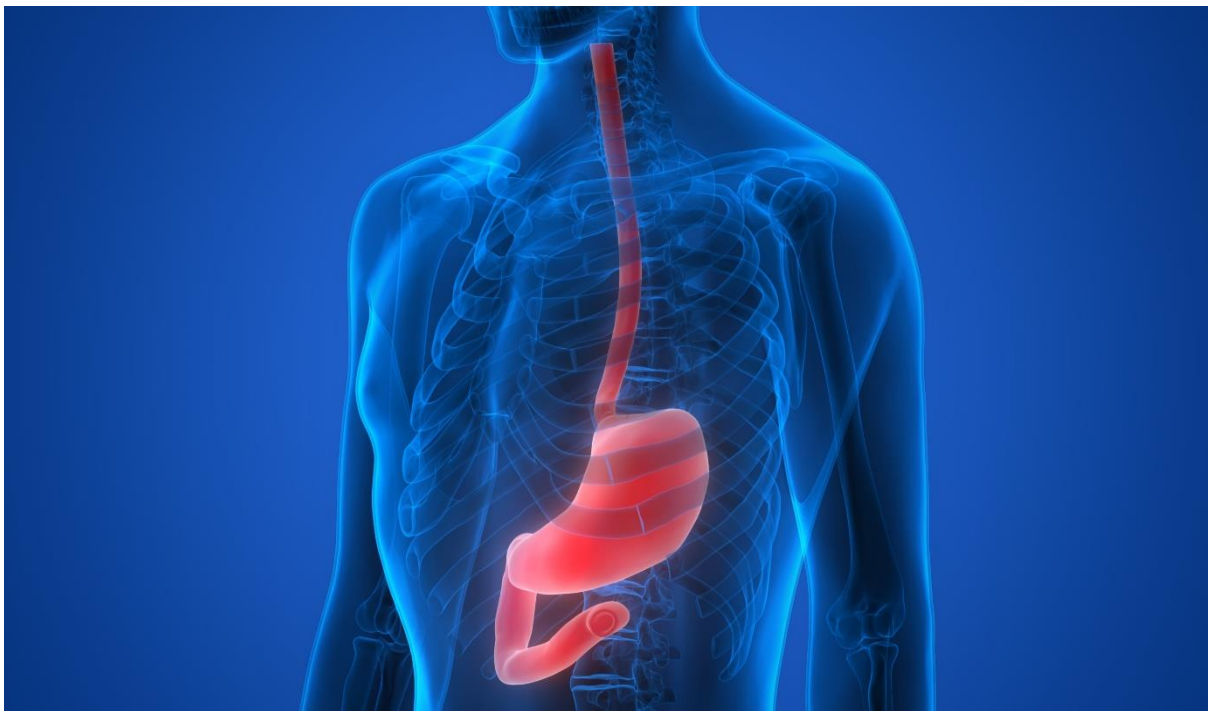
National Oesophago-Gastric Cancer Audit

2019



An audit of the care received by
people with oesophago-gastric cancer and
oesophageal high grade dysplasia in England and Wales

Version 2: Published 19 December 2019

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AUGIS Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland	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.
bsg 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.
RCR The Royal College of Radiologists	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 trading name for the Health and Social Care Information Centre (HSCIC). They provide 'Information and Technology for better health and care'. The Clinical Audit and Registries Management Service of NHS Digital manages a number of national clinical audits in the areas of cancer, diabetes and heart disease. It manages the Audit on behalf of the RCS.

Contents

VERSION 2: Published 19 December 2019
Updates made to original: Some high grade dysplasia (HGD) figures in the executive summary and HGD infographic were updated to match the correct figures in the main text. The median length of stay figure for oesophaectomy in the OG cancer infographic was also corrected.

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).

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

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 data.

We would also like to acknowledge the Welsh local health boards and the Welsh Cancer Network.

We would particularly like to thank:

- Mr John Taylor, Mr David Eaves 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 Office of Data Release, Public Health England

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.

Executive Summary

The National Oesophago-Gastric Cancer Audit (NOGCA) was established to evaluate the quality of care received by patients with oesophago-gastric (OG) cancer in England and Wales. It collects prospective data on adult patients diagnosed in England and Wales with invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach, and patients diagnosed with high grade dysplasia (HGD) of the oesophagus. In this 2019 Annual Report, we describe the care received by patients diagnosed between April 2016 and March 2018 and their outcomes. All 134 NHS acute trusts in England and the 6 local health boards in Wales participated in the 2016-18 audit period.

The report is written for four key audiences: those who deliver, receive, commission and regulate care. 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 as well as to inform patients and the commissioners of cancer services.

Supplementary material from the report, including tables containing individual trust results, and further information about the Audit can be found on its website: www.NOGCA.org.uk.

High grade dysplasia of the oesophagus: key findings

Guidance on the diagnosis and management of patients with HGD of the oesophagus was published by the British Society of Gastroenterology in 2014 [BSG/Fitzgerald et al 2014], updating and extending the National Institute for Health and Care Excellence (NICE) clinical guidance on endoscopic treatment for Barrett's oesophagus [NICE 2010]. The audit uses clinical standards relating to four key areas of care identified in the guidelines, the findings of which are described below. During the 2016-18 period, the Audit received information on 797 patients diagnosed with HGD in England, a similar number to the 800 patient records received between April 2014 and March 2016. The number of HGD records submitted per million population shows variation across regions, and suggests some regions might have lower case ascertainment. Data were not available for Wales because they could not be collected within existing IT systems.

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

In the audit period 2016-18, 89.0% of patients with HGD had their original diagnosis confirmed by a second pathologist. The proportion exceeded 90% for patients aged under 70 years, and was 88.3% among patients aged 70-79 years and 83.2% for patients aged 80 and over. The figures among older patients were an improvement on the figures for 2012-14 and 2014-16.

2. All patients with HGD should be discussed by a specialist multi-disciplinary team (MDT).

In the 2016-18 audit period, 85.8% of newly diagnosed cases of HGD were discussed at an upper gastrointestinal MDT meeting. This proportion has remained stable over the four years from 2014 to 2018, but there were regional differences in the proportion discussed at MDT, with the figure exceeding 90% for six Cancer Alliances and being below 70% for two Alliances.

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

Among patients diagnosed between 2014 and 2018, 69.6% of patients had a plan of endoscopic therapy, 12.8% of patients had a plan of surveillance alone, and 9.6% of patients had no treatment or surveillance planned. The proportion of patients who had surveillance or no treatment was higher among older patients. There was also some variation between the Cancer Alliances, with over 85% of patients within some Alliances planned to have active treatment, while the proportion was below 65% in others.

4. Endoscopic treatment should be performed in specialist centres treating at least 15 cases each year

Based on the data submitted for the 2016-18 period, 6 of the 35 specialist OG cancer centres) performed at least 15 endoscopic procedures annually, although 13 treated at least 15 patients annually in one or more years since 2012. Twenty two centres, along with five non-surgical centres that reported treating HGD patients in five of the six years since 2012, never reported an annual volume of 15 or more cases.

Oesophago-gastric cancer: key findings

The 134 NHS organisations in England and Wales providing OG cancer care submitted records on 20,080 patients and 1,337 patients, respectively.

1. Patterns of care at diagnosis: diagnosed following an emergency admission

Among patients diagnosed in 2016-18, 66% were diagnosed following referral from a GP, 13% after emergency admission, and 22% from a non-emergency hospital setting. The overall rate of diagnosis after an emergency admission was 10.6% for oesophageal tumours and 19.6% for stomach tumours. The rate was strongly associated with age, rising to 16.2% and 26.1% for oesophageal and stomach tumours, respectively, among patients aged 80+. Regional variation continues to be observed, with the adjusted rates of diagnosis after emergency admission across the Cancer Alliance/Welsh region ranging from 5.7% to 26.9%. This is possibly due to a combination of how patients use local services as well as practitioner factors.

2. Staging and treatment planning

All patients diagnosed with OG cancer are recommended to have a CT scan to identify any metastatic disease. Overall, 93.8% of patients diagnosed in 2016-18 had an initial CT scan, and there was good compliance with this recommendation across NHS organisations. A minority of NHS organisations submitted limited staging investigation data, which needs to improve.

For patients with oesophageal cancer, PET-CT is recommended for patients being considered for curative treatment. In the 2016-18 cohort, 78.7% of patients who had curative treatment for oesophageal cancer had PET-CT, although the use of EUS and PET-CT varied across England and Wales.

Clinical stage information is essential to interpret treatment plans. While 9 of the 22 Cancer Alliances / Welsh regions submitted clinical stage for over 90% of patients, more services should meet this standard. Among patients with early disease (stage 0/1-3), a high proportion of patients had a curative treatment plan (typically over 70%), although this was lower among older patients and the overall proportion of patients with stage 0/1-3 cancer managed with curative intent was 58.8% in 2016-18. The proportions varied between Cancer Alliances/Welsh regions but were generally close to the national average.

3. Time taken along the care pathway

The target for the waiting time from referral to the start of treatment is 62 days, but recent NHS figures show services are struggling to meet this target [NHS England 2019; NHS Wales 2018]. In the 2016-2018 cohort, the distributions of waiting times from referral to first treatment were often similar across the Cancer Alliances / Welsh regions, with the differences being smaller than the differences in times between patients. Only five regions managed to have primary treatment start within 62 days of referral for more than half the patients with curative treatment plans. For patients having non-curative oncological treatment, about 50% of patients typically started treatment 62 days within each region. However, in 9 regions, 25% patients waited longer than 80 days.

4. Curative Surgery

In the three year period (2015-2018) over which curative surgery is evaluated, services submitted data for 4,417 oesophagectomies and 2,334 gastrectomies. All NHS acute trusts and local health boards had rates of 90-day mortality after curative surgery within the expected range given their volume of cases (overall 90-day mortality rate was 3.8% for oesophagectomies and 2.5% for gastrectomies).

Enhanced recovery after surgery (ERAS) protocols can reduce surgical complications and shorten length of hospital stay. The audit had one year of data (2017-18) on the use of ERAS, which revealed that over half of patients having curative surgery were placed on an ERAS protocol with daily-documentation in the medical notes. On average, these patients had shorter stays; the mean hospital stay was typically 2 days less than patients on a non-ERAS pathway).

Other key indicators of outcome for patients having curative surgery were the proportion of patients with positive resection margins (ie, tumour was found at the edge of the removed tissue). A lack of standardisation in the preparation of surgical specimens in theatre before submission to the pathology department has limited the ability of organisations to benchmark themselves on these indicators. In the 2015-18 audit period, surgical centres had a similar level of performance on the longitudinal margins indicators for oesophagectomy and gastrectomy. All NHS acute trusts and local health boards had positive longitudinal margin rates within the expected range given their volume of cases (overall rate was 3.8% for oesophagectomies and 7.2% for gastrectomies).

5. Non-curative treatments

Among patients on a non-curative care pathway, palliative oncological treatment 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 oncological treatment, 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. There is considerable regional variation in the use of doublet and triplet regimens, especially among patients aged 75 years and over being treated with palliative chemotherapy for adenocarcinomas.

Recommendations

	Where in report	Primary audience
Audit participation		
1. Review cases submitted to the National Oesophago-Gastric Cancer Audit regularly and ensure data collection practices are robust by focusing on (a) case ascertainment in regions where it is currently low, and (b) the completeness of data items, particularly those related to cancer stage.	Pages 12, 19, 28	Clinical leads, Multi-disciplinary teams (MDTs), local audit teams
Diagnosis and treatment of high grade dysplasia		
2. Ensure that older patients with suspected high grade dysplasia have their diagnosis confirmed by a second pathologist.	Page 13	Clinical leads, MDTs
3. Ensure that all patients with high grade dysplasia are considered for endoscopic treatment, in line with current recommendations. High rates of non-treatment among patients should be explored in a local audit / review.	Page 14	Clinical leads, MDTs
4. Ensure protocols are in place with neighbouring hospitals for the referral of all cases of high grade dysplasia to the specialist multi-disciplinary team.	Page 16	NHS trusts / local health boards, commissioners
5. Review protocols on the referral of patients to their local specialist centre for endoscopic treatment to ensure annual volumes comply with British Society of Gastroenterology recommended caseloads.	Page 16	NHS trusts / local health boards, commissioners
Diagnosis and treatment of oesophago-gastrc cancer		
6. Investigate reasons for patients being diagnosed with cancer after emergency admission to identify opportunities for improving earlier detection.	Page 22	GP practices, MDTs, Commissioners
7. Ensure patients have staging investigations in line with national guidance – notably, all patients being considered for radical treatment have a PET-CT scan, with EUS and staging laparoscopy being used as appropriate.	Pages 25-26	MDTs, NHS trusts / local health boards
8. Review waiting times through the oesophago-gastric cancer care pathway and identify ways to improve the progression of patients from referral through to diagnosis and treatment.	Page 35	MDTs, NHS trusts / local health boards commissioners
9. Work towards standardising the methods of preparing surgical specimens following resection, particularly in relation to circumferential margins.	Page 41	Upper GI surgeons, pathologists, AUGIS
10. Explore the reasons why patients receiving palliative chemotherapy were unable to complete the regimen, and where appropriate develop plans to address the issues identified.	Page 47	Oncologists, MDTs, NHS trusts / local health boards

High grade dysplasia

The Audit received information about

797 patients

in England, who were diagnosed with high-grade dysplasia of the oesophagus between April 2016 and March 2018.

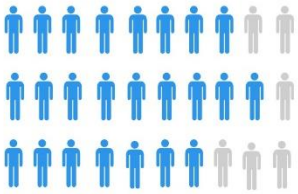
71 Median age (years)

75% Were male

83% Had a segment of Barrett's oesophagus

Recommended process of care

Care received by patients diagnosed between April 2016 and March 2018



89% of patients had their diagnosis confirmed by a second pathologist

86% of patients were discussed at a multidisciplinary team meeting

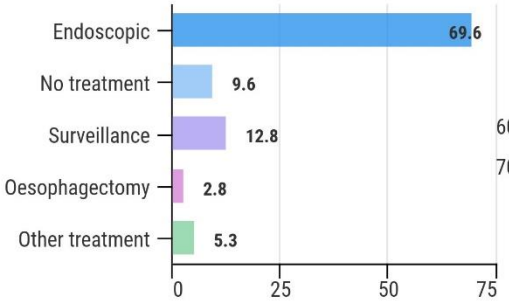
70% of patients received endoscopic treatment

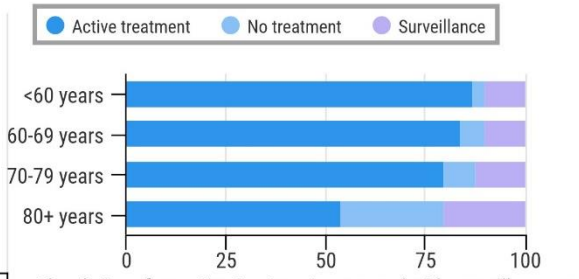
For further information

www.nogca.org.uk

Primary treatment modality

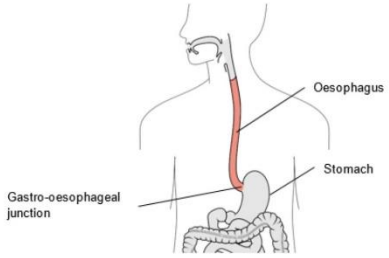
Primary treatment among patients diagnosed between April 2014 and March 2018





The choice of an active treatment compared with surveillance or no treatment was related to age at diagnosis.

