure 1.2.

A list of these regions is provided in Annex 3.

Figure 1.2
Location of NHS surgical cancer centres and regional boundaries as at September 2017 (Key for NHS trust codes overleaf).

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Surgical Centres

Code	Name	Code	Name
7A1	Betsi Cadwaladr University Local Health Board	**RM3**	Salford Royal NHS Foundation Trust
7A3	Abertawe Bro Morgannwg University Local Health Board	**RPY**	The Royal Marsden NHS Foundation Trust
7A4	Cardiff & Vale University Local Health Board	**RQ6**	Royal Liverpool and Broadgreen University Hospitals NHS Trust
7A5	Cwm Taf University Local Health Board	**RQ8**	Mid Essex Hospital Services NHS Trust
		RR1	Heart of England NHS Foundation Trust
RA2	Royal Surrey County Hospital NHS Foundation Trust	**RR8**	Leeds Teaching Hospitals NHS Trust
RA7	University Hospitals Bristol NHS Foundation Trust	**RRK**	University Hospitals Birmingham NHS Foundation Trust
RAE	Bradford Teaching Hospitals NHS Foundation Trust	**RRV**	University College London Hospitals NHS Foundation Trust
RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	**RTD**	The Newcastle Upon Tyne Hospitals NHS Foundation Trust
REM	Aintree University Hospital NHS Foundation Trust	**RTE**	Gloucestershire Hospitals NHS Foundation Trust
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	**RTG**	Derby Hospitals NHS Foundation Trust
RGT	Cambridge University Hospitals NHS Foundation Trust	**RTH**	Oxford University Hospitals NHS Trust
RHM	University Hospital Southampton NHS Foundation Trust	**RTR**	South Tees Hospitals NHS Foundation Trust
RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	**RW3**	Central Manchester University Hospitals NHS Foundation Trust
RHU	Portsmouth Hospitals NHS Trust	**RWA**	Hull and East Yorkshire Hospitals NHS Trust
RJ1	Guy's and St Thomas' NHS Foundation Trust	**RWE**	University Hospitals of Leicester NHS Trust
RJE	University Hospitals of North Midlands NHS Trust	**RWG**	West Hertfordshire Hospitals NHS Trust
RK9	Plymouth Hospitals NHS Trust	**RX1**	Nottingham University Hospitals NHS Trust
RKB	University Hospitals Coventry and Warwickshire NHS Trust	**RXH**	Brighton and Sussex University Hospitals NHS Trust
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	**RXN**	Lancashire Teaching Hospitals NHS Foundation Trust
RM2	University Hospital of South Manchester NHS Foundation Trust	**RYJ**	Imperial College Healthcare NHS Trust

Cancer Alliances & Welsh regions

Code	Name	Code	Name
Cheshire	Cheshire and Merseyside	**SE Lon**	South East London
E Mids	East Midlands	**S Yorks**	South Yorkshire, Bassetlaw and North Derbyshire
E Engl	East of England	**Surrey**	Surrey and Sussex
Manc	Greater Manchester	**Thames**	Thames Valley
Humber	Humber, Coast and Vale	**Wessex**	Wessex
Kent	Kent and Medway	**W Lon**	West London
Lancs	Lancashire and South Cumbria	**W Mids**	West Midlands
NCE Lon	North Central and East London	**W Yorks**	West Yorkshire
N East	North East and Cumbria	**ABMU**	Abertawe Bro Morgannwg
Penns	Peninsula	**N Wales**	North Wales Cancer Centre: Betsi Cadwaladr
Soms	Somerset, Wiltshire, Avon and Gloucestershire	**S Wales**	South Wales Cancer Centre: Cardiff & Vale, Cwm Taf, Hywel Dda, Aneurin Bevan

1.3 Other sources of information produced by the Audit

The Audit publishes information on the www.nogca.org.uk website for all NHS trusts / local health boards in England and Wales with OG cancer services. This includes:

- This Annual Report as well as previous versions
- A patient version of the Annual Reports, published shortly after publication of each Annual Report
- Information on the performance of each NHS organisation
- Links to other sources of information about OG cancer such as Cancer Research UK

In addition, as part of NHS England's "Everyone Counts: Planning for Patients 2013/4" initiative, the Audit has published outcome information for curative surgical procedures by individual consultants currently working at the organisation. This information can be found on the:

- AUGIS website
  www.augis.org/surgical-outcomes-2018/
- MyNHS website
  www.nhs.uk/Service-Search/performance/search

The results from the Audit are used by various other national health care organisations. In particular, the Audit has worked with HQIP and the CQC intelligence team to create a dashboard to support CQC inspections.

1.4 Future of the Audit

The National OG Cancer Audit was re-commissioned in 2018 and has evolved into the three-year National Gastrointestinal Cancer Audit Programme. This now covers both oesophago-gastric and bowel cancer services.

While the new programme will change how the two current Audits are managed, it will continue to have a distinct work stream for OG cancer under a recognisable name, which will publish information and recommendations for those who provide, receive, regulate and commission OG cancer care.

The OG cancer workstream of the new audit will continue to be run by a team from the Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland (AUGIS), the Royal College of Radiologists (RCR), the British Society of Gastroenterology (BSG), NHS Digital and the Clinical Effectiveness Unit of the Royal College of Surgeons of England.

2. Management of patients with high-grade dysplasia in England

2.1 Introduction

Abnormal development of cells (or dysplasia) in the oesophagus is a risk factor for progression to oesophageal cancer. The condition typically develops over time and the most severe form of dysplasia, known as high-grade dysplasia (HGD), is considered a pre-cancerous condition.

The Audit has collected data on patients diagnosed with HGD of the oesophagus in England since April 2012. This chapter describes the management of patients who were diagnosed between April 2012 and March 2017, in the context of recommendations from national guidelines and changes over the five years.

To provide more information on the care received by these patients, the audit data were linked to patients' records in Hospital Episode Statistics (HES), the routine hospital patient database for England. This was used to describe the sequence of endoscopic procedures that patients underwent in the year after HGD diagnosis, and to identify patients with a cancer diagnosis as they received different treatment modalities.

2.2 Indicators of HGD care

The British Society of Gastroenterology (BSG) guidelines on diagnosis and management of Barrett's oesophagus include a number of recommendations in relation to patients with HGD [BSG/Fitzgerald et al 2014]. These update NICE clinical guidance on endoscopy treatment for Barrett's oesophagus [NICE 2010] and provide additional recommendations in relation to diagnosis and treatment.

Box 1
Indicators used to assess the care of patients with HGD (source: BSG 2014 guideline)

Recommendation and rationale	Indicator
All cases of suspected HGD should be confirmed by two gastrointestinal pathologists Grading dysplasia involves a degree of subjectivity, and a diagnosis of HGD has important implications for treatment. Studies have shown that the rate of progression to cancer among patients with dysplasia confirmed by two specialist pathologists is higher than among those without consensus diagnosis.	% of patients whose diagnosis was confirmed by a second pathologist
All patients with HGD should be discussed at the specialist multi-disciplinary team (MDT) for oesophago-gastric cancer As treatment for HGD can involve endoscopic or surgical management, discussion at the MDT ensures that the patient is considered for the most appropriate treatment option	% of patients discussed at the MDT
Endoscopic treatment of HGD (endoscopic mucosal resection of visible lesions and radiofrequency ablation of flat HGD) is preferred over oesophagectomy or surveillance Compared to surgery, endoscopic treatment is associated with lower morbidity and mortality. There is little evidence to support the use of surveillance.	% of patients who received endoscopic treatment
Endoscopic treatment should be performed in high-volume tertiary referral centres (min. 15 endoscopic mucosal resections per year for HGD or early cancer) Outcomes of oesophageal surgery are consistently better in high-volume centres. While similar data for endoscopic treatments are lacking, complication rates have been shown to be higher among endoscopists with less experience.	Number of patients with HGD receiving endoscopic treatment at each trust per year

2.3 Participation in HGD component and patient characteristics

To date, records for 2,059 patients newly diagnosed with HGD between 1 April 2012 and 31 March 2017 have been submitted to the Audit. Data submissions have been limited to English NHS trusts due to the different data collection system used in Wales (CaNISC)[3].

The number of HGD records submitted to the Audit has declined each year, from 465 in 2012–13 to 368 in 2016–17. As there is no suggestion that there has been a change in the underlying incidence of HGD in the last five years, this decline is likely to reflect lower case ascertainment in successive years. The Audit's 2017 User Survey (available at https://www.nogca.org.uk) indicated that a large proportion of users found collecting HGD data difficult, with particular issues relating to the coordination of data collection and submission between organisations.

It is currently not possible to estimate case ascertainment for the HGD component of the Audit because there is no specific ICD-10 code for HGD that can be used to identify patients in hospital IT systems or databases such as Hospital Episode Statistics (HES) [Chadwick et al 2017]. Instead, we examined the number of cases of HGD submitted to the Audit per million population for each NHS England region, and found a 6-fold variation across regions (4.5-fold variation when restricted to population aged 65+) (Table 2.1). Such wide variation is unlikely to be due to differences in incidence, and suggests that case ascertainment could be as low as 20% in some regions. Work is underway to see if other data sources such as the UK Radiofrequency Ablation Registry[4] can provide greater insight into case ascertainment.

The Audit has also undertaken a number of activities to support improvements in case ascertainment, such as compiling case studies from trusts with high numbers of HGD submissions and sharing these examples of best practice with hospitals via the Audit's regular newsletter. The Audit also conducted a User Survey in 2017 (https://www.nogca.org.uk/reports/nogca-user-survey-2017/), which highlighted technical difficulties that users experienced when coordinating the submission of HGD records across different organisations (e.g. between diagnosing and treating hospitals). These findings are informing further development of the data collection system, and will improve participation and data quality.

Table 2.1
High-grade dysplasia cases submitted to the Audit in 2016-17 per million population in each NHS England region

NHS England Region	HGD cases per million population*	
	In total population	In population aged 65+ years
London	2.96	25.46
Central Midlands	3.89	22.07
West Midlands	4.05	23.21
Yorkshire and Humber	4.26	27.12
Greater Manchester	4.34	23.71
Yorkshire and Humber	5.50	30.59
South Central	5.84	29.17
South East	5.99	29.58
Lancashire and South Cumbria	6.60	33.92
North Midlands	10.41	49.68
Wessex	10.64	51.62
East	11.81	60.82
Cheshire and Merseyside	13.02	59.81
South West Cumbria and North East	19.63	100.04

*Mid-2016 population estimates obtained from Office for National Statistics (2017)

[3] English NHS trusts submit patient information to NOGCA via its online submission system (Clinical Audit Platform, CAP), while information from Wales is provided by the Cancer Network Information System Cymru (CaNISC). CaNISC only collects information on patients with OG cancer and does not collect information on patients with HGD.

[4] The Radiofrequency Ablation (RFA) Registry collects information on RFA procedures for Barrett's oesophagus that take place in major specialist centres in the UK, and is led by UCLH. More information about the registry can be found here: https://www.ucl.ac.uk/surgery/research/clinical-trials/halo-radiofrequency-ablation-registry

2.4 Diagnosis of HGD and patient characteristics

There were 2,059 patients diagnosed with HGD in 2012–17. Three quarters of patients (n=1,529) were male, and the condition was typically diagnosed in those aged 65 or older. The median age at diagnosis was 71 years (IQR 64 to 79). Around half of all patients were referred to secondary services by a medical practitioner after experiencing symptoms (n=1,001). The other half were diagnosed while undergoing surveillance. These characteristics were similar in each Audit year between 2012 and 2017.

Among patients diagnosed in 2014–17, 37% had at least one significant comorbidity, of which cardiovascular disease was the most common (reported for 22% of patients), followed by diabetes (10% of patients). Multiple comorbidities were reported for 14% of patients.

Among the patients diagnosed with HGD in 2014–2017, 86% had their original diagnosis confirmed by a second pathologist (Table 2.2). This proportion has remained similar over the three years for which data are available. Among patients who underwent a repeat biopsy, 87% had the result confirmed by a second pathologist. Endoscopic findings at the time of HGD diagnosis are presented in Table 2.3. These are generally in keeping with characteristics reported elsewhere with the exception of the type of lesion. The proportion of patients with multifocal disease is larger than expected.

Table 2.2
Diagnostic details of patients diagnosed with high-grade dysplasia in England, by year of diagnosis 2014–17

	2014–15	2015–16	2016–17	Total
Original biopsy confirmed by a second pathologist, n (%)	272 (82.9)	292 (87.2)	263 (87.4)	827 (85.8)
Missing	60	45	67	172
Repeat biopsy taken, n (%)	207 (56.6)	203 (60.2)	181 (57.8)	591 (58.2)
Missing	22	43	55	120
Repeat biopsy confirmed by a second pathologist, n (%)*	131 (85.0)	170 (89.0)	151 (87.8)	452 (87.4)
Missing	53	12	9	74

Data items on biopsy changed from 2014. *Denominator is number of patients who had a repeat biopsy taken.

Table 2.3
Endoscopic findings at time of diagnosis for patients with high-grade dysplasia, by year of diagnosis

	2012–13	2013–14	2014–15	2015–16	2016–17	Total
Endoscopic appearance of HGD, n (%)						
Flat mucosa	105 (42.5)	99 (36.4)	96 (44.4)	76 (38.2)	94 (48.7)	470 (41.7)
Nodular lesion	135 (54.7)	158 (58.1)	111 (51.4)	118 (59.3)	96 (49.7)	618 (54.8)
Depressed lesion	7 (2.8)	15 (5.5)	9 (4.2)	5 (2.5)	3 (1.6)	39 (3.5)
Missing	218	186	172	181	175	932
Barrett's segment present, n (%)	279 (76.8)	298 (79.1)	264 (81.0)	256 (79.0)	246 (79.6)	1345 (79.0)
Missing	99	81	62	56	59	357
Type of lesion (pathology report), n (%)						
Unifocal	136 (58.4)	155 (69.5)	110 (60.4)	139 (75.1)	113 (68.9)	653 (66.2)
Multifocal	97 (41.6)	68 (30.5)	72 (39.6)	46 (24.9)	51 (31.1)	334 (33.8)
Missing	232	235	206	195	204	1072

2.5 Treatment for HGD

Between 2012 and 2017, 86% of newly diagnosed cases of HGD were discussed at an upper gastrointestinal MDT meeting. This proportion has not changed over the five-year period (Table 2.4).

Two-thirds of patients diagnosed with HGD between 2012 and 2017 received endoscopic treatment (Table 2.4).

- The most common type of therapy was endoscopic resection, which accounted for three-quarters of initial endoscopic treatments. This proportion increased from 70% in 2012–13 to 80% in 2016–17 (p=0.008).
- Radiofrequency ablation (RFA) represented a fifth of treatments, declining from 27% to 19% (p=0.030). RFA was used more frequently in patients with flat mucosa than in those with lesions (41% versus 12%, p<0.001).
- Oesophagectomy (curative surgical resection) was the initial treatment modality for just 4% of patients. This may include patients with suspected cancers which could not be confirmed by biopsy (e.g. due to sampling issues), rather than cases of HGD.
- Other treatments (including photodynamic therapy, argon plasma coagulation and laser therapy) accounted for just 2% of endoscopic treatments.

In fit patients, multimodal therapy in the form of endoscopic resection followed by RFA every 3 months is recommended for complete eradication of dysplasia [Phoa et al 2016]. We explored the use of multimodal therapy among patients in the Audit using linked HES data on endoscopic procedures. These indicated that 30% of patients (217 of 721) who had endoscopic resection after diagnosis of HGD received RFA within 6 months. The median time from first resection to first RFA was 90 days (IQR 63 to 126).

Despite clinical guidelines recommending active treatment for HGD, 17% of all patients were placed on a surveillance regimen and 8% received no treatment. There have been some changes in these figures over time (Figure 2.1):

- Those receiving active treatment (endoscopic, surgical or other) increased from 70% to 75% (p=0.032).
- The proportion on surveillance declined from 27% in 2012-13 to 15% in 2016–17 (p<0.001). Among these patients, planned timing of next surveillance was within three months for 58% (the recommended interval [BSG 2014], and within six months for a further 30%.
- The proportion of patients receiving no treatment increased from 4% to 11%.

Patients placed on surveillance were on average older than those who received active treatment (mean age 74 versus 69 years, p<0.001), but these groups were similar in terms of reported comorbidities. Patients receiving no treatment were older on average than those receiving active treatment or surveillance (mean age 78 years), and were more likely to have at least one significant comorbidity (57% versus 35%, p<0.001).

The reason for surveillance or no treatment has been collected for the Audit since 2014 (Table 2.4). Lack of fitness was more frequently reported for patients receiving no treatment (65%) than for those placed on surveillance (48%). These findings indicate that patients on surveillance are distinct from those receiving no active treatment, with the latter group representing frailer patients for whom treatment (including surveillance) may be unsuitable.

Figure 2.1
Proportion of patients with HGD receiving active treatment, surveillance or no active treatment in 2012–2017, by audit year

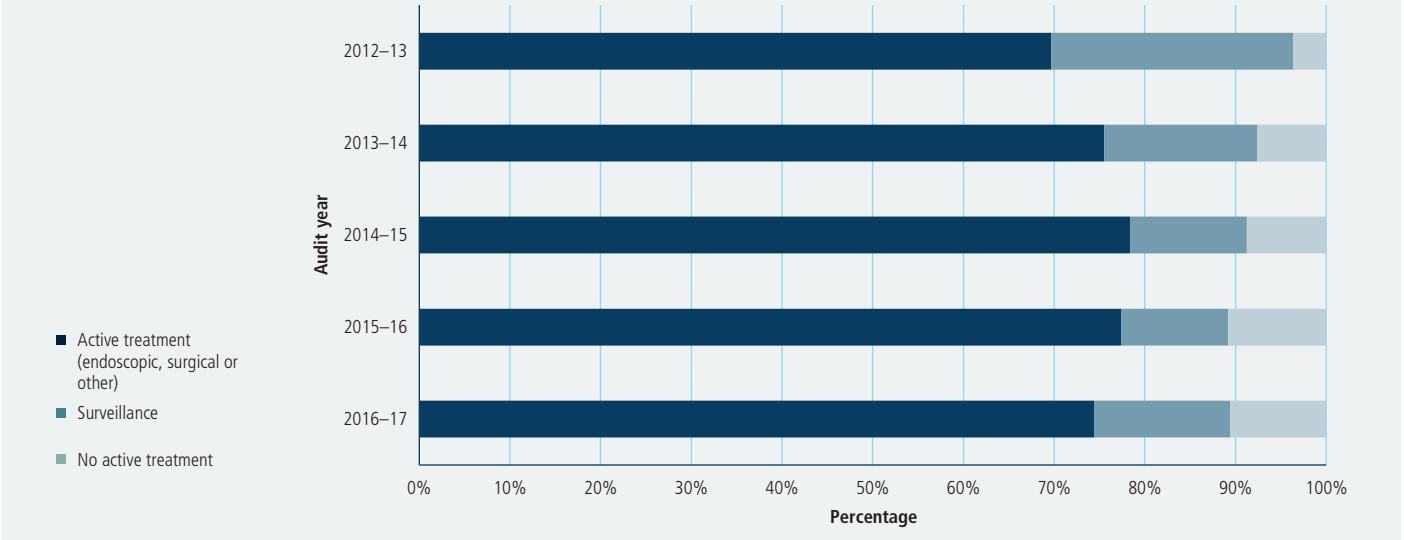


Table 2.4
Planned treatment for patients diagnosed with high-grade dysplasia in England, by year of diagnosis

	2012–13	2013–14	2014–15	2015–16	2016–17	Total
Treatment plan agreed at MDT, n (%)	372 (85.7)	371 (87.5)	329 (85.7)	321 (84.5)	314 (85.3)	1707 (85.8)
Missing	31	34	4	0	0	69
Initial treatment modality, n (%)						
Endoscopic treatment	288 (61.9)	282 (61.6)	262 (67.5)	271 (71.3)	236 (64.1)	1339 (65.0)
Curative surgical resection (oesophagectomy)	23 (5.0)	27 (5.9)	16 (4.1)	5 (1.3)	14 (3.8)	85 (4.1)
Surveillance	124 (26.7)	77 (16.8)	50 (12.9)	45 (11.8)	55 (15.0)	351 (17.1)
No treatment	17 (3.7)	35 (7.6)	34 (8.8)	41 (10.8)	39 (10.6)	166 (8.1)
Other – not specified	13 (2.8)	37 (8.1)	26 (6.7)	18 (4.7)	24 (6.5)	118 (5.7)
Type of endoscopic treatment, n (%) †						
Endoscopic resection	201 (69.8)	213 (75.5)	200 (76.4)	225 (83.0)	188 (79.7)	1027 (76.7)
Radiofrequency ablation	77 (26.7)	62 (22.0)	60 (22.9)	43 (15.9)	46 (19.5)	288 (21.5)
Other endoscopic treatment	10 (3.5)	7 (2.4)	2 (0.8)	3 (1.1)	2 (0.8)	24 (1.8)
Reason for surveillance, n (%) * ‡						
Patient choice	NA	NA	9 (69.2)	9 (47.4)	7 (43.8)	25 (52.1)
Patient unfit for endoscopic or surgical treatment			4 (30.8)	10 (52.6)	9 (56.3)	23 (47.9)
Missing			37	26	39	102
Reason for no treatment, n (%)* ‡						
Patient choice	NA	NA	5 (26.3)	12 (42.9)	7 (28.0)	24 (33.3)
Patient unfit for endoscopic or surgical treatment			14 (73.7)	15 (53.6)	18 (72.0)	47 (65.3)
Lack of access to endoscopic or surgical treatment			0	1 (3.6)	0	1 (1.4)
Missing			15	13	14	42
Planned timing of next surveillance, n (%) * §						
3 months or less	NA	NA	11 (52.4)	18 (64.3)	22 (56.4)	51 (58.0)
4–6 months			7 (33.3)	7 (25.0)	12 (30.8)	26 (29.5)
More than 6 months			3 (14.3)	3 (10.7)	5 (12.8)	11 (12.5)
Missing			29	17	16	62

*Data only routinely collected after 2014; † Among patients identified as having endoscopic treatment as initial treatment modality;
‡Among patients with surveillance or no active treatment as initial treatment modality;
§ Among patients with surveillance as initial treatment modality.

Variation in active treatment by Cancer Alliance

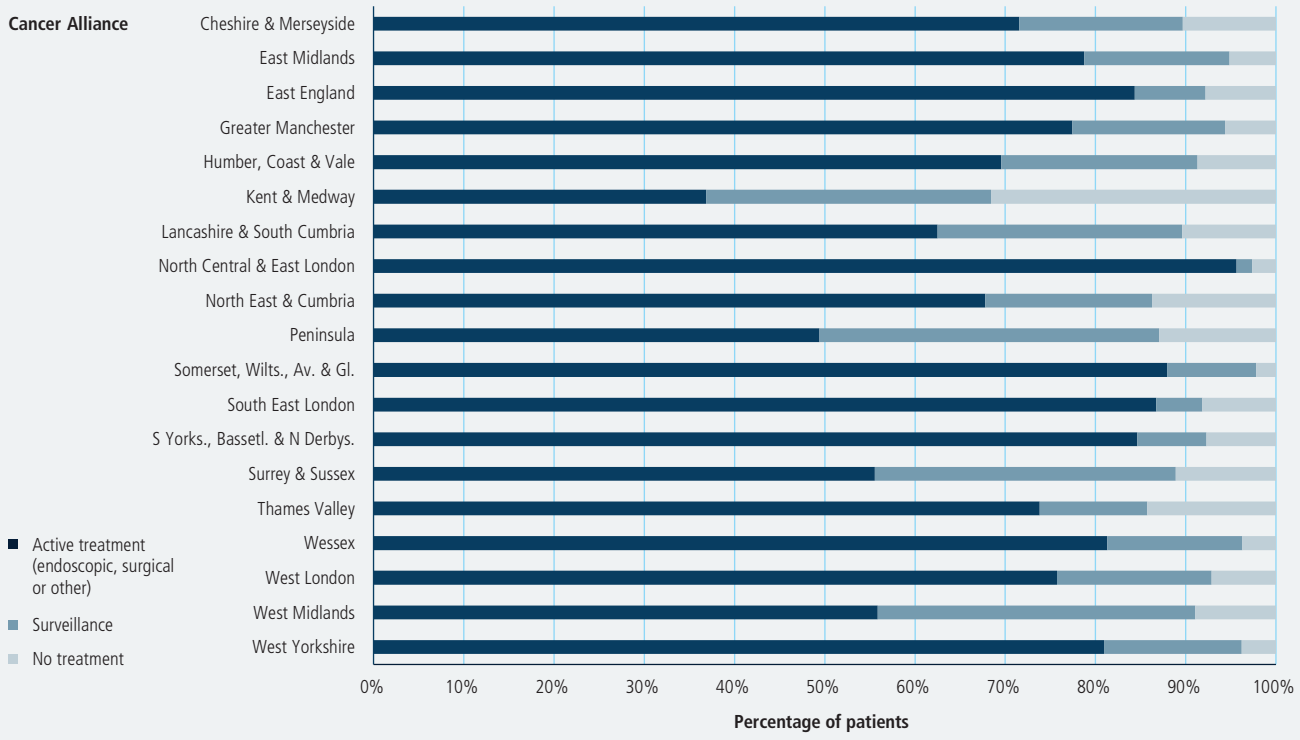
The proportion of patients receiving active treatment showed considerable variation across Cancer Alliances (Figure 2.2), ranging from 37% in Kent & Medway to 96% in North Central & East London. This variation may be explained in part by the referral of patients to centres in other areas for treatment. For example

- Kent & Medway Cancer Alliance made treatment plans for far fewer patients than they diagnosed (97 cases diagnosed, 38 treatment plans), indicating that they send a substantial proportion of patients to other areas for active treatment.

- North Central & East London Cancer Alliance made treatment plans for more than double the number of patients that they diagnosed, indicating that they treat a large number of patients diagnosed elsewhere.

However, referral to other regions does not appear to explain all of the observed variation. In particular, the proportion of patients receiving active treatment was only 49% in Peninsula despite the Alliance diagnosing and treating similar numbers of patients.

Figure 2.2
Proportion of patients with HGD receiving active treatment, surveillance or no treatment in 2012–2017, by Cancer Alliance of treatment plan



BSG guidelines recommend that endoscopic treatment should be performed in tertiary centres treating at least 15 patients with HGD each year. As described in previous Audit reports, few NHS trusts have met this annual volume of patients, and a similar pattern is observed in the most recent Audit year (2016–17), with just six NHS trusts reporting endoscopic treatment for 15 or more patients (range: 15 to 30 patients per trust) (Table 2.5).

Only one of these trusts treated this minimum number of patients in every year of data collection. Of the other 32 trusts that reported providing endoscopic treatment in 2016–17, the majority (75%) treated fewer than five patients. However, as described previously, low case ascertainment may lead to underestimation of the true number of procedures.

Table 2.5
NHS trusts diagnosing and treating patients with HGD in England

	Audit year				
	2012–13	**2013–14**	**2014–15**	**2015–16**	**2016–17**
Number of trusts diagnosing patients with HGD	105	110	105	104	95
Number of trusts treating patients with HGD*	76	79	79	71	60
Number of trusts providing endoscopic treatment for patients with HGD*	49	52	49	50	38
Number of trusts providing endoscopic treatment to ≥15 patients with HGD*	6	4	6	4	6
Average number of patients receiving endoscopic treatment per trust, median (IQR)	3 (1 to 6)	2.5 (1 to 7.5)	3 (1 to 9)	3 (1 to 7)	3 (1 to 6)

* Numbers are based on the hospital of treatment plan, as recorded in Audit treatment record.

2.6 Short term outcomes of endoscopic treatment

Endoscopic treatment records were available for 97% of patients with EMR/ESD recorded as the initial treatment modality. Two-thirds of initial EMR/ESD procedures resulted in complete excision (Table 2.6), although the Audit does not collect information on whether incomplete excision was judged by involved lateral or deep margins. This proportion has shown little variation over the Audit years. In cases of incomplete excision:

- 51% of patients went on to receive further endoscopic treatment (repeat EMR/ESD or ablative treatment)
- 15% were referred for oesophagectomy
- 19% were placed under surveillance
- 15% were reported to receive no further surveillance or treatment.

Following EMR/ESD, pathology examination confirmed the original diagnosis of HGD in 55% of cases (Table 2.6). However, nearly one third of patients had their diagnosis upgraded to intramucosal or submucosal cancer. Among patients with an incomplete excision, 32% had their diagnosis upgraded to cancer, compared to 27% of those with complete excision.