Glossary



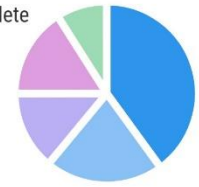
High grade dysplasia (HGD) refers to precancerous changes in the cells of the oesophagus, and occurs at the junction of the oesophagus and the stomach.

Barrett's oesophagus is condition where the cells of the oesophagus grow abnormally. Barrett's oesophagus is not a cancer, but can develop into cancer for a small number of people.

Outcomes after endoscopic mucosal resection / endoscopic submuscosal dissection between April 2016 and March 2018

69% of patients have a complete excision

29% of removed tissue is found to contain cancer cells



Plan after incomplete excision

- Further EMR/ESD
- Further ablative therapy
- Refer for oesophagectomy
- Surveillance
- No further treatment

NOGCA 2019 Annual Report Oesophago-gastric cancer

The Audit received information about

21,417 patients

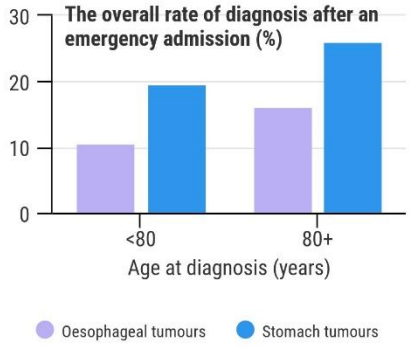
in England and Wales, who were diagnosed with oesophageal-gastric cancer between April 2016 and March 2018.

72 Median age (years)

69% Were male

37% Diagnosed with metastatic cancer (Stage IV)

Route to diagnosis



Glossary

Gastric - An adjective used to describe something that is related to or involves the stomach.

Gastrectomy - A surgical procedure to remove either a section or all of the stomach.

Oesophagus - The portion of the digestive tract that carries food from the bottom of the throat to the top of the stomach.

Oesophagectomy - The surgical removal of all or part of the oesophagus.

Time taken by patients to move along the care pathway

Cancer waiting time targets set by NHS England and NHS Wales focus on treatment starting within 62 days after referral for suspected cancer.

Non-Curative treatment: In 9 regions, 25% of patients waited more than 80 days

Curative treatment: In 19 regions, 25% of patients waited more than 80 days

Treatment plan

Proportion of patients having curative treatment plans during the audit period 2016-2018

Stage 0/1	Stage 2	Stage 3
71.1%	61.3%	52.8%

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

Outcomes after curative surgery

Oesophagectomy

30 day survival	Length of stay (median)	90 day survival
97.9%	12 days	96.2%

Gastrectomy

30 day survival	Length of stay (median)	90 day survival
98.5%	9 days	97.5%

1. Introduction

Oesophago-gastric (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.

The National Oesophago-Gastric Cancer Audit (NOGCA) was established to evaluate the quality of care received by patients diagnosed with oesophago-gastric (OG) cancer and identify where NHS cancer services in England and Wales can improve the care delivered to these patients. In addition, the Audit examines the care received by patients diagnosed with oesophageal high grade dysplasia (HGD), due to the risk of progression to cancer if HGD is left untreated.

The 2019 Annual Report gives an overall picture of the care provided to adult patients with OG cancer or oesophageal HGD. It focuses primarily on the experience and outcomes of patients diagnosed between April 2016 and March 2018.

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 neuro-endocrine tumours or gastro-intestinal stromal tumours (GISTs) were not included in the Audit due to the different management of these tumours.

1.1 The 2019 Annual Report

The aim of this report is to describe the care received by people with oesophago-gastric cancer and oesophageal high grade dysplasia in England and Wales from the time of diagnosis to the end of a patient's primary treatment and identify areas of variation for local investigation.

In particular, the report focuses on:

1. the quality and timeliness of the diagnosis and clinical (pre-treatment) staging process
2. whether decisions about planned curative or palliative treatments are supported by the necessary clinical data (eg, on disease stage, patient fitness)
3. the appropriate use of curative modalities including combinations of surgery, chemotherapy and radiotherapy
4. the use of oncological and endoscopic / radiological palliative treatments
5. outcomes of care

The report is aimed at those who provide, receive, commission and regulate OG cancer care. This includes clinicians and other healthcare 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 care for OG cancer or high grade dsyplasia, 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. The Audit is overseen by a Project Board, and advice on the clinical direction of the Audit, the interpretation of its findings and their dissemination is provided by a Clinical Reference Group (see Annex 1).

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.

This report presents results for English NHS services within 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 the treatment for all people with cancer across the country. For simplicity, we use term Alliance to refer to both Alliances and Vanguard regions.

For Wales, the Audit is supported by the single Wales Cancer Network and recognises all health boards and trusts providing services and, especially, the three regional NHS services, defining the geographical areas as: Abertawe Bro Morgannwg (ABMU), Betsi Cadwaladr (North Wales) and South Wales Cardiff region providing specialist surgical and onology services.

A list of the geographical regions and the NHS organisations within them is provided in Annex 3.

1.3 Other information produced by the Audit

Supplementary material from the report, including tables containing individual trust results, and further information about the Audit can be found on its website: www.NOGCA.org.uk.

The NOGCA website also contains:

- Annual Reports from previous years
- Patient versions of the Annual Reports
- Information on the performance of each NHS organisation
- Links to resources that support local services quality improvement initiatives
- 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 each organisation. This information can be found on the:

- AUGIS website (http://www.augis.org/surgical-outcomes-2018/)
- MyNHS website (https://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 Care Quality Commission (CQC) intelligence team to create a dashboard to support their inspections.

2. Management of patients with high grade dysplasia

In a small proportion of patients with Barrett's oesophagus (a condition that affects the junction of the oesophagus and the stomach), the cells can become increasingly abnormal, a condition called dysplasia. High grade dysplasia (HGD) is the most severe form of dysplasia and, if untreated, around 1 in 20 patients develop oesophageal cancer in the year after diagnosis.

The Audit has been evaluating the care received by these patients since April 2012. It has based its performance indicators on the recommendations in guidance published by the British Society of Gastroenterology (BSG) on the management of Barrett's oesophagus [BSG/Fitzgerald et al 2014] and NICE clinical guidance on endoscopy treatment for Barrett's oesophagus [NICE 2010] (see Table 2.1).

Box 2.1. Recommendations from BSG guideline on the management of HGD

Recommendation	Indicator
All cases of suspected HGD should be confirmed by two gastrointestinal (GI) pathologists Grading dysplasia involves a degree of subjectivity. Studies have found that the rate of progression to cancer among patients with dysplasia is higher when diagnosis is confirmed by two pathologists.	% of patients whose diagnosis was confirmed by a second pathologist
All patients with HGD for whom therapy is considered should be discussed by a specialist multi-disciplinary team (MDT) for OG cancer Discussion by the MDT ensures that the most appropriate treatment options are considered for patients.	% of patients considered for treatment discussed by specialist MDT for OG cancer
Endoscopic treatment of HGD (endoscopic mucosal resection, radiofrequency ablation) 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 (minimum 15 endoscopic procedures per year for HGD or early cancer) Complication rates after endoscopic treatments have been found to be higher among endoscopists with less experience.	Number of patients with HGD receiving endoscopic treatment at each NHS trust per year

2.1 Submission of data on HGD patients

The submission of data on HGD patients has so far been limited to English NHS trusts. In Wales, data collection has not been possible via the CaNISC IT system.

The number of HGD records submitted to the Audit has varied over time: 952 cases in the two year period 2012-14, 800 in 2014-16, and 797 in 2016-18. There is no reliable way to identify patients with HGD in other national health care datasets [Chadwick et al 2017]. Consequently, we present the estimated incidence of HGD among people aged 40+ years per million population for each Cancer Alliance (Table 2.1) given that the population structure within each region is similar. The number of HGD cases across the Alliances typically fall between 30 and 40 per million, although several Alliances have much lower rates. The most likely explanation for these low values is a comparatively worse case ascertainment rate.

Various technical difficulties have been highlighted to the Audit by hospital staff coordinating the submission of HGD records across different organisations. Nonetheless, the number of HGD patients per year corresponds to 3-4 patients per month at each NHS trust and submission of these data does not represent a substantial burden.

Table 2.1: HGD cases submitted to the Audit per million population by English Cancer Alliance

	Adults of	Year of diagnosis		
Cancer Alliance	**40+ years**	**2012-2014**	**2014-16**	**2016-2018**
W Yorkshire	1,212,331	42.9	28.9	9.1
Humber, Coast & Vale	738,834	10.8	24.4	10.8
Cheshire & Mersey	1,293,334	46.4	39.4	41.0
S Yorks, Bstlw, N Derb & Hwk	970,385	31.9	24.7	41.2
W Midlands	2,899,602	26.2	20.7	16.2
E Midlands	2,140,600	36.9	29.9	35.0
E England	3,336,805	37.8	27.6	34.8
SE London	748,380	32.1	32.1	32.1
Kent & Medway	946,556	39.1	44.4	38.0
Surrey & Sussex	1,632,582	15.9	10.4	9.2
Thames Valley	1,162,553	17.2	22.4	36.1
Peninsula	990,472	39.4	35.3	25.2
Soms, Wilt, Avon & Glou	1,474,173	29.8	24.4	38.7
Wessex	1,386,472	68.5	49.0	36.1
North East & Cumbria	1,649,549	47.9	49.1	67.9
Lancs & S Cumbria	890,521	16.8	30.3	34.8
Greater Manchester	1,311,644	45.0	41.2	14.5
N Cent / NE London	1,350,660	28.1	11.1	6.7
NW / SW London	1,557,074	28.3	19.9	17.3

HGD is a condition that is typically associated with older age. Within the period from 2016-18, the median age at diagnosis was 71 years (IQR 64 to 78) and three quarters of the 797 patients were male. 46% of patients had at least one significant comorbidity, of which cardiovascular disease was the most common (reported for 22% of patients), followed by diabetes (11% of patients). The route to diagnosis was evenly split between referral from a medical practitioner after the patient experienced symptoms (49.2%), and after referral while on surveillance (50.8%).

Diagnosis

Since 2012, there has been a noticeable improvement in the proportion of patients who had their original diagnosis confirmed by a second pathologist (Table 2.2). The proportion exceeded 90% for patients aged under 60 years in each two year period, and this level was reached for the period 2016-18 for patients aged 60-69 years.

In the 2016-18 audit period:

- 59% of patients had a repeat biopsy taken, of whom 84% had this result confirmed by a second pathologist
- 83% of patients were reported to have a Barrett's segment
- 49% of patients had a nodular lesion, 48% had a flat muscosa, and 3% had a depressed lesion. 82% of patients with a flat muscosa had quadrantic biopsies taken.

The above characteristics are similar to those reported in other studies.

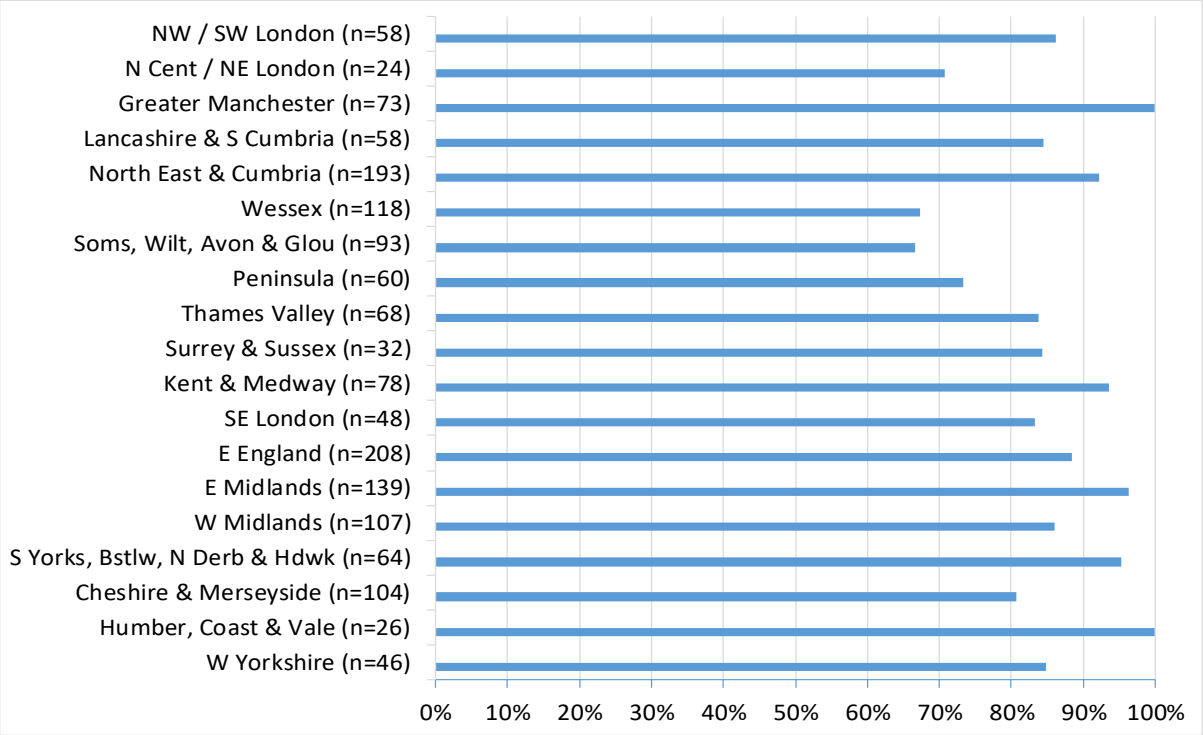
Treatment planning

Between 2014 and 2018, 86% of newly diagnosed HGD patients had a treatment plan agreed at an upper gastrointestinal MDT meeting (2014-16: 85.7%; 2016-18: 85.8%). There were small differences in the proportion with a plan agreed by an MDT if the patient had active treatment (87%), surveillance (82%) or no active treatment (78%).

Table 2.2: Proportion of patients whose original diagnosis was confirmed by a second pathologist, by age at diagnosis across the audit periods

	Year of diagnosis		
Age of patient at diagnosis (years)	**2012-14**	**2014-16**	**2016-2018**
Under 60 years	91.4%	91.2%	91.5%
60-69	83.2%	86.4%	92.3%
70-79	83.5%	83.0%	88.3%
80 or over	77.2%	82.4%	83.2%
All patients	83.0%	85.1%	89.0%

Figure 2.1: Proportion of patients whose treatment plan was agreed at an MDT meeting for patients diagnosed between April 2014 and March 2018, by Cancer Alliance of diagnosis



There was some variation across the 19 Cancer Alliances, with six regions reporting plans were agreed by the MDT for over 90% of patients, while two Alliances reported plans were not agreed for one third of the submitted cases (Figure 2.1).

Primary treatment modality

Endoscopic treatment is recommended as the first line treatment for HGD in preference to either surgery or surveillance alone [BSG / Fitzgerald 2014]. NHS services were generally performing in line with this recommendation, reporting that the planned primary treatments among patients diagnosed between 2014 and 2018 were as follows:

- 69.6% of patients had a plan of endoscopic therapy (almost all being either endoscopic resection (80%) or radiofrequency ablation (19%))
- 2.8% of patients had a plan of surgery (oesophagectomy). Pathology results from the resected tissue revealed 55% had oesophageal cancer (16/29 patients; unknown for 15 patients).
- 5.3% of patients had another treatment planned (argon plasma coagulation, photodynamic therapy, laser therapy)
- 12.8% of patients had a plan of surveillance alone
- 9.6% of patients had no treatment or surveillance planned

The choice of an active treatment compared with surveillance or no treatment was strongly associated with age at diagnosis (Figure 2.2). There was also some variation in the choice of treatment modality across Cancer Alliances (Figure 2.3). While overall, 77.6% of patients had active treatment, the proportion of patients planned to have active treatment exceeded 85% in some regions, while in others, the proportion was below 65%.

Figure 2.2: Initial primary treatment by age at diagnosis for patients diagnosed between April 2014 and March 2018

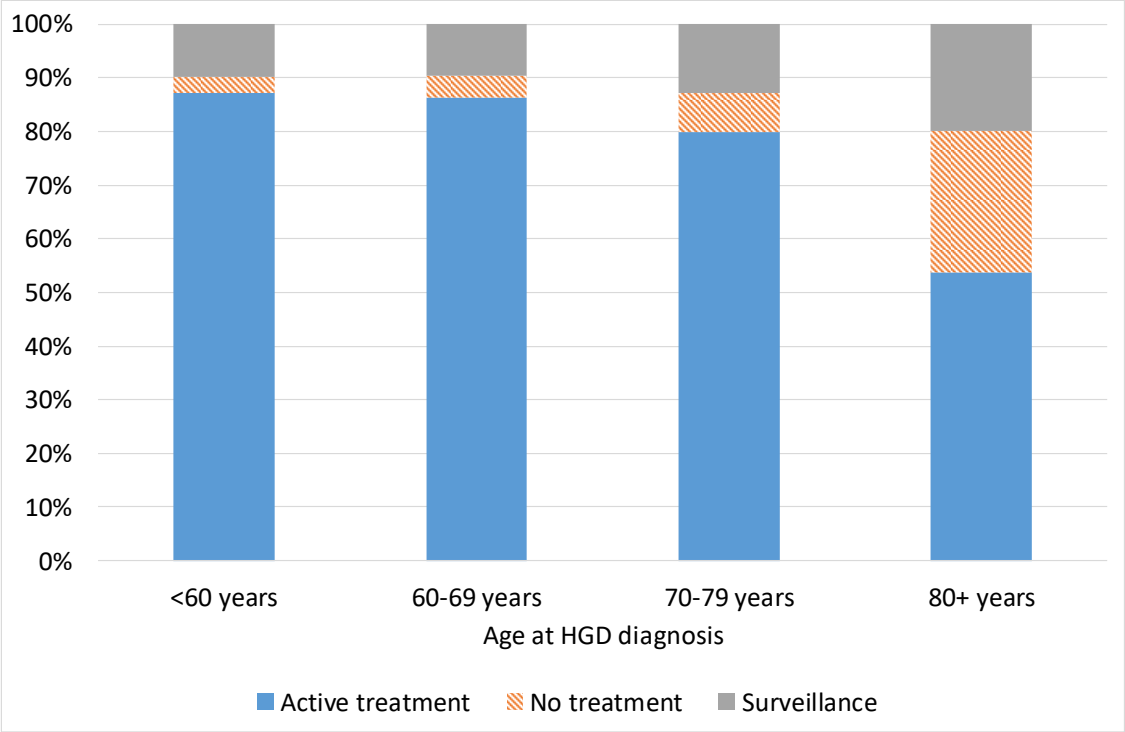
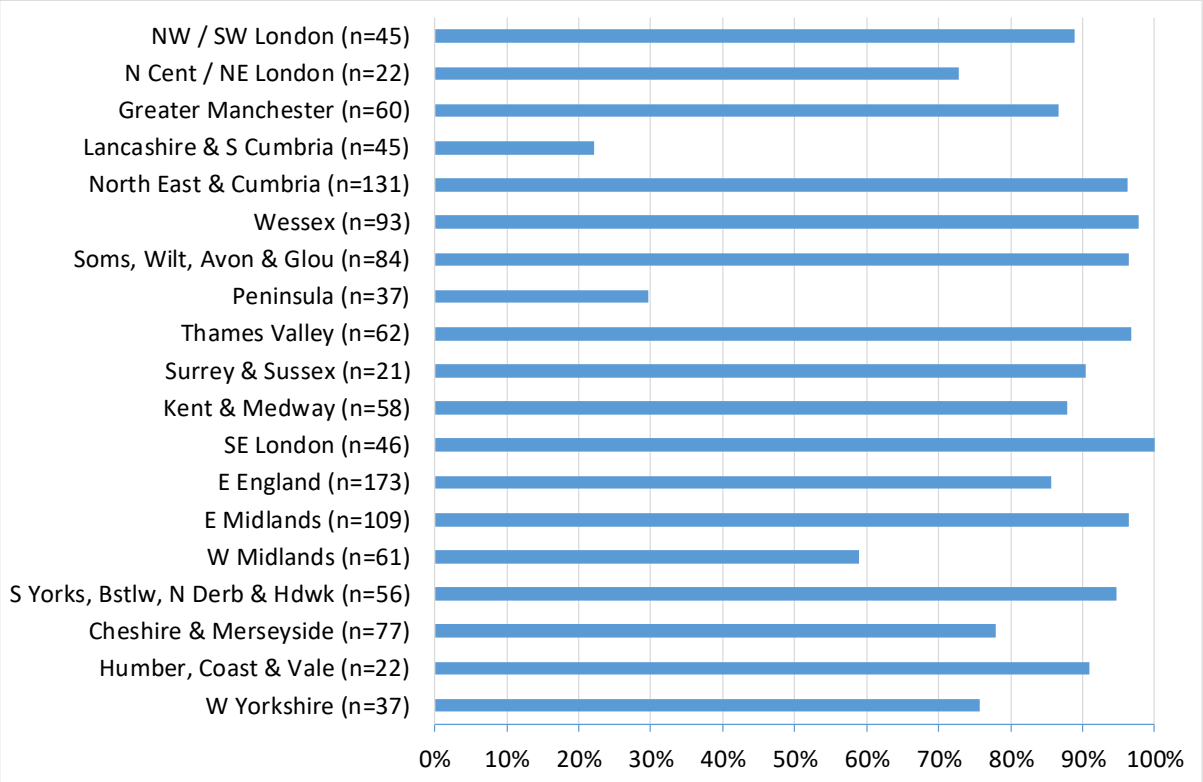


Figure 2.3: Initial primary treatments for patients diagnosed between April 2014 and March 2018 (unadjusted proportions), by Cancer Alliance of diagnosis

Figure 2.4: Proportion of patients having active treatment whose plan was discussed at a specialist MDT meeting (April 2014 and March 2018), grouped by Cancer Alliance of diagnosis



For patients who underwent active treatment, 85% had their treatment plan discussed at a designated OG cancer specialist centre. There was a fair degree of variation between Alliances, however (Figure 2.4).

The BSG guideline recommends that the endoscopic treatments are undertaken within NHS trusts treating 15 or more patients each year. There were six NHS trusts (all specialist OG cancer centres) that met this standard based on the data submitted for the 2016-18 period. Among the 35 surgical centres, there were 13 that treated at least 15 patients in one or more years from 2012. Twenty two centres and five non-surgical centres that reported performing endoscopic treatments for HGD patients in five of the six years from 2012, never had an annual volume that met the “15 patients” standard.

It is possible that more NHS trusts are meeting this recommended volume of activity. The figures only include those endoscopic procedures performed as primary treatment after diagnosis and there are a small number of patients who will have had a procedure after being on surveillance. The figures may also be underestimates because of poor case ascertainment.

Use of Endoscopic Resection

The Audit received details of 882 endoscopic resections for the four year period 2014-18. The outcome of these procedures was reported for 762 patients and is summarised in Table 2.3.

In the 2016-18 audit period, 69% of resections resulted in a complete excision.

There was some evidence that the complete excision rate was associated with two factors:

- The complete excision rate was 66% for lesions of a nodular appearance and 75% for flat / depressed lesions
- The rate of complete excision was 48% for lesions that were found to be a submucosal carcinoma when the pathology was examined.

Table 2.3: Outcomes after endoscopic mucosal resection / endoscopic submucosal dissection for patients diagnosed with HGD between April 2014 and March 2018

	2014-16	**2016-18**
No. of procedures / outcome reported	434 / 377	448 / 385
Complete excision	68%	69%
Histology finding		
HGD (or other finding)	70%	71%
Intramucosal carcinoma	25%	27%
Submucosal carcinoma	5%	2%
Plan after incomplete excision		
Further EMR/ESD	21%	40%
Further ablative therapy	33%	21%
Refer for oesophagectomy	12%	14%
Surveillance	21%	16%
No further treatment	13%	9%

3. Participation in the OG cancer prospective audit

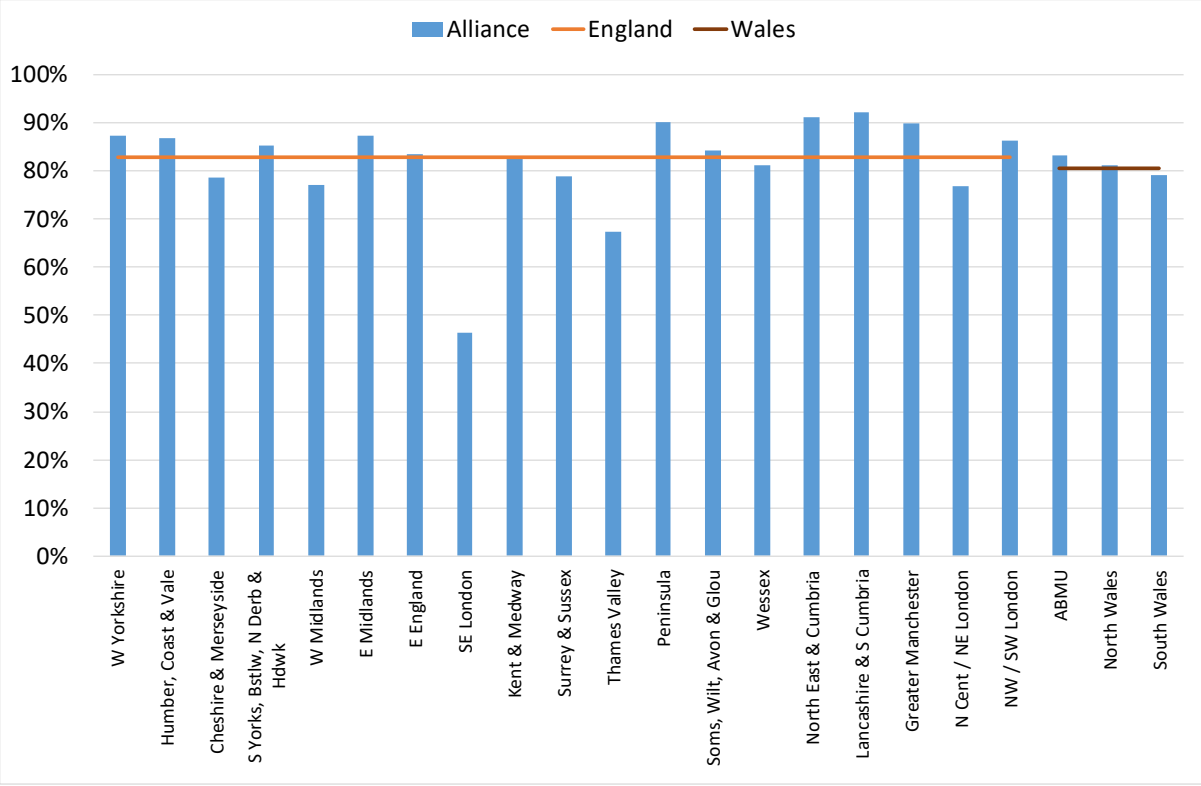
Cancer patients were eligible for inclusion in the Audit if they were diagnosed with invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach (ICD10 codes C15 and C16), and were aged 18 years or over. Patients with neuro-endocrine tumours or gastro-intestinal stromal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

The 2019 Audit Report focuses on patients with oesophago-gastric (OG) cancer in England and Wales between 1 April 2016 and 31 March 2018. Records were submitted on 21,417 patients in total, with 20,080 being diagnosed at 132 NHS trusts in England and from 1,337 being diagnosed at 6 local health boards in Wales. There were two specialist treatment centres in England which were involved in giving oncological treatments to patients but at which patients were not diagnosed.

3.1 Case ascertainment

Case ascertainment for the period April 2016 to March 2018 was estimated to be 82.5% in England and 80.5% in Wales, although there was some variation across the geographical regions, as shown in Figure 3.1. There was little change annually. The estimated case ascertainment rates for each NHS trust / local health board are given in Annex 3.