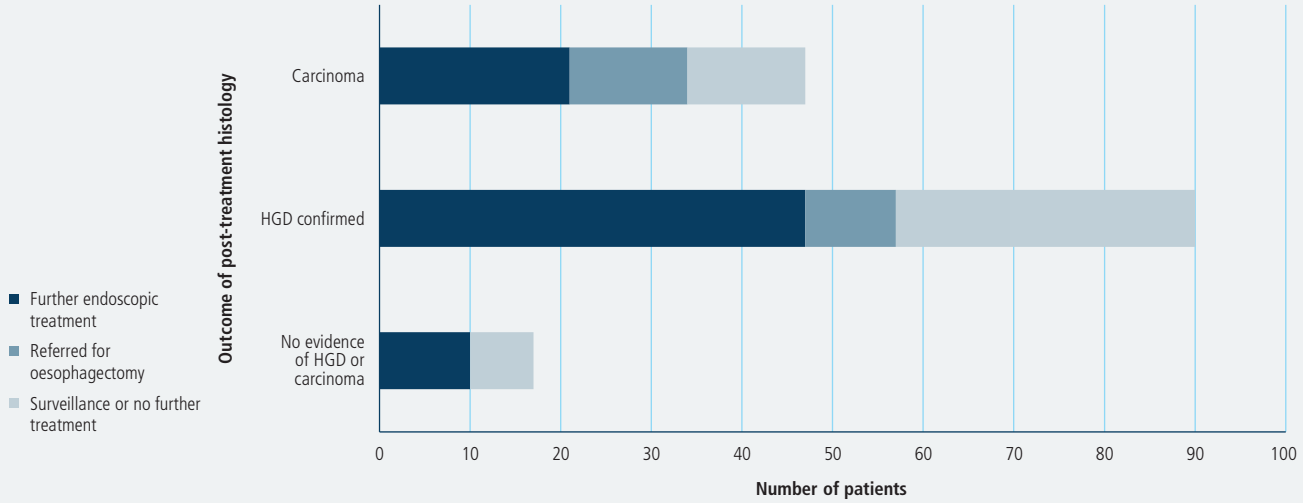
Patients who had their diagnosis upgraded to carcinoma were more likely to have had a nodular lesion at the time of HGD diagnosis: 78% of patients with carcinoma had a nodular lesion, compared to 62% of those with confirmed HGD and 51% of those with no HGD ($p<0.001$).
The outcome of post-treatment histology was not associated with the route to diagnosis (symptomatic referral or surveillance), type of lesion (unifocal or multifocal) or confirmation of the original biopsy by a second pathologist.

Following incomplete excision, patients with an upgraded diagnosis were more likely to be referred for oesophagectomy than those with confirmed HGD (28% of patients with carcinoma, versus 11% with HGD), and less likely to be placed on surveillance or no further treatment (28% of patients with carcinoma, versus 37% with HGD and 41% with no HGD) ($p=0.039$) (Figure 2.3).

Table 2.6
Outcomes of endoscopic resection for patients with high-grade dysplasia in England

Outcome of endoscopic resection	2012–13	2013–14	2014–15	2015–16	2016–17	Total
Complete excision, n (%)	123 (66.9)	136 (66.7)	127 (72.6)	118 (63.4)	102 (66.2)	606 (67.1)
Missing	17	9	25	39	34	124
Post-treatment histology, n (%)						
No evidence of HGD or carcinoma	23 (12.5)	25 (12.2)	25 (12.8)	32 (14.2)	37 (19.7)	142 (14.2)
HGD confirmed	97 (52.7)	115 (56.1)	107 (54.9)	127 (56.4)	102 (54.3)	548 (55.0)
Intramucosal carcinoma	50 (27.2)	50 (24.4)	54 (27.7)	52 (23.1)	45 (23.9)	251 (25.2)
Submucosal carcinoma	14 (7.6)	15 (7.3)	9 (4.6)	14 (6.2)	4 (2.1)	56 (5.6)
Missing	17	8	5	0	0	30
Treatment plan after incomplete excision, n (%)						
Further EMR/ESD	NA	NA	8 (21.6)	12 (18.2)	15 (29.4)	35 (22.7)
Further ablative treatment			11 (29.7)	22 (33.3)	10 (19.6)	43 (27.9)
Refer for oesophagectomy			7 (18.9)	7 (10.6)	9 (17.7)	23 (14.9)
Surveillance			11 (29.7)	10 (15.2)	9 (17.7)	30 (19.5)
No further surveillance / treatment			0	15 (22.7)	8 (15.7)	23 (14.9)
Missing			11	2	1	14

Figure 2.3
Treatment plan following EMR/ESD resulting in incomplete excision, by outcome of post-treatment histology



2.7 Outcomes of HGD surveillance

We investigated the longer-term outcomes of HGD patients who were initially placed on surveillance between 1 April 2012 and 31 March 2016 by using the Audit-HES linked dataset. The HES data were used to describe the sequence of endoscopic procedures of the oesophagus around the time of diagnosis and in the subsequent year. These procedures were categorised as diagnostic or therapeutic (ablation, resection or other treatment). Relevant procedures were identified using OPCS surgical procedure codes recorded in HES (see Annex 2 for full list of codes).

The HES data were also used to identify patients who had a diagnosis of oesophageal cancer recorded in hospital admissions within a year of their HGD diagnosis. We included ICD-10 codes for cancers of the oesophagus (C15x), gastro-oesophageal junction GOJ (C16.0) or unspecified gastric cancers (C16.9, which may include cancers of the GOJ). We excluded patients whose initial treatment modality was recorded as surgery (oesophagectomy) in their audit records because these are likely to include cases of suspected cancer that could not be confirmed at biopsy.

Endoscopic procedures

Linked data were available for 384 HGD patients whose initial treatment plan was identified as surveillance (n=278; 72%) or no active treatment (n=106; 28%). Of these, 9% had a treatment record in the Audit indicating that they underwent endoscopic resection at a later time (Table 2.7). This demonstrates that treatment plans can change over time as patient preference and/or fitness change.

Among patients whose initial treatment plan was identified as surveillance:

- 74% had a diagnostic endoscopic procedure recorded in HES within a year of diagnosis.
- A quarter of patients had a therapeutic endoscopic procedure, more than double the number who had a treatment record in the Audit. The median time from HGD biopsy to the first therapeutic endoscopic procedure was 104 days.
- A fifth of patients had no recorded diagnostic or therapeutic endoscopic procedure. It is not clear whether this is due to coding uncertainties in HES, patients receiving treatment in the private sector, or if patients did not undergo surveillance as originally planned.

Among patients identified as receiving no active treatment, two-thirds underwent a diagnostic or therapeutic endoscopic procedure within the first year after diagnosis. The median time to the first therapeutic procedure was 109 days.

Table 2.7
Endoscopic procedures of the oesophagus identified in HES during the first year after diagnosis of high-grade dysplasia, among patients diagnosed 2012–16, by initial treatment modality

	Planned treatment modality		
	Surveillance	No treatment	Endoscopic treatment
N patients	278	106	1092
Endoscopic treatment record in Audit, n (%)	30 (10.8)	5 (4.7)	857 (78.5)
Records in HES			
Diagnostic endoscopic procedure, n (%)	205 (73.7)	66 (62.3)	870 (79.7)
Therapeutic endoscopic procedure, n (%)	71 (25.5)	16 (15.1)	962 (88.1)
Any endoscopic procedure (diagnostic or therapeutic), n (%)	216 (77.7)	70 (66.0)	1077 (98.6)
Average number of endoscopic procedures per patient during first year after diagnosis, median (IQR)	2 (1 to 3)	2 (1 to 2)	3 (2 to 4)
Time from HGD biopsy to first therapeutic endoscopic procedure in HES (days), median (IQR)	104 (34 to 194)	109 (69 to 169)	72 (42 to 118)

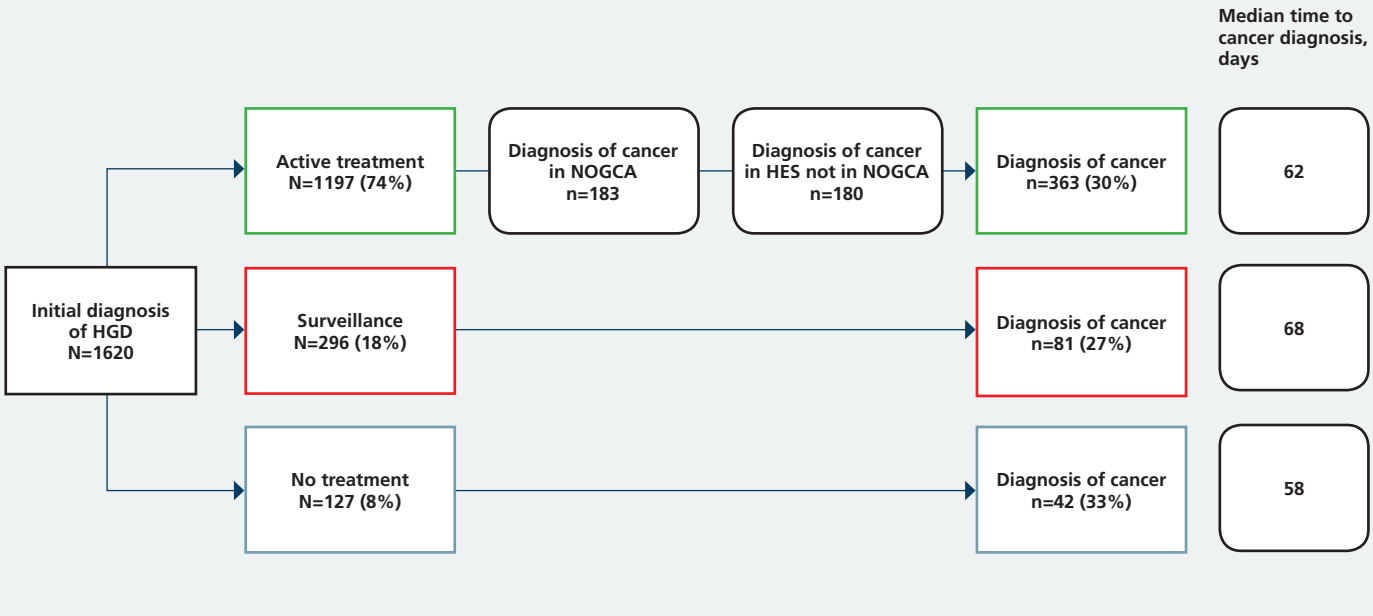
Cancer diagnoses

Linked data were available for 1,620 patients diagnosed with HGD between April 2012 and March 2016, of whom 74% of patients received active (endoscopic) treatment.

Overall, the proportion of patients who had a diagnosis of oesophageal or GOJ cancer within one year of HGD diagnosis was 30%. This proportion was similar across treatment modalities: 30% in the active treatment group, 27% in the surveillance group, and 33% in the no treatment group (Figure 2.4). The median time from the date of HGD diagnosis to cancer diagnosis was 62.5 days (IQR 20 to 135), and did not vary greatly by treatment modality. Excluding cases of unspecified gastric cancers (C16.9) led to a small reduction in the proportion of cancer diagnoses (from 30% to 28%), but the distribution of cases by treatment modality and time to diagnosis remained unchanged.

The similar proportions of patients with cancer diagnoses across treatment groups suggest that patients undergoing surveillance or no treatment are being reviewed sufficiently to identify incident cancers. Nonetheless, the high proportion of patients who were diagnosed with cancer within a year of HGD diagnosis supports the BSG recommendation of endoscopic treatment as the preferred option for HGD.

Figure 2.4
Diagnoses of oesophageal and junctional cancer within one year of high-grade dysplasia biopsy among patients diagnosed with high-grade dysplasia between April 2012 and March 2016



2.8 Key findings and recommendations for HGD

HGD Key Finding 1: The number of HGD patients reported to the Audit has declined over time, and case ascertainment could be as low as 20% in some regions. Consequently, the Audit does not have a complete picture of HGD management across England.

Recommendation
Regular review of HGD cases by local teams and submission to the Audit is needed. To help hospital staff, the Audit team is working with users to improve the ease with which data can be uploaded into the data collection IT system. We are also reviewing the dataset to reduce the number of required data items.

HGD Key Finding 2: 86% of patients with HGD had their original diagnosis confirmed by a second pathologist. This proportion remained fairly constant over the three years for which data are available.

Recommendation
Where appropriate, MDTs should ensure that cases of suspected HGD have been confirmed by a second pathologist.

HGD Key Finding 3: 86% of patients with HGD are discussed at an MDT meeting, although the proportion has not increased since the Audit began in 2012.

Recommendation
NHS trusts should ensure there are clear protocols with neighbouring hospitals for the referral of all cases of HGD to the specialist MDT. Local audits should be undertaken to identify the reasons why cases are not discussed and to take any required action.

HGD Key Finding 4: The proportion of patients with HGD who receive endoscopic treatment has increased since 2012. These findings indicate that increasing numbers of patients are being treated in line with current recommendations for HGD. However, there is a great deal of variation in the use of active treatment across English regions.

Recommendation
MDTs should ensure that all patients with HGD are considered for endoscopic treatment, and Cancer Alliances should set out clear pathways for referral to specialist treatment centres, where necessary. Alliances with higher rates of non-treatment should also consider conducting local audits to explore the reasons for this.

HGD Key Finding 5: The majority of patients undergoing surveillance are seen within 3 months, but some are not seen for more than 6 months. Current recommendations state that patients who are not actively treated should have repeat endoscopy at 3 month (HGD) or 6 month (low-grade dysplasia) intervals.

Recommendation
MDTs should ensure that all patients with HGD are considered for endoscopic treatment, and Cancer Alliances should set out clear pathways for referral to specialist treatment centres, where necessary. Alliances with higher rates of non-treatment should also consider conducting local audits to explore the reasons for this.

HGD Key Finding 6: Despite recommendations for centralisation of HGD treatment in specialist centres, such changes are not evident in the Audit data.

Recommendation
While small numbers might reflect low case ascertainment in some regions, NHS trusts that treat under 5 patients per year should consider referral of these patients to their local specialist centre in line with BSG recommendations.

3. Participation in the OG cancer prospective audit

3.1 Audit inclusion criteria

The 2018 Audit Report focuses on patients with oesophageal-gastric (OG) cancer in England and Wales between 1 April 2015 and 31 March 2017. As in previous Audit reports, we used two years' worth of data to increase the robustness of our findings. We have also analysed data from patients diagnosed from April 2012 to March 2017 to evaluate changes that have occurred over the 5-year period since the NOGCA Clinical Audit Platform (CAP) data collection system was introduced in 2012.

Cancer patients were eligible for inclusion in the audit if they were diagnosed with invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach (ICD10 codes C15 and C16), and were aged 18 years or over. Patients with endocrine tumours or gastrointestinal stromal tumours (GISTs) were not included in the Audit due to the different behaviour and management of these tumours.

3.2 Case ascertainment

Case ascertainment for patients diagnosed with OG cancer in England was derived by comparing the number of tumour records submitted to the Audit with the number of patients in the Hospital Episode Statistics (HES) database with a diagnosis code for OG cancer (ICD 10 codes C15 or C16) recorded in the first episode. Case ascertainment for Wales was derived using the equivalent hospital administrative database for Wales (Patient Episode Database for Wales, PEDW).

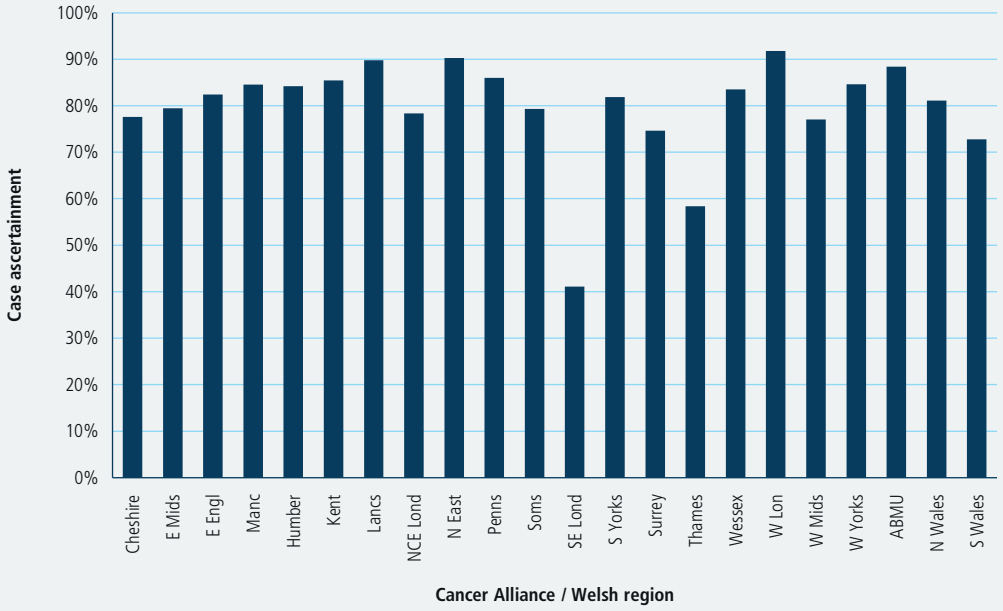
Case ascertainment for the period April 2015 to March 2017 was estimated to be 79.8% in England and 75.6% in Wales (Table 3.1). The estimated case ascertainment rates for each NHS organisation in England and Wales are given in Annex 5.

Since 2013, case ascertainment has remained around 80%. A component of these missing records probably relates to patients who receive no active treatment. However, there is also some variation across the geographical regions, as shown in Table 3.2.

Table 3.1
Number of data forms submitted to the Audit between April 2015 and March 2017 in England and Wales

	England	Wales
Number of tumour records	19,769	1,263
Case ascertainment (tumour records)	79.3%	75.6%
Number of surgical records	4,236	200
Case ascertainment (surgical records)	89.7%	70.2%
Number of pathology records	3,899	126
Number of oncology records		
Curative	4,631	104
Non-curative	7,075	104
Number of endoscopic / radiological palliation records	2,471	85

Figure 3.1
Estimated case ascertainment by geographical region



3.3 Completeness of submitted surgical records

Annex 6 describes the number of surgical / pathology records and the quality of the data items used to derive the surgical indicators. Excellent data quality on surgical treatment is important because the Audit figures are used to produce consultant-level outcomes as part of the COP initiative as well as to describe organisational performance. In addition, the suite of outcome indicators for curative surgery relies on information in the pathology records. It is important that Cancer Centres ensure they return all pathology records associated with patients undergoing curative surgery as well as the surgical record.

Overall, completeness of surgical records after the second submission deadline was 89.7% in England, a decrease from the 95.7% reported last year. Completeness of surgical records for Wales was 70.2%, compared to 89.3% last year. The fall in completeness is concerning and needs to be examined locally.

3.4 Key findings and recommendations

OGC Key Finding 1: Case ascertainment has not changed significantly over time, but completeness of surgical records has decreased from last year.

Recommendation
NHS trusts and local health boards should continue to upload tumour records and surgical records in a timely manner. Where a patient has treatment in a cancer centre, it is important that data collection is coordinated between the diagnosing hospital and the specialist cancer centre so that tumour records and treatment records are not missed.

4. Patients with OG cancer

The characteristics of patients diagnosed with OG cancer between 1 April 2015 and 31 March 2017 have stayed relatively stable over time. The disease predominantly affects older people and occurs more frequently in men rather than women (see Table 4.1).

There was a steady shift in the relative distribution of oesophageal and stomach cancer, with oesophageal tumours (upper, middle and lower oesophagus) accounting for a greater proportion in the last five years, rising from 51.7% in 2012/13 to 60.1% in 2016/17 (see Figure 4.1). This shift reflects changes in the prevalence of risk factors (notably rising levels of obesity contributing to increased rates of oesophageal cancer, and reductions in *H. pylori* infections leading to fewer cases of gastric cancer [Cancer Research UK, 2018b]).

Table 4.1
Summary of patient characteristics by type of OG tumour in England and Wales

	Oes SCC	Oes ACA upper / mid	Oes ACA lower / SI	GOJ SII/SIII	Stomach
Number of patients (%)	4422 (21.0)	1360 (6.5)	7553 (35.9)	2225 (10.6)	5472 (26.0)
Proportion of patients who are male	50%	69%	81%	77%	64%
Median age (years) of men	70	72	70	70	75
Median age (years) of women	74	77	74	72.5	76
Performance status (%)					
0	30.9	31.8	37.4	37.2	29.2
1	34.6	33.4	34.6	34.5	31.9
2	20.3	18.6	16.6	15.8	20.8
≥3	14.1	16.1	11.4	12.5	18.2
Comorbidities (%)					
0 comorbidities	58.3	58.2	55.4	55.4	55.3
1 comorbidities	26.1	25.7	25.7	26.6	26.2
≥2 comorbidities	15.6	16.2	18.9	18.1	18.5

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, GOJ – gastro-oesophageal junction

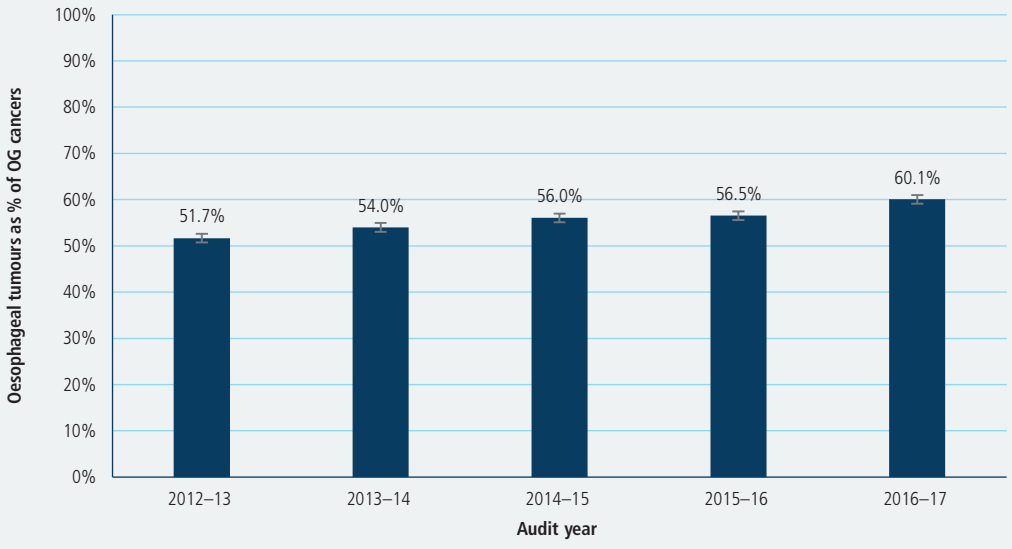
Tumours of the GOJ are described using the Siewert classification [Siewert et al 1996]:

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.

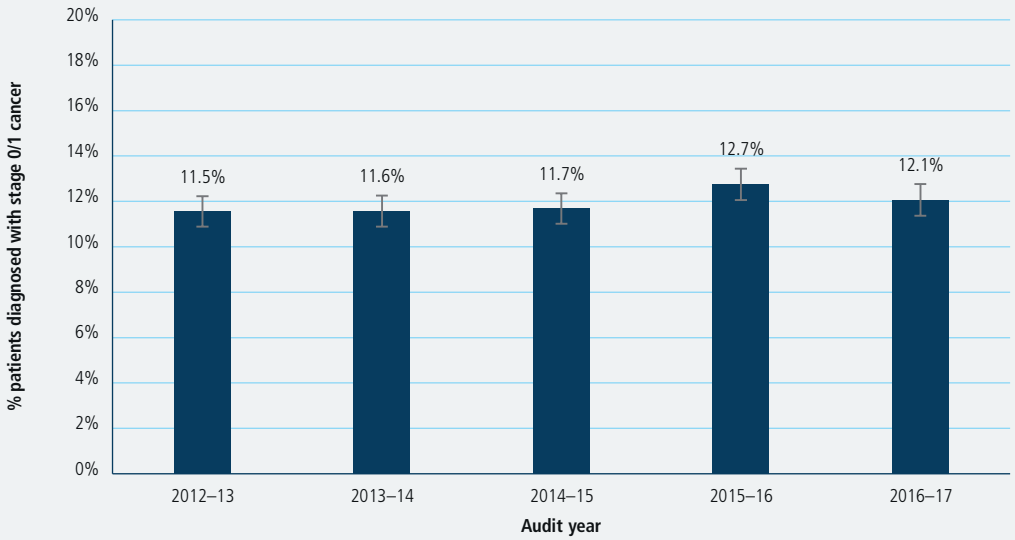
III. Subcardial gastric adenocarcinoma the centre of which is within the 5cm distal to the anatomical cardia. It may infiltrate the gastro-oesophageal junction from below.

Figure 4.1
Oesophageal tumours as a proportion of OG cancers from audit year 2012/13 to 2016/17



With the launch of the national "Be Clear on Cancer" campaign in 2015 to raise awareness of the risk factors and early symptoms of OG cancer [Cancer Research UK, 2018b], we assessed whether there had been any changes in the stage of cancer upon presentation. The proportion of patients with early-stage cancer did not change significantly from April 2012 to March 2017, or before and after the launch of the campaign in 2015 (Figure 4.2).

Figure 4.2
Proportion of patients diagnosed with stage 0/1 OG cancer (clinical TNM) by Audit year, from April 2012 to March 2017 in England and Wales



5. Patterns of care at diagnosis

5.1 Route to diagnosis

Patients can be diagnosed with OG cancer after following a number of different pathways. Typically, an individual may present to their general practitioner (GP) with symptoms that suggest cancer might be a potential cause, and guidelines recommend that GPs refer patients as early as possible [Allum et al 2011]. However, it is also possible that diagnosis occurs after an emergency admission, following referral by another hospital consultant from a non-emergency setting, or as a result of a surveillance gastroscopy. Of these, services are recommended to monitor and seek ways to reduce the chance of patients being diagnosed after emergency admission as these patients are more likely to have late stage disease and, consequently, are less likely to undergo curative therapies than those diagnosed via other routes [Palser et al 2009, 2010].

The routes to diagnosis for the 2015–2017 Audit cohort are summarised in (Table 5.1). The majority of patients (65.6%) were diagnosed following referral by their GP. Of those patients who were referred by their GP, 78.1% were referred on the "two-week wait" suspected cancer pathway.

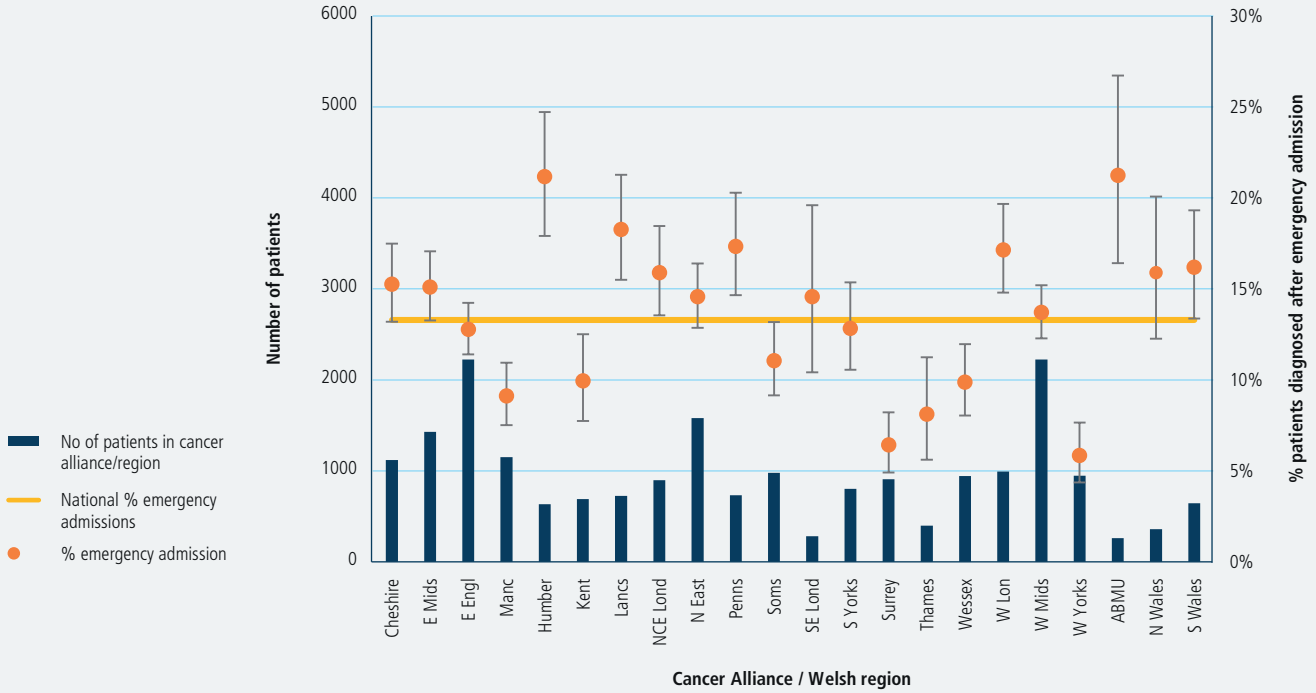
Table 5.1
Routes to diagnosis among OG cancer patients diagnosed between April 2015 and March 2017 in England and Wales

Route to diagnosis	No. of patients	%
Emergency admission	2,740	13.3
GP referral*	13,522	65.6
Other hospital consultant	4,022	19.5
Open access endoscopy	202	1.0
Barrett's surveillance	126	0.6
Total	21,032	
Missing	420	
*Priority of GP referral		
Routine	1,339	9.9
Urgent	1,597	11.9
Two week wait	10,462	78.1
Missing	124	

The proportion of patients diagnosed after emergency admission was 13.3% in the current cohort, a slight decrease from the 13.7% published in last year's report. Similar to last year, there was variation in emergency diagnoses by Cancer Alliance / Welsh region (Figure 5.1). Some Alliances have emergency diagnosis rates that are significantly lower than the national average, while others have rates that are much higher. Regional variation may be due to a combination of patient characteristics (such as deprivation) and practitioner factors (such as rate of referral for endoscopy).