Figure 3.1: Estimated case ascertainment by English and Welsh geographical region



The estimates of case ascertainment were derived by comparing the number of tumour records submitted to the Audit with routinely collected hospital data in England and Wales. For patients diagnosed in England, the expected number of patients was derived using 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 in the same way using the equivalent national hospital database, known as the Patient Episode Database for Wales (PEDW). This approach gives estimates that are slightly too low because it is not possible to remove the patients with neuro-endocrine tumours or GISTs from HES / PEDW.

3.2 Completeness of submitted records

Patterns of treatment are influenced by various features such as tumour characteristics and the general health and preferences of patients. A number of key data items such as planned intent, are mandatory but it is not possible to make all items compulsory.

Table 3.1 shows data completeness for a selection of data items in patients diagnosed during April 2016 and March 2018 by English NHS trusts and Welsh local health boards. Generally, data completeness is very good but the table highlights there are a minority of organisations that are not achieving the same standards as others.

The completeness of data items related to surgical treatment is important because the Audit figures are used to produce consultant level outcomes (part of the Clinical Outcomes Programme) 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 surgical centres ensure they return all pathology records associated with patients undergoing curative surgery as well as the surgical record. The case ascertainment of patients having curative surgery is very high, and is estimated to be 99.7% in England for the period 2016-18.

Table 3.1: Summary of data completeness for selected data items for the 2016-18 audit period

Tumour data items	**Completeness overall across 138 organisations**	**No. of diagnosing NHS organisations with at least 80% completeness**
Referral source	98%	134
Staging investigations	91%	111
Pre-treatment M stage	90%	110
Surgical data items	**Completeness overall across 39 surgical centres**	**No. of NHS surgical centres with at least 90% completeness**
Nodal dissection	87%	27
Status at discharge	87%	27
Discharge date	92%	33
Pathological record	93%	31
Pathological TNM stage	86%	24

4. Patients with oesophago-gastric cancer

OG cancer is the fifth most common type of cancer in the UK. The disease predominantly affects older people and occurs more frequently in men than in women (see Table 4.1).

Over the last 25 years, the incidence of oesophageal cancer has increased, particularly cancers located at the gastro-oesophageal junction. During the same period, the incidence of stomach cancers has decreased by around 50% [Cancer Research UK, 2019a]. 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 stomach cancer [Cancer Research UK, 2019b]). Evidence of this long term change can be seen within the Audit. 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 67.2% in 2013/14 to 70.5% in 2017/18 (see Figure 4.2).

Figure 4.1: Illustration of the main locations of OG tumours

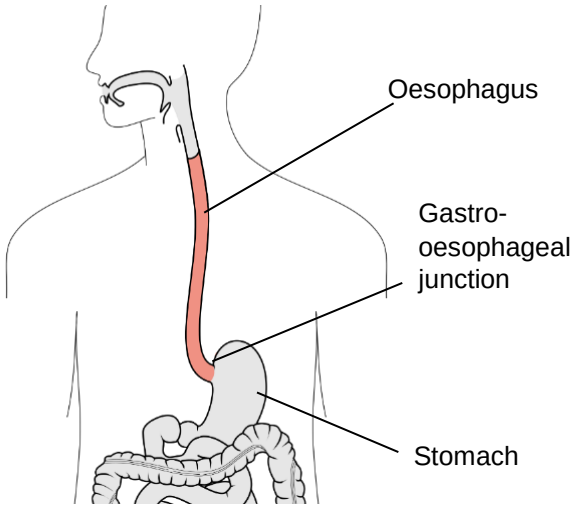


Table 4.1: Summary of patient characteristics by type of OG tumour in England and Wales

	OES SCC	OES ACA Upper/Mid	OES ACA Lower (w SI,SII)	Stomach (w SIII)	Total
Male (%)	49%	66%	81%	66%	69%
Median age (yrs)	72	73	71	74	72
Age group					
<60	16%	11%	17%	16%	16%
60-69	26%	25%	28%	19%	25%
70-79	33%	35%	34%	33%	33%
80+	25%	29%	21%	32%	26%

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, SI, SII, SIII - Siewert classification of the gastro-oesophageal junction (GOJ) [Siewert et al 1996]. See glossary for details.

The distribution of disease stage for the audit measured during the staging process is shown below in Table 4.2. It highlights the challenge for clinicians in managing the disease, with over one third of patients being diagnosed with stage 4 (metastatic) disease. Indeed, this might be an underestimate because 16.7% of patients did not have a clinical stage and there may be proportionally more patients with metastatic disease in this group because patients with advanced disease who will only receive palliative treatment or best supportive care may be less likely to complete staging investigations.

There have been various initiatives in recent years to increase the proportion of patients diagnosed with early disease, notably the national "Be Clear on Cancer" campaign in 2015 that aimed to raise awareness of the risk factors and early symptoms of OG cancer [Cancer Research UK 2019c]. Among Audit patients, there has not been a noticeable change in the overall distribution of disease stage at the time of diagnosis in the five years from April 2013. Indeed, among patients with stomach cancer, the proportion with metastatic disease rose from 41% in 2013/14 to 43% in 2016/18.

Table 4.2: Pattern of clinical stage by type of OG tumour in England and Wales for the audit period 2016-18

Clinical Stage (pretreatment)	**Oes SCC**	**OES ACA Upper/Mid**	**OES ACA Lower (w SI,SII)**	**Stomach (w SIII)**	**Total**
Stage 0/1	10%	11%	12%	13%	12%
Stage 2	17%	13%	16%	25%	19%
Stage 3	45%	35%	37%	19%	33%
Stage 4	27%	41%	36%	43%	37%
Total	3,996	1,521	9,524	6,376	21,417
Missing	653	292	1394	1236	3575

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, SI, SII, SIII - Siewert classification of the gastro-oesophageal junction (GOJ) [Siewert et al 1996]. See glossary for details.

5. Route to diagnosis

Patients who are diagnosed with oesophago-gastric cancer may have followed a number of different pathways. Typically, an individual presents to their general practitioner (GP) with symptoms that suggest cancer might be a potential cause. Guidelines recommend that GPs refer patients as early as possible [NICE 2018; Allum et al 2011]. Diagnosis may also occur following a referral by another hospital consultant, either from a non-emergency setting or as a result of a surveillance gastroscopy. Finally, diagnosis can follow after a patient is admitted as an emergency, with acute symptoms that are often the result of late stage disease. Late stage disease is associated with poorer outcomes and, consequently, services are recommended to seek ways to reduce the proportion of diagnoses made after an emergency admission.

Table 5.1 summarises the routes to diagnosis for the 2016-2018 Audit cohort. The majority of patients were diagnosed following referral by their GP, typically on either the "two-week wait" suspected cancer pathway or (in Wales) an urgent suspected cancer referral.

The proportion of patients diagnosed after an emergency admission with stomach tumours was almost twice as high as for patients with oesophageal cancer (19.6% vs 10.6%, respectively). The risk was also strongly associated with age (Figure 5.1), social deprivation and the presence of comorbid conditions.

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

Route to diagnosis	**OES SCC**	**OES ACA Upper/Mid**	**OES ACA Lower (w SI,SII)**	**Stomach (w SIII)**	**Total**
GP referral	70%	68%	69%	57%	66%
Urgent / 2 week wait	*65%*	*62%*	*63%*	*51%*	*60%*
Routine	*5%*	*6%*	*6%*	*6%*	*6%*
Emergency admission	10%	11%	10%	19%	13%
Other consultant	20%	22%	21%	24%	22%
Total cases	3,996	1,521	9,524	6,376	21,417
Missing values	50	33	183	121	387

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, SI, SII, SIII - Siewert classification of the gastro-oesophageal junction (GOJ).

Figure 5.1: Proportion of patients diagnosed after an emergency admission by age at diagnosis for oesophageal and stomach tumours

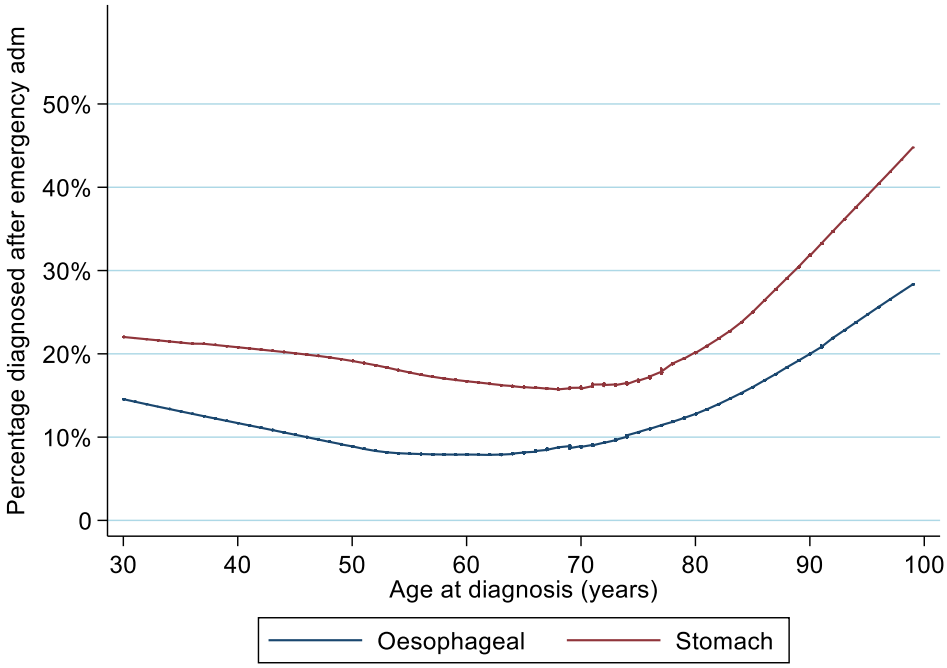
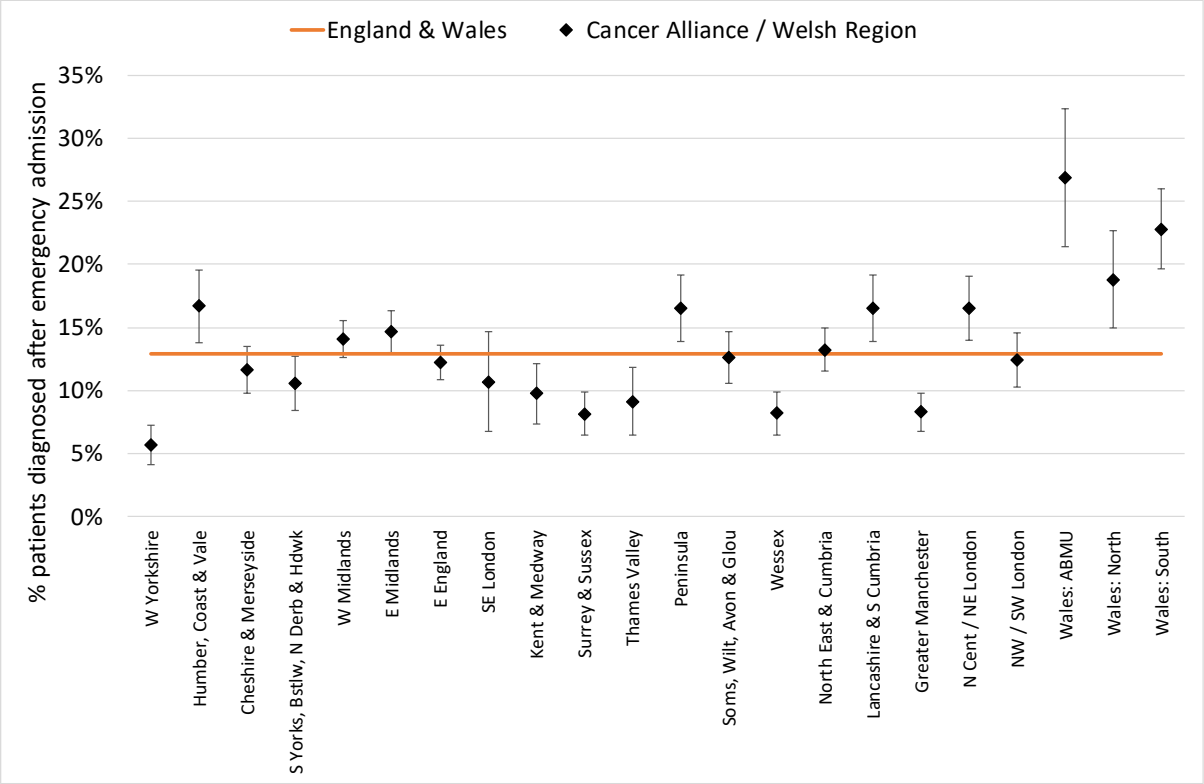


Figure 5.2: Proportion of patients diagnosed after an emergency admission by Cancer Alliance / Welsh region. Graph shows adjusted rates with 95% confidence interval (CI)



Similar to last year, there was variation in the proportion of patients diagnosed after an emergency admission across the Cancer Alliances/Welsh regions (Figure 5.2), even after adjusting for potential confounders. Some regions have emergency diagnosis rates that are significantly lower than the national average, while others have rates that are much higher. In particular, the differences between England and Wales need to be explored. This regional variation may be due to unmeasured patient characteristics, but it is also possible that it reflects differences within regions in how people respond to their symptoms and decide when to seek help from health services as well as factors associated with how patients are managed within general practice.

6. Staging investigations

Patients with a new diagnosis of OG cancer should undergo appropriate staging investigations to identify the extent of the disease and thereby determine if it is potentially amenable to curative therapy. Clinical guidelines recommend that

- All patients diagnosed with OG cancer should 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 performed to determine the location and stage of cancer (see Box 6.1)

The overall proportion of patients who had CT scans in the 2016-2018 audit cohort was 87.3%. But, as noted in chapter 3, the quality of the data on staging investigations submitted to the Audit varied across NHS organisations, with some reporting a high proportion of patients having no investigations. Consequently, this crude overall figure is likely to underestimate the true figure. Using data from those NHS organisations that reported staging investigations for at least 80% of patients, the estimated proportion was 93.8%.

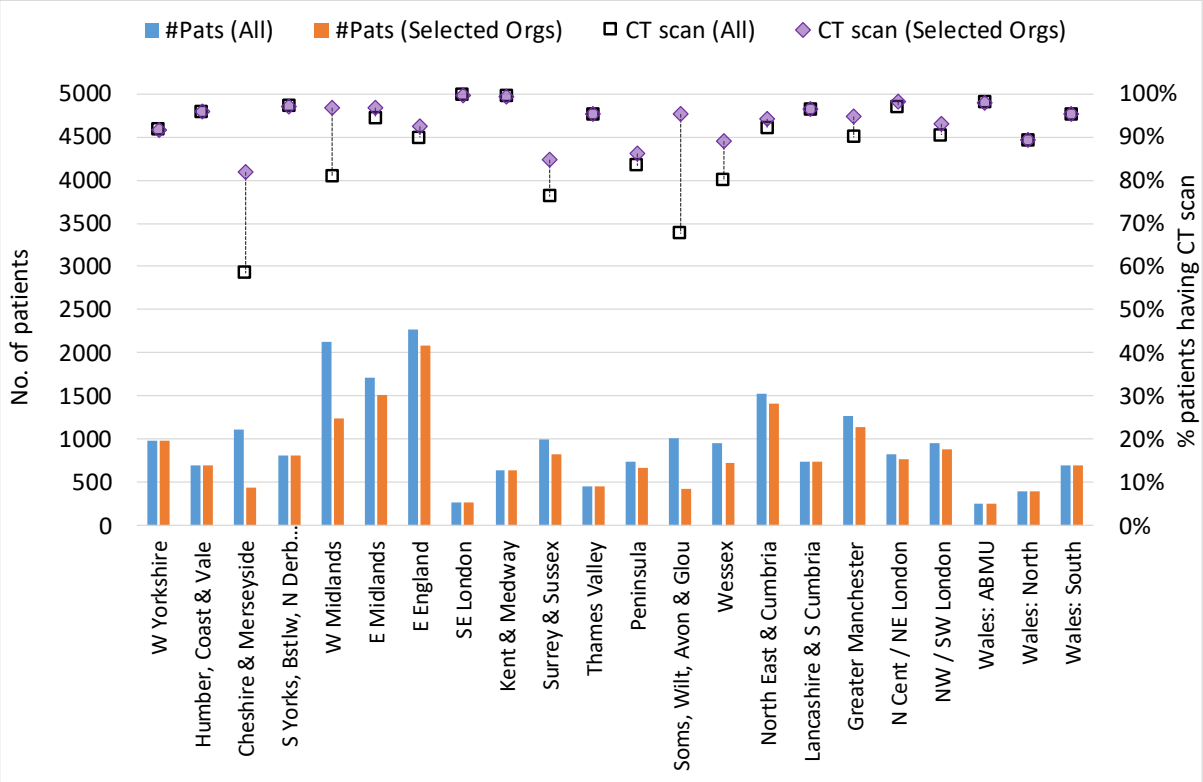
Figure 6.1 shows these proportions for the Cancer Alliances / Welsh regions, and demonstrates that, among those NHS organisations with complete data, there is good compliance with the staging recommendation for CT scans.

The proportion of patients recorded as having a CT scan was consistently high among most patient groups. It decreased slightly 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 3.

Box 6.1: Recommended staging investigations for oesophageal and gastric cancer [NICE 2018]

- CT scan of chest, abdomen and pelvis to provide an initial local assessment, and look for evidence of nodal and metastatic spread
- Offer a PET-CT scan to people with oesophageal and gastro-oesophageal junctional tumours that are suitable for radical treatment (except for T1a tumours).
- Do not offer endoscopic ultrasound only to distinguish between T2 and T3 tumours in people with oesophageal and gastro-oesophageal junctional tumours.
- Only offer endoscopic ultrasound (EUS) to people with oesophageal and gastro-oesophageal junctional cancer when it will help guide ongoing management.
- Offer staging laparoscopy to all people with potentially curable gastric cancer.
- Only consider a PET-CT scan in people with gastric cancer if metastatic disease is suspected and it will help guide ongoing management.

Figure 6.1: Proportion of patients reported as having CT scans in 2016-18 Audit cohort, by Cancer Alliance / Welsh region.



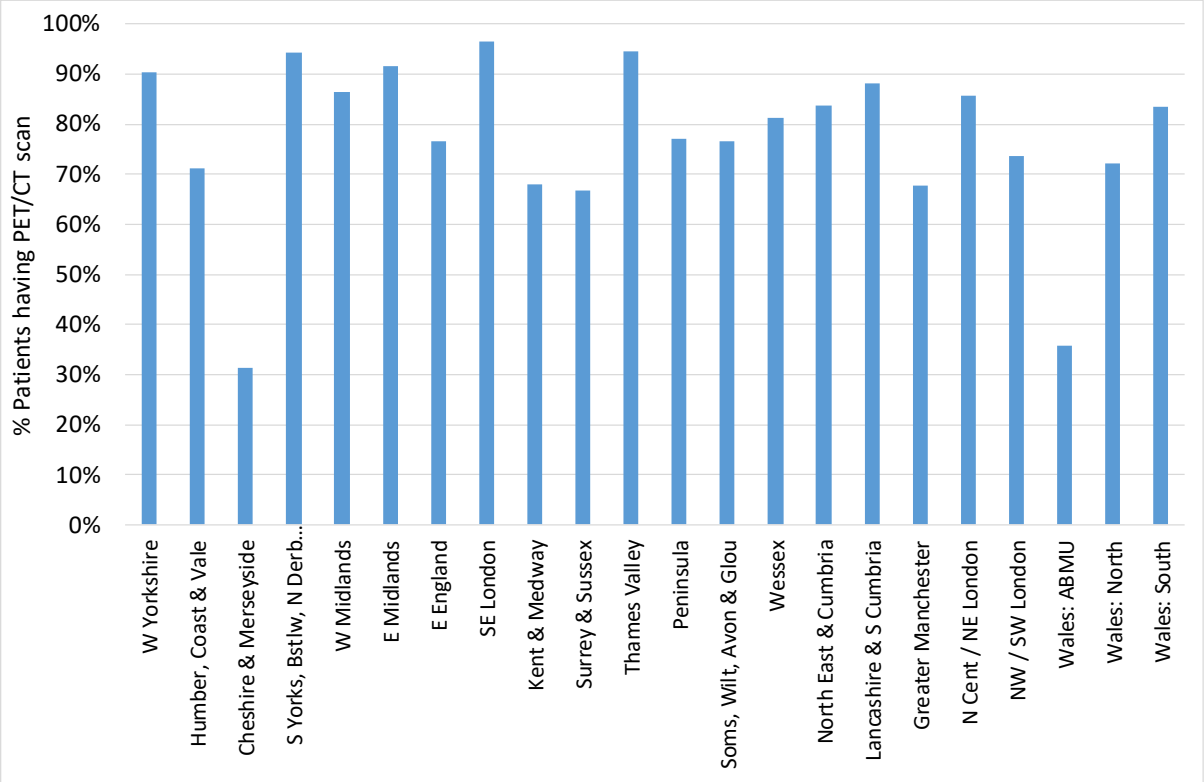
KEY: Purple diamonds show CT scan figures based on organisations with good data (investigations reported for at least 80% of patients); the black squares show CT scan figures based on data from all organisations. Bars show the number of patients in each region used to calculate both sets of figures.

The use of the other staging investigations is contingent upon the CT scan not finding metastatic disease, and on patients being sufficiently fit to be candidates for curative treatment. The recent NICE guidance recommends that PET-CT scans should be offered to people with oesophageal tumours that are suitable for radical treatment and endoscopic ultrasound should only be offered if it helps guide ongoing management (see Box 6.1). The figures from the 2016-18 audit period show practice is broadly consistent with these recommendations.

Among patients with oesophageal cancer who had curative treatment (surgery with/without chemotherapy or definitive chemo-radiotherapy), 78.7% were recorded to have PET-CT, although there was some variation between regions (Figure 6.2). Endoscopic ultrasound was used for 49.0% of patients.

Among patients with stomach cancer, staging laparoscopy remains the most common investigation. In the 2016-18 audit period, 55% of patients who had curative treatment (surgery with/without chemotherapy) had a staging laparoscopy; 37% had a PET-CT.

Figure 6.2: Use of PET-CT scans among patients with oesophageal cancer who had curative treatment diagnosed between April 2016 and March 2018, by Cancer Alliance / Welsh region



7. Treatment planning

Treatment options for an individual are discussed at the upper gastrointestinal MDT meeting, taking account of the extent of the disease and patient factors such as comorbidities, nutritional status and patient preferences. For patients found to have stage 2 or 3 disease and who are sufficiently fit to undergo curative treatment, the recommended treatment for most tumours is surgery with or without oncological therapy (see Box 7.1). Endoscopic treatment is an option for patients whose tumour is limited to the top layer of tissue cells (the mucosa) and there is little risk of spread to the lymph nodes.

For patients with metastatic disease or who are unfit for surgery, there are a number of treatment options. Palliative chemotherapy can improve survival and is suitable for patients with a reasonable level of fitness. Therapies for managing symptoms such as dysphagia include endoscopic or radiological interventions (e.g. stents) and radiotherapy.

7.1 Clinical stage

Data on clinical stage provide essential information to interpret treatment decisions. Curative treatment options require a patient's cancer to remain localised to the site of the tumour (stage 1-3). Treatment options for patients with metastatic disease are limited to therapies that might extend life or control symptoms but are unlikely to result in a patient going into remission.

The completeness of the data on clinical stage supplied by NHS organisations during the 2016-18 audit period is shown in Figure 7.1 for the various geographical regions. Overall, 83.3% of records had clinical stage, although the proportion varied across the regions. There were nine regions that submitted data for over 90% of patients, but stage was submitted for under 70% of patients in two regions. The likelihood of clinical stage being missing increased among older patients (Figure 7.2).

Box 7.1: Recommended curative treatment options [NICE 2018]

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

Oesophageal adenocarcinoma and GOJ tumours:
- Preoperative chemotherapy or chemoradiation is recommended to improve long term survival after surgery, compared to surgery alone.
- Peri-operative chemotherapy (pre and post operative) can also be recommended as it increases survival for junctional tumours.

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

Figure 7.1: Summary of clinical stage information for the audit period 2016-18, by geographical region.

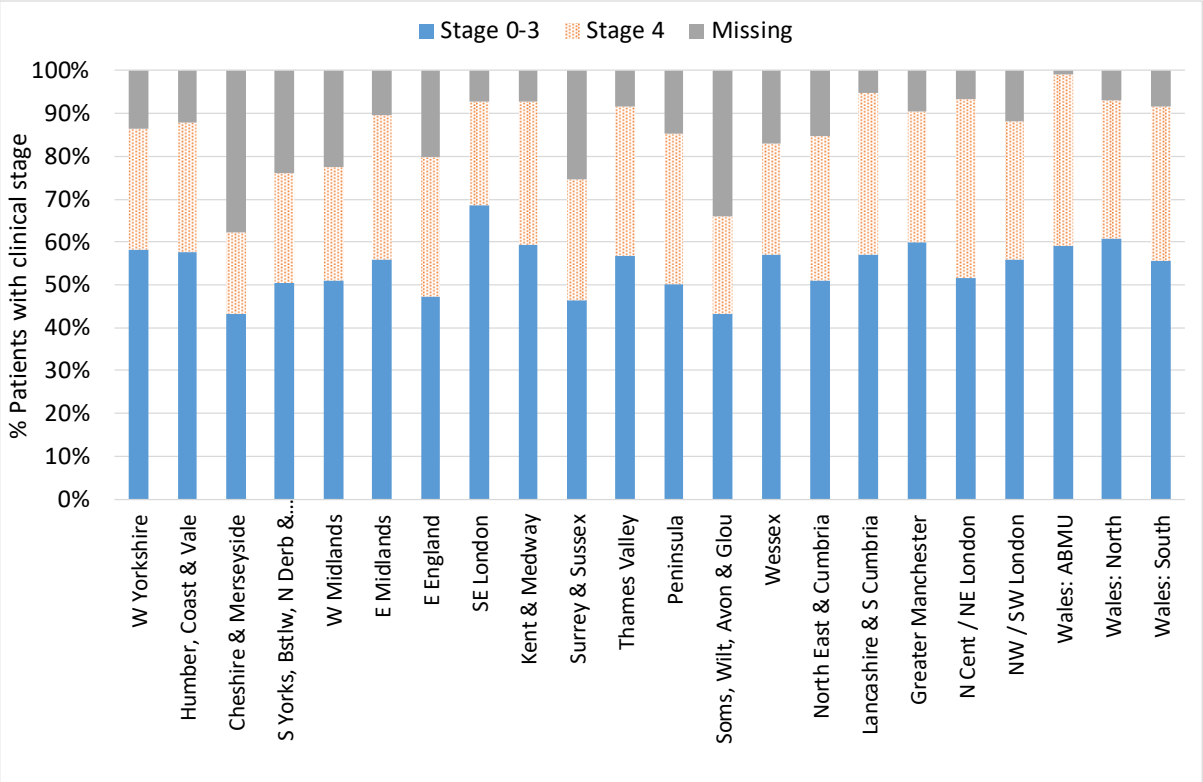
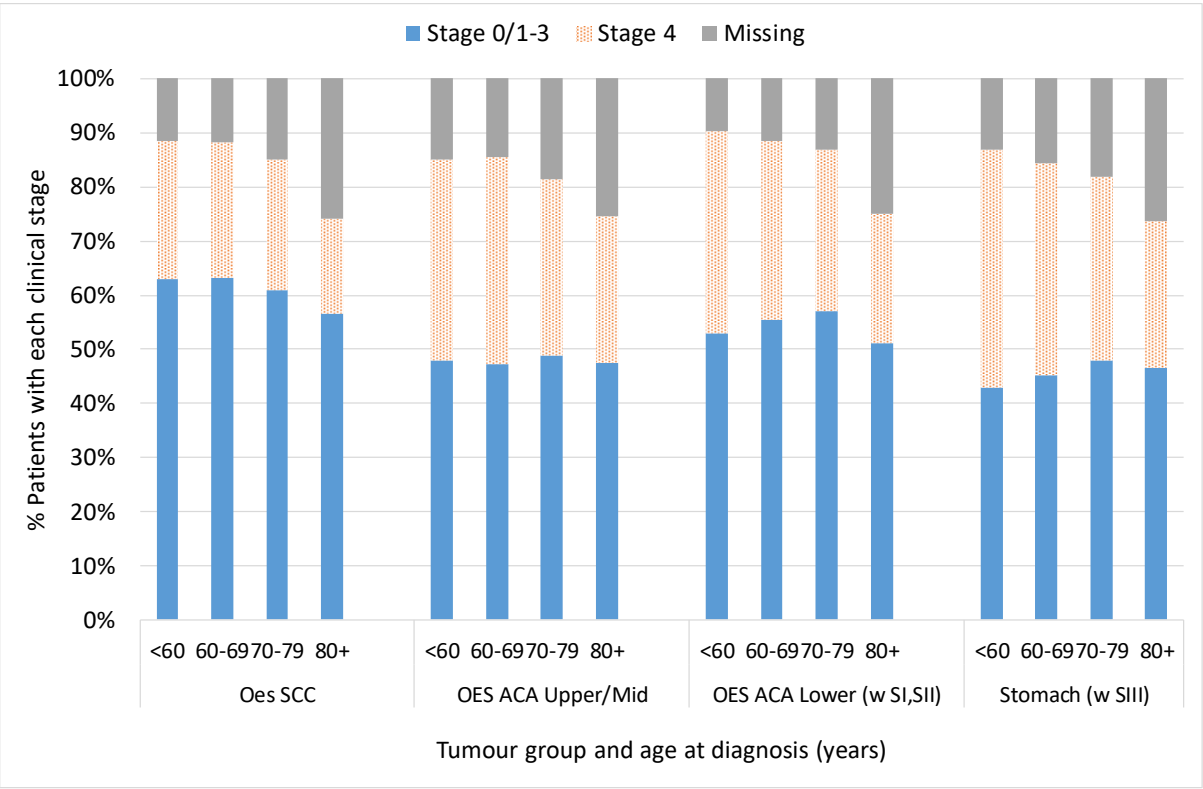


Figure 7.2: Pattern of clinical stage by type of OG tumour in each of the four age groups, for the period from April 2016 to March 2018 in England and Wales



7.2 Treatment plans

Overall, 38.0% of patients diagnosed in the 2016-18 audit period were managed with curative intent. There was a slight variation among the different tumour groups (Table 7.1), but these differences were small compared to the differences within patient groups. Among patients with early stage disease (stage 1-3), a high proportion of patients had a curative treatment plan and this only fell among older patients (Table 7.2).