The proportion of emergency diagnoses by NHS trust / local health board is given in Annex 7.

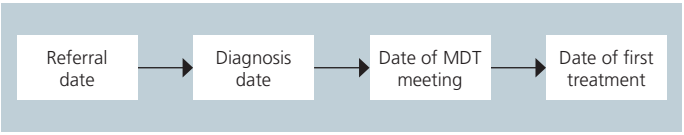
Figure 5.1
Proportion of patients diagnosed with OG cancer following emergency admission between April 2015 and March 2017, by Cancer Alliance/Welsh region



Over the five years since 2012, the rate of diagnosis after emergency admissions has not changed greatly nationally in England and Wales from year to year, fluctuating between 13% and 14%. The large regional variations have also been stubborn in their persistence.

5.2 Times from diagnosis to the start of treatment

The NOGCA dataset captures four key dates along the patient pathway:



In the 2017 Audit Report, for the first time we reported on time from diagnosis to first treatment for different treatment modalities across the various geographical regions. We provide similar figures in this report but have expanded the waiting times to include more key points in the patient pathway.

Among patients in the 2015–2017 cohort (Table 5.2):

- Patients who had surgery alone had the longest median waiting times at all key points in the pathway.
- Patients who had palliative endoscopic/radiological treatment had the shortest waiting times, which might reflect the need for rapid treatment to alleviate symptoms.
- Half of patients receiving neoadjuvant treatment/ palliative oncology had treatment within 2 months of referral.

Table 5.2:
Waiting times between key dates in the patient pathway by treatment modality in England and Wales (patients diagnosed between April 2015 and March 2017). Figures provide median and the limits of the interquartile range

Modality	No. of patients	Time from referral to diagnosis	Time from diagnosis to MDT	Time from MDT to first treatment	Time from referral to first treatment
Surgery only	972	18 (6,39)	28 (10,47)	29 (16,53.5)	94 (63,144)
Neo adjuvant treatment	1748	14 (7,24)	27 (14,38)	20 (12,32)	62 (55, 81)
Palliative oncology	4624	14 (8,25)	14 (6,28)	24 (15,38)	61 (48, 87)
Palliative endoscopic / radiological	2114	14 (7,24)	12 (4,23)	12 (4,54)	50.5 (30,112)

NB: Reported on patients with complete treatment records

Among the Cancer Alliance / Welsh regions, most had similar distributions of waiting times for palliative oncology (Figure 5.4) and palliative endoscopic/radiological treatment (Figure 5.5), with median waits close to the national average. However, there was considerable variation in waiting times for patients who had curative surgery (Figure 5.2).

Figure 5.2
Waiting time from referral to surgery for patients diagnosed between April 2015 and March 2017 in England and Wales

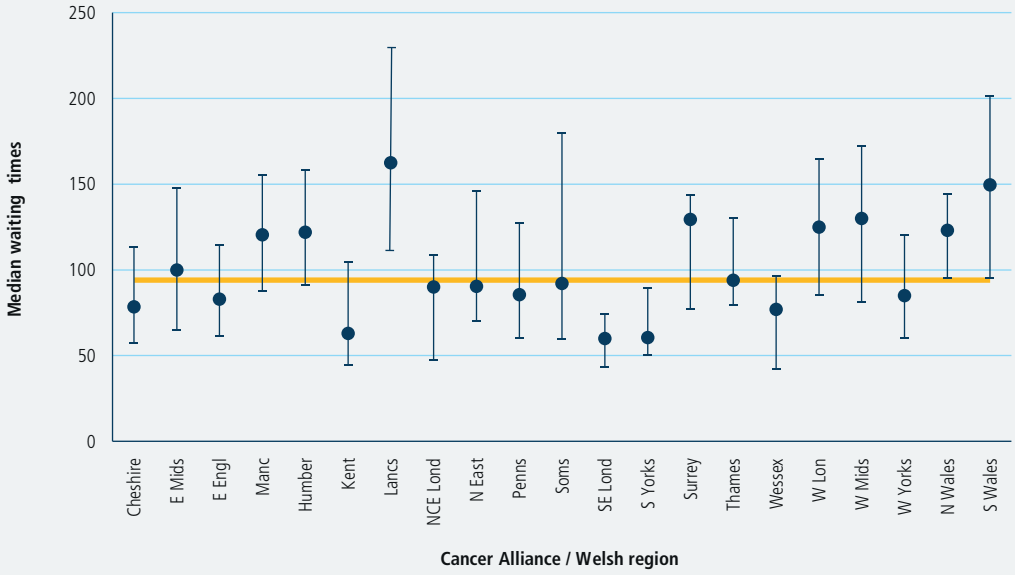


Figure 5.3
Waiting time from referral to first neoadjuvant treatment for patients diagnosed between April 2015 and March 2017 in England and Wales

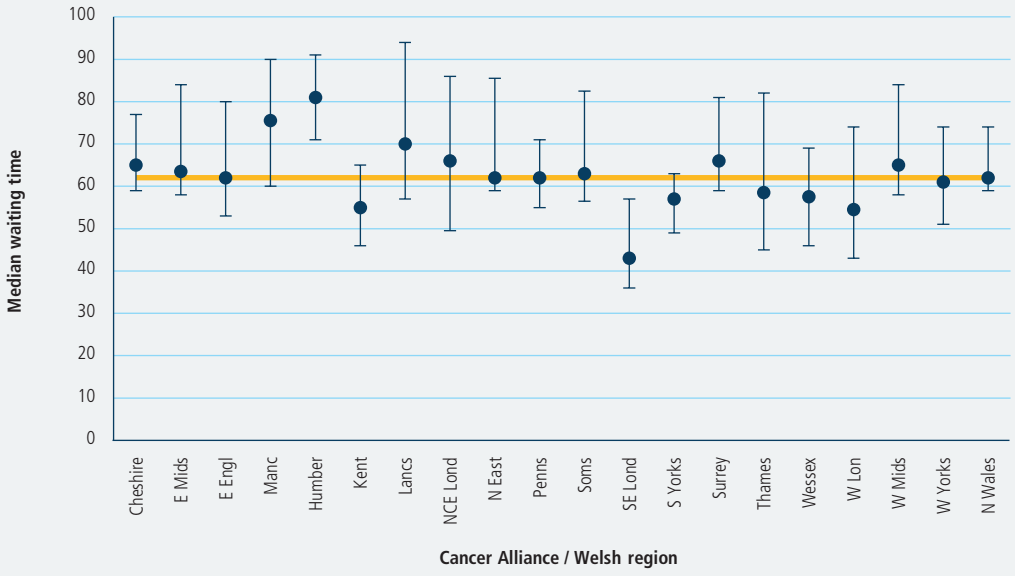


Figure 5.4
Waiting time from referral to first palliative oncology treatment for patients diagnosed between April 2015 and March 2017 in England and Wales

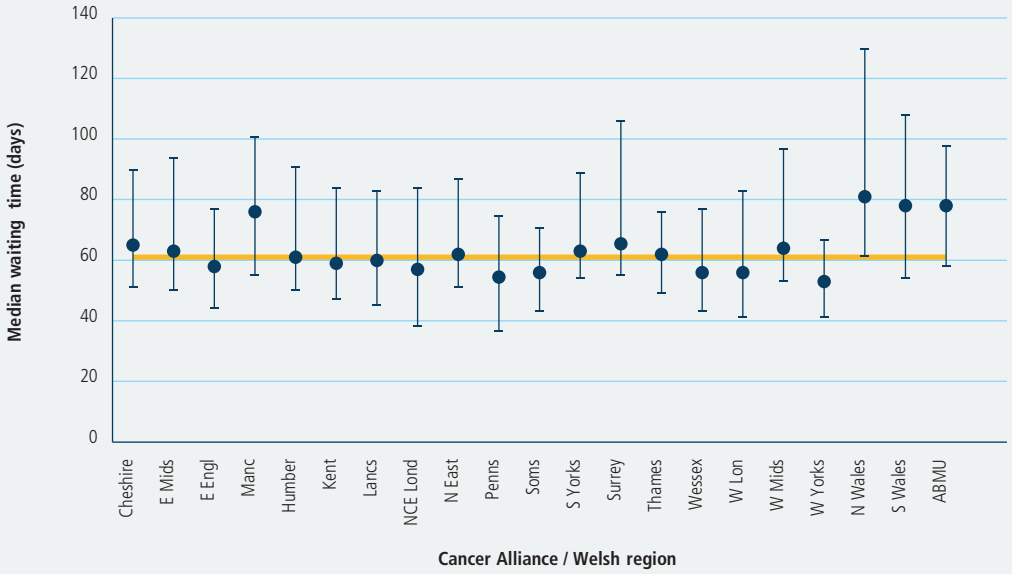
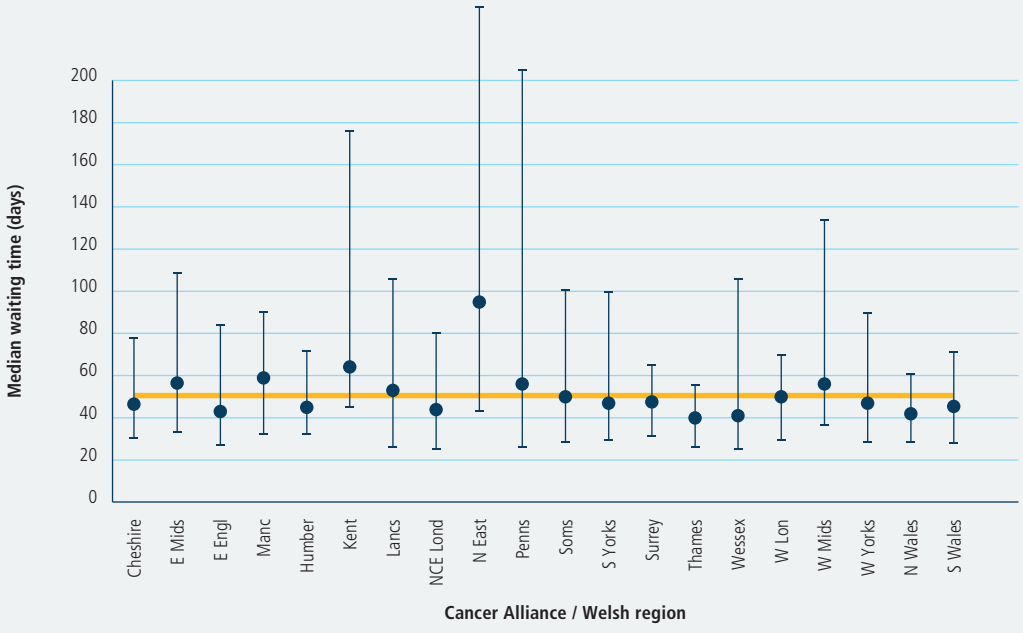


Figure 5.5
Waiting time from referral to first palliative endoscopic/radiological treatment for patients diagnosed between April 2015 to March 2017 in England and Wales



5.3 Key findings and recommendations

OGC Key Finding 2: There was substantial variation in emergency diagnoses by Cancer Alliance / Welsh region (ranging from 5% to 22%), likely due to a combination of patient characteristics and practitioner factors. The rate of emergency diagnoses has remained unchanged over the past five years, and regional variations also persisted over time.

Recommendation
Commissioners, GP practices and NHS trusts / local health boards need to explore ways to improve rates of early diagnosis and, in particular, investigate the reasons for high rates of diagnosis after emergency admission.

OGC Key Finding 3: Waiting for treatment can be an anxious time for patients. Some patients may not receive treatment until several months after referral.

Recommendation
Together with commissioners, MDTs should review waiting times through the care pathways and discuss ways to improve the progression of patients from diagnosis through to staging and treatment.

6. Staging investigations

Patients with a new diagnosis of OG cancer should undergo appropriate staging investigations to determine whether the disease is potentially amenable to curative therapy. All patients diagnosed with OG cancer are recommended to have an initial CT scan to assess the spread of disease and look for evidence of metastatic disease. If the cancer is localised and the patient is suitable for curative treatment, further staging investigations are done to determine the location and stage of cancer.

The Audit collects information on whether an initial CT scan was performed and the subsequent use of endoscopic ultrasound (EUS), staging laparoscopy, PET/PET-CT scan and other staging investigations.

For patients diagnosed between April 2015 and March 2017, the quality of the data on staging investigations submitted to the Audit varied across NHS organisations. To prevent data from hospitals with poor levels of data submission adversely affecting the results, we excluded from the analysis those organisations which had a disproportionately low proportion of CT scans (less than 50% of patients) and those that reported no patients with a curative treatment intent having either an EUS (oesophageal tumours) or laparoscopy (gastric tumours).

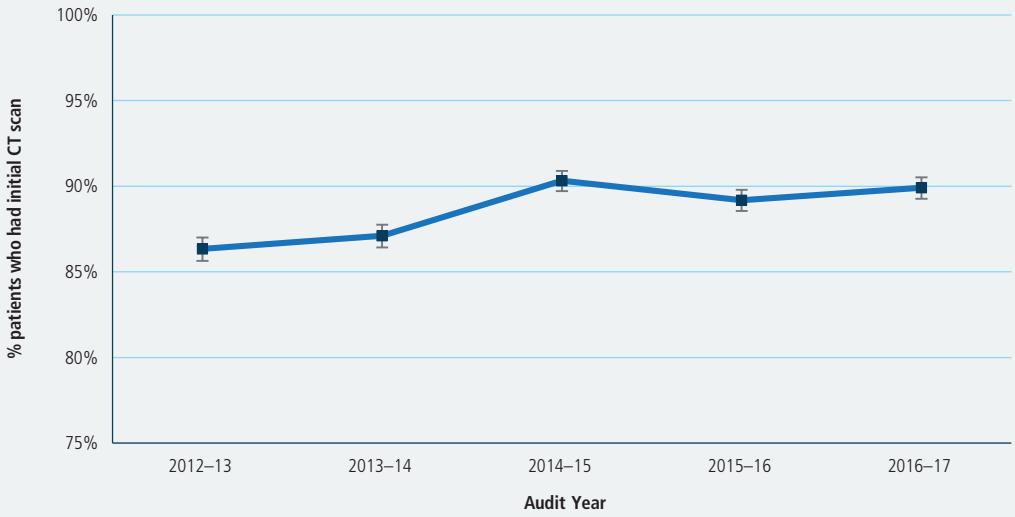
The proportion of patients who had CT scans in the 2015–2017 cohort was 89.5% overall. There was a small increase in the proportion of patients who had a CT scan over the past 5 years, from 86.3% in 2012/13 to 89.9% in 2016/17 (Figure 6.1). The proportion of patients recorded as having a CT scan was consistently high among most patient groups, but decreased among patients with a performance status of 3 or 4, or who were older than 80 years when diagnosed. The proportion of patients who underwent a CT scan by NHS trust / local health board is given in Annex 8.

Box 2
Recommended staging investigations for patients with oesophago-gastric cancer

Recommended staging investigations for oesophageal and gastric cancer [Allum 2011]

- 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.

Figure 6.1
Proportion of OG cancer patients who had initial CT scan, by Audit year



Among patients with oesophageal cancer who had a curative treatment plan, approximately half were recorded to have EUS, with this falling slightly from 50.5% in 2012/13 to 46.1% in 2016/17. Over the same period, the use of PET for patients with oesophageal cancer increased from 63.2% to 71.0% (Figure 6.2). The changing patterns in the use of EUS and PET reflect the changing clinical evidence on the effectiveness of each procedure. Recent NICE guidance recommends that PET should be offered to people with oesophageal tumours that are suitable for radical treatment, and EUS should only be offered if it helps guide ongoing management [NICE 2018]. However, there was variation in the recorded use of EUS and PET across the Cancer Alliances and Welsh regions (Figure 6.3).

There was little change in the proportion of patients with gastric cancer recorded as having staging laparoscopy, remaining around 50% over the five year period (Figure 6.4).

Figure 6.2
Proportion of oesophageal cancer patients with curative treatment intent who had endoscopic ultrasound (EUS) and Positron Emission Tomography (PET), by Audit year

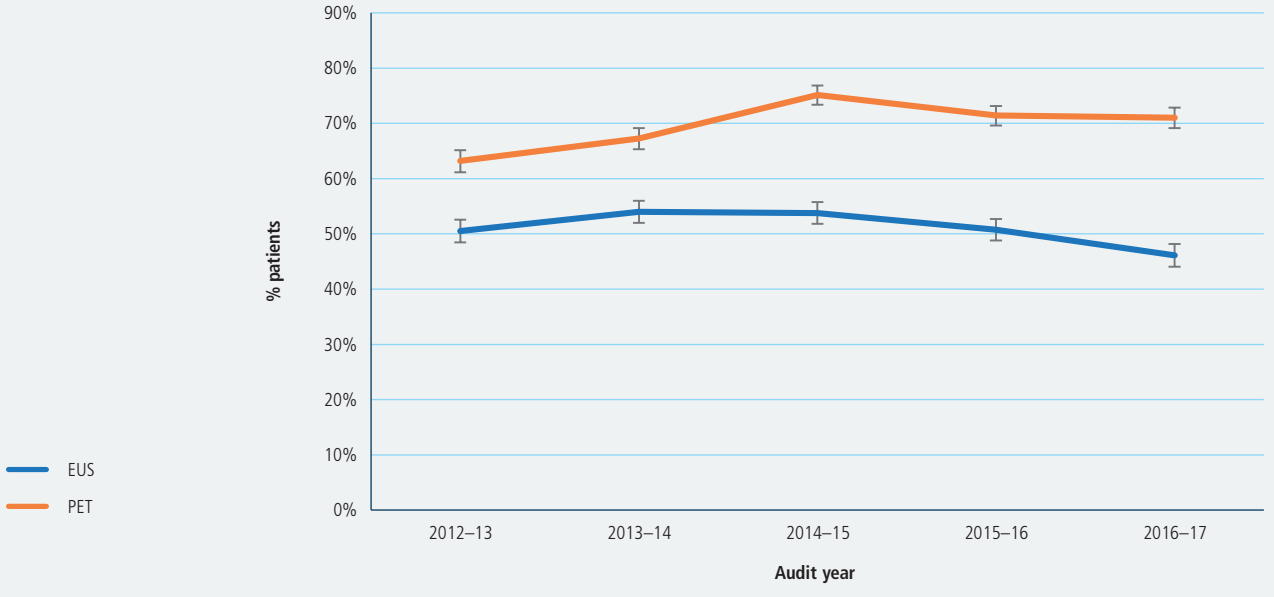


Figure 6.3
Use of EUS and PET staging procedures among oesophageal cancer patients with curative treatment intent by geographical region

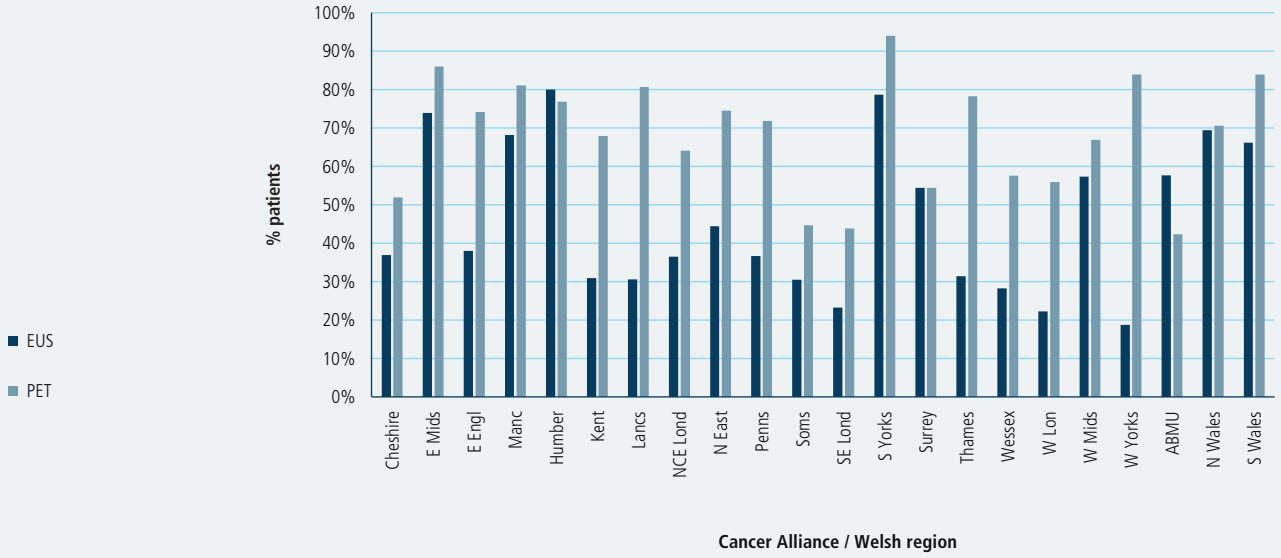
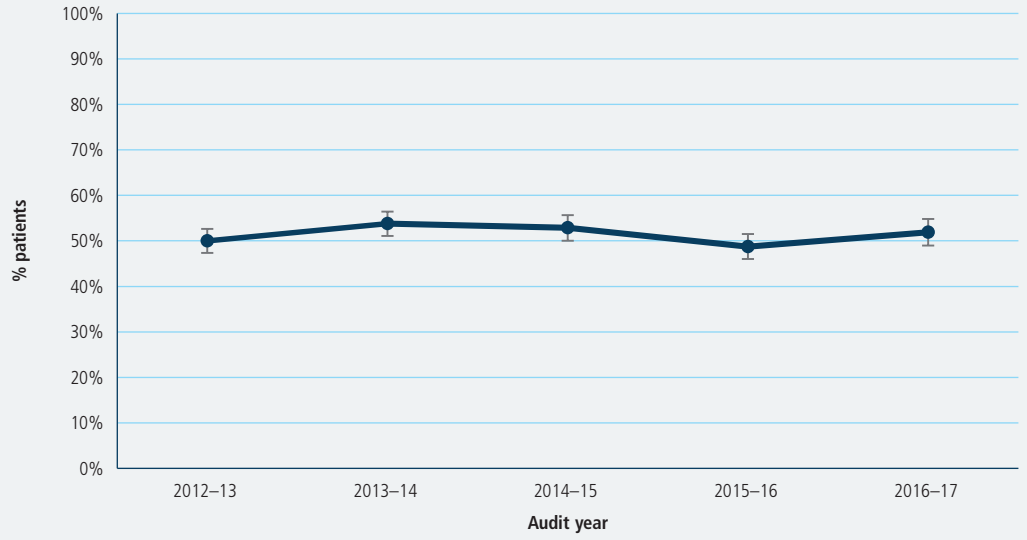


Figure 6.4
Proportion of gastric cancer patients with curative treatment intent who had staging laparoscopy (LAP), by Audit year



6.1 Key findings and recommendations

OGC Key Finding 4: UK guidelines recommend that all patients with a new diagnosis of OG cancer have a staging CT scan. There has been a small increase in the recording of CT scans from April 2012 to March 2017, and patterns of use are consistent overall with current NICE guidance.

Recommendation
NHS trusts / local health boards should examine their use of staging investigations and the submission of data about these investigations where their use is reported to be low. This may require better coordination between MDT team members and data mangers in the NHS trust / local health board so that complete information is submitted to the Audit.

OGC Key Finding 5: Among patients with oesophageal cancer, the recorded use of EUS has decreased and PET has increased over the same period, which reflects changes in the evidence on the effectiveness of PET scans [Findlay et al 2015] as well as their availability. Nonetheless, there is considerable variation in the recorded use of EUS and PET across the regions. This might reflect different local protocols on how EUS and PET are used given the extent of disease identified by the CT scan.

Recommendation
MDTs should ensure that all OG cancers are appropriately staged according to national recommendations; in particular, MDTs should ensure that patients with oesophageal cancer being considered for radical treatment have a PET-CT scan. MDTs should also ensure that staging laparoscopy is used in appropriate cases.

7. Treatment planning

Following preliminary staging investigations, the treatment options available for a patient with OG cancer are discussed by the upper gastrointestinal (GI) multidisciplinary team (MDT), which typically includes a gastroenterologist, a surgeon, a pathologist and a radiologist. Treatment decisions take account of both disease stage and patient factors such as comorbidities, general fitness and nutritional status, and patient preference.

Curative treatment options for OG cancer include surgery, oncological therapy (alone or in combination with surgery) and endoscopic therapy:

- Surgery with or without oncological treatment is recommended if there is evidence of the tumour invading deeper than the most superficial submucosal layer as there is a higher risk of lymphatic spread. The use of neoadjuvant oncology and curative surgery is described in detail in Chapters 8 and 9.

- Curative endoscopic treatment is only possible where the disease is limited to the mucosa (or rarely the most superficial sub-mucosal layer). In this situation, the risk of the disease spreading to the lymph nodes is minimal and good long term outcomes can therefore be achieved through localised endoscopic therapy.

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 (no active treatment). Use of palliative treatment options is described in Chapter 10.

7.1 Planned treatment modality

Approximately two thirds of patients diagnosed between April 2015 and March 2017 had either no active treatment or palliative treatment, and 38.6% of patients had a curative treatment plan (Figure 7.1).

As in previous years, patients with lower oesophageal and junctional tumours were more likely to have a curative treatment plan than those with other types of tumour (Table 7.1). The proportion of patients with a curative treatment intent varied by Cancer Alliance/Welsh region (Figure 7.2).