There was a distinct pattern of planned modes of treatment for patients with different tumours (Figure 7.3). For patients with squamous cell carcinomas (SCC), definitive chemoradiotherapy is recommended as the preferred option for patients, and this treatment became more common among older patients. Multimodal therapy that combines either chemotherapy or chemoradiotherapy with surgery is the dominant treatment among patients with a tumour in the lower oesophagus or stomach, but surgery only was the most common treatment among patients aged 80+ years.

For patients with a non-curative treatment intent, oncological therapy (either chemotherapy or radiotherapy) was the planned therapy for 48% of patients during the 2016-18 period, a figure which has not changed significantly over the last five years. Another 15% of patients had either surgery or endoscopic / radiological palliative therapies, while the remaining 37% were planned to have best supportive care. As before, these overall figures mask large variation between different patient groups, with active treatment being planned far less commonly for patients aged 80 years or over (Figure 7.4).

Among patients with clinical stage 0/1-3, the proportion of patients with a curative treatment plan varied across the geographical regions (Figure 7.5). While the average was 58.8% in England and Wales for the 2016-18 audit period, the values for individual regions could fall below 50% and above 70%.

Table 7.1: Proportion of patients having curative treatment plans during the audit period 2016-18

Treatment plan	**Oes SCC**	**OES ACA Upper/Mid**	**OES ACA Lower (w SI,SII)**	**Stomach (w SIII)**	**Total**
Total patients	3,996	1,521	9,524	6,376	21,417
Curative intent	39.2%	31.0%	41.3%	33.8%	37.9%
By clinical stage					
0/1	65.1%	61.4%	77.2%	67.4%	71.1%
2	60.8%	56.9%	63.8%	59.5%	61.3%
3	47.0%	41.7%	59.8%	45.0%	52.8%
4	7.1%	4.4%	5.5%	3.7%	5.0%
(missing data)	653	292	1394	1236	3575

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, SI, SII, SIII - Siewert classification of the gastro-oesophageal junction (GOJ) [Siewert et al 1996]. See glossary for details.

Table 7.2: Proportion of patients having curative treatment plans for patients stratified by tumour type, disease stage (where known) and age group

Tumour	Age	Clinical Stage 0/1	2	3	4
OES SCC					
	Under 60	86%	78%	68%	6%
	60-69	83%	75%	64%	5%
	70-79	74%	64%	51%	3%
	80+	35%	25%	16%	1%
OES ACA Upper/Mid					
	Under 60	85%	77%	66%	6%
	60-69	82%	74%	62%	5%
	70-79	73%	63%	49%	3%
	80+	34%	24%	15%	1%
OES ACA Lower					
(w SI,SII)	Under 60	89%	83%	74%	8%
	60-69	87%	80%	70%	7%
	70-79	80%	71%	58%	4%
	80+	42%	31%	21%	1%
Stomach					
(w SIII)	Under 60	87%	81%	71%	7%
	60-69	85%	78%	67%	6%
	70-79	77%	67%	54%	4%
	80+	39%	28%	18%	1%

Figure 7.3: Planned modality for patients with curative treatment intent during the 2016-18 audit period, by age and tumour location

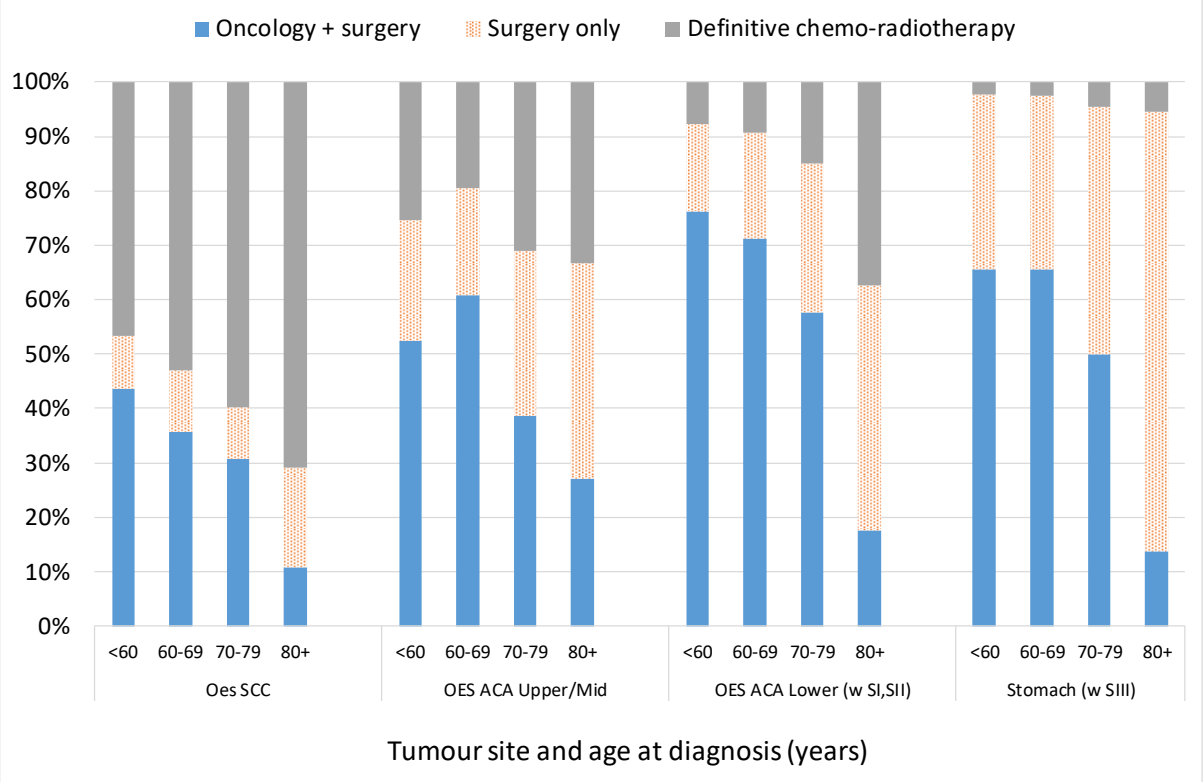


Figure 7.4: Planned modality for patients with non-curative treatment intent during 2016-18 audit period, by age and tumour location

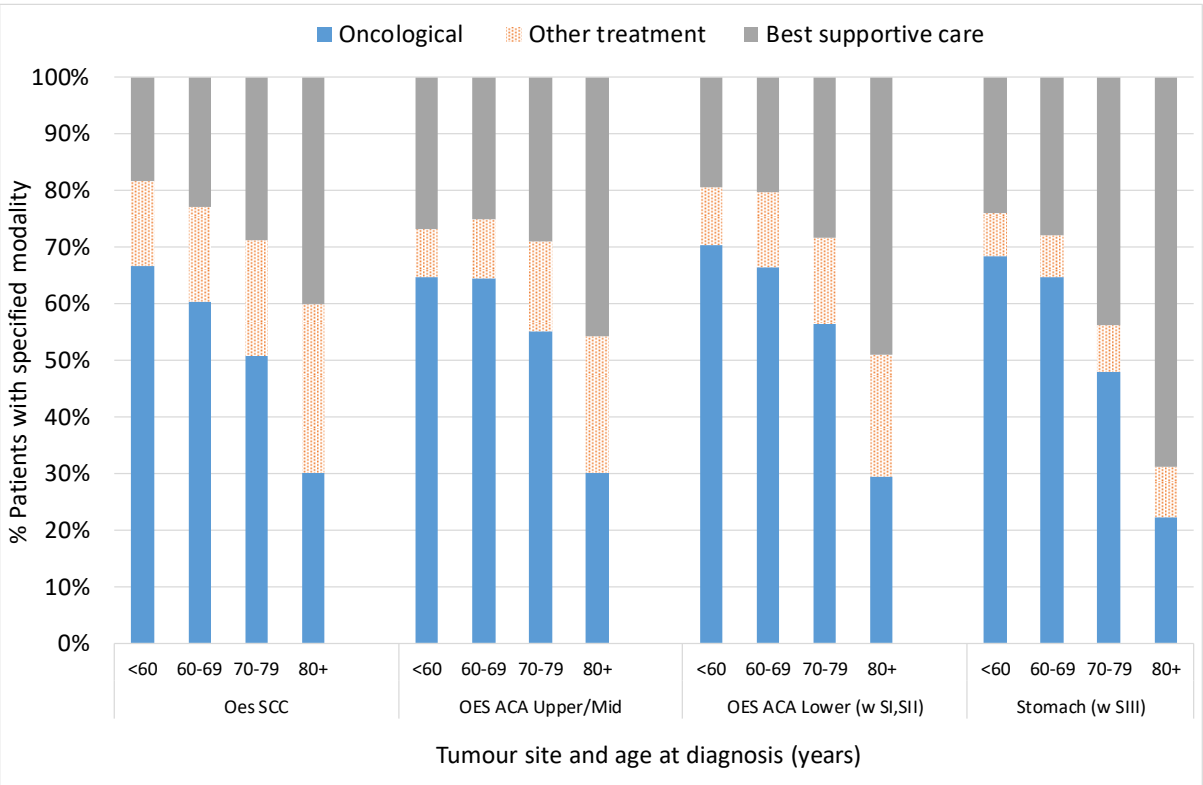
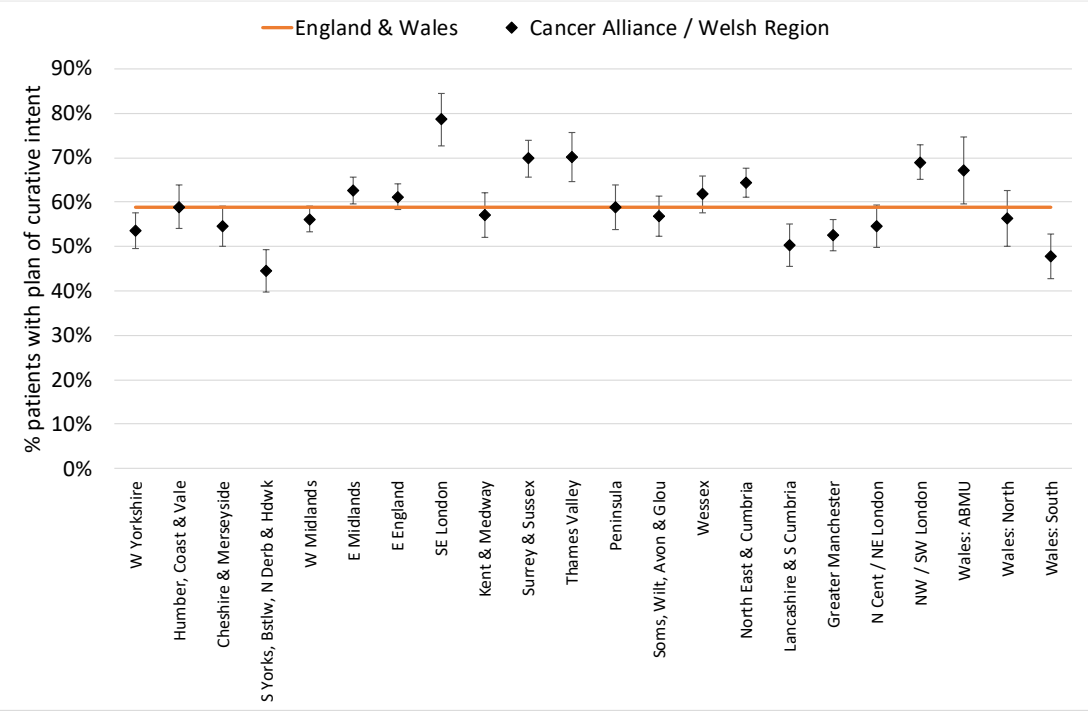


Figure 7.5: Proportion of patients with curative treatment plans among those with clinical stage 0-3 by Cancer Alliance / Welsh region for audit period 2016-18. Graph shows adjusted rates with 95% CI



7.3 Planned curative treatment and surgical records

In the 2018 Annual Report, we noted that the number of patients with a curative treatment plan was considerably higher than the number of patients undergoing curative surgery. This was unexpected given the central role of surgery. This topic was subsequently explored further in a short report (published June 2019) which highlighted several factors that contributed to this pattern:

- The increasing use of definitive chemo-radiotherapy
- The role of patient characteristics, with the proportion of patients having surgery being lower among the older and/or more frail
- Patients beginning neoadjuvant chemotherapy may not proceed to planned surgery, possibly because of disease progression, or changes in patient preferences
- Incomplete treatment information, or mis-reported planned treatment intent / modality

Table 7.3 summarises the relationship between curative treatment plans and whether or not a surgical record was submitted for the 2016-18 audit period. Not surprisingly, few patients proceeded to surgery if the planned modality was definitive chemo-radiation or radiotherapy. The proportions were more in line with expectations for patients whose plan involved surgery with chemotherapy / radiotherapy, as a proportion of patients would not be expected to have surgery for the reasons mentioned above. However, similar proportions were observed for patients

having surgery alone, even though there were less obvious treatment-related reasons for the actual treatment to differ from the reported plan. This, together with the number of records with inconsistent information (eg, the actual treatment was palliative) suggests the reporting of plans needs to be reviewed locally.