Figure 7.1
Treatment intent of patients diagnosed with OG cancer between April 2015 and March 2017 in England and Wales

Table 7.1
Treatment intent by type of tumour in patients diagnosed with OG cancer between April 2015 and March 2017

	Oesophageal SCC	Oes ACA upper / mid	Oes ACA lower / S1	G-O junction S11/S111	Stomach
Curative	1661 (37.6)	431 (31.7)	3238 (42.9)	957 (43.0)	1831 (33.5)
Palliative	2761 (62.4)	929 (68.3)	4315 (57.1)	1268 (57.0)	3641 (66.5)
Total	4422	1360	7553	2225	5472

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, GOJ – gastro-oesophageal junction

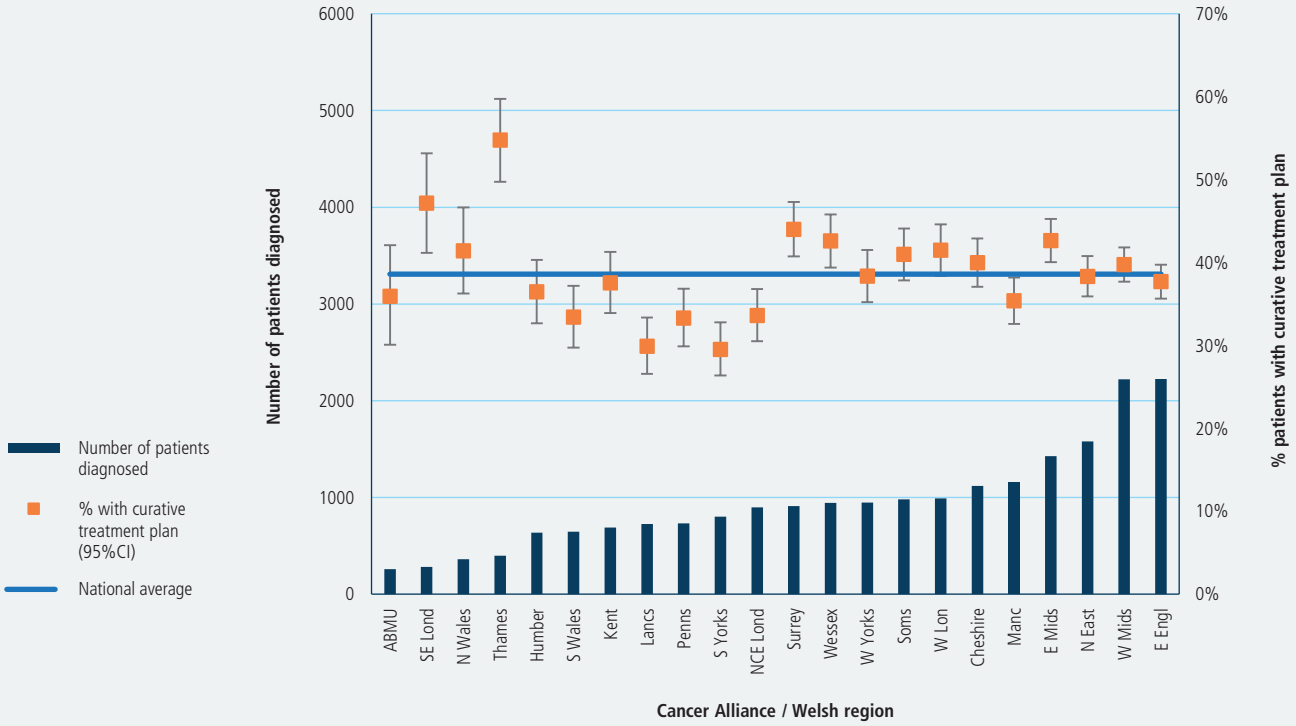
Tumours of the GOJ are described using the Siewert classification [Siewert et al 1996]:

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.

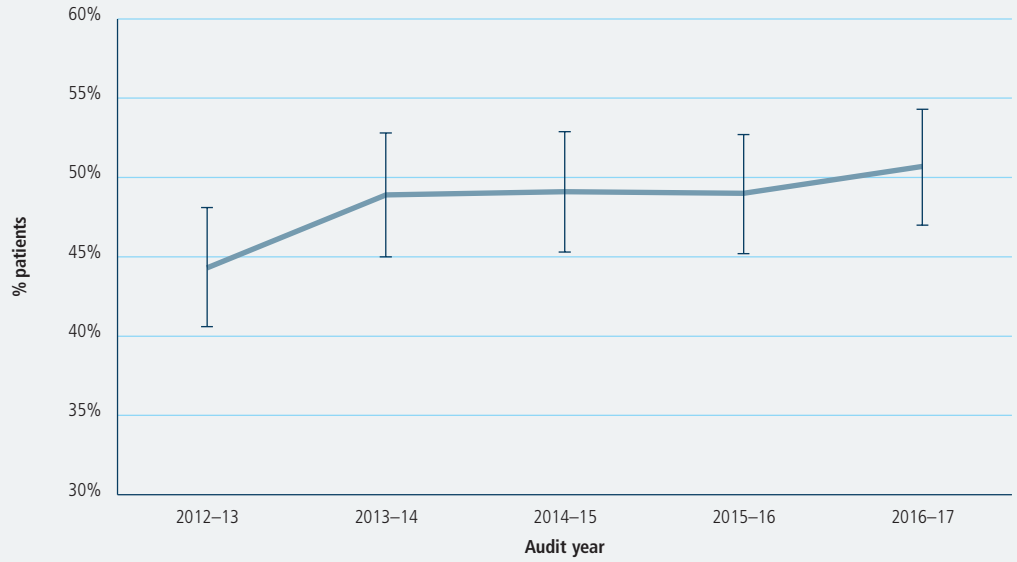
III. Subcardial gastric adenocarcinoma, the centre of which is within the 5cm distal to the anatomical cardia. It may infiltrate the gastro-oesophageal junction from below.

Figure 7.2
Proportion of OG cancer patients managed with curative treatment plan by Cancer Alliance/Welsh region in England and Wales



In the 2016 Audit report, we described an increase in the use of planned definitive chemoradiotherapy in patients with oesophageal squamous cell carcinoma (SCC). A year-on-year analysis of planned modality shows that there was a slight increase in the use of definitive chemoradiotherapy over five years, from 44.3% in 2012–13 to 50.7% in 2016–17 (Figure 7.3). This increase is in line with the BSG guideline for oesophageal SCC, which recommends: 1) definitive chemoradiotherapy for proximal oesophageal tumours and 2) chemoradiotherapy alone or combined with surgery for tumours of the middle and lower oesophagus.

Figure 7.3
Proportion of patients with oesophageal squamous cell carcinoma (SCC) who had definitive chemoradiotherapy, by Audit year



7.2 Planned curative treatment and surgical records

As described above, we found that 39% of patients were reported to have a curative treatment plan. However, only 21% of patients had a curative surgery record submitted to the audit, despite this being the dominant type of curative treatment. There are various possible reasons for this difference (Figure 7.4):

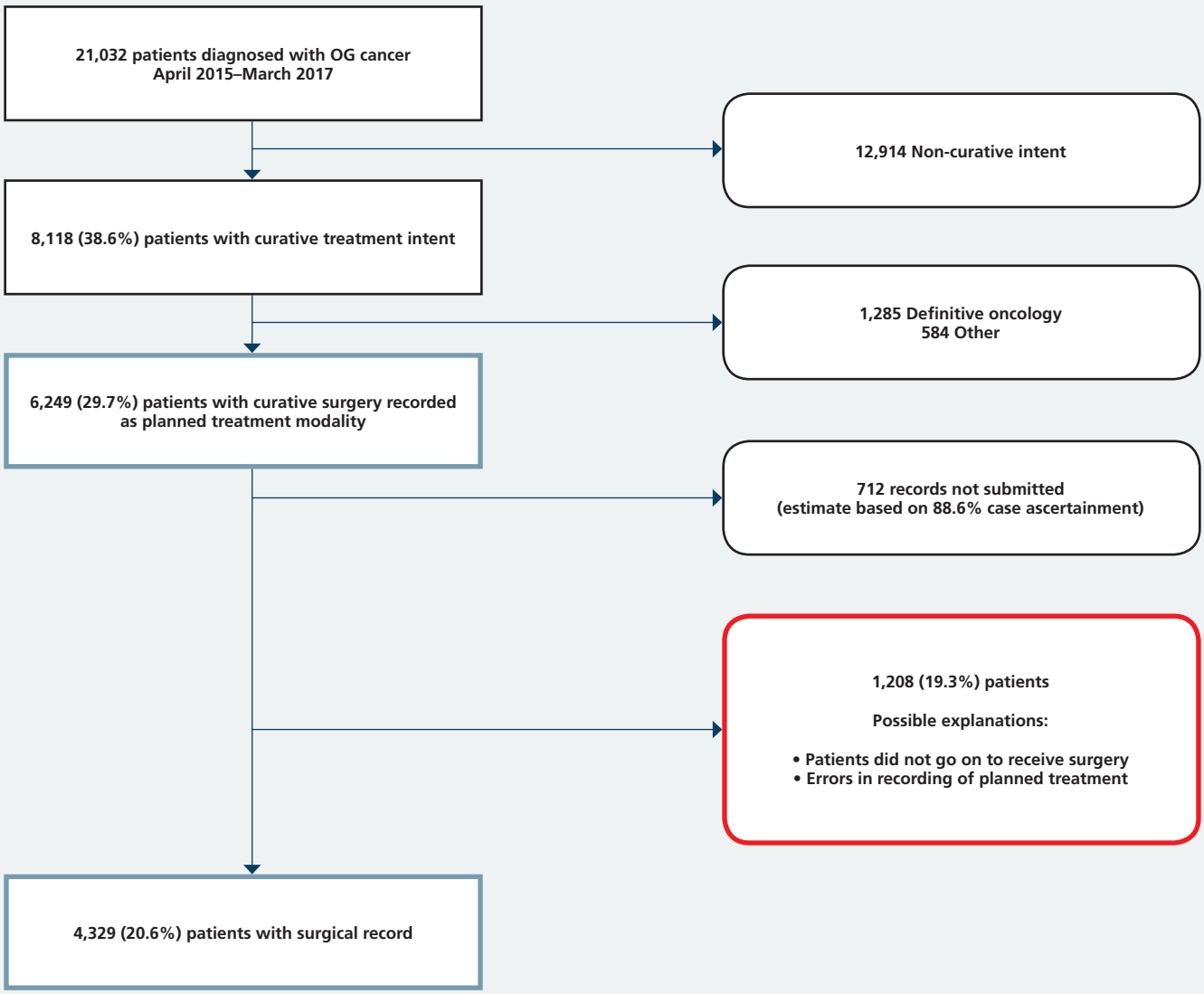
1. Some patients with a curative treatment plan received definitive chemo-radiation and therefore would not have a surgery record.

2. Some surgical records may not have been submitted to the audit despite patients having received curative surgery, as reflected in the surgical record case ascertainment of 89%.

3. Some patients who were initially thought to be fit enough to have curative treatment may have gone on to receive palliative treatment. This could be due to a number of factors including disease progression during neo-adjuvant treatment, or a discordance between the initial treatment plan recommended at the MDT and treatment actually agreed between the treating clinician and the patient.

4. For a small proportion of patients, the treatment intent data item may have been coded incorrectly. For example, 6.8% of patients with recorded curative treatment intent had 'no active treatment' recorded as the planned modality.

Figure 7.4
Planned curative treatment and surgical records



7.3 Choice of non-curative treatment modality

In the 2015–2017 cohort, the choice of non-curative treatment modality varied by cancer site (Table 7.2). As in previous years, the proportion of patients receiving best supportive care was highest in patients with stomach tumours (48.9%). Overall, there was a slight increase in the proportion of patients with a plan for best supportive care, rising from 32.8% in 2012/13 to 35.6% in 2016/17.

Table 7.2
Planned non-curative treatment modality by cancer type for patients diagnosed with OG cancer between April 2015 and March 2017 in England and Wales

	Oesophageal SCC		Oes ACA Upper / mid		Oes ACA Lower / S1		GOJ S11/S111		Stomach	
	N	%	N	%	N	%	N	%	N	%
Palliative oncology	1338	50.5	462	51.7	2237	53.8	673	55.2	1538	43.0
Palliative surgery	101	3.8	22	2.5	134	3.2	23	1.9	118	3.3
Endoscopic/ radiological palliation	445	16.8	136	15.2	559	13.5	134	11.0	172	4.8
Best supportive care	765	28.9	274	30.6	1226	29.5	390	32.0	1748	48.9
Total	2649	100.0	894	100.0	4156	100.0	1220	100.0	3576	48.9
Missing	112		35		159		48		65	

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, GOJ – gastro-oesophageal junction

Tumours of the GOJ are described using the Siewert classification [Siewert et al 1996]:

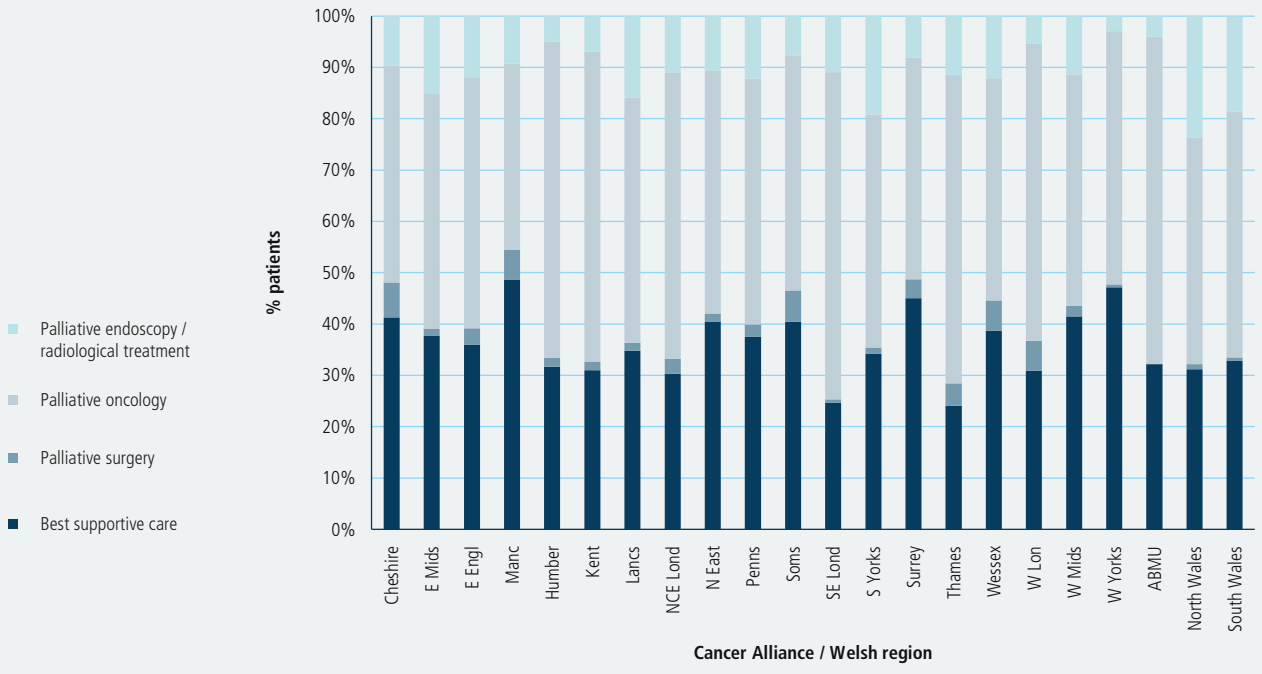
I. Adenocarcinoma of the distal oesophagus, the centre of which is within 2-5cm proximal to the anatomical cardia. It may infiltrate the gastro-oesophageal junction from above.

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.

There was variation in the choice of palliative modality across the geographical regions of England and Wales, with some Cancer Alliances actively treating patients with oncology more than others (Figure 7.5). For example, in Humber, Coast and Vale, 61.6% of patients had oncology as their planned modality. By contrast, in Greater Manchester, this modality was selected for 36.3% of patients.

Figure 7.5
Planned non-curative treatment modality by English Cancer Alliance and Welsh region using data on patients diagnosed between 2015-2017



7.4 Key findings and recommendations

OGC Key Finding 6: The proportion of patients who are candidates for curative treatments remains around 39%. There are some differences in this proportion by tumour site, with tumours around the lower oesophagus and GOJ more likely to have a curative treatment intent. Although there was some regional variation, the majority of Cancer Alliances / Welsh regions have a proportion of patients treated curatively clustered around the national average. Not all patients with a curative treatment plan go on to receive surgery, and there is regional variation in the proportion of eligible patients who have a surgical record in NOGCA.

Recommendation
NHS organisations with large differences between the number of patients with curative treatment intent and number of surgery records should investigate the reasons for this. MDTs should consider how information about planned treatments is communicated to patients.

OGC Key Finding 7: There was variation in the patterns of planned palliative modality across the regions, with some regions having comparatively high rates of best supportive care.

Recommendation
NHS organisations with comparatively low use of active cancer treatment among palliative patients should examine whether more patients would be suitable for these therapies.

8. Use of tri-modal treatment for curative patients in England and Wales

Among patients suitable for curative therapy, clinicians in the UK have tended to favour the use of neoadjuvant chemotherapy over neoadjuvant chemoradiotherapy (also known as tri-modal treatment) for patients with OG cancer due to concerns about postoperative morbidity. However, in other countries the use of neoadjuvant chemoradiotherapy (nCRT) is more common.

Evidence for the use of nCRT comes from various studies, notably the CROSS trial conducted in the Netherlands [Shapiro 2015] and the NeoSCOPE trial in the UK [Mukherjee et al 2017]. The CROSS trial reported that nCRT improved overall survival among patients with potentially curable oesophageal or GOJ cancer compared to surgery alone, while NeoSCOPE confirmed that the regimen was associated with acceptable rates of treatment complications. There remains uncertainty as to whether pre-operative chemoradiotherapy is superior to pre-/peri-operative chemotherapy alone. The NeoAEGIS trial, which aims to address this issue, is currently ongoing in the UK (ClinicalTrials Identifier: NCT01726452).

The data items in the Audit records allow us to identify a cohort of patients with documented evidence of nCRT. Moreover, linking the Audit data with the radiotherapy dataset (RTDS) and the chemotherapy dataset (SACT) enables us to derive information on the radiotherapy doses and chemotherapy drugs used in patients who had nCRT. The cohort comprised patients diagnosed between April 2013 and March 2015, as records in RTDS and SACT were only available for patients diagnosed during this period.

Of those patients who had neoadjuvant treatment as part of their curative therapy, 122 (6%) had nCRT.
These patients were treated at 23 surgical centres, although the majority (56%) were treated in five centres. The mean age of the patients undergoing nCRT was 62.8 years and 68.9% were male. Just over half (55.7%) were patients with adenocarcinomas, while 43.4% had squamous cell carcinomas. The majority of patients (91.5%) had a pre-treatment TNM stage of 2 or 3.

8.1 Use of radiotherapy within the nCRT cohort

Of the 122 patients who were documented as having nCRT, 110 (90.1%) had linked radiotherapy records. The pattern of prescribed radiotherapy regimens were as follows:

- 30 patients had the CROSS trial regimen (41.4 Gy over 23 fractions)
- 44 patients had the NeoSCOPE trial regimen (45 Gy over 25 fractions)
- 36 patients had another pattern of radiotherapy

8.2 Use of chemotherapy within the nCRT cohort

Of those patients who had nCRT, 110 (90.1%) had a record in the SACT dataset, but we were only able to extract the prescribed chemotherapy regimen for 51 of these patients. Of these patients:

- 11 patients (22%) were reported as being in the NeoSCOPE trial but the drug regimens were not specified
- 16 patients (31%) were given the regimen specified in the CROSS trial

8.3 Key findings and recommendations

OGC Key Finding 8: The Audit data confirm that only a small minority (6%) of patients who had neoadjuvant therapy prior to curative surgery received nCRT between April 2013 and March 2015. The majority of these patients followed the dosing regimens used in the CROSS and Neoscope trials. It is not clear why the standard regimens for nCRT were not being followed in all cases.

Recommendation
The upper GI community in the UK should monitor the use of nCRT to ensure that it is used in suitable candidates and that the evidence based recommendations for the radiotherapy and chemotherapy regimens are followed. NHS trusts / Health Boards are encouraged to support patient recruitment to the NeoAEGIS trial.

9. Curative surgery

In this chapter, we describe patterns of curative surgery and short-term outcomes. The majority of OG cancer patients suitable for curative treatment received surgery. Over time, the types of surgical procedures performed and the surgical approach used have changed, with an increasing use of minimally invasive surgical techniques.

In the 2015–17 audit period, surgical records were submitted for 4,436 patients, of whom 96.7% were recorded as having curative treatment intent. The type of surgery these patients had is described in Table 9.1:

- For patients having an oesophagectomy, the procedure was typically performed using the transthoracic approach (left thoraco-abdominal 7.8%, 2-phase 82.5%, 3-phase 6.3%)

- For stomach tumours, patients typically had either total or distal gastrectomy.

The distribution of surgical procedures is similar to that reported in last year's report (2014–16 cohort). In particular the proportion of open-and-shut / bypass cases has remained stable at around 4% since 2012, although it reduced significantly in the five years prior. The majority of these open-and-shut procedures were associated with stomach tumours; fewer than 1 in 200 patients with oesophageal tumours had an open-and-shut procedure.

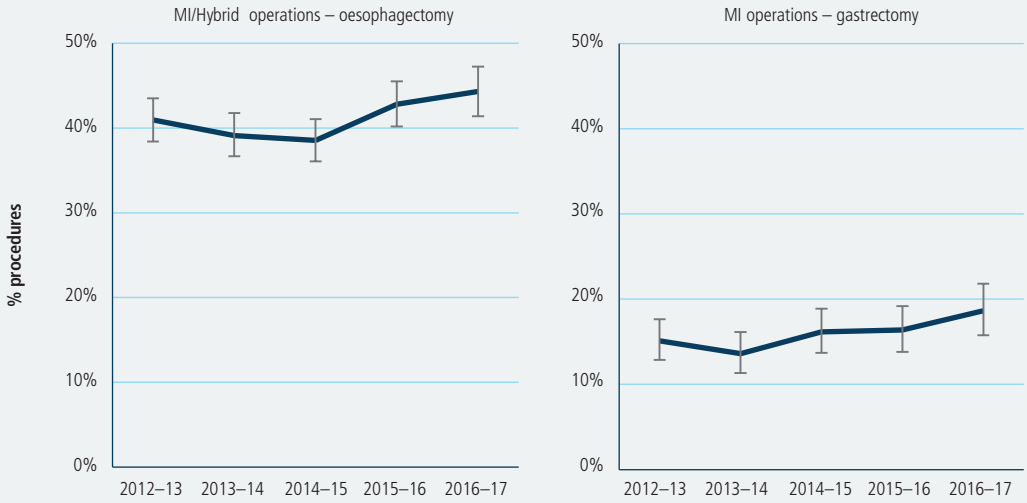
Table 9.1
Type of curative surgical procedures performed in patients diagnosed from April 2015 to March 2017, in England and Wales

	No. of operations	% within type of procedure	% in 2014 –2016 cohort
Oesophagectomy			
Transthoracic approach	2560	96.3%	95.4%
Transhiatal approach	90	3.4%	4.2%
Thoractomy (open and shut)	8	0.3%	0.4%
Gastrectomy			
Total gastrectomy	671	41.1%	38.1%
Distal gastrectomy	605	37.0%	40.1%
Other	197	12.6%	12.4%
Laparotomy (open and shut)	140	8.6%	8.5%
Bypass procedures	20	1.2%	1.0%
Total	4291		

Minimally invasive (MI) operations are performed using laparoscopic instruments under the guidance of a camera inserted through several small (5–10 mm) incisions rather than using a large incision characteristic of an open surgical approach. Fully minimally invasive oesophagectomies involve thoracoscopy for the chest phase of the operation and laparoscopy for the abdominal phase. However, oesophagectomies can be performed using minimally invasive techniques for only the abdominal or chest phase. These are commonly referred to as hybrid operations.

The 2016 Audit report showed a significant increase in MI operations between the first Audit (cohort diagnosed in 2007–2009) and second Audit cycle (cohort diagnosed 2013–2015) for oesophagectomies but not for gastrectomies. There was no statistically significant increase in MI operations for either oesophagectomies or gastrectomies in the five-year period from April 2012 to March 2017 (Figure 9.1). The use of MI surgery to resect gastric cancers remains persistently low at less than 20%.

Figure 9.1
Proportion of minimally invasive (MI) operations performed in England and Wales from April 2012 to March 2017, by audit year



9.1 Enhanced recovery after surgery (ERAS)

There is an increasing evidence base on the advantages of using enhanced recovery after surgery (ERAS) protocols. Studies have reported ERAS can produce reduced rates of complications, improved outcomes and shorter length of stay [Markar et al 2015]. ERAS protocols may include several components to aid early recovery, such as pre-operative nutritional assessment and post-operative prophylaxis for nausea and vomiting. The extent of the use of ERAS protocols in surgical centres in England and Wales is unknown. The Audit introduced two data items last year to capture the use of these protocols for patients diagnosed from April 2017, but some data were also submitted for patients in the current cohort (Table 9.2):

- data on the description of the surgical pathway were submitted for approximately half of patients
- data on the completion of the pathway were submitted for a quarter of patients.

Among patients with complete data on ERAS items, the majority completed the pathway.

Of 37 English surgical centres, six did not complete the questions on the surgical pathway for any patients. The other 31 organisations had information on the pathway for some but not all patients. None of the Welsh surgical centres completed the ERAS items.

Table 9.2
ERAS pathway in curative surgical patients diagnosed between April 2016 and March 2017 in England and Wales

	Oesophagectomy	Gastrectomy
No. of patients	1202	683
What best describes the surgical pathway that this patient followed?		
A protocolised enhanced recovery (ERAS) without daily documentation in medical notes?	29 (2.4%)	23 (3.4%)
A protocolised enhanced recovery (ERAS) with daily documentation in medical notes?	318 (26.5%)	132 (19.3%)
A standard (non-ERAS) surgical pathway	340 (28.3%)	192 (28.1%)
Missing	515 (42.9%)	336 (49.2%)
Did the patient complete the ERAS pathway?		
Yes	308 (25.6%)	138 (20.2%)
No: but partial completion	19 (1.6%)	9 (1.3%)
No: non-completion	6 (0.5%)	2 (0.3%)
Unknown / not documented	4 (0.3%)	3 (0.4%)
Missing	865 (72.0%)	531 (77.8%)

9.2 Short-term outcomes of curative surgery

Since 2013, NOGCA has benchmarked surgical outcomes for trusts and consultants, to help patients make an informed decision about where to have surgery. Information on post-operative 30-day and 90-day mortality rates and length of stay after surgery in England (at the level of trust and consultant) have been assessed and published on the AUGIS and NHS Choices websites on an annual basis. Currently, benchmarked outcomes from Wales are not published on public websites as Wales does not formally participate in the COP exercise, but there are plans to pilot the extension of consultant outcome reporting to Wales in the near future.

Figure 9.2 shows that the majority of cancer centres performed as expected for the 30-day mortality outcome given their surgical workload, with the adjusted mortality rate generally falling within the 99.8% control limit. There was one centre which fell outside this control limit, and a commentary about this result from the organisation is included in Annex 9.

All NHS surgical centres performed as expected with respect to the 90-day mortality outcome (Figure 9.3). Both sets of mortality rates were adjusted to remove differences in the mix of patients treated at the different organisations.

Figure 9.2
Funnel plot of adjusted 30-day postoperative mortality for patients diagnosed between April 2014 and March 2017 in England and Wales

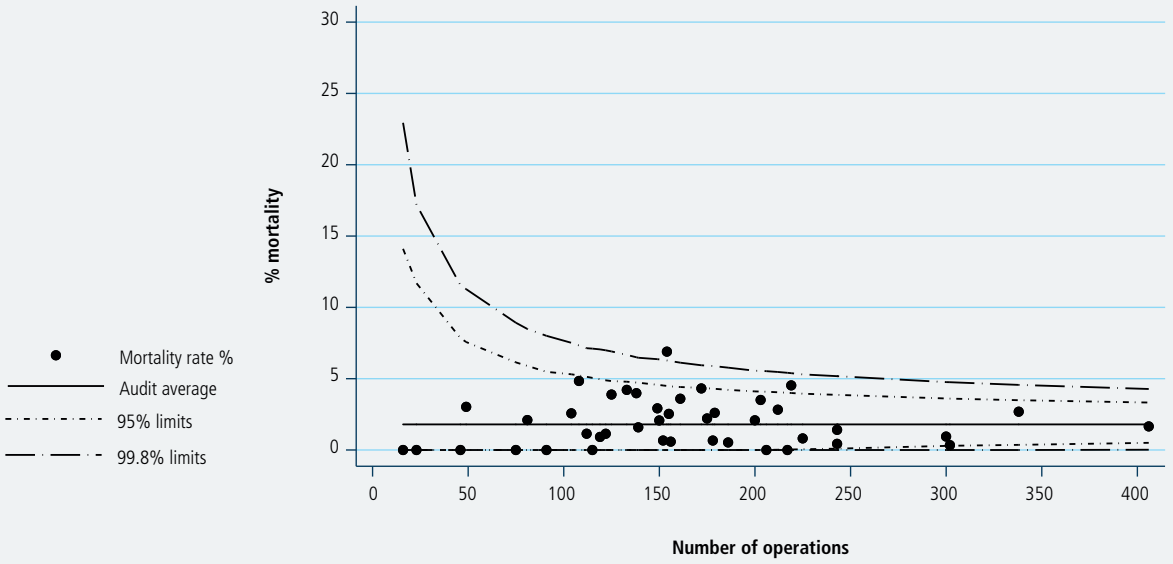
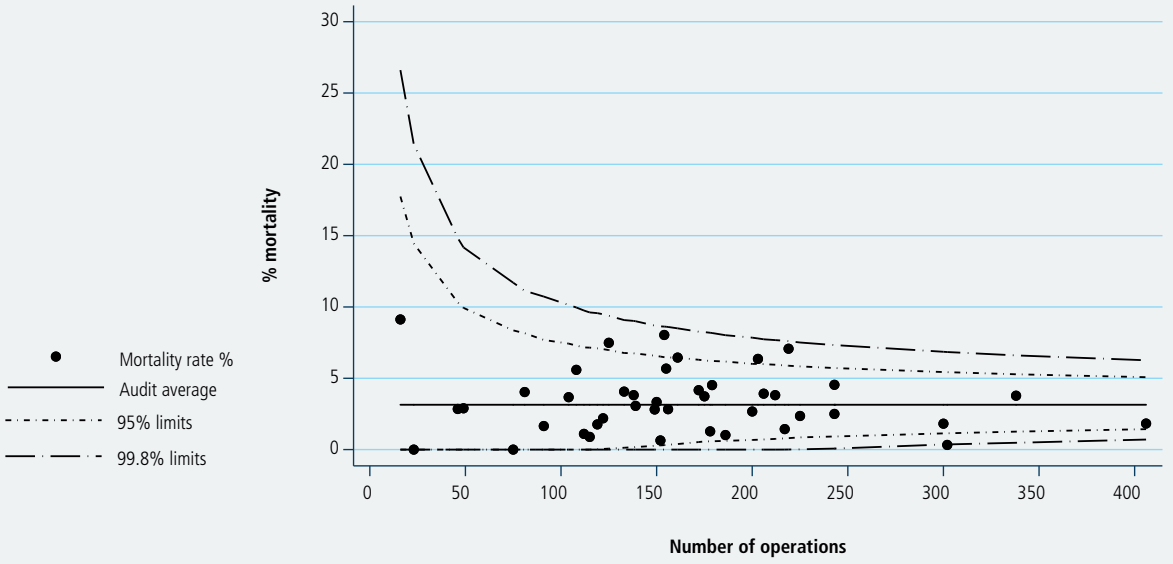


Figure 9.3
Funnel plot of adjusted 90-day postoperative mortality for patients diagnosed between April 2014 and March 2017 in England and Wales



There was no statistically significant change in either overall 30-day mortality or 90-day mortality in England and Wales from April 2012 to March 2017 for either oesophagectomy or gastrectomy. There has been a steady decrease in the median hospital length of stay over the last 10 years, which has continued in the last audit period.

Median length of stay in hospital after curative surgery has decreased from 12 days in 2012-2013 to 10 days in 2016–2017.

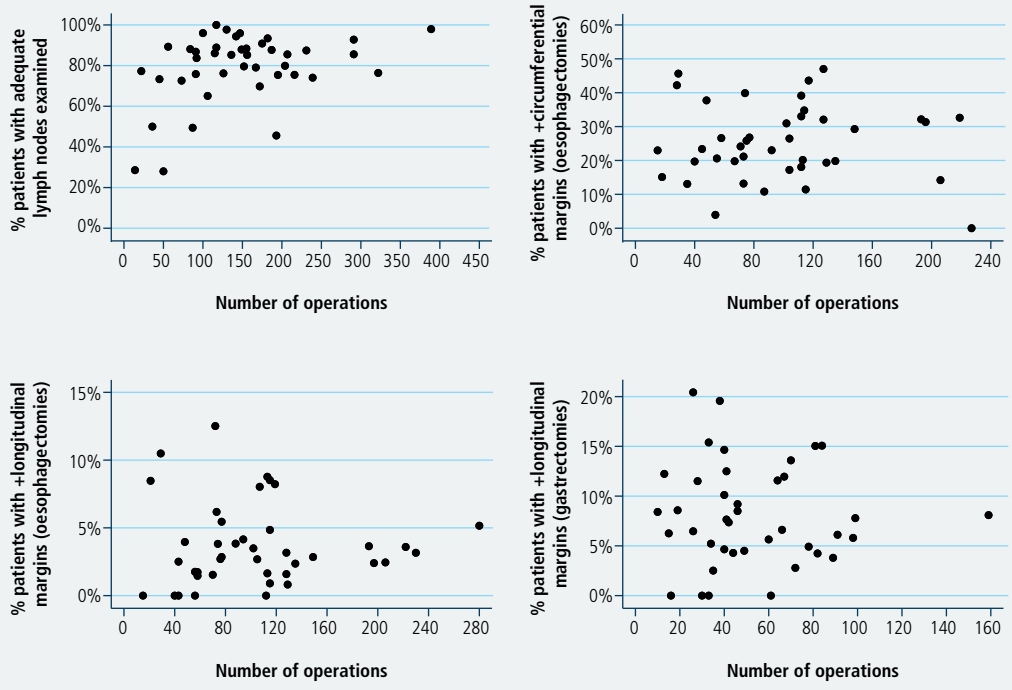
Table 9.3
Outcomes after curative surgery for patients diagnosed from April 2015 to March 2017 in England and Wales, compared with the previous two years

	Oesophagectomy		Gastrectomy	
	2015–17	**2013–15**	**2015–17**	**2013–15**
In hospital mortality (95% CI)	2.7 (2.1–3.4)	1.9 (1.5–2.5)	1.6 (1.0–2.4)	2.2 (1.5–3.0)
30-day mortality (95%CI)	2.4 (1.8–3.0)	1.6 (1.2–2.1)	1.3 (1.0–2.0)	1.9 (1.3–2.7)
90–day mortality (95% CI)	3.9 (3.3–4.7)	3.2 (2.6–3.9)	3.3 (2.5–4.4)	4.1 (3.2–5.2)
Length of stay (days) Median (IQR)	11 (9–17)	12 (9–17)	9 (7–13)	10 (7–14)

Last year, the Audit published results on four new surgical indicators by surgical centre. A decision was made not to benchmark trusts based on these indicators as it became apparent that there was wide variation in surgical practice and pathology examination.
These variations in practice need to be addressed by the clinical community because, in the current situation, the statistical models used for risk adjustment will not perform adequately across all surgical centres.

We will continue to publish information on these new indicators to encourage discussion among surgeons about working towards standardisation of procedures (Figure 9.4).

Figure 9.4
Graphs showing four new surgical indicators by NHS organisation and volume of activity



KEY: Four indicators are:

1 Proportion of patients with 15 or more lymph nodes examined (oesophagectomies and gastrectomies) - unadjusted

2 Proportion of patients with positive circumferential margins (oesophagectomy) - adjusted for overall TNM, history of neo-adjuvant treatment

3 Proportion of patients with positive longitudinal margins (oesophagectomy) - adjusted for overall TNM, history of neoadjuvant treatment

4 Proportion of patients with positive longitudinal margins (gastrectomy) - adjusted for overall TNM, history of neo-adjuvant treatment

Each dot represents an NHS organisation

9.3 Key findings and recommendations

OGC Key Finding 9: The delivery of surgical curative procedures remains at a high standard overall. Both 30-day and 90-day mortality rates remain at the low levels achieved over the last few audit periods and the length of hospital stay continues to decrease. For the first time in a number of years, there was one surgical centre with a comparatively high mortality rate in the context of the outcomes achieved elsewhere.

OGC Key Finding 10: Although the previous Annual Report highlighted the wide variation in surgical practice related to the pathological examination of excised tumours, we did not identify much change in the results published in last year's Annual Report. This limits the interpretation of new surgical indicators.

Recommendation
Surgeons and pathologists should work towards standardisation of the way surgical specimens are collected, so that benchmarking of organisations using these indicators can be carried out in the future.

Perspective on the surgical results from Mr Nick Maynard

Consultant Upper GI Surgeon
Oxford University Hospitals NHS Foundation Trust

The surgical teams in England and Wales should be congratulated for their excellent surgical outcomes yet again. PET-CT is widely agreed to be an essential staging investigation prior to the radical treatment of oesophageal cancer, and although the overall use of 71% feels about right, there remains a wide variation between different units. MDTs should review their use of PET-CT to ensure it is appropriately used. There has been a steady increase in the use of minimally invasive surgery to resect oesophageal cancers, but the use of these techniques for gastric cancer remains stubbornly low. It is not clear why this is the case. It is crucial that we use the audit to investigate in greater detail outcome standards and the quality of care our patients receive, and with the increasing amount of data we are collecting, we will be able to analyse different aspects of treatment with respect to both short term and long term outcomes. We hope that the data collected, together with the analyses we provide, will help improve standards throughout England and Wales and eliminate the variation that remains between different units.

10. Non-curative OG cancer treatment patterns and outcomes

As mentioned in Chapter 7, most patients with OG cancer were managed with non-curative treatment intent after their diagnosis because they either had incurable disease or were unsuitable for curative treatment. The traditional aims of palliative therapy are symptom control (e.g. relief of pain or difficulty swallowing), improving quality of life and lengthening the duration of survival.

Patients on a non-curative care pathway have various treatment options available to them (see Box 3 below) but whether or not a patient receives a particular therapy will depend upon their condition and preference [Allum et al 2011]. Among these, palliative oncological therapies are the most common. Nonetheless, a common management approach remains "best supportive care", which is characterised by no active treatment beyond the immediate relief of symptoms.

Box 3
Non-curative treatment options for people with oesophago-gastric cancer

Palliative chemotherapy can improve survival in locally advanced gastric cancer by 3–6 months, compared to best supportive care alone. Similar results are seen in oesophageal cancer.

External beam radiotherapy can be used to relieve dysphagia, but its effect is slower to act than the insertion of an oesophageal stent.

Brachytherapy can be used to treat dysphagia symptoms and quality of life in people expected to live more than 3 months.

Endoscopic / radiological therapy

- Stents provide immediate relief of dysphagia and are recommended for people with a short life expectancy.

- Laser therapy and argon plasma coagulation (APC) can both be used to relieve dysphagia particularly when it is due to tumour overgrowth after a stent has been inserted.

10.1 Endoscopic/radiological palliative therapy

Table 10.1 describes the various endoscopic and radiological non-curative procedures recorded for patients in the 2015–17 audit period. Stenting to relieve dysphagia was the single most frequently conducted procedure, being used in 1,995 patients. The absolute numbers of other procedures were relatively small and have decreased since previous years. Stent insertions have increased from representing 91% of all procedures in 2012/13 to 96% in 2016/17. The use of stents across the various types of tumour is described in Table 10.2.

The infrequent use of brachytherapy is likely to be due to a combination of factors related to the more complex delivery compared with the insertion of a stent, with the procedure requiring both an endoscopist as well as an oncologist. Other issues include a lack of training and experience among staff on how to perform brachytherapy, and a limited interest in commissioning this service.

Table 10.1
Palliative endoscopic and radiological treatments received by patients diagnosed with OG cancer between 2012 and 2017, by Audit year

Procedure	2012–13	2013–14	2014–15	2015–16	2016–17
Stent insertion	1290	1271	1267	1105	890
Laser ablation (PDT/laser)	32	27	11	16	15
Brachytherapy	27	30	29	8	6
Dilation	57	57	35	26	19
Other (APC / gastrostomy)	15	8	8	11	<5

Only patients with a planned palliative treatment modality and who held endoscopy records were included.

Table 10.2
Number of stent procedures by OG cancer site (first recorded procedure in NOGCA), in England and Wales (patients diagnosed between April 2015 and March 2017)

Procedure	Oeso-phageal SCC	Oes ACA Upper/ Mid	Oes ACA Lower/SI	GOJ ACA SII /SIII	Stomach	All sites
Stent insertion	610	187	838	172	188	1995
Total	641	196	889	176	195	2097

SCC=squamous cell carcinoma; ACA=adenocarcinoma; SI, SII, SIII= Siewert I, II, III.

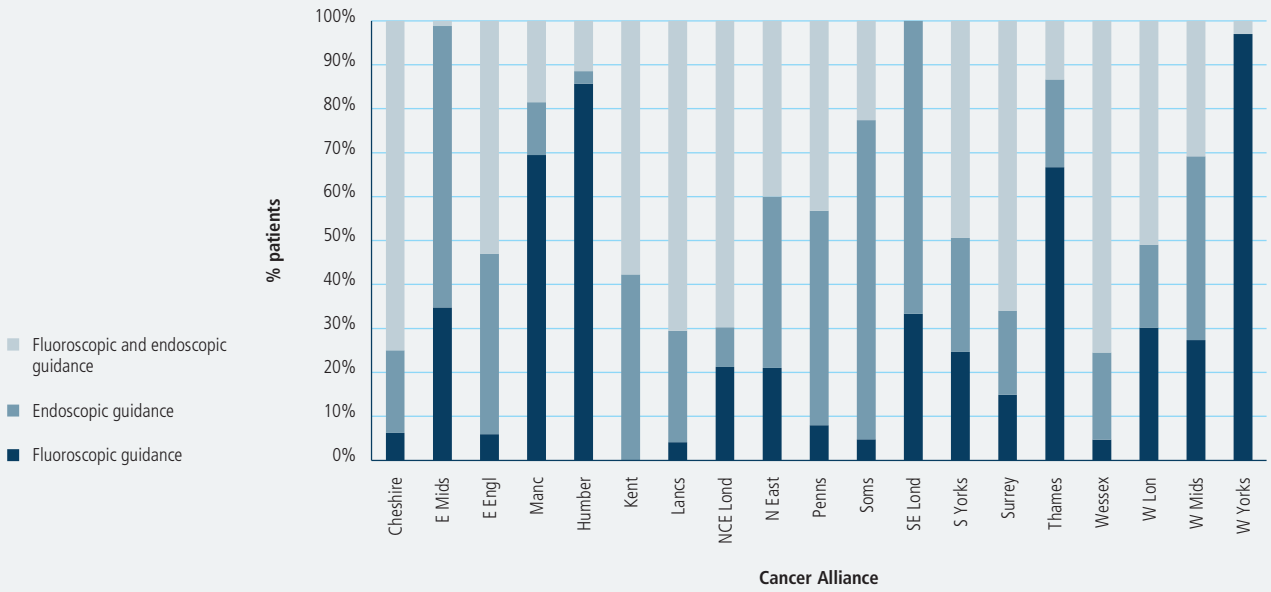
10.2 Method used for stent insertion

Oesophageal stents may be inserted under fluoroscopic guidance alone, endoscopic guidance alone or combined endoscopic and fluoroscopic guidance. Over the 2015–2017 audit period, we observed large variation in the types of insertion technique used within the Cancer Alliances (Figure 10.1):

- Four Alliances used fluoroscopy alone as the predominant technique of insertion
- Three Alliances used endoscopy alone in the majority of cases
- Ten Alliances used a combination approach most frequently.

This variation is likely to represent differences in the regional availability of endoscopy and interventional radiology services. No differences in 3 month and 6 month survival were observed by method of stent insertion (Chi squared test, p=0.959, p=0.419 respectively).

Figure 10.1
Stent insertion technique used in OG cancer patients treated with palliative intent, by English Cancer Alliance



10.3 Palliative oncology

Among patients with a planned treatment modality of palliative oncology and an oncological record in the Audit, chemotherapy was consistently the most frequent oncological modality between 2012 and 2017 (Table 10.3). This was the case for both oesophageal and gastric cancers. Overall, 68.2% of patients who received palliative oncology had chemotherapy (either alone or in combination with radiotherapy).

External beam radiotherapy was used less frequently than chemotherapy, and this was more pronounced in patients with gastric cancer than oesophageal cancer (19.3% vs 30.9%) (Table 10.4). People who were treated with radiotherapy alone were older than people who received chemotherapy: age (SD) 75.6 (10.6) vs 66.0 (10.6). Chemoradiotherapy was used infrequently in both gastric and oesophageal cancer.

Table 10.3
Palliative oncology regimens received by OG cancer patients with a planned treatment modality of palliative oncology diagnosed between 2012 and 2017, by Audit year

Procedure	2012–13 n (%)	2013–14 n (%)	2014–15 n (%)	2015–16 n (%)	2016–17 n (%)
Chemoradiotherapy	108 (4.6)	116 (5.0)	103 (4.5)	70 (3.2)	67 (3.6)
Chemotherapy	1537 (66.0)	1518 (65.4)	1546 (67.7)	1504 (68.5)	1281 (67.9)
Radiotherapy	684 (29.4)	688 (29.6)	634 (27.8)	623 (28.4)	538 (28.5)

Table 10.4
Palliative oncological treatment received by OG cancer patients diagnosed between 2015 and 2017, by tumour location

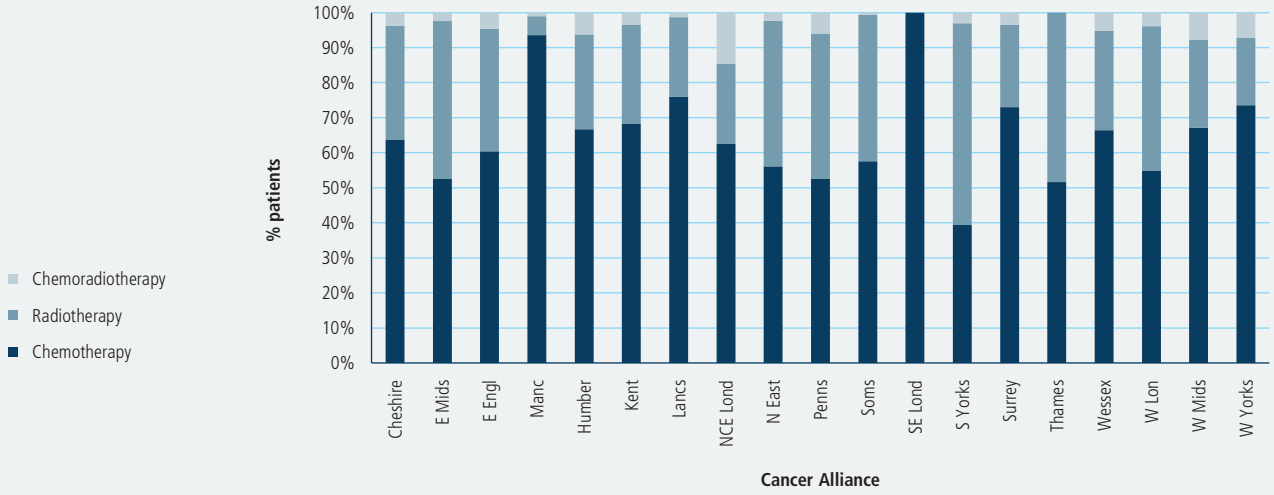
Treatment modality	Oesophageal SCC n (%)	Oes ACA upper / mid n (%)	Oes ACA Lower / SI n (%)	GOJ SII/III n (%)	Stomach n (%)	Total
Chemotherapy	497 (53.9)	180 (61.6)	1087 (69.7)	342 (75.5)	679 (79.2)	2785 (68.2)
Radiotherapy	360 (39.1)	97 (33.2)	435 (27.9)	104 (23.0)	165 (19.3)	1161 (28.4)
Chemo-radiotherapy	65 (7.1)	15 (5.1)	37 (2.4)	7 (1.6)	13 (1.5)	137 (3.4)
Total	922	292	1559	453	857	4083

Only patients for whom palliative oncological treatment was planned and who had an oncology record were included.

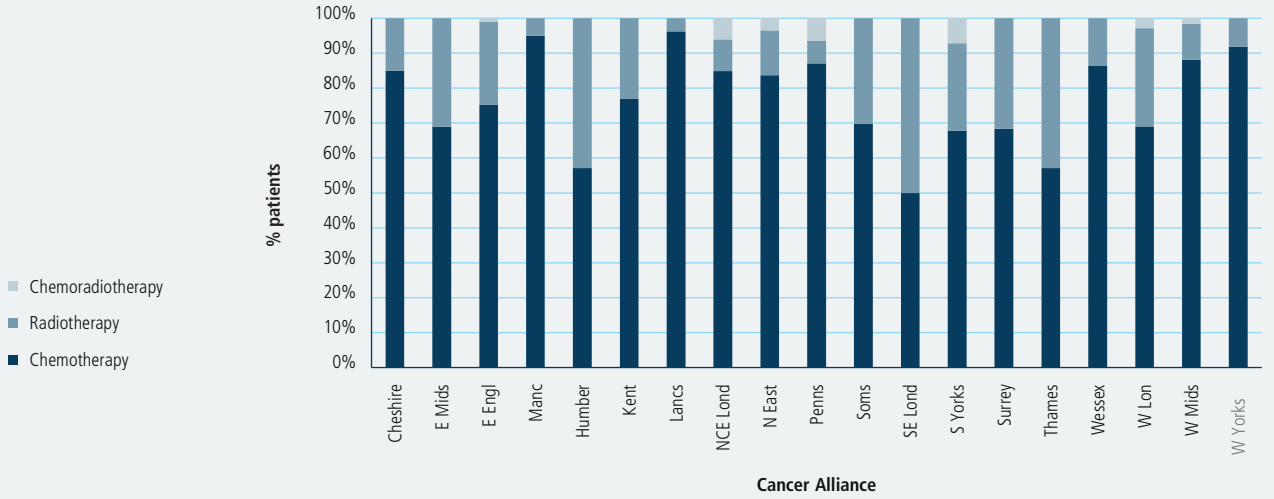
Figure 10.2 shows the distribution of palliative oncology therapies used within the various Cancer Alliances for a) oesophageal cancer and b) gastric cancer. The pattern of use showed considerable variation across the Alliances. For example, in the South East London Alliance, all patients with oesophageal cancer received chemotherapy only, in contrast to Peninsula where only half of patients received chemotherapy and the other half received radiotherapy or chemoradiotherapy.

Figure 10.2
Distribution of oncological treatment regimen by Cancer Alliance for oesophageal and gastric cancer. All patients diagnosed between 2015 and 2017 with a planned treatment modality of palliative oncology that held oncology records were included.

Oesophageal cancer



Gastric cancer



Completion rates were consistently high (over 95%) for radiotherapy over the 5 year period from 2012 to 2017. Completion was much lower for chemotherapy, being on average 56.1% over the five years. Of patients unable to complete chemotherapy, progressive disease during chemotherapy was the most frequently cited reason (42.8%) for stopping, followed by acute chemotherapy toxicity (22.0%). People who were able to complete chemotherapy tended to have a better performance status, no comorbidities and a lower tumour stage (Table 10.5). A higher proportion of people unable to complete chemotherapy had metastatic disease.

Table 10.5
Characteristics of patients who completed chemotherapy during the audit period from April 2015 to March 2017

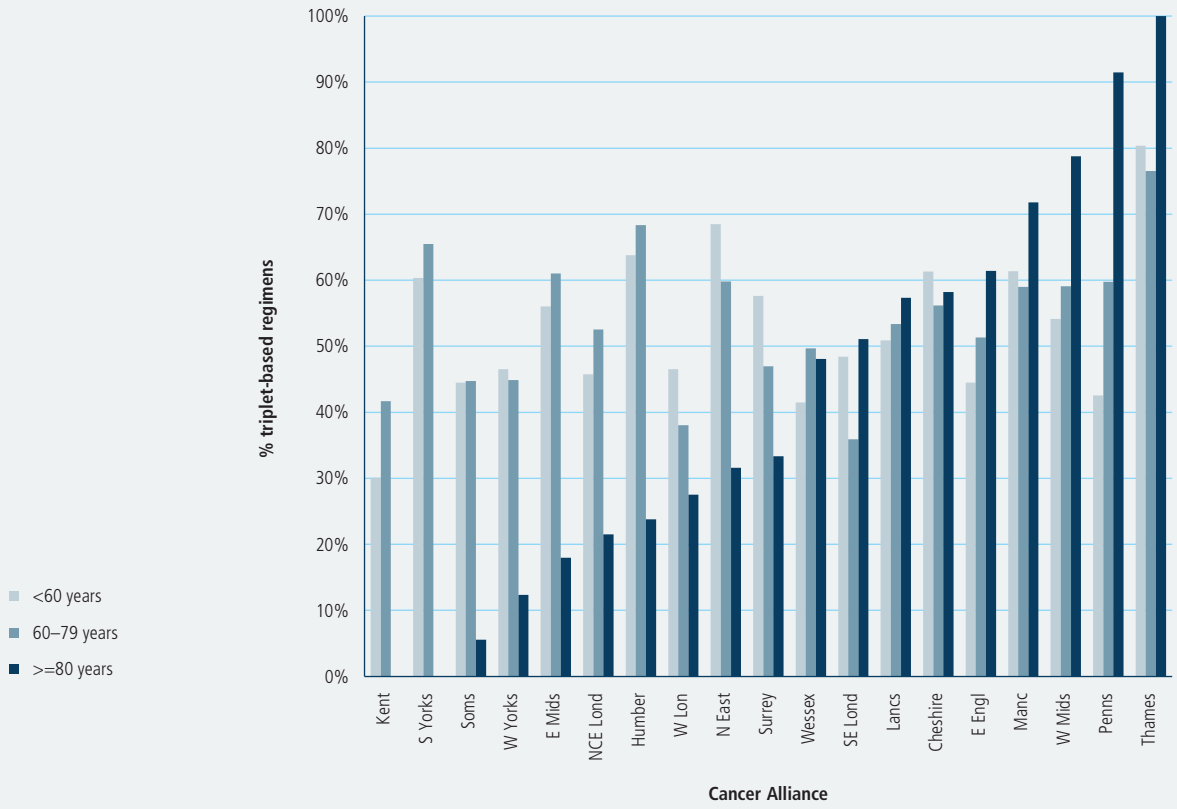
Patient characteristics		No. of patients that received chemotherapy	Proportion of patients who completed chemotherapy (%)
Age	Under 60	538	58.6
	60–69	696	57.8
	70–79	712	56.0
	80 and over	158	60.1
Sex	Male	1565	57.2
	Female	539	58.6
Performance Status	0	797	60.6
	1	963	56.8
	2 or more	344	52.6
Comorbidities	0	1207	63.1
	1	575	51.7
	2	245	44.9
	3 or more	77	54.5
Tumour grade	1	22	59.1
	2	100	63.0
	3	412	62.6
	4	1390	54.7
Presence of metastatic disease		1389	54.7

10.4 Variation in use of chemotherapy regimens by age and Cancer Alliance

Current guidelines recommend the use of triplet regimens (including a platinum-based agent, a fluoropyrimidine and an anthracycline) as a first-line option for patients being treated with palliative chemotherapy [Allum et al 2011]. These have been shown to improve overall survival compared to doublet regimens (including a platinum-based agent and a fluoropyrimidine), although whether this benefit is outweighed by the risk of greater toxicity has been questioned [Wagner et al 2017].

Using information from the SACT dataset on patients who received palliative chemotherapy between 2012 and 2016, we identified regional variation in the choice of chemotherapy regimens given to patients in different age groups. The use of triplet regimens in patients aged 80 or over showed much greater variation (range 0 to 100%) than their use in younger patients (range 30 to 80%) (Figure 10.3). Alliances such as Kent, Somerset and South Yorkshire demonstrated a preference for doublet regimens over triplet regimens in patients over 80 years whereas in Manchester, Thames and Peninsula, no patients over 80 years received doublet therapy. This finding of age-related variation in the choice of chemotherapy delivered is noteworthy because there is evidence that triple-drug therapy resulted in more patients experiencing toxicity compared to older patients who had doublet therapy [Al-Batran et al 2013]. Ideally, the functional age of the patient, their comorbidities, performance status and their values and wishes should be considered when deciding their chemotherapy regimen.

Figure 10.3
Proportion of palliative chemotherapy regimens that are triplet-based by age category for the 19 English Cancer Alliances (using data collected between 2012 and 2016).



10.5 Key findings and recommendations

OGC Key Finding 11: Most patients being treated palliatively were planned to receive oncological treatment and this pattern has been consistent between 2012 and 2017. Chemotherapy is used more often than radiotherapy, but 44% of patients were reported to have not completed the original planned course. In 21% of cases, non-completion was reported to be due to the patient dying before the end of treatment. Furthermore, 52% of patients who received best supportive care or palliative endoscopic procedures survive beyond 3 months, suggesting they may have benefited from additional treatments such as palliative radiotherapy.

Recommendation
The selection process of patients for palliative chemotherapy requires improvement. In particular, services should explore the reasons why patients chosen to receive this treatment were unable to complete the regimen and why patients who were sufficiently fit to be candidates for chemotherapy received best supportive care.

OGC Key Finding 12: There is considerable regional variation in the use of doublet and triplet regimens, especially among older patients being treated with palliative oncology.

Recommendation
Attempts should be made to develop a more consistent approach to the use of systemic therapy regimens, especially in older patients with advanced OG cancer, through the development of practice guidelines and/or participation in clinical trials.