Table 7.3: Proportion of patients with a curative treatment plan for whom surgical records were submitted, by the type of planned modality for the 2016-18 audit period.

	OES SCC	OES Upper / Mid ACA	OES Lower (SI / SII) ACA	Stomach (w SIII)
Patients with curative plan	1,566	471	3,931	2,154
Plan: Surgery only				
No. of patients with plan	119	70	614	754
% with surgical record	71%	67%	80%	84%
Plan: Surgery + Oncology				
No. of patients with plan	400	170	2,159	961
% with surgical record	64%	76%	80%	67%
Definitive oncology				
No. of patients with plan	784	108	431	n/a
% with surgical record	3%	10%	11%	n/a
Inconsistent modality / plan	263	123	727	439

7.4 Time taken by patients to move along the care pathway

Several waiting time targets have been established for cancer services in England and Wales to ensure patients with suspected cancer are seen promptly. English services have the aim of ensuring at least 85% of patients diagnosed after an urgent "2-week" GP referral begin treatment within 62 days [NHS England 2019]. In Wales, the target for cancer services is for treatment to begin within 62 days for 95% of patients who have been referred urgently due to suspected cancer [NHS Wales 2018]. NHS England is also planning to implement a 28 day target from referral to diagnosis for patients with cancer [NHS England 2019].

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

- Referral date to OG cancer team
- Date of diagnosis
- Date of MDT meeting
- Date of first treatment

These dates are not sufficient to allow us to replicate the official waiting time calculations because we cannot identify periods that are not counted in the reported wait. Nonetheless, together the dates provide insight into the pattern of times taken by patients along the care pathway. These are described in Table 7.4 for the 2016-2018 cohort. In summary:

- The time from referral to diagnosis is longest for patients who are referred routinely by their GP with 25% of patients taking longer than 62 days

- The median waiting time from referral to diagnosis for urgent referrals is 16 days, with 75% of patients waiting less than the proposed 28 day target
- Patients who had a curative treatment plan had a slightly longer wait from diagnosis to the agreement of a treatment plan than those with a non-curative plan. This is to be expected given the additional staging investigations that would be involved
- The time from diagnosis to the start of primary therapy typically took between 1 and 2 months for surgical and oncological treatments, but 25% of patients exceeded this timeframe.

Table 7.4: Patterns of waiting times along the care pathway for the 2016-18 Audit cohort

Time in days from	Referral to diagnosis			
	Median	IQR		
GP referral: urgent	16	10 to 26		
GP referral: routine	28	11 to 52		
After emergency admission	7	3 to 13		
Other consultant referral	7	1 to 22		
Time in days from	Diagnosis to plan		Diagnosis to treatment	
	Median	IQR	Median	IQR
Curative: Surgery only	28	10 to 49	56	38 to 83
Curative: Definitive / Neoadjuvant oncology	27	14 to 39	50	40 to 66
Palliative: oncology	14	6 to 28	42	29 to 56
Palliative: ERPT	7	2 to 16	16	7 to 30

KEY: ERPT – Endoscopic / radiologic palliative therapy

Among the Cancer Alliance/Welsh regions, most had similar distributions of waiting times for curative (Figure 7.3) and non-curative oncological treatments (Figure 7.4). However:

- Only five regions managed to have primary treatment start within 62 days of referral for more than half the patients with curative treatment plans
- In 19 regions, 25% of patients with curative plans waited more than 80 days
- For patients having non-curative oncological treatment, median waits were typically around 62 days, being closer to 70 days in three regions
- In 9 regions, 25% patients who had non-curative oncological treatments waited longer than 80 days (one region provided insufficient treatment information to calculate a distribution of waiting times).

Official cancer wait statistics from NHS England and the Welsh Cancer Network have highlighted excessive waiting times in recent years. These Audit figures give further insight by breaking down the waits for different parts of the care pathway. That long waits are apparent throughout the NHS suggests commissioners need to review whether the capacity exists to manage patients within the current framework of waiting time targets, particularly given that demand is forecast to increase.

Figure 7.3: Median (IQR) waiting times from referral to start of curative treatment for patients diagnosed between April 2016 and March 2018, by Cancer Alliance / Welsh region

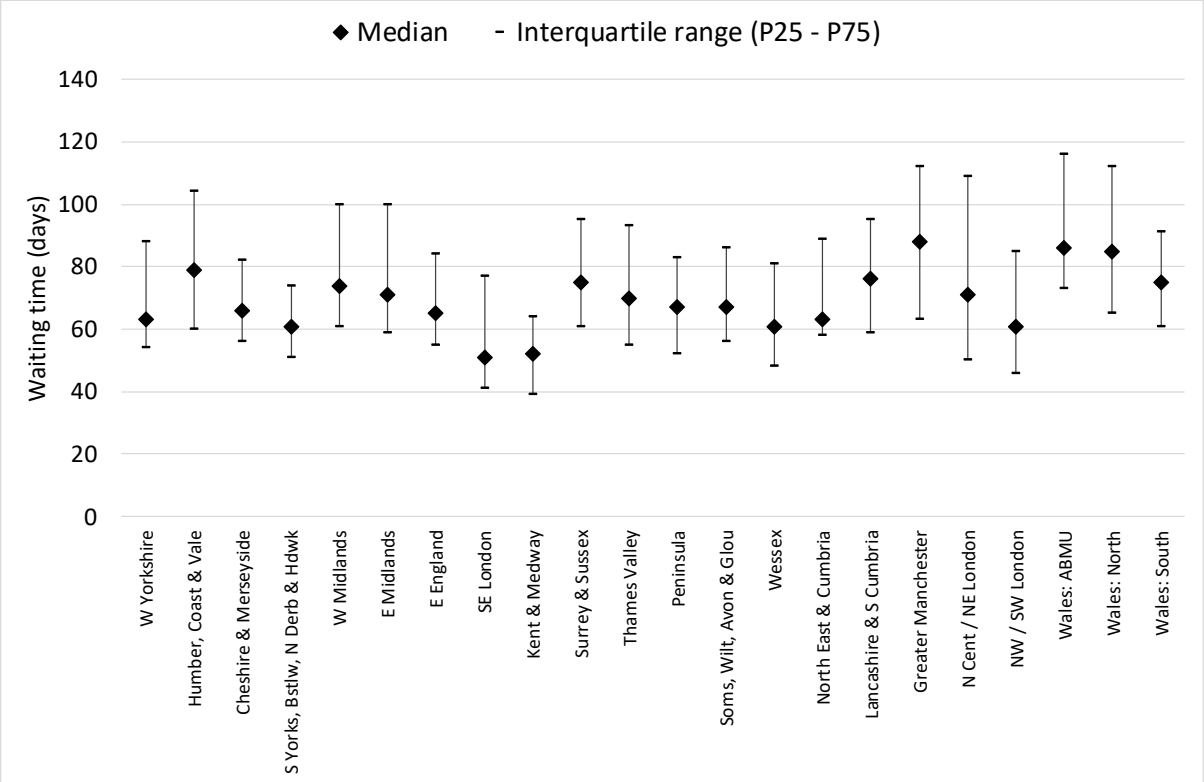
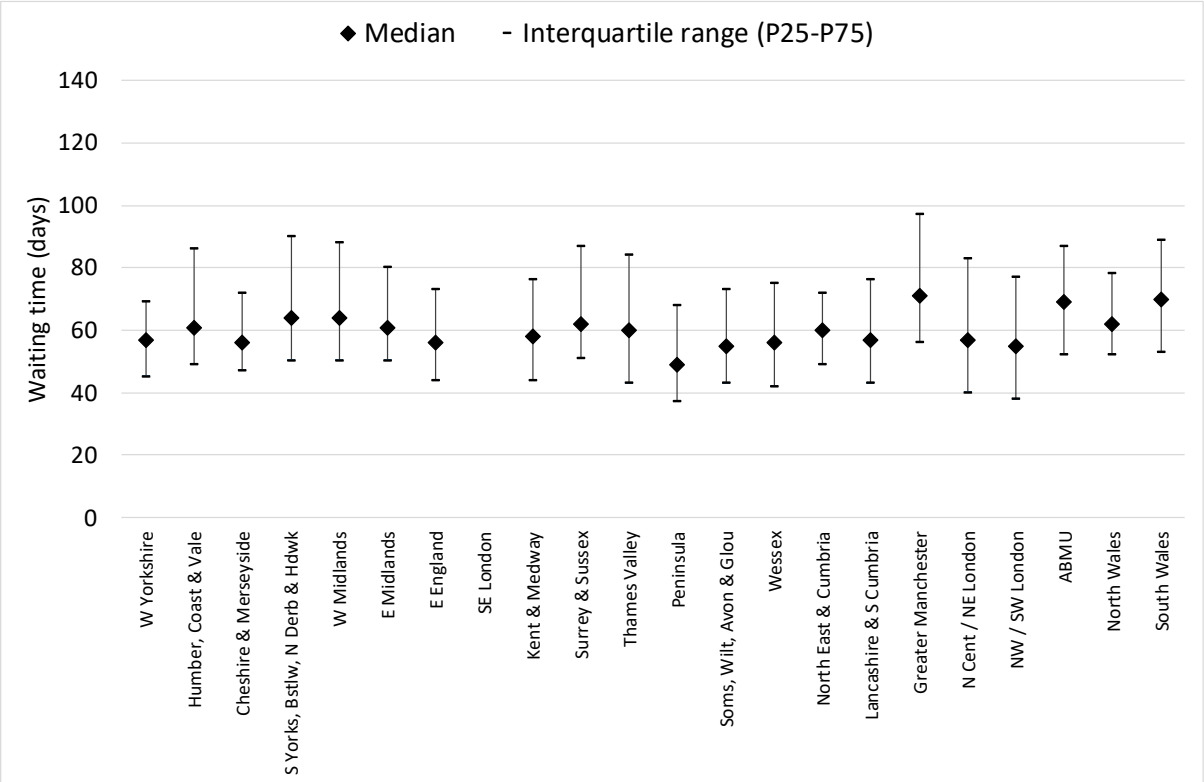


Figure 7.4: Median (IQR) waiting times from referral to start of non-curative oncological treatment for patients diagnosed between April 2016 and March 2018, by Cancer Alliance / Welsh region



8. Curative surgery

For patients diagnosed in the three year audit period between April 2015 and March 2018, there were 7209 surgical records submitted, of which 93.6% were recorded as an oesophagectomy (4,417 patients) or gastrectomy (2,334 patients) with curative intent. Only 87 patients were reported to have a resection with palliative intent. The remaining procedures were bypass operations for stomach cancer patients and open-and-shut procedures. Open-and-shut procedures corresponded to 0.4% of operations recorded for patients with oesophageal cancer and 8.9% of operations for stomach cancer.

The type of curative surgery undergone by patients is described in Table 8.1, together with the dominant type of lymphadenectomy.

- For patients having an oesophagectomy, the procedure was typically performed using the 2-stage Ivor-Lewis transthoracic approach
- 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 [Varagunam et al 2018].

Table 8.1: Summary of surgical procedures performed in patients diagnosed from April 2015 to March 2018, in England and Wales

Type or procedure	**No. of operations**	**%type**	**2-field dissection**
Left thoracic abdominal	314	7%	97.7%
2-Stage Ivor-Lewis	3,727	84%	97.3%
3-Stage McKeown	253	6%	69.4%
Transhiatal	124	3%	82.1%
All curative oesophagectomies	4,417		
Open & Shut	19		
	No. of operations	**%type**	**D2-dissection**
Total gastrectomy	1,058	45%	89.5%
Distal gastrectomy	969	42%	83.5%
Extended gastrectomy	211	9%	92.1%
Other gastrectomy	96	4%	63.4%
All curative gastrectomies	2,334		
Bypass	107		
Open & Shut	245		

Minimally invasive (MI) operations are performed using laparoscopic instruments under the guidance of a camera inserted through several small (1-2cm) incisions rather than using a large incision characteristic of an open surgical approach. A total minimally invasive oesophagectomy involves thoracoscopy for the chest-phase of the operation and laparoscopy for the abdominal phase. However, an oesophagectomy can be performed using a minimally invasive technique for only the abdominal or chest phase. This is commonly called a hybrid operation.

We observed the following patterns of MI procedures among patients diagnosed between April 2015 and March 2018:

- For 2-phase Ivor Lewis oesophagectomy, 15.1% were started as total MI (of which 8.5% converted to open) and 34.1% were started as hybrid MI (4.4% converted)
- For total gastrectomy, 14.6% were started as MI (12.3% converted)
- For distal gastrectomy, 21.4% were started as MI (13.5% converted)

8.1 Enhanced recovery after surgery (ERAS)

Enhanced recovery after surgery (ERAS) protocols are increasingly being introduced in OG cancer surgery as the evidence mounts about their effectiveness in reducing rates of complications, and shortening length of stay [Marker 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 Audit added two data items on ERAS several years ago, and we received good quality data for the 2017/18 audit year from 33 of the 35 English surgical centres. None of the four Welsh surgical centres were able to submit the two ERAS data items.

Table 8.2: Use of ERAS pathway in curative surgical patients diagnosed between April 2017 and March 2018 in England

	Oesophagectomy		Gastrectomy	
Number of patients	1,478		744	
What best describes the surgical pathway that this patient followed?				
A protocolised enhanced recovery with daily-documentation in medical notes	752	60.0%	332	54.3%
A protocolised enhanced recovery without daily documentation in medical notes	155	12.4%	96	15.7%
A standard (non-ERAS) surgical pathway	346	27.6%	183	30.0%
Missing	225		133	
Did the patient complete the ERAS pathway?				
Yes	695	83.4%	336	86.6%
No: but partial completion	110	13.2%	50	12.9%
No: non-completion	28	3.4%	2	0.5%
Missing	74		40	

Table 8.2 describes the overall use of an ERAS pathway for all English surgical centres in curative surgical patients diagnosed between April 2017 and March 2018. The use of ERAS is now more common than the standard pathway among patients, and the majority of the ERAS protocols involve the daily-documentation in medical notes. Nonetheless, the use of ERAS protocols is clustered within NHS trusts, with 27 surgical centres adopting this approach (19 used it for more than 80% of patients). Completion rates were good for both oesophagectomy and gastrectomy patients.