Perspective from Dr Tom Crosby

Consultant Clinical Oncologist,
Velindre Cancer Centre, Cardiff

The majority of patients with oesophago-gastric cancer present with advanced disease and/or are not suitable for curative treatment. There is a clear need to develop more effective treatments to manage these patients but also a more consistent approach to patient selection and choice of treatment. It is difficult not to conclude from this data that there are not examples of both under- and over-treatment.

Over 40% of patients are not completing their planned course of palliative chemotherapy, with 15% dying within 3 months of starting treatment. Yet 52% of patients are surviving more than 3 months with endoscopic treatment or best supportive care, suggesting that they might have been suitable for additional anti-cancer therapy.

Lastly, there is significant variation in the treatment regimens used with regard to palliative chemotherapy, radiotherapy (external beam and brachytherapy) and the use of oesophageal stents.

Whilst treatments should be both evidence based and tailored to factors related to the individual patient, their disease and indeed their values, the cause of such regional variation is difficult to understand. There is clearly more work required to generate consensus practice guidelines or participate in high quality research to answer therapeutic uncertainties where these exist.

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 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		
Jan van der Meulen (chair)	Professor of Clinical Epidemiology	London School of Hygiene and Tropical Medicine
Mike Hallisey	Consultant Surgeon Birmingham	Association of Cancer Surgeons
David McKinlay	Programme Manager	Healthcare Quality Improvement Partnership (HQIP)
Bill Allum	Consultant Surgeon	Member of Specialised Cancer Surgery Commissioning Group
James Gossage	Consultant Upper Gastrointestinal Surgeon	Association of Upper Gastrointestinal Surgeons
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
Nick Carroll	Consultant Radiologist and Endoscopist	UK EUS Users Group
Fiona Huddy	Specialist Dietitian	British Dietetic Association Oncology Group
Richard Roope	RCGP/CRUK Clinical Lead for Cancer	Durham University
John Taylor	Patient representative	Oesophageal Patients Association
with members of the project team		

Members of Project Board	
Jan van der Meulen (chair)	London School of Hygiene and Tropical Medicine
Richard Hardwick	Association of Upper GI Surgeons (AUGIS)
Diana Tait	Royal College Radiologists (RCR)
Alison Roe	NHS Digital
David McKinlay	Healthcare Quality Improvement Partnership (HQIP)
Kirsten Windfuhr	Healthcare Quality Improvement Partnership (HQIP)
with members of the project team	

Annex 2: Audit 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.nogca.org.uk.

Welsh data was provided by the Cancer Network Information System Cymru (CaNISC). This dataset did not provide access to information on surgical complication rates, details of chemotherapy or radiotherapy regimens or on patients diagnosed with oesophageal HGD. Consequently, results requiring these data are not reported for Welsh patients.

Linkage to other datasets

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:

- Office for National Statistics (ONS) Death Register to provide accurate statistics on cancer survival
- 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 (eg, dates of procedures)
- Welsh hospital administrative database (Patient Episode Database for Wales (PEDW)
- The national radiotherapy dataset (RTDS) that provides information on the episodes of radiotherapy received by patients
- The national systemic cancer dataset (SACT) that provides information on the regimens of chemotherapy delivered to patients

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

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 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.

OPCS-4 procedure codes used to identify relevant endoscopic procedures in patients diagnosed with HGD

OPCS-4 code	Description
Diagnostic OGD	
G45, G16	Diagnostic endoscopy of upper GI tract/ oesophagus
G19.1, G19.8, G19.9	Diagnostic examination of oesophagus using rigid oesophagoscope
Endoscopic ablation of oesophagus	
G14.2, G43.2	Laser resection of lesion oesophagus/UGIT
G14.3, G43.3	Cauterisation of lesion oesophagus /UGIT
G14.5, G43.5	Destruction of lesion oesophagus /UGIT
G14.7, G42.2	Photodynamic therapy of lesion oesophagus /UGIT
G17.2, G17.3	Ablation of oesophagus using rigid oesophagoscope
Possible additional ablation	
Y11.4, Y13.4	Radiofrequency controlled thermal destruction of organ/lesion of organ (if occurs at time of oesophagogastroduodenoscopy (OGD)
Y13.6	Photodynamic therapy of lesion of organ (if occurs at time of OGD)
Y13.1	Cauterisation of lesion of organ (if occurs at time of OGD)
Y08	Laser excision/destruction of organ/lesion of organ
Endoscopic resection	

OPCS-4 procedure codes used to identify relevant endoscopic procedures in patients diagnosed with HGD	
G14.1, G43.1	Snare resection of lesion oesophagus/UGIT
G14.6, G42.1	Submucosal resection of lesion oesophagus/ UGIT
G17.1	Resection of oesophagus using rigid oesophagoscope
Other therapeutic OGD	
G14.8, G14.9, G42.8, G42.9, G43.8, G43.9	Other endoscopic extirpation of lesion of oesophagus/UGIT
G15.8, G15.9, G44.8, G44.9, G46.8, G46.9	Other therapeutic endoscopic operation on oesophagus/UGIT
G17.8, G17.9	Extirpation of lesion of oesophagus using rigid oesophagoscope
G18.8, G18.9	Other therapeutic endoscopic operation using rigid oesophagoscope

Statistical analysis of data

The results of the Audit are presented at different levels:

1. by Cancer Alliance for England, with Wales considered as three separate areas (Abertawe Bro Morgannwg, North Wales and South Wales), and

2. by English NHS trust / Welsh local health board.

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% confidence intervals (CI) to describe their level of precision. When shown graphically, regional rates are plotted against the overall national rate, with regions ordered according to the number of patients on whom data were submitted. English patients were allocated to the Cancer Alliance based on their NHS trust of diagnosis and not by region of residence. Welsh patients were similarly allocated to the region based on the local health board of diagnosis.

In descriptive analyses of continuous variables, the distribution of values is 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).

We derived risk-adjusted 30-day and 90-day mortality rates for patients who underwent curative surgery for each NHS trust. The rates were adjusted to take into account differences in the case mix 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 summed to calculate the predicted number of deaths for each NHS trust. 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 postoperative mortality rates after curative surgery using funnel plots. Two funnel limits were used that indicate the ranges within which 95.0% (representing a difference of two standard deviations from the national rate) or 99.8% (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% 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 with a case volume of less than 10 were not included in the funnel plots because such small samples lead to unreliable statistical estimates due to the play of chance.

Annex 3: List of regional areas and NHS organisations in England and Wales

Cancer Alliance/Vanguard or Welsh Region	NHS Trust/ Health Board code	NHS Trust/Health Board name
Cheshire and Merseyside	RBT	Mid Cheshire Hospitals NHS Foundation Trust
	RJN	East Cheshire NHS Trust
	RBL	Wirral University Teaching Hospital NHS Foundation Trust
	RBN	St Helens and Knowsley Hospitals NHS Trust
	REM	Aintree University Hospital NHS Foundation Trust
	RJR	Countess of Chester Hospital NHS Foundation Trust
	RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust
	RVY	Southport and Ormskirk Hospital NHS Trust
	RWW	Warrington and Halton Hospitals NHS Foundation Trust
	REN	The Clatterbridge Cancer Centre NHS Foundation Trust
East Midlands	RK5	Sherwood Forest Hospitals NHS Foundation Trust
	RNQ	Kettering General Hospital NHS Foundation Trust
	RNS	Northampton General Hospital NHS Trust
	RTG	Derby Hospitals NHS Foundation Trust
	RWD	United Lincolnshire Hospitals NHS Trust
	RWE	University Hospitals of Leicester NHS Trust
	RX1	Nottingham University Hospitals NHS Trust
East of England	RC9	Luton and Dunstable University Hospital NHS Foundation Trust
	RWG	West Hertfordshire Hospitals NHS Trust
	RWH	East and North Hertfordshire NHS Trust
	RQW	The Princess Alexandra Hospital NHS Trust
	RD8	Milton Keynes Hospital NHS Foundation Trust
	RC1	Bedford Hospital NHS Trust
	RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
	RGN	Peterborough and Stamford Hospitals NHS Foundation Trust
	RGP	James Paget University Hospitals NHS Foundation Trust
	RGR	West Suffolk NHS Foundation Trust
	RGT	Cambridge University Hospitals NHS Foundation Trust
	RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust
	RQQ	Hinchingbrooke Health Care NHS Trust
	RAJ	Southend University Hospital NHS Foundation Trust
	RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust
	RDE	Colchester Hospital University NHS Foundation Trust
	RGQ	Ipswich Hospital NHS Trust
	RQ8	Mid Essex Hospital Services NHS Trust
Greater Manchester	RM2	University Hospital of South Manchester NHS Foundation Trust
	RM3	Salford Royal NHS Foundation Trust
	RMC	Bolton NHS Foundation Trust
	RMP	Tameside and Glossop Integrated Care NHS Foundation Trust
	RRF	Wrightington, Wigan and Leigh NHS Foundation Trust
	RW3	Central Manchester University Hospitals NHS Foundation Trust
	RW6	Pennine Acute Hospitals NHS Trust
	RWJ	Stockport NHS Foundation Trust
	RBV	The Christie NHS Foundation Trust
Humber, Coast and Vale	RCB	York Teaching Hospital NHS Foundation Trust
	RJL	Northern Lincolnshire and Goole NHS Foundation Trust
	RWA	Hull and East Yorkshire Hospitals NHS Trust
Kent and Medway	RN7	Dartford and Gravesham NHS Trust
	RPA	Medway NHS Foundation Trust
	RVV	East Kent Hospitals University NHS Foundation Trust
	RWF	Maidstone and Tunbridge Wells NHS Trust
Lancashire and South Cumbria	RXL	Blackpool Teaching Hospitals NHS Foundation Trust
	RXN	Lancashire Teaching Hospitals NHS Foundation Trust
	RXR	East Lancashire Hospitals NHS Trust
	RTX	University Hospitals of Morecambe Bay NHS Foundation Trust

Cancer Alliance/Vanguard or Welsh Region	NHS Trust/ Health Board code	NHS Trust/Health Board name
North Central and North East London	RAL	Royal Free London NHS Foundation Trust
	RAP	North Middlesex University Hospital NHS Trust
	RKE	The Whittington Hospital NHS Trust
	RRV	University College London Hospitals NHS Foundation Trust
	R1H	Barts Health NHS Trust
	RF4	Barking, Havering and Redbridge University Hospitals NHS Trust
	RQX	Homerton University Hospital NHS Foundation Trust
North East and Cumbria	RE9	South Tyneside NHS Foundation Trust
	RLN	City Hospitals Sunderland NHS Foundation Trust
	RNL	North Cumbria University Hospitals NHS Trust
	RR7	Gateshead Health NHS Foundation Trust
	RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust
	RTF	Northumbria Healthcare NHS Foundation Trust
	RTR	South Tees Hospitals NHS Foundation Trust
	RVW	North Tees and Hartlepool NHS Foundation Trust
	RXP	County Durham and Darlington NHS Foundation Trust
Peninsula	RA9	Torbay and South Devon NHS Foundation Trust
	RBZ	Northern Devon Healthcare NHS Trust
	REF	Royal Cornwall Hospitals NHS Trust
	RH8	Royal Devon and Exeter NHS Foundation Trust
	RK9	Plymouth Hospitals NHS Trust
Somerset, Wiltshire, Avon and Gloucestershire	RA3	Weston Area Health NHS Trust
	RA4	Yeovil District Hospital NHS Foundation Trust
	RA7	University Hospitals Bristol NHS Foundation Trust
	RBA	Taunton and Somerset NHS Foundation Trust
	RD1	Royal United Hospitals Bath NHS Foundation Trust
	RVJ	North Bristol NHS Trust
	RTE	Gloucestershire Hospitals NHS Foundation Trust
	RNZ	Salisbury NHS Foundation Trust
South East London	RJ1	Guy's and St Thomas' NHS Foundation Trust
	RJ2	Lewisham and Greenwich NHS Trust
	RJZ	King's College Hospital NHS Foundation Trust
South Yorkshire, Bassetlaw and North Derbyshire	RFF	Barnsley Hospital NHS Foundation Trust
	RFR	The Rotherham NHS Foundation Trust
	RFS	Chesterfield Royal Hospital NHS Foundation Trust
	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust
	RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust
Surrey and Sussex	RA2	Royal Surrey County Hospital NHS Foundation Trust
	RDU	Frimley Park Hospital NHS Foundation Trust
	RTK	Ashford and St Peter's Hospitals NHS Foundation Trust
	RTP	Surrey and Sussex Healthcare NHS Trust
	RXC	East Sussex Healthcare NHS Trust
	RXH	Brighton and Sussex University Hospitals NHS Trust
	RYR	Western Sussex Hospitals NHS Foundation Trust
Thames Valley	RHW	Royal Berkshire NHS Foundation Trust
	RN3	Great Western Hospitals NHS Foundation Trust
	RTH	Oxford University Hospitals NHS Trust
	RXQ	Buckinghamshire Healthcare NHS Trust
Wessex	RBD	Dorset County Hospital NHS Foundation Trust
	RD3	Poole Hospital NHS Foundation Trust
	RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
	R1F	Isle of Wight NHS Trust
	RHM	University Hospital Southampton NHS Foundation Trust
	RHU	Portsmouth Hospitals NHS Trust
	RN5	Hampshire Hospitals NHS Foundation Trust

Cancer Alliance/Vanguard or Welsh Region	NHS Trust/ Health Board code	NHS Trust/Health Board name
West London	R1K	London North West Healthcare NHS Trust
	RAS	The Hillingdon Hospitals NHS Foundation Trust
	RQM	Chelsea and Westminster Hospital NHS Foundation Trust
	RPY	The Royal Marsden NHS Foundation Trust
	RYJ	Imperial College Healthcare NHS Trust
	RAX	Kingston Hospital NHS Foundation Trust
	RJ6	Croydon Health Services NHS Trust
	RJ7	St George's Healthcare NHS Trust
	RVR	Epsom and St Helier University Hospitals NHS Trust
West Midlands	RBK	Walsall Healthcare NHS Trust
	RR1	Heart of England NHS Foundation Trust
	RRK	University Hospitals Birmingham NHS Foundation Trust
	RXK	Sandwell and West Birmingham Hospitals NHS Trust
	RJC	South Warwickshire NHS Foundation Trust
	RKB	University Hospitals Coventry and Warwickshire NHS Trust
	RLT	George Eliot Hospital NHS Trust
	RLQ	Wye Valley NHS Trust
	RWP	Worcestershire Acute Hospitals NHS Trust
	RJE	University Hospitals of North Midlands NHS Trust
	RL4	The Royal Wolverhampton NHS Trust
	RNA	The Dudley Group NHS Foundation Trust
	RXW	Shrewsbury and Telford Hospital NHS Trust
	RJF	Burton Hospitals NHS Foundation Trust
West Yorkshire	RAE	Bradford Teaching Hospitals NHS Foundation Trust
	RCD	Harrogate and District NHS Foundation Trust
	RCF	Airedale NHS Foundation Trust
	RR8	Leeds Teaching Hospitals NHS Trust
	RWY	Calderdale and Huddersfield NHS Foundation Trust
	RXF	Mid Yorkshire Hospitals NHS Trust
North Wales	7A1	Betsi Cadwaladr University Local Health Board
South Wales	7A2	Hywel Dda University Local Health Board
	7A4	Cardiff & Vale University Local Health Board
	7A5	Cwm Taf University Local Health Board
	7A6	Aneurin Bevan University Local Health Board
ABMU	7A3	Abertawe Bro Morgannwg University Local Health Board

Annex 4: Management of high-grade dysplasia (HGD) by NHS Trusts (over 2012–2017, 5 years of data)

Alliance code	Cancer Alliance	No. of patients diagnosed	Patients with first diagnosis confirmed by second pathologist	% First diagnosis confirmed by second pathologist	No. of patients treated	Patients with HGD plan discussed at MDT	% HGD plan discussed at MDT	Pats with treatment plan for active treatment	% Treatment plan for active treatment	Patients who had endoscopic treatment	% Endoscopic treatment	Patients who had curative surgical resection	% Curative surgical resection	Patients on surveillance	% Surveillance	Patients having no treatment	% No treatment
A01	**Cheshire and Merseyside**	132	67	71.3%	116	79	70.5%	70	68.0%	65	63.1%	5	4.8%	21	20.4%	12	11.7%
A02	**East Midlands**	172	137	95.1%	174	162	94.7%	127	77.4%	124	75.6%	3	1.8%	28	17.1%	9	5.5%
A03	**East of England**	262	217	90.0%	243	230	95.4%	190	83.3%	188	82.5%	2	0.9%	19	8.3%	19	8.3%
A04	**Greater Manchester**	121	80	89.9%	124	114	91.9%	80	74.1%	74	68.5%	6	5.6%	21	19.4%	7	6.5%
A05	**Humber, Coast and Vale**	29	17	89.5%	23	19	86.4%	14	66.7%	13	61.9%	1	4.8%	5	23.8%	2	9.5%
A06	**Kent and Medway**	97	67	84.8%	38	30	90.9%	7	22.6%	6	19.4%	1	3.2%	12	38.7%	12	38.7%
A07	**Lancashire and South Cumbria**	51	40	85.1%	48	37	78.7%	29	61.7%	28	59.6%	1	2.1%	13	27.7%	5	10.6%
A08	**North Central and East London**	54	36	76.6%	114	93	82.3%	104	95.4%	102	93.6%	2	1.8%	2	1.8%	3	2.8%
A09	**North East and Cumbria**	211	163	91.1%	211	187	92.6%	135	66.5%	113	55.7%	22	10.8%	39	19.2%	29	14.3%
A10	**Peninsula**	85	45	71.4%	85	49	68.1%	37	46.3%	34	42.5%	3	3.8%	32	40.0%	11	13.8%
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	102	83	86.5%	91	60	65.9%	77	87.5%	76	86.4%	1	1.1%	9	10.2%	2	2.3%
A12	**South East London**	54	49	94.2%	98	83	87.4%	81	86.2%	78	83.0%	3	3.2%	5	5.3%	8	8.5%
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	66	54	90.0%	65	63	98.4%	52	83.9%	50	80.7%	2	3.2%	5	8.1%	5	8.1%
A14	**Surrey and Sussex**	59	40	85.1%	36	30	88.2%	18	52.9%	15	44.1%	3	8.8%	12	35.3%	4	11.8%
A15	**Thames Valley**	42	33	86.8%	42	29	72.5%	28	71.8%	27	69.2%	1	2.6%	5	12.8%	6	15.4%
A16	**Wessex**	186	92	87.6%	214	160	78.1%	164	80.4%	157	77.0%	7	3.4%	32	15.7%	8	3.9%
A17	**West London**	82	69	93.2%	70	64	95.5%	50	74.6%	49	73.1%	1	1.5%	12	17.9%	5	7.5%
A18	**West Midlands**	145	64	63.4%	145	109	78.4%	75	54.0%	66	47.5%	9	6.5%	51	36.7%	13	9.3%
A19	**West Yorkshire**	94	51	61.5%	105	94	92.2%	83	80.6%	74	71.8%	9	8.7%	16	15.5%	4	3.9%

Annex 5: Levels of case ascertainment for English NHS Trusts and Welsh Health Boards (April 2015–March 2017)

Estimates of the number of patients diagnosed in England and Wales with oesophago-gastric (OG) cancer are derived from the number of patients whose first record with OG cancer (ICD code: C15/C16) in HES / PEDW within the Audit period. HES / PEDW data do 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 receiving care for OG cancer. NHS trusts / local health boards 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

Audit year
- ● >80%
- ■ 50–80%
- ▲ <50%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
A01	**Cheshire and Merseyside**	RBL	Wirral University Teaching Hospital NHS Foundation Trust	151 to 200	172	>90 ●
		RBN	St Helens and Knowsley Hospitals NHS Trust	151 to 200	140	81 to 90 ●
		RBT	Mid Cheshire Hospitals NHS Foundation Trust	101 to 150	112	81 to 90 ●
		REM	Aintree University Hospital NHS Foundation Trust	201 to 250	184	71 to 80 ■
		RJN	East Cheshire NHS Trust	51 to 100	95	>90 ●
		RJR	Countess of Chester Hospital NHS Foundation Trust	101 to 150	62	41 to 50 ▲
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	251 to 300	249	81 to 90 ●
		RVY	Southport and Ormskirk Hospital NHS Trust	101 to 150	65	61 to 70 ■
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	101 to 150	37	0 to 40 ▲
A02	**East Midlands**	RK5	Sherwood Forest Hospitals NHS Foundation Trust	151 to 200	162	81 to 90 ●
		RNQ	Kettering General Hospital NHS Foundation Trust	101 to 150	128	>90 ●
		RNS	Northampton General Hospital NHS Trust	151 to 200	115	71 to 80 ■
		RTG	Derby Hospitals NHS Foundation Trust	301 to 350	256	81 to 90 ●
		RWD	United Lincolnshire Hospitals NHS Trust	301 to 350	120	0 to 40 ▲
		RWE	University Hospitals of Leicester NHS Trust	451 to 500	374	81 to 90 ●
		RX1	Nottingham University Hospitals NHS Trust	251 to 300	273	>90 ●
A03	**East of England**	RAJ	Southend University Hospital NHS Foundation Trust	101 to 150	125	>90 ●
		RC1	Bedford Hospital NHS Trust	51 to 100	95	>90 ●
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	101 to 150	112	>90 ●
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	151 to 200	140	81 to 90 ●
		RD8	Milton Keynes Hospital NHS Foundation Trust	51 to 100	82	81 to 90 ●
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	101 to 150	79	61 to 70 ■
		RDE	Colchester Hospital University NHS Foundation Trust	151 to 200	158	>90 ●
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	101 to 150	101	61 to 70 ■
		RGP	James Paget University Hospitals NHS Foundation Trust	101 to 150	115	81 to 90 ●
		RGQ	Ipswich Hospital NHS Trust	101 to 150	162	>90 ●
		RGR	West Suffolk NHS Foundation Trust	51 to 100	98	>90 ●
		RGT	Cambridge University Hospitals NHS Foundation Trust	251 to 300	172	61 to 70 ■
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	301 to 350	221	71 to 80 ■
		RQ8	Mid Essex Hospital Services NHS Trust	201 to 250	138	61 to 70 ■
		RQQ	Hinchingbrooke Health Care NHS Trust	51 to 100	73	>90 ●
		RQW	The Princess Alexandra Hospital NHS Trust	51 to 100	86	>90 ●
		RWG	West Hertfordshire Hospitals NHS Trust	151 to 200	132	71 to 80 ■
		RWH	East and North Hertfordshire NHS Trust	151 to 200	135	81 to 90 ●
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	101 to 150	111	81 to 90 ●
		RM3	Salford Royal NHS Foundation Trust	151 to 200	99	51 to 60 ■
		RMC	Bolton NHS Foundation Trust	101 to 150	115	>90 ●
		RMP	Tameside and Glossop Integrated Care NHS Foundation Trust	101 to 150	86	71 to 80 ■
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	151 to 200	134	81 to 90 ●
		RW3	Central Manchester University Hospitals NHS Foundation Trust	151 to 200	171	>90 ●
		RW6	Pennine Acute Hospitals NHS Trust	301 to 350	306	>90 ●
		RWJ	Stockport NHS Foundation Trust	101 to 150	128	>90 ●

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
A05	**Humber, Coast and Vale**	RCB	York Teaching Hospital NHS Foundation Trust	251 to 300	207	81 to 90 ●
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	201 to 250	197	>90 ●
		RWA	Hull and East Yorkshire Hospitals NHS Trust	251 to 300	230	71 to 80 ■
A06	**Kent and Medway**	RN7	Dartford and Gravesham NHS Trust	101 to 150	102	71 to 80 ■
		RPA	Medway NHS Foundation Trust	101 to 150	105	81 to 90 ●
		RVV	East Kent Hospitals University NHS Foundation Trust	301 to 350	305	>90 ●
		RWF	Maidstone and Tunbridge Wells NHS Trust	201 to 250	175	81 to 90 ●
A07	**Lancashire and South Cumbria**	RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	151 to 200	147	>90 ●
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	151 to 200	182	>90 ●
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	201 to 250	185	81 to 90 ●
		RXR	East Lancashire Hospitals NHS Trust	201 to 250	209	>90 ●
A08	**North Central and East London**	R1H	Barts Health NHS Trust	201 to 250	166	61 to 70 ■
		RAL	Royal Free London NHS Foundation Trust	201 to 250	226	>90 ●
		RAP	North Middlesex University Hospital NHS Trust	51 to 100	108	>90 ●
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	201 to 250	222	>90 ●
		RKE	The Whittington Hospital NHS Trust	<50	39	81 to 90 ●
		RQX	Homerton University Hospital NHS Foundation Trust	51 to 100	47	71 to 80 ■
		RRV	University College London Hospitals NHS Foundation Trust	201 to 250	88	41 to 50 ▲
A09	**North East and Cumbria**	RE9	South Tyneside NHS Foundation Trust	51 to 100	88	>90 ●
		RLN	City Hospitals Sunderland NHS Foundation Trust	151 to 200	139	>90 ●
		RNL	North Cumbria University Hospitals NHS Trust	101 to 150	129	81 to 90 ●
		RR7	Gateshead Health NHS Foundation Trust	101 to 150	114	>90 ●
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	301 to 350	238	61 to 70 ■
		RTF	Northumbria Healthcare NHS Foundation Trust	201 to 250	223	>90 ●
		RTR	South Tees Hospitals NHS Foundation Trust	251 to 300	253	81 to 90 ●
		RVW	North Tees and Hartlepool NHS Foundation Trust	151 to 200	171	>90 ●
		RXP	County Durham and Darlington NHS Foundation Trust	201 to 250	224	>90 ●
A10	**Peninsula**	RA9	Torbay and South Devon NHS Foundation Trust	101 to 150	107	81 to 90 ●
		RBZ	Northern Devon Healthcare NHS Trust	51 to 100	75	>90 ●
		REF	Royal Cornwall Hospitals NHS Trust	151 to 200	168	81 to 90 ●
		RH8	Royal Devon and Exeter NHS Foundation Trust	201 to 250	190	81 to 90 ●
		RK9	Plymouth Hospitals NHS Trust	201 to 250	190	81 to 90 ●
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA3	Weston Area Health NHS Trust	51 to 100	55	51 to 60 ■
		RA4	Yeovil District Hospital NHS Foundation Trust	51 to 100	44	61 to 70 ■
		RA7	University Hospitals Bristol NHS Foundation Trust	201 to 250	142	61 to 70 ■
		RBA	Taunton and Somerset NHS Foundation Trust	101 to 150	126	>90 ●
		RD1	Royal United Hospitals Bath NHS Foundation Trust	151 to 200	100	61 to 70 ■
		RNZ	Salisbury NHS Foundation Trust	51 to 100	82	81 to 90 ●
		RTE	Gloucestershire Hospitals NHS Foundation Trust	301 to 350	286	81 to 90 ●
		RVJ	North Bristol NHS Trust	101 to 150	144	>90 ●
A12	**South East London**	RJ1	Guy's and St Thomas' NHS Foundation Trust	301 to 350	32	0 to 40 ▲
		RJ2	Lewisham and Greenwich NHS Trust	101 to 150	80	51 to 60 ■
		RJZ	King's College Hospital NHS Foundation Trust	201 to 250	168	71 to 80 ■
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RFF	Barnsley Hospital NHS Foundation Trust	51 to 100	98	>90 ●
		RFR	The Rotherham NHS Foundation Trust	101 to 150	101	>90 ●
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	101 to 150	149	>90 ●
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	351 to 400	256	61 to 70 ■
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	201 to 250	196	81 to 90 ●
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	151 to 200	102	61 to 70 ■
		RDU	Frimley Park Hospital NHS Foundation Trust	251 to 300	167	61 to 70 ■
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	51 to 100	74	71 to 80 ■
		RTP	Surrey and Sussex Healthcare NHS Trust	101 to 150	85	81 to 90 ●
		RXC	East Sussex Healthcare NHS Trust	201 to 250	181	81 to 90 ●
		RXH	Brighton and Sussex University Hospitals NHS Trust	151 to 200	90	51 to 60 ■
		RYR	Western Sussex Hospitals NHS Foundation Trust	201 to 250	210	>90 ●

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Expected cases based on HES	Tumour records submitted	% Case ascertainment rate (grouped)
A15	**Thames Valley**	RHW	Royal Berkshire NHS Foundation Trust	151 to 200	27	0 to 40 ▲
		RN3	Great Western Hospitals NHS Foundation Trust	101 to 150	128	>90 ●
		RTH	Oxford University Hospitals NHS Trust	251 to 300	144	51 to 60 ■
		RXQ	Buckinghamshire Healthcare NHS Trust	101 to 150	99	71 to 80 ■
A16	**Wessex**	R1F	Isle of Wight NHS Trust	51 to 100	62	>90 ●
		RBD	Dorset County Hospital NHS Foundation Trust	101 to 150	107	>90 ●
		RD3	Poole Hospital NHS Foundation Trust	101 to 150	115	>90 ●
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	151 to 200	127	61 to 70 ■
		RHM	University Hospital Southampton NHS Foundation Trust	201 to 250	187	81 to 90 ●
		RHU	Portsmouth Hospitals NHS Trust	251 to 300	214	71 to 80 ■
		RN5	Hampshire Hospitals NHS Foundation Trust	151 to 200	132	71 to 80 ■
A17	**West London**	R1K	London North West Healthcare NHS Trust	151 to 200	209	>90 ●
		RAS	The Hillingdon Hospitals NHS Foundation Trust	51 to 100	67	>90 ●
		RAX	Kingston Hospital NHS Foundation Trust	51 to 100	91	>90 ●
		RJ6	Croydon Health Services NHS Trust	51 to 100	86	>90 ●
		RJ7	St George's Healthcare NHS Trust	101 to 150	120	>90 ●
		RPY	The Royal Marsden NHS Foundation Trust	101 to 150	27	0 to 40 ▲
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	101 to 150	122	>90 ●
		RVR	Epsom and St Helier University Hospitals NHS Trust	101 to 150	123	>90 ●
		RYJ	Imperial College Healthcare NHS Trust	151 to 200	144	71 to 80 ■
A18	**West Midlands**	RBK	Walsall Healthcare NHS Trust	101 to 150	39	0 to 40 ▲
		RJC	South Warwickshire NHS Foundation Trust	51 to 100	48	51 to 60 ■
		RJE	University Hospitals of North Midlands NHS Trust	401 to 450	255	51 to 60 ■
		RJF	Burton Hospitals NHS Foundation Trust	101 to 150	116	>90 ●
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	251 to 300	156	61 to 70 ■
		RL4	The Royal Wolverhampton NHS Trust	201 to 250	146	51 to 60 ■
		RLQ	Wye Valley NHS Trust	<50	78	>90 ●
		RLT	George Eliot Hospital NHS Trust	51 to 100	71	71 to 80 ■
		RNA	The Dudley Group NHS Foundation Trust	201 to 250	182	81 to 90 ●
		RR1	Heart of England NHS Foundation Trust	351 to 400	333	>90 ●
		RRK	University Hospitals Birmingham NHS Foundation Trust	251 to 300	189	61 to 70 ■
		RWP	Worcestershire Acute Hospitals NHS Trust	251 to 300	261	81 to 90 ●
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	51 to 100	176	>90 ●
		RXW	Shrewsbury and Telford Hospital NHS Trust	201 to 250	172	71 to 80 ■
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	151 to 200	136	71 to 80 ■
		RCD	Harrogate and District NHS Foundation Trust	51 to 100	95	>90 ●
		RCF	Airedale NHS Foundation Trust	51 to 100	75	>90 ●
		RR8	Leeds Teaching Hospitals NHS Trust	301 to 350	248	71 to 80 ■
		RWY	Calderdale and Huddersfield NHS Foundation Trust	151 to 200	163	81 to 90 ●
		RXF	Mid Yorkshire Hospitals NHS Trust	201 to 250	230	>90 ●
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	251 to 300	259	81 to 90 ●
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	401 to 450	360	81 to 90 ●
Cardiff	**South Wales**	7A2	Hywel Dda University Local Health Board	201 to 250	157	61 to 70 ■
		7A4	Cardiff & Vale University Local Health Board	151 to 200	126	71 to 80 ■
		7A5	Cwm Taf University Local Health Board	151 to 200	155	81 to 90 ●
		7A6	Aneurin Bevan University Local Health Board	251 to 300	206	71 to 80 ■

Annex 6: Data completeness for surgical and pathology records (April 2014–March 2017)

Completeness of data entered by each NHS organisation for key fields needed to calculate the new indicators is given. The data were derived from the extract taken after the 3rd submission deadline for data collection.