There has been a steady decrease in the length of stay (LOS) over the last 10 years. The overall median LOS for oesophagectomy and gastrectomy for the 2016-18 audit period were 12 days (IQR: 9-18) and 9 days (IQR: 7-13), respectively.

However, the 2017/18 data on the use of ERAS protocols reveals there was a noticeable difference in the expected (mean) length of stay across the different types of ERAS protocol by the type of procedure and whether or not a patient had any postoperative complication record (Table 8.3).

Table 8.3: Expected length of stay (days) for patients diagnosed in 2017/18 who had curative surgery by the type of postoperative care. Figures estimated for a patient aged 65 years

	Oesophagectomy		Gastrectomy	
Postoperative pathway	**No CC**	**With CC**	**No CC**	**With CC**
A protocolised enhanced recovery with daily-documentation in medical notes?	11.6	20.3	9.3	18.0
A protocolised enhanced recovery without daily documentation in medical notes?	14.0	27.5	11.7	25.3
A standard (non-ERAS) surgical pathway	13.5	25.7	11.2	23.4

KEY: CC – surgical complication. Expected LOS predicted using linear regression model that incorporated age at diagnosis, type of procedure and type of postoperative pathway

8.2 Short-term outcomes of surgery

NOGCA has benchmarked surgical outcomes for NHS trusts / local health boards since it began in 2011, and has documented a steady improvement over time. Since 2013, outcome information has also been published for active surgical consultants in England on both the AUGIS and NHS Choices websites as part of the clinical outcomes programme (COP). Wales does not participate in COP.

Figure 8.1 shows the risk-adjusted 30-day postoperative mortality rate for the English and Welsh surgical cancer centres. The mortality rate for each centre is plotted against their surgical workload, as the precision of the estimate will improve as the volume increases (which is reflected in the shape of the control limits). All of the centres had an adjusted mortality rate that fell within the expected range (defined by the 99.8% control limit).

A similar result was found with respect to the performance of the surgical cancer centres on the risk-adjusted 90-day mortality indicator (Figure 8.2). The overall and procedure specific rates are shown in Table 8.4.

Figure 8.1: Funnel plot of adjusted 30-day mortality after curative surgery for OG cancer for patients diagnosed between April 2015 and March 2018 for NHS organisations in England and Wales

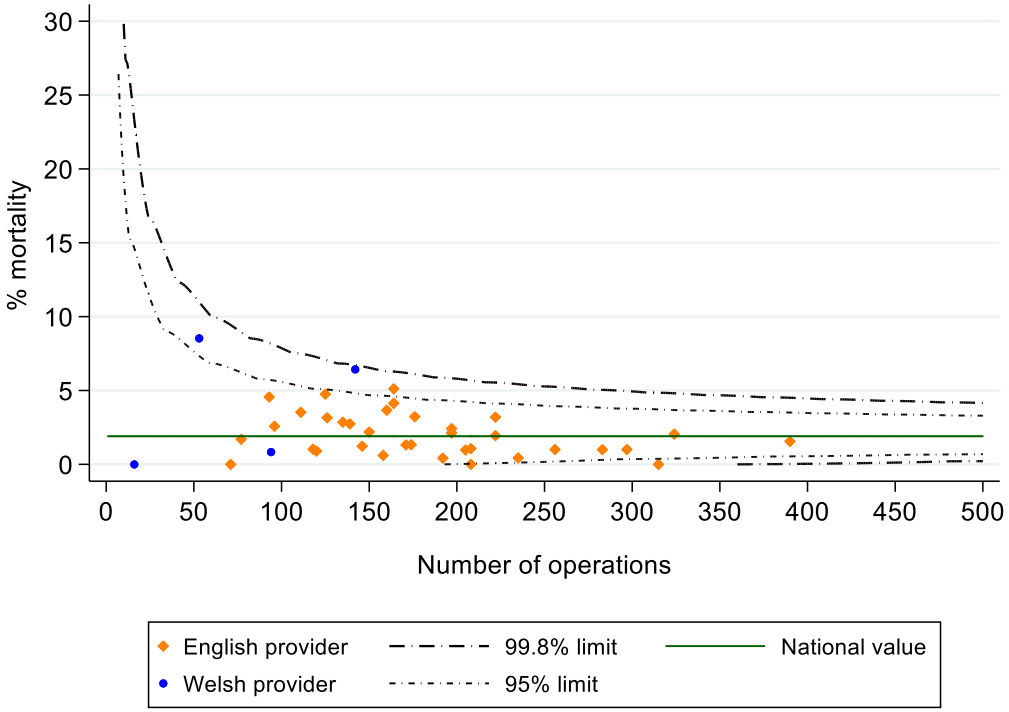


Figure 8.2: Funnel plot of adjusted 90-day mortality after curative surgery for OG cancer for patients diagnosed between April 2015 and March 2018 for NHS organisations in England and Wales

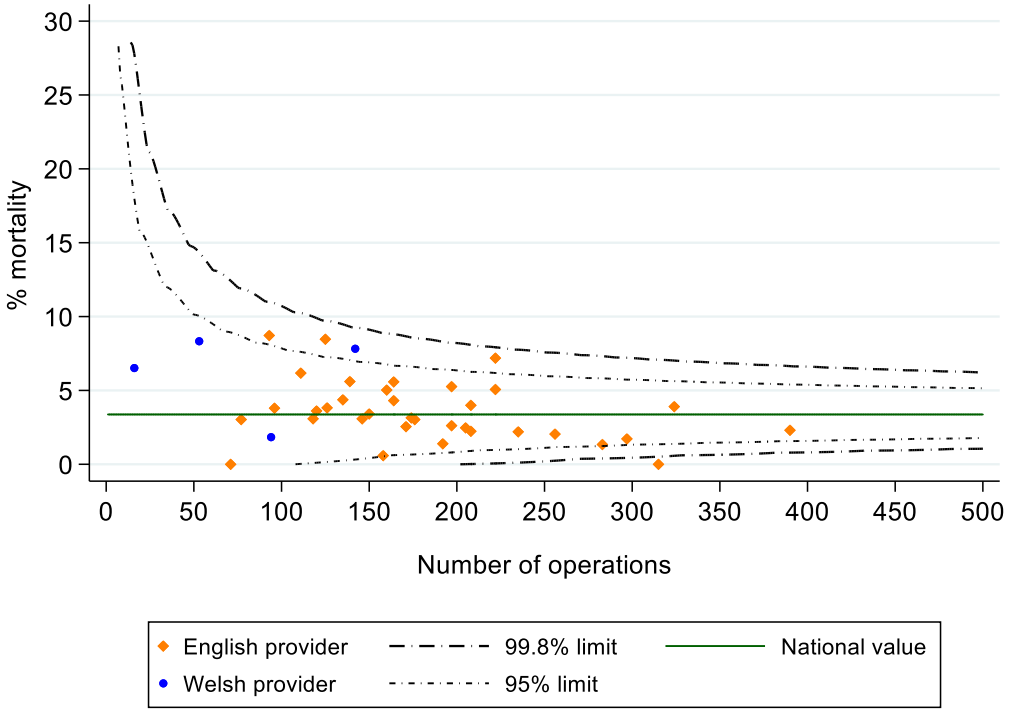


Table 8.4: Postoperative outcomes after curative surgery for patients diagnosed from April 2015 to March 2018 in England and Wales

	Oesophagectomy	Gastrectomy	Overall
30-day mortality (95%CI)	2.1% (1.7 to 2.6)	1.5% (1.0 to 1.9)	1.9% (1.6 to 2.3)
90-day mortality (95% CI)	3.8% (3.2 to 4.4)	2.5% (1.9 to 3.2)	3.4% (3.0 to 3.8)
Pathology indicators			
Nodes examined	86.1% (85.0 to 87.1)	81.1% (79.4 to 82.7)	84.4% (83.5 to 85.3)
Longitudinal margins	3.8% (3.2 to 4.4)	7.2% (6.1 to 8.4)	5.0% (4.4 to 5.5)
Circumferential margins*	25.4% (24.1 to 26.8)	n/a	n/a

* excludes NHS organisations that reported 0% positive circumferential margins

The Audit has published results on four additional surgical indicators for the last few years, namely:

1. Proportion of patients with 15 or more lymph nodes removed and examined (both oesophagectomies and gastrectomies)
2. Proportion of patients with positive longitudinal margins (oesophagectomies)
3. Proportion of patients with positive circumferential margins (oesophagectomies)
4. Proportion of patients with positive longitudinal margins (gastrectomies)

These additional indicators were selected to support the implementation of the recommendations in the AUGIS 2016 "Provision of Services" document [AUGIS 2016].

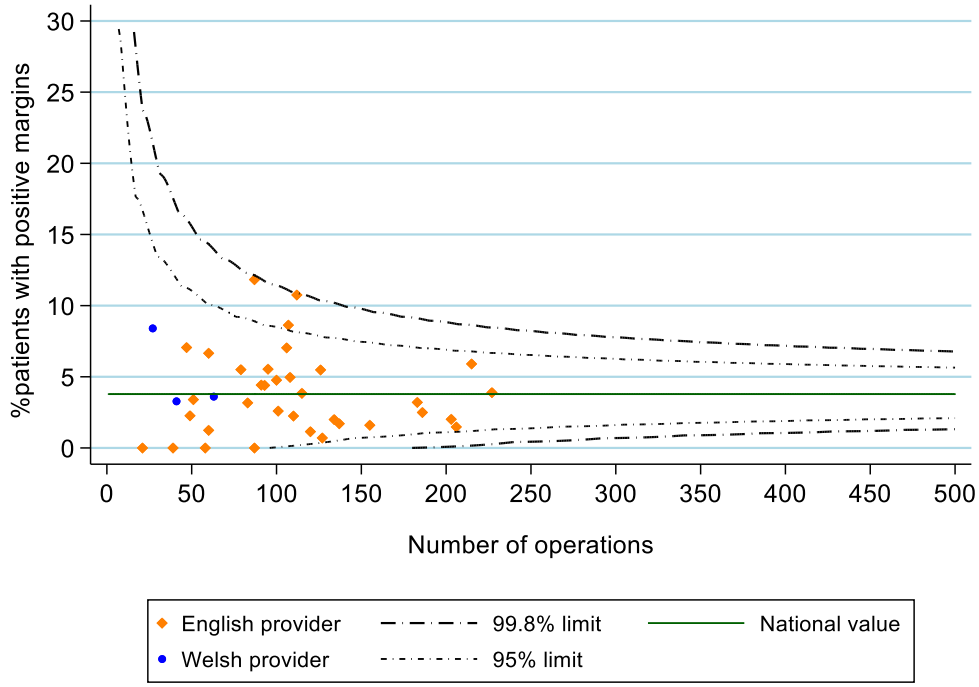
Our analysis in earlier Annual Reports revealed some variation between organisations in surgical practices and the interpretation of the surgical specimens. In the 2016-18 audit period results, there was no evidence of this in relation to the longitudinal margin indicators (see Figure 8.3). The funnel plots of the risk-adjusted longitudinal margin indicators for both oesophagectomy and gastrectomy are within the expected range (defined by the 99.8% control limit). Consequently, surgical centres should feel confident in beginning to use these figures for benchmarking. This is a welcome development because the overall rate of 7.2% for gastrectomy is higher than the 5% target set by AUGIS and these results can support surgical centres in investigating how this might be reduced (Table 8.4). The overall rate of positive longitudinal margins for oesophagectomy was within the 5% target.

However, Figure 8.4 shows excessive variation remains in relation to the results of the circumferential margin indicator and the lymph nodes examined indicator. This variation in practice needs to be addressed by the clinical community. Both indicators relate to important aspects of surgical practice and greater consistency is required for surgical centres to benchmark themselves confidently.

We will continue to publish information on these four indicators to encourage discussion among surgeons about working towards standardisation of procedures.

Figure 8.3: Funnel plots showing the organisational rates of positive longitudinal margins for patients diagnosed in England and Wales between April 2015 and March 2018

Adjusted rate of positive longitudinal margins after oesophagectomy



Adjusted rate of positive longitudinal margins after gastrectomy

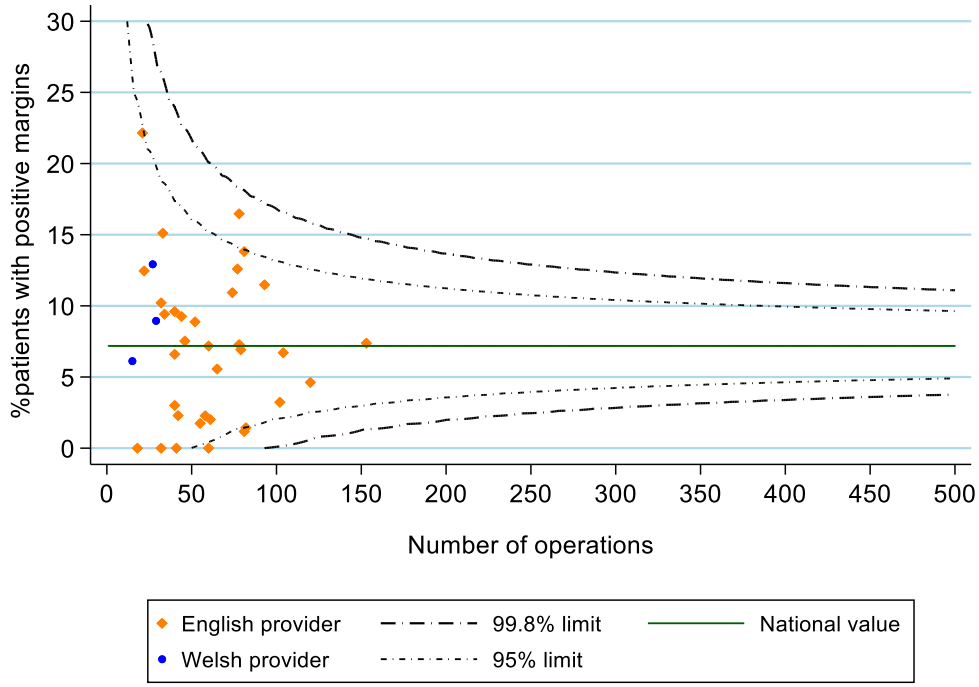