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Surgical case ascertainment	No. of oesophagectomies	No. of gastrectomies	Total cases	% complete cases for adequate lymph nodes	% complete cases for oes longitudinal margins	% complete cases for oes circum margins	% complete cases for gast longitudinal margins
A01	**Cheshire and Merseyside**	REM	Aintree University Hospital NHS Foundation Trust	81 to 90	65	40	105	80.0%	86.2%	84.6%	65.0%
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	51 to 60	54	56	110	83.6%	88.9%	88.9%	75.0%
A02	**East Midlands**	RTG	Derby Hospitals NHS Foundation Trust	>90	94	42	136	100.0%	100.0%	97.9%	95.2%
		RWE	University Hospitals of Leicester NHS Trust	>90	128	44	172	100.0%	100.0%	99.2%	100.0%
		RX1	Nottingham University Hospitals NHS Trust	>90	227	101	328	98.2%	97.8%	96.5%	98.0%
A03	**East of England**	RGT	Cambridge University Hospitals NHS Foundation Trust	>90	129	78	207	100.0%	100.0%	100.0%	100.0%
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	71 to 80	115	35	150	98.0%	97.4%	97.4%	100.0%
		RQ8	Mid Essex Hospital Services NHS Trust	81 to 90	146	48	194	46.9%	49.3%	48.6%	39.6%
		RWG	West Hertfordshire Hospitals NHS Trust	>90	59	41	100	100.0%	98.3%	98.3%	100.0%
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	>90	29	16	45	100.0%	100.0%	96.6%	100.0%
		RM3	Salford Royal NHS Foundation Trust	>90	135	81	216	100.0%	100.0%	100.0%	100.0%
		RW3	Central Manchester University Hospitals NHS Foundation Trust	>90	77	49	126	100.0%	100.0%	96.1%	100.0%
A05	**Humber, Coast and Vale**	RWA	Hull and East Yorkshire Hospitals NHS Trust	81 to 90	79	42	121	87.6%	92.4%	92.4%	78.6%
A07	**Lancashire and South Cumbria**	RXN	Lancashire Teaching Hospitals NHS Foundation Trust	81 to 90	128	65	193	100.0%	100.0%	99.2%	98.5%
A08	**North Central and East London**	RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	>90	43	30	73	100.0%	100.0%	0.0%	100.0%
		RRV	University College London Hospitals NHS Foundation Trust	>90	77	94	171	97.7%	98.7%	97.4%	96.8%
A09	**North East and Cumbria**	RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	>90	230	159	389	100.0%	100.0%	N/A	100.0%
		RTR	South Tees Hospitals NHS Foundation Trust	>90	120	77	197	99.0%	94.2%	93.3%	90.9%
A10	**Peninsula**	RK9	Plymouth Hospitals NHS Trust	71 to 80	200	35	235	98.3%	98.5%	98.0%	97.1%
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA7	University Hospitals Bristol NHS Foundation Trust	71 to 80	111	47	158	98.1%	96.4%	93.7%	97.9%
		RTE	Gloucestershire Hospitals NHS Foundation Trust	>90	91	51	142	81.0%	81.3%	80.2%	74.5%
A12	**South East London**	RJ1	Guy's and St Thomas' NHS Foundation Trust	>90	193	98	291	100.0%	100.0%	100.0%	100.0%
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	>90	150	89	239	100.0%	99.3%	98.7%	100.0%
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	>90	92	41	133	97.7%	95.7%	94.6%	97.6%
		RXH	Brighton and Sussex University Hospitals NHS Trust	61 to 70	69	18	87	57.5%	405.8%	50.7%	83.3%
A15	**Thames Valley**	RTH	Oxford University Hospitals NHS Trust	>90	209	83	292	99.7%	98.6%	98.6%	98.8%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Surgical case ascertainment	No. of oesophagectomies	No. of gastrectomies	Total cases	% complete cases for adequate lymph nodes	% complete cases for oes longitudinal margins	% complete cases for oes circum margins	% complete cases for gast longitudinal margins
A16	**Wessex**	RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	71 to 80	61	18	79	70.9%	70.5%	65.6%	72.2%
		RHM	University Hospital Southampton NHS Foundation Trust	81 to 90	116	33	149	100.0%	99.1%	99.1%	100.0%
		RHU	Portsmouth Hospitals NHS Trust	>90	106	46	152	100.0%	99.1%	98.1%	100.0%
A17	**West London**	RPY	The Royal Marsden NHS Foundation Trust	81 to 90	70	72	142	100.0%	100.0%	95.7%	100.0%
		RYJ	Imperial College Healthcare NHS Trust	>90	56	62	118	99.2%	100.0%	96.4%	98.4%
A18	**West Midlands**	RJE	University Hospitals of North Midlands NHS Trust	>90	135	75	210	89.0%	75.6%	75.6%	89.3%
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	>90	116	41	157	99.4%	99.1%	96.6%	100.0%
		RR1	Heart of England NHS Foundation Trust	>90	77	40	117	100.0%	100.0%	100.0%	100.0%
		RRK	University Hospitals Birmingham NHS Foundation Trust	>90	114	68	182	100.0%	99.1%	99.1%	97.1%
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	>90	116	60	176	99.4%	99.1%	98.3%	100.0%
		RR8	Leeds Teaching Hospitals NHS Trust	81 to 90	120	84	204	100.0%	99.2%	97.5%	100.0%
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	81 to 90	30	19	49	73.5%	70.0%	60.0%	52.6%
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	81 to 90	87	52	139	65.5%	66.7%	51.7%	50.0%
Cardiff	**South Wales**	7A4	Cardiff & Vale University Local Health Board	51 to 60	61	43	104	83.7%	65.6%	47.5%	65.1%
		7A5	Cwm Taf University Local Health Board	>90	8	8	16	87.5%	87.5%	87.5%	87.5%

Annex 7: Emergency admission by English Cancer Alliances and Welsh Cancer Centres (April 2015–March 2017)

The proportion of data reported as "unknown" for referral source and the adjusted referral rates were calculated for each NHS trust / local health board. Rates were derived from complete data and adjusted for age and gender.

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

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	No. of patients	No. of patients diagnosed after emergency admissions	% Diagnosed after emergency admission adjusted for age and sex	Patients with unknown referral source	% unknown referral source
A01	**Cheshire and Merseyside**	RBL	Wirral University Teaching Hospital NHS Foundation Trust	172	39	21.2%	0	0.0%
		RBN	St Helens and Knowsley Hospitals NHS Trust	140	20	14.4%	0	0.0%
		RBT	Mid Cheshire Hospitals NHS Foundation Trust	112	14	12.3%	0	0.0%
		REM	Aintree University Hospital NHS Foundation Trust	184	26	13.9%	0	0.0%
		RJN	East Cheshire NHS Trust	95	6	5.8%	0	0.0%
		RJR	Countess of Chester Hospital NHS Foundation Trust	62	4	6.6%	0	0.0%
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	249	52	21.5%	0	0.0%
		RVY	Southport and Ormskirk Hospital NHS Trust	65	4	5.9%	1	1.5%
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	37	5	12.9%	0	0.0%
A02	**East Midlands**	RK5	Sherwood Forest Hospitals NHS Foundation Trust	162	26	16.1%	1	0.6%
		RNQ	Kettering General Hospital NHS Foundation Trust	128	22	17.3%	1	0.8%
		RNS	Northampton General Hospital NHS Trust	115	21	17.7%	0	0.0%
		RTG	Derby Hospitals NHS Foundation Trust	256	36	14.2%	0	0.0%
		RWD	United Lincolnshire Hospitals NHS Trust	120	13	11.5%	2	1.7%
		RWE	University Hospitals of Leicester NHS Trust	374	60	16.0%	0	0.0%
		RX1	Nottingham University Hospitals NHS Trust	273	36	13.2%	6	2.2%
A03	**East of England**	RAJ	Southend University Hospital NHS Foundation Trust	125	24	18.7%	1	0.8%
		RC1	Bedford Hospital NHS Trust	95	5	5.6%	6	6.3%
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	112	23	21.4%	4	3.6%
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	140	18	12.7%	0	0.0%
		RD8	Milton Keynes Hospital NHS Foundation Trust	82	8	10.2%	1	1.2%
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	79	13	17.0%	3	3.8%
		RDE	Colchester Hospital University NHS Foundation Trust	158	2	1.3%	1	0.6%
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	101	6	6.2%	4	4.0%
		RGP	James Paget University Hospitals NHS Foundation Trust	115	20	17.1%	0	0.0%
		RGQ	Ipswich Hospital NHS Trust	162	23	13.9%	0	0.0%
		RGR	West Suffolk NHS Foundation Trust	98	15	15.1%	0	0.0%
		RGT	Cambridge University Hospitals NHS Foundation Trust	172	43	24.3%	0	0.0%
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	221	41	18.2%	1	0.5%
		RQ8	Mid Essex Hospital Services NHS Trust	138	5	3.8%	0	0.0%
		RQQ	Hinchingbrooke Health Care NHS Trust	73	7	9.9%	2	2.7%
		RQW	The Princess Alexandra Hospital NHS Trust	86	8	9.0%	0	0.0%
		RWG	West Hertfordshire Hospitals NHS Trust	132	3	2.3%	0	0.0%
		RWH	East and North Hertfordshire NHS Trust	135	17	12.4%	1	0.7%
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	111	34	31.2%	0	0.0%
		RM3	Salford Royal NHS Foundation Trust	99	7	7.6%	3	3.0%
		RMC	Bolton NHS Foundation Trust	115	12	11.2%	6	5.2%
		RMP	Tameside and Glossop Integrated Care NHS Foundation Trust	86	4	4.5%	0	0.0%
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	134	8	6.1%	1	0.7%
		RW3	Central Manchester University Hospitals NHS Foundation Trust	171	7	4.4%	0	0.0%
		RW6	Pennine Acute Hospitals NHS Trust	306	32	10.4%	0	0.0%
		RWJ	Stockport NHS Foundation Trust	128	0	0.0%	0	0.0%
A05	**Humber, Coast and Vale**	RCB	York Teaching Hospital NHS Foundation Trust	207	37	23.3%	51	24.6%
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	197	50	25.7%	0	0.0%
		RWA	Hull and East Yorkshire Hospitals NHS Trust	230	36	15.8%	2	0.9%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	No. of patients	No. of patients diagnosed after emergency admissions	% Diagnosed after emergency admission adjusted for age and sex	Patients with unknown referral source	% unknown referral source
A06	**Kent and Medway**	RN7	Dartford and Gravesham NHS Trust	102	20	20.3%	3	2.9%
		RPA	Medway NHS Foundation Trust	105	18	18.7%	1	1.0%
		RVV	East Kent Hospitals University NHS Foundation Trust	305	3	1.0%	25	8.2%
		RWF	Maidstone and Tunbridge Wells NHS Trust	175	23	14.6%	14	8.0%
A07	**Lancashire and South Cumbria**	RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	147	29	19.6%	0	0.0%
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	182	40	21.5%	0	0.0%
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	185	33	17.1%	0	0.0%
		RXR	East Lancashire Hospitals NHS Trust	209	30	14.1%	0	0.0%
A08	**North Central and East London**	R1H	Barts Health NHS Trust	166	37	24.2%	2	1.2%
		RAL	Royal Free London NHS Foundation Trust	226	17	7.5%	0	0.0%
		RAP	North Middlesex University Hospital NHS Trust	108	17	15.3%	0	0.0%
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	222	57	25.0%	0	0.0%
		RKE	The Whittington Hospital NHS Trust	39	7	19.1%	0	0.0%
		RQX	Homerton University Hospital NHS Foundation Trust	47	2	4.4%	0	0.0%
		RRV	University College London Hospitals NHS Foundation Trust	88	5	6.2%	0	0.0%
A09	**North East and Cumbria**	RE9	South Tyneside NHS Foundation Trust	88	19	21.5%	0	0.0%
		RLN	City Hospitals Sunderland NHS Foundation Trust	139	4	3.0%	1	0.7%
		RNL	North Cumbria University Hospitals NHS Trust	129	14	11.0%	1	0.8%
		RR7	Gateshead Health NHS Foundation Trust	114	17	15.4%	0	0.0%
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	238	38	16.3%	0	0.0%
		RTF	Northumbria Healthcare NHS Foundation Trust	223	33	14.2%	0	0.0%
		RTR	South Tees Hospitals NHS Foundation Trust	253	36	14.6%	4	1.6%
		RVW	North Tees and Hartlepool NHS Foundation Trust	171	32	18.4%	0	0.0%
		RXP	County Durham and Darlington NHS Foundation Trust	224	36	15.7%	0	0.0%
A10	**Peninsula**	RA9	Torbay and South Devon NHS Foundation Trust	107	21	19.0%	0	0.0%
		RBZ	Northern Devon Healthcare NHS Trust	75	14	17.8%	0	0.0%
		REF	Royal Cornwall Hospitals NHS Trust	168	21	12.4%	3	1.8%
		RH8	Royal Devon and Exeter NHS Foundation Trust	190	30	15.7%	0	0.0%
		RK9	Plymouth Hospitals NHS Trust	190	40	20.8%	0	0.0%
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA3	Weston Area Health NHS Trust	55	6	11.4%	0	0.0%
		RA4	Yeovil District Hospital NHS Foundation Trust	44	0	0.0%	0	0.0%
		RA7	University Hospitals Bristol NHS Foundation Trust	142	4	2.9%	0	0.0%
		RBA	Taunton and Somerset NHS Foundation Trust	126	2	1.6%	0	0.0%
		RD1	Royal United Hospitals Bath NHS Foundation Trust	100	16	15.7%	0	0.0%
		RNZ	Salisbury NHS Foundation Trust	82	10	11.5%	0	0.0%
		RTE	Gloucestershire Hospitals NHS Foundation Trust	286	51	18.1%	0	0.0%
		RVJ	North Bristol NHS Trust	144	18	12.6%	1	0.7%
A12	**South East London**	RJ1	Guy's and St Thomas' NHS Foundation Trust	32	0	0.0%	14	43.8%
		RJ2	Lewisham and Greenwich NHS Trust	80	7	10.3%	9	11.3%
		RJZ	King's College Hospital NHS Foundation Trust	168	28	17.9%	10	6.0%
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RFF	Barnsley Hospital NHS Foundation Trust	98	17	17.2%	0	0.0%
		RFR	The Rotherham NHS Foundation Trust	101	12	11.9%	0	0.0%
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	149	35	23.1%	0	0.0%
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	256	26	10.2%	1	0.4%
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	196	11	6.0%	11	5.6%
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	102	6	6.1%	0	0.0%
		RDU	Frimley Park Hospital NHS Foundation Trust	167	3	1.9%	2	1.2%
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	74	1	1.4%	1	1.4%
		RTP	Surrey and Sussex Healthcare NHS Trust	85	3	3.5%	0	0.0%
		RXC	East Sussex Healthcare NHS Trust	181	23	12.0%	2	1.1%
		RXH	Brighton and Sussex University Hospitals NHS Trust	90	1	1.2%	0	0.0%
		RYR	Western Sussex Hospitals NHS Foundation Trust	210	20	9.3%	0	0.0%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	No. of patients	No. of patients diagnosed after emergency admissions	% Diagnosed after emergency admission adjusted for age and sex	Patients with unknown referral source	% unknown referral source
A15	**Thames Valley**	RHW	Royal Berkshire NHS Foundation Trust	27	0	0.0%	1	3.7%
		RN3	Great Western Hospitals NHS Foundation Trust	128	20	15.6%	0	0.0%
		RTH	Oxford University Hospitals NHS Trust	144	7	5.2%	2	1.4%
		RXQ	Buckinghamshire Healthcare NHS Trust	99	5	5.0%	0	0.0%
A16	**Wessex**	R1F	Isle of Wight NHS Trust	62	6	9.1%	0	0.0%
		RBD	Dorset County Hospital NHS Foundation Trust	107	12	11.1%	0	0.0%
		RD3	Poole Hospital NHS Foundation Trust	115	15	12.9%	2	1.7%
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	127	27	20.4%	0	0.0%
		RHM	University Hospital Southampton NHS Foundation Trust	187	18	9.5%	0	0.0%
		RHU	Portsmouth Hospitals NHS Trust	214	14	6.4%	0	0.0%
		RN5	Hampshire Hospitals NHS Foundation Trust	132	1	0.8%	0	0.0%
A17	**West London**	R1K	London North West Healthcare NHS Trust	209	2	1.0%	1	0.5%
		RAS	The Hillingdon Hospitals NHS Foundation Trust	67	9	13.1%	0	0.0%
		RAX	Kingston Hospital NHS Foundation Trust	91	20	23.8%	10	11.0%
		RJ6	Croydon Health Services NHS Trust	86	20	25.3%	0	0.0%
		RJ7	St George's Healthcare NHS Trust	120	35	30.8%	5	4.2%
		RPY	The Royal Marsden NHS Foundation Trust	27	0	0.0%	12	44.4%
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	122	34	30.6%	1	0.8%
		RVR	Epsom and St Helier University Hospitals NHS Trust	123	27	22.0%	5	4.1%
		RYJ	Imperial College Healthcare NHS Trust	144	16	11.6%	0	0.0%
A18	**West Midlands**	RBK	Walsall Healthcare NHS Trust	39	3	8.7%	0	0.0%
		RJC	South Warwickshire NHS Foundation Trust	48	2	4.4%	4	8.3%
		RJE	University Hospitals of North Midlands NHS Trust	255	33	13.4%	3	1.2%
		RJF	Burton Hospitals NHS Foundation Trust	116	13	11.8%	8	6.9%
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	156	23	15.8%	2	1.3%
		RL4	The Royal Wolverhampton NHS Trust	146	7	5.1%	0	0.0%
		RLQ	Wye Valley NHS Trust	78	11	13.9%	0	0.0%
		RLT	George Eliot Hospital NHS Trust	71	8	11.6%	0	0.0%
		RNA	The Dudley Group NHS Foundation Trust	182	23	12.2%	0	0.0%
		RR1	Heart of England NHS Foundation Trust	333	73	21.8%	0	0.0%
		RRK	University Hospitals Birmingham NHS Foundation Trust	189	22	12.0%	0	0.0%
		RWP	Worcestershire Acute Hospitals NHS Trust	261	47	17.8%	0	0.0%
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	176	27	15.0%	0	0.0%
		RXW	Shrewsbury and Telford Hospital NHS Trust	172	10	6.1%	0	0.0%
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	136	6	5.1%	14	10.3%
		RCD	Harrogate and District NHS Foundation Trust	95	20	20.8%	0	0.0%
		RCF	Airedale NHS Foundation Trust	75	1	1.4%	3	4.0%
		RR8	Leeds Teaching Hospitals NHS Trust	248	12	6.9%	73	29.4%
		RWY	Calderdale and Huddersfield NHS Foundation Trust	163	4	2.8%	13	8.0%
		RXF	Mid Yorkshire Hospitals NHS Trust	230	6	2.7%	6	2.6%
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	259	55	20.7%	0	0.0%
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	360	57	15.7%	1	0.3%
Cardiff	**South Wales**	7A2	Hywel Dda University Local Health Board	157	28	19.3%	10	6.4%
		7A4	Cardiff & Vale University Local Health Board	126	12	10.0%	1	0.8%
		7A5	Cwm Taf University Local Health Board	155	35	23.3%	0	0.0%
		7A6	Aneurin Bevan University Local Health Board	206	25	13.8%	15	7.3%

Annex 8: Proportion of patients reported to have had an initial staging CT scan by NHS trusts (April 2015–March 2017) REVISED March 2019

NHS trusts submitting fewer than 10 tumour records over the two year period were excluded from the comparison.

Key
● ≥90%
■ 80–89%
▲ <80%

Alliance /Welsh region	Region name	NHS Trust code	NHS Trust name	N with CT scan	% CT scan
A01	**Cheshire and Merseyside**	RBL	Wirral University Teaching Hospital NHS Foundation Trust	125	72.7% ▲
		RBN	St Helens and Knowsley Hospitals NHS Trust	105	75.0% ▲
		RBT	Mid Cheshire Hospitals NHS Foundation Trust	25	22.3% ▲
		REM	Aintree University Hospital NHS Foundation Trust	146	79.3% ▲
		RJN	East Cheshire NHS Trust	81	85.3% ■
		RJR	Countess of Chester Hospital NHS Foundation Trust	8	12.9% ▲
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	144	57.8% ▲
		RVY	Southport and Ormskirk Hospital NHS Trust	30	46.2% ▲
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	20	54.1% ▲
A02	**East Midlands**	RK5	Sherwood Forest Hospitals NHS Foundation Trust	158	97.5% ●
		RNQ	Kettering General Hospital NHS Foundation Trust	128	100.0% ●
		RNS	Northampton General Hospital NHS Trust	97	84.3% ■
		RTG	Derby Hospitals NHS Foundation Trust	253	98.8% ●
		RWD	United Lincolnshire Hospitals NHS Trust	111	92.5% ●
		RWE	University Hospitals of Leicester NHS Trust	351	93.9% ●
		RX1	Nottingham University Hospitals NHS Trust	259	94.9% ●
A03	**East of England**	RAJ	Southend University Hospital NHS Foundation Trust	122	97.6% ●
		RC1	Bedford Hospital NHS Trust	52	54.7% ▲
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	110	98.2% ●
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	127	90.7% ●
		RD8	Milton Keynes Hospital NHS Foundation Trust	26	31.7% ▲
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	77	97.5% ●
		RDE	Colchester Hospital University NHS Foundation Trust	119	75.3% ▲
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	97	96.0% ●
		RGP	James Paget University Hospitals NHS Foundation Trust	115	100.0% ●
		RGQ	Ipswich Hospital NHS Trust	152	93.8% ●
		RGR	West Suffolk NHS Foundation Trust	61	62.2% ▲
		RGT	Cambridge University Hospitals NHS Foundation Trust	155	90.1% ●
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	205	92.8% ●
		RQ8	Mid Essex Hospital Services NHS Trust	132	95.7% ●
		RQQ	Hinchingbrooke Health Care NHS Trust	62	84.9% ■
		RQW	The Princess Alexandra Hospital NHS Trust	83	96.5% ●
		RWG	West Hertfordshire Hospitals NHS Trust	128	97.0% ●
		RWH	East and North Hertfordshire NHS Trust	121	89.6% ■
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	110	99.1% ●
		RM3	Salford Royal NHS Foundation Trust	99	100.0% ●
		RMC	Bolton NHS Foundation Trust	82	71.3% ▲
		RMP	Tameside and Glossop Integrated Care NHS Foundation Trust	80	93.0% ●
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	110	82.1% ■
		RW3	Central Manchester University Hospitals NHS Foundation Trust	155	90.6% ●
		RW6	Pennine Acute Hospitals NHS Trust	288	94.1% ●
		RWJ	Stockport NHS Foundation Trust	58	45.3% ▲
A05	**Humber, Coast and Vale**	RCB	York Teaching Hospital NHS Foundation Trust	192	92.8% ●
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	141	71.6% ▲
		RWA	Hull and East Yorkshire Hospitals NHS Trust	217	94.3% ●
A06	**Kent and Medway**	RN7	Dartford and Gravesham NHS Trust	102	100.0% ●
		RPA	Medway NHS Foundation Trust	102	97.1% ●
		RVV	East Kent Hospitals University NHS Foundation Trust	295	96.7% ●
		RWF	Maidstone and Tunbridge Wells NHS Trust	172	98.3% ●

Alliance /Welsh region	Region name	NHS Trust code	NHS Trust name	N with CT scan	% CT scan
A07	**Lancashire and South Cumbria**	RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	145	98.6% ●
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	152	83.5% ■
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	168	90.8% ●
		RXR	East Lancashire Hospitals NHS Trust	203	97.1% ●
A08	**North Central and East London**	R1H	Barts Health NHS Trust	146	88.0% ■
		RAL	Royal Free London NHS Foundation Trust	214	94.7% ●
		RAP	North Middlesex University Hospital NHS Trust	107	99.1% ●
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	205	92.3% ●
		RKE	The Whittington Hospital NHS Trust	39	100.0% ●
		RQX	Homerton University Hospital NHS Foundation Trust	34	72.3% ▲
		RRV	University College London Hospitals NHS Foundation Trust	85	96.6% ●
A09	**North East and Cumbria**	RE9	South Tyneside NHS Foundation Trust	84	95.5% ●
		RLN	City Hospitals Sunderland NHS Foundation Trust	111	79.9% ▲
		RNL	North Cumbria University Hospitals NHS Trust	124	96.1% ●
		RR7	Gateshead Health NHS Foundation Trust	100	87.7% ■
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	233	97.9% ●
		RTF	Northumbria Healthcare NHS Foundation Trust	213	95.5% ●
		RTR	South Tees Hospitals NHS Foundation Trust	128	50.6% ▲
		RVW	North Tees and Hartlepool NHS Foundation Trust	166	97.1% ●
		RXP	County Durham and Darlington NHS Foundation Trust	219	97.8% ●
A10	**Peninsula**	RA9	Torbay and South Devon NHS Foundation Trust	93	86.9% ■
		RBZ	Northern Devon Healthcare NHS Trust	62	82.7% ■
		REF	Royal Cornwall Hospitals NHS Trust	143	85.1% ■
		RH8	Royal Devon and Exeter NHS Foundation Trust	173	91.1% ●
		RK9	Plymouth Hospitals NHS Trust	159	83.7% ■
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA3	Weston Area Health NHS Trust	46	83.6% ■
		RA4	Yeovil District Hospital NHS Foundation Trust	30	68.2% ▲
		RA7	University Hospitals Bristol NHS Foundation Trust	61	43.0% ▲
		RBA	Taunton and Somerset NHS Foundation Trust	58	46.0% ▲
		RD1	Royal United Hospitals Bath NHS Foundation Trust	34	34.0% ▲
		RNZ	Salisbury NHS Foundation Trust	70	85.4% ■
		RTE	Gloucestershire Hospitals NHS Foundation Trust	279	97.6% ●
		RVJ	North Bristol NHS Trust	79	54.9% ▲
A12	**South East London**	RJ1	Guy's and St Thomas' NHS Foundation Trust	32	100.0% ●
		RJ2	Lewisham and Greenwich NHS Trust	80	100.0% ●
		RJZ	King's College Hospital NHS Foundation Trust	168	100.0% ●
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RFF	Barnsley Hospital NHS Foundation Trust	94	95.9% ●
		RFR	The Rotherham NHS Foundation Trust	101	100.0% ●
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	133	89.3% ■
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	248	96.9% ●
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	191	97.4% ●
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	57	55.9% ▲
		RDU	Frimley Park Hospital NHS Foundation Trust	109	65.3% ▲
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	43	58.1% ▲
		RTP	Surrey and Sussex Healthcare NHS Trust	59	69.4% ▲
		RXC	East Sussex Healthcare NHS Trust	77	42.5% ▲
		RXH	Brighton and Sussex University Hospitals NHS Trust	68	75.6% ▲
		RYR	Western Sussex Hospitals NHS Foundation Trust	199	94.8% ●
A15	**Thames Valley**	RHW	Royal Berkshire NHS Foundation Trust	27	100.0% ●
		RN3	Great Western Hospitals NHS Foundation Trust	104	81.3% ■
		RTH	Oxford University Hospitals NHS Trust	140	97.2% ●
		RXQ	Buckinghamshire Healthcare NHS Trust	96	97.0% ●

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Alliance /Welsh region	Region name	NHS Trust code	NHS Trust name	N with CT scan	% CT scan
A16	**Wessex**	R1F	Isle of Wight NHS Trust	62	100.0% ●
		RBD	Dorset County Hospital NHS Foundation Trust	64	59.8% ▲
		RD3	Poole Hospital NHS Foundation Trust	79	68.7% ▲
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	76	59.8% ▲
		RHM	University Hospital Southampton NHS Foundation Trust	182	97.3% ●
		RHU	Portsmouth Hospitals NHS Trust	188	87.9% ■
		RN5	Hampshire Hospitals NHS Foundation Trust	112	84.8% ■
A17	**West London**	R1K	London North West Healthcare NHS Trust	178	85.2% ■
		RAS	The Hillingdon Hospitals NHS Foundation Trust	50	74.6% ▲
		RAX	Kingston Hospital NHS Foundation Trust	88	96.7% ●
		RJ6	Croydon Health Services NHS Trust	85	98.8% ●
		RJ7	St George's Healthcare NHS Trust	94	78.3% ▲
		RPY	The Royal Marsden NHS Foundation Trust	24	88.9% ■
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	122	100.0% ●
		RVR	Epsom and St Helier University Hospitals NHS Trust	111	90.2% ●
		RYJ	Imperial College Healthcare NHS Trust	88	61.1% ▲
A18	**West Midlands**	RBK	Walsall Healthcare NHS Trust	39	100.0% ●
		RJC	South Warwickshire NHS Foundation Trust	47	97.9% ●
		RJE	University Hospitals of North Midlands NHS Trust	93	36.5% ▲
		RJF	Burton Hospitals NHS Foundation Trust	109	94.0% ●
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	154	98.7% ●
		RL4	The Royal Wolverhampton NHS Trust	66	45.2% ▲
		RLQ	Wye Valley NHS Trust	76	97.4% ●
		RLT	George Eliot Hospital NHS Trust	68	95.8% ●
		RNA	The Dudley Group NHS Foundation Trust	56	30.8% ▲
		RR1	Heart of England NHS Foundation Trust	319	95.8% ●
		RRK	University Hospitals Birmingham NHS Foundation Trust	185	97.9% ●
		RWP	Worcestershire Acute Hospitals NHS Trust	240	92.0% ●
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	84	47.7% ▲
		RXW	Shrewsbury and Telford Hospital NHS Trust	117	68.0% ▲
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	123	90.4% ●
		RCD	Harrogate and District NHS Foundation Trust	89	93.7% ●
		RCF	Airedale NHS Foundation Trust	73	97.3% ●
		RR8	Leeds Teaching Hospitals NHS Trust	124	50.0% ▲
		RWY	Calderdale and Huddersfield NHS Foundation Trust	157	96.3% ●
		RXF	Mid Yorkshire Hospitals NHS Trust	198	86.1% ■
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	251	96.9% ●
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	313	86.9% ■
Cardiff	**South Wales**	7A2	Hywel Dda University Local Health Board	141	89.8% ■
		7A4	Cardiff & Vale University Local Health Board	118	93.7% ●
		7A5	Cwm Taf University Local Health Board	144	92.9% ●
		7A6	Aneurin Bevan University Local Health Board	182	88.3% ■

REVISED March 2019

Annex 9: Comparative analysis of short term outcomes after curative surgery for NHS Trusts in England and Wales (April 2014–March 2017)

Organisations submitting fewer than 10 cases for the relevant outcome or with 10 or more cases but with less than 50% complete cases in the 3 year period are not shown (N/A).

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	No. of oesophagectomies	No. of gastrectomies	Total cases	30 day mortality rate	90 day mortality rate	Length of stay (days)	% with adequate lymph nodes examined	% oes positive longitudinal margins	% oes positive circumferencial margins	% gast positive longitudinal margins
A01	**Cheshire and Merseyside**	REM	Aintree University Hospital NHS Foundation Trust	65	40	105	1.2%	1.1%	11	88.1%	1.8%	20.6%	20.4%
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	54	56	110	0.0%	0.9%	12	83.7%	4.0%	37.7%	7.4%
A02	**East Midlands**	RTG	Derby Hospitals NHS Foundation Trust	94	42	136	0.8%	2.3%	11	85.3%	4.2%	23.0%	14.7%
		RWE	University Hospitals of Leicester NHS Trust	128	44	172	2.2%	3.7%	14	69.8%	1.6%	32.1%	4.3%
		RX1	Nottingham University Hospitals NHS Trust	227	101	328	2.7%	3.8%	11	76.4%	3.6%	32.6%	7.8%
A03	**East of England**	RGT	Cambridge University Hospitals NHS Foundation Trust	129	78	207	0.0%	1.5%	10	85.5%	0.8%	19.4%	4.9%
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	115	35	150	0.6%	2.8%	7	95.9%	0.0%	18.1%	2.5%
		RQ8	Mid Essex Hospital Services NHS Trust	146	48	194	3.6%	6.6%	9	86.8%	12.5%	24.1%	8.6%
		RWG	West Hertfordshire Hospitals NHS Trust	59	41	100	5.1%	5.9%	13	96.0%	1.5%	26.6%	12.5%
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	29	16	45	0.0%	2.8%	12	73.3%	10.5%	42.2%	0.0%
		RM3	Salford Royal NHS Foundation Trust	135	81	216	0.8%	2.3%	12	75.5%	2.4%	19.8%	15.0%
		RW3	Central Manchester University Hospitals NHS Foundation Trust	77	49	126	3.4%	3.3%	14	76.2%	5.5%	39.9%	4.5%
A05	**Humber, Coast and Vale**	RWA	Hull and East Yorkshire Hospitals NHS Trust	79	42	121	3.8%	6.7%	11.5	65.1%	6.2%	21.2%	15.4%
A07	**Lancashire and South Cumbria**	RXN	Lancashire Teaching Hospitals NHS Foundation Trust	128	65	193	1.4%	2.0%	12	45.6%	3.2%	47.0%	11.6%
A08	**North Central and East London**	RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	43	30	73	0.0%	0.0%	10	72.6%	0.0%	N/A	0.0%
		RRV	University College London Hospitals NHS Foundation Trust	77	94	171	0.7%	1.3%	12	79.0%	2.7%	25.8%	6.1%
A09	**North East and Cumbria**	RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	230	159	389	1.6%	1.8%	9	97.9%	3.2%	N/A	8.1%
		RTR	South Tees Hospitals NHS Foundation Trust	120	77	197	2.3%	3.3%	13	75.4%	8.8%	33.0%	13.6%
A10	**Peninsula**	RK9	Plymouth Hospitals NHS Trust	200	35	235	1.4%	4.5%	10	87.4%	2.4%	31.3%	5.2%
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA7	University Hospitals Bristol NHS Foundation Trust	111	47	158	4.4%	4.3%	11	88.4%	8.0%	26.5%	9.2%
		RTE	Gloucestershire Hospitals NHS Foundation Trust	91	51	142	2.9%	2.8%	11	86.1%	3.8%	13.2%	19.6%
A12	**South East London**	RJ1	Guy's and St Thomas' NHS Foundation Trust	193	98	291	0.3%	0.3%	10	85.6%	3.6%	32.1%	5.8%
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	150	89	239	0.4%	2.5%	9	74.1%	2.8%	29.3%	3.8%
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	92	41	133	4.1%	3.9%	10	97.7%	3.8%	10.8%	4.7%
		RXH	Brighton and Sussex University Hospitals NHS Trust	69	18	87	0.0%	1.7%	10	28.0%	5.2%	13.1%	6.3%
A15	**Thames Valley**	RTH	Oxford University Hospitals NHS Trust	209	83	292	0.9%	1.8%	10	92.8%	2.5%	14.2%	4.2%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	No. of oesophagectomies	No. of gastrectomies	Total cases	30 day mortality rate	90 day mortality rate	Length of stay (days)	% with adequate lymph nodes examined	% oes positive longitudinal margins	% oes positive circumferencial margins	% gast positive longitudinal margins
A16	**Wessex**	RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	61	18	79	2.1%	4.1%	12	89.3%	2.5%	19.7%	12.2%
		RHM	University Hospital Southampton NHS Foundation Trust	116	33	149	0.6%	0.6%	9	87.9%	0.9%	11.4%	0.0%
		RHU	Portsmouth Hospitals NHS Trust	106	46	152	2.5%	5.6%	11	79.6%	2.7%	17.2%	8.5%
A17	**West London**	RPY	The Royal Marsden NHS Foundation Trust	70	72	142	2.1%	2.8%	11	94.4%	1.5%	19.8%	2.8%
		RYJ	Imperial College Healthcare NHS Trust	56	62	118	1.1%	2.2%	10	100.0%	0.0%	3.9%	0.0%
A18	**West Midlands**	RJE	University Hospitals of North Midlands NHS Trust	135	75	210	3.9%	6.5%	12	87.7%	3.5%	31.0%	12.0%
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	116	41	157	3.5%	6.4%	10	85.3%	8.5%	39.1%	7.6%
		RR1	Heart of England NHS Foundation Trust	77	40	117	0.9%	1.7%	14	88.9%	2.8%	26.8%	10.1%
		RRK	University Hospitals Birmingham NHS Foundation Trust	114	68	182	0.5%	1.0%	12	93.4%	1.6%	20.1%	6.6%
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	116	60	176	2.5%	4.5%	15	90.9%	4.9%	34.8%	5.6%
		RR8	Leeds Teaching Hospitals NHS Trust	120	84	204	0.0%	3.8%	11	79.9%	8.2%	43.6%	15.1%
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	30	19	49	2.9%	2.8%	11.5	50.0%	8.5%	15.1%	8.4%
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	92	62	154	6.9%	8.0%	9	75.8%	1.8%	23.4%	6.4%
Cardiff	**South Wales**	7A4	Cardiff & Vale University Local Health Board	61	43	104	2.5%	3.6%	12	49.4%	0.0%	45.6%	11.5%
		7A5	Cwm Taf University Local Health Board	8	8	16	0.0%	8.8%	15.5	28.6%	N/A	N/A	N/A

Commentary from Betsi Cadwaladr University Local Health Board in Wales, which was an outlier for 30-day adjusted mortality rate

"We have now completed the review work of the mortalities in this period and have presented to the Welsh Cancer Network as well as external peer.

The deaths include gastrectomy and oesophagectomy procedures. These include 3 instances of pouch necrosis (1.9%), and 3 anastamotic leaks (1 oesophageal and 2 gastric). The rest of the mortality involved high risk medical comorbidity leading to chest sepsis and ischaemic heart disease as specific causes of death. All mortality was recorded against patients with ASA 3 or 4, and increased risk CPEX results.

In response we are addressing our systems for preoperative risk assessment and patient selection. We are also introducing uniform perioperative anaesthetic and critical care components for managing elements including pain relief, blood pressure control, and fluid administration.

We are confident that there are no outstanding risks in the service. All changes and outcomes will continue to be monitored and audited closely."

Annex 10: Regional variation in non-curative cancer treatments in England and Wales (April 2015–March 2017)

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Pats having palliative treatment	% palliative treatment	Pats having palliative oncology	% receiving palliative oncology
A01	**Cheshire and Merseyside**	RBL	Wirral University Teaching Hospital NHS Foundation Trust	103	59.88%	46	44.66%
		RBN	St Helens and Knowsley Hospitals NHS Trust	98	70.00%	43	43.88%
		RBT	Mid Cheshire Hospitals NHS Foundation Trust	65	58.04%	33	50.77%
		REM	Aintree University Hospital NHS Foundation Trust	100	54.35%	61	61.00%
		RJN	East Cheshire NHS Trust	75	78.95%	52	69.33%
		RJR	Countess of Chester Hospital NHS Foundation Trust	29	46.77%	10	34.48%
		RQ6	Royal Liverpool and Broadgreen University Hospitals NHS Trust	132	53.01%	46	34.85%
		RVY	Southport and Ormskirk Hospital NHS Trust	50	76.92%	23	46.00%
		RWW	Warrington and Halton Hospitals NHS Foundation Trust	18	48.65%	8	44.44%
A02	**East Midlands**	RK5	Sherwood Forest Hospitals NHS Foundation Trust	92	56.79%	55	60.44%
		RNQ	Kettering General Hospital NHS Foundation Trust	87	67.97%	27	31.03%
		RNS	Northampton General Hospital NHS Trust	75	65.22%	42	56.00%
		RTG	Derby Hospitals NHS Foundation Trust	165	64.45%	50	31.06%
		RWD	United Lincolnshire Hospitals NHS Trust	21	17.50%	11	55.00%
		RWE	University Hospitals of Leicester NHS Trust	234	62.57%	111	47.44%
		RX1	Nottingham University Hospitals NHS Trust	145	53.11%	74	54.01%
A03	**East of England**	RAJ	Southend University Hospital NHS Foundation Trust	90	72.00%	36	40.00%
		RC1	Bedford Hospital NHS Trust	62	65.26%	16	25.81%
		RC9	Luton and Dunstable University Hospital NHS Foundation Trust	71	63.39%	38	54.29%
		RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust	82	58.57%	36	43.90%
		RD8	Milton Keynes Hospital NHS Foundation Trust	20	24.39%	8	40.00%
		RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	52	65.82%	24	46.15%
		RDE	Colchester Hospital University NHS Foundation Trust	96	60.76%	61	66.30%
		RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	66	65.35%	36	54.55%
		RGP	James Paget University Hospitals NHS Foundation Trust	68	59.13%	34	50.00%
		RGQ	Ipswich Hospital NHS Trust	125	77.16%	69	55.20%
		RGR	West Suffolk NHS Foundation Trust	60	61.22%	28	46.67%
		RGT	Cambridge University Hospitals NHS Foundation Trust	116	67.44%	42	36.21%
		RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	136	61.54%	68	50.00%
		RQ8	Mid Essex Hospital Services NHS Trust	69	50.00%	35	50.72%
		RQQ	Hinchingbrooke Health Care NHS Trust	44	60.27%	24	54.55%
		RQW	The Princess Alexandra Hospital NHS Trust	58	67.44%	46	79.31%
		RWG	West Hertfordshire Hospitals NHS Trust	79	59.85%	49	66.22%
		RWH	East and North Hertfordshire NHS Trust	92	68.15%	39	42.39%
A04	**Greater Manchester**	RM2	University Hospital of South Manchester NHS Foundation Trust	83	74.77%	40	48.19%
		RM3	Salford Royal NHS Foundation Trust	54	54.55%	25	49.02%
		RMC	Bolton NHS Foundation Trust	58	50.43%	18	31.58%
		RMP	Tameside and Glossop Integrated Care NHS Foundation Trust	61	70.93%	20	32.79%
		RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	79	58.96%	34	43.59%
		RW3	Central Manchester University Hospitals NHS Foundation Trust	103	60.23%	60	58.25%
		RW6	Pennine Acute Hospitals NHS Trust	209	68.30%	44	21.26%
		RWJ	Stockport NHS Foundation Trust	96	75.00%	33	34.38%
A05	**Humber, Coast and Vale**	RCB	York Teaching Hospital NHS Foundation Trust	125	60.39%	2	5.00%
		RJL	Northern Lincolnshire and Goole NHS Foundation Trust	124	62.94%	83	66.94%
		RWA	Hull and East Yorkshire Hospitals NHS Trust	154	66.96%	125	81.17%
A06	**Kent and Medway**	RN7	Dartford and Gravesham NHS Trust	72	70.59%	56	77.78%
		RPA	Medway NHS Foundation Trust	56	53.33%	46	88.46%
		RVV	East Kent Hospitals University NHS Foundation Trust	205	67.21%	96	50.00%
		RWF	Maidstone and Tunbridge Wells NHS Trust	96	54.86%	18	41.86%
A07	**Lancashire and South Cumbria**	RTX	University Hospitals of Morecambe Bay NHS Foundation Trust	95	64.63%	66	69.47%
		RXL	Blackpool Teaching Hospitals NHS Foundation Trust	126	69.23%	53	42.40%
		RXN	Lancashire Teaching Hospitals NHS Foundation Trust	134	72.43%	57	42.54%
		RXR	East Lancashire Hospitals NHS Trust	152	72.73%	71	46.71%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Pats having palliative treatment	% palliative treatment	Pats having palliative oncology	% receiving palliative oncology
A08	**North Central and East London**	R1H	Barts Health NHS Trust	99	59.64%	38	38.38%
		RAL	Royal Free London NHS Foundation Trust	154	68.14%	86	56.21%
		RAP	North Middlesex University Hospital NHS Trust	72	66.67%	59	83.10%
		RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	163	73.42%	68	45.64%
		RKE	The Whittington Hospital NHS Trust	29	74.36%	20	68.97%
		RQX	Homerton University Hospital NHS Foundation Trust	30	63.83%	18	60.00%
		RRV	University College London Hospitals NHS Foundation Trust	48	54.55%	37	77.08%
A09	**North East and Cumbria**	RE9	South Tyneside NHS Foundation Trust	62	70.45%	29	46.77%
		RLN	City Hospitals Sunderland NHS Foundation Trust	84	60.43%	48	57.14%
		RNL	North Cumbria University Hospitals NHS Trust	82	63.57%	44	53.66%
		RR7	Gateshead Health NHS Foundation Trust	72	63.16%	24	33.33%
		RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	138	57.98%	73	52.90%
		RTF	Northumbria Healthcare NHS Foundation Trust	150	67.26%	70	46.67%
		RTR	South Tees Hospitals NHS Foundation Trust	142	56.13%	67	50.38%
		RVW	North Tees and Hartlepool NHS Foundation Trust	105	61.40%	34	32.38%
		RXP	County Durham and Darlington NHS Foundation Trust	139	62.05%	65	46.76%
A10	**Peninsula**	RA9	Torbay and South Devon NHS Foundation Trust	72	67.29%	38	52.78%
		RBZ	Northern Devon Healthcare NHS Trust	47	62.67%	19	40.43%
		REF	Royal Cornwall Hospitals NHS Trust	117	69.64%	53	45.30%
		RH8	Royal Devon and Exeter NHS Foundation Trust	123	64.74%	68	55.28%
		RK9	Plymouth Hospitals NHS Trust	128	67.37%	61	47.66%
A11	**Somerset, Wiltshire, Avon and Gloucestershire**	RA3	Weston Area Health NHS Trust	29	52.73%	12	41.38%
		RA4	Yeovil District Hospital NHS Foundation Trust	25	56.82%	11	44.00%
		RA7	University Hospitals Bristol NHS Foundation Trust	82	57.75%	28	34.15%
		RBA	Taunton and Somerset NHS Foundation Trust	71	56.35%	29	40.85%
		RD1	Royal United Hospitals Bath NHS Foundation Trust	62	62.00%	24	38.71%
		RNZ	Salisbury NHS Foundation Trust	52	63.41%	13	25.00%
		RTE	Gloucestershire Hospitals NHS Foundation Trust	193	67.48%	149	85.63%
		RVJ	North Bristol NHS Trust	64	44.44%	14	21.88%
A12	**South East London**	RJ2	Lewisham and Greenwich NHS Trust	40	50.00%	20	50.00%
		RJZ	King's College Hospital NHS Foundation Trust	103	61.31%	70	67.96%
A13	**South Yorkshire, Bassetlaw and North Derbyshire**	RFF	Barnsley Hospital NHS Foundation Trust	65	66.33%	23	35.38%
		RFR	The Rotherham NHS Foundation Trust	76	75.25%	31	40.79%
		RFS	Chesterfield Royal Hospital NHS Foundation Trust	110	73.83%	29	27.36%
		RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	178	69.53%	63	35.59%
		RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	135	68.88%	108	80.00%
A14	**Surrey and Sussex**	RA2	Royal Surrey County Hospital NHS Foundation Trust	45	44.12%	34	75.56%
		RDU	Frimley Park Hospital NHS Foundation Trust	80	47.90%	53	67.09%
		RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	47	63.51%	37	78.72%
		RTP	Surrey and Sussex Healthcare NHS Trust	59	69.41%	37	62.71%
		RXC	East Sussex Healthcare NHS Trust	121	66.85%	24	19.83%
		RXH	Brighton and Sussex University Hospitals NHS Trust	31	34.44%	13	41.94%
		RYR	Western Sussex Hospitals NHS Foundation Trust	126	60.00%	57	45.60%
A15	**Thames Valley**	RN3	Great Western Hospitals NHS Foundation Trust	83	64.84%	41	49.40%
		RTH	Oxford University Hospitals NHS Trust	55	38.19%	37	67.27%
		RXQ	Buckinghamshire Healthcare NHS Trust	42	42.42%	32	76.19%
A16	**Wessex**	R1F	Isle of Wight NHS Trust	42	67.74%	20	47.62%
		RBD	Dorset County Hospital NHS Foundation Trust	74	69.16%	35	47.30%
		RD3	Poole Hospital NHS Foundation Trust	47	40.87%	24	51.06%
		RDZ	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	86	67.72%	20	23.26%
		RHM	University Hospital Southampton NHS Foundation Trust	113	60.43%	46	40.71%
		RHU	Portsmouth Hospitals NHS Trust	111	51.87%	78	70.27%
		RN5	Hampshire Hospitals NHS Foundation Trust	69	52.27%	41	59.42%

Alliance /Welsh region	Region name	NHS organisation code	NHS organisation name	Pats having palliative treatment	% palliative treatment	Pats having palliative oncology	% receiving palliative oncology
A17	**West London**	R1K	London North West Healthcare NHS Trust	115	55.02%	56	65.12%
		RAS	The Hillingdon Hospitals NHS Foundation Trust	41	61.19%	17	41.46%
		RAX	Kingston Hospital NHS Foundation Trust	51	56.04%	41	80.39%
		RJ6	Croydon Health Services NHS Trust	54	62.79%	37	68.52%
		RJ7	St George's Healthcare NHS Trust	82	68.33%	35	43.21%
		RPY	The Royal Marsden NHS Foundation Trust	14	51.85%	11	78.57%
		RQM	Chelsea and Westminster Hospital NHS Foundation Trust	65	53.28%	50	76.92%
		RVR	Epsom and St Helier University Hospitals NHS Trust	78	63.41%	43	55.13%
		RYJ	Imperial College Healthcare NHS Trust	79	54.86%	39	49.37%
A18	**West Midlands**	RJC	South Warwickshire NHS Foundation Trust	25	52.08%	13	52.00%
		RJE	University Hospitals of North Midlands NHS Trust	143	56.08%	83	58.04%
		RJF	Burton Hospitals NHS Foundation Trust	73	62.93%	58	81.69%
		RKB	University Hospitals Coventry and Warwickshire NHS Trust	81	51.92%	38	48.72%
		RL4	The Royal Wolverhampton NHS Trust	74	50.68%	38	51.35%
		RLQ	Wye Valley NHS Trust	44	56.41%	27	61.36%
		RLT	George Eliot Hospital NHS Trust	36	50.70%	20	55.56%
		RNA	The Dudley Group NHS Foundation Trust	94	51.65%	22	23.40%
		RR1	Heart of England NHS Foundation Trust	241	72.37%	92	38.33%
		RRK	University Hospitals Birmingham NHS Foundation Trust	126	66.67%	55	45.83%
		RWP	Worcestershire Acute Hospitals NHS Trust	175	67.05%	85	48.57%
		RXK	Sandwell and West Birmingham Hospitals NHS Trust	118	67.05%	48	40.68%
		RXW	Shrewsbury and Telford Hospital NHS Trust	104	60.47%	58	55.77%
A19	**West Yorkshire**	RAE	Bradford Teaching Hospitals NHS Foundation Trust	64	47.06%	24	46.15%
		RCD	Harrogate and District NHS Foundation Trust	57	60.00%	22	39.29%
		RCF	Airedale NHS Foundation Trust	53	70.67%	23	46.00%
		RR8	Leeds Teaching Hospitals NHS Trust	162	65.32%	74	60.66%
		RWY	Calderdale and Huddersfield NHS Foundation Trust	103	63.19%	34	44.74%
		RXF	Mid Yorkshire Hospitals NHS Trust	145	63.04%	67	46.85%
ABMU	**ABMU**	7A3	Abertawe Bro Morgannwg University Local Health Board	166	64.09%	95	63.76%
BCU	**North Wales**	7A1	Betsi Cadwaladr University Local Health Board	211	58.61%	89	44.06%
Cardiff	**South Wales**	7A2	Hywel Dda University Local Health Board	107	68.15%	55	55.00%
		7A4	Cardiff & Vale University Local Health Board	82	65.08%	31	41.89%
		7A5	Cwm Taf University Local Health Board	92	59.35%	41	46.07%
		7A6	Aneurin Bevan University Local Health Board	148	71.84%	67	47.18%

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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.

Ablation – A palliative technique (performed by laser or argon beam coagulation) that aims to reduce symptoms by destroying the surface of the tumour, thereby shrinking it in size.

Adenocarcinoma – Tend to occur in the lower third of the oesophagus or stomach in glandular cells that make and release fluids.

AUGIS – Association of Upper GI Surgeons

Brachytherapy – This is a type of radiotherapy in which a radiation source is placed inside a person's oesophagus, next to the area requiring treatment.

BSG – British Society of Gastroenterology

CARMS – The Clinical Audit and Registries Management Service Support Unit 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 comprises 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.

Dilatation – A procedure that involves inserting an endoscope into the oesophagus to increase the size of the opening through which food or liquids can pass.

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, dilatation, 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, e.g. 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 inpatients treated within NHS trusts in England. This includes details of admissions, diagnoses and 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.

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.

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.

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 – 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 foodpipe.

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 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.

PEDW – Patient Episode Database for Wales (PEDW) is an administrative database which contains data on all inpatients treated within NHS hospitals in Wales. This includes details of admissions, diagnoses and treatments undergone.

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.

Squamous cell carcinoma – A tumour that is located in the cells lining the oesophagus and tends to occur in the upper or middle of the oesophagus.

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.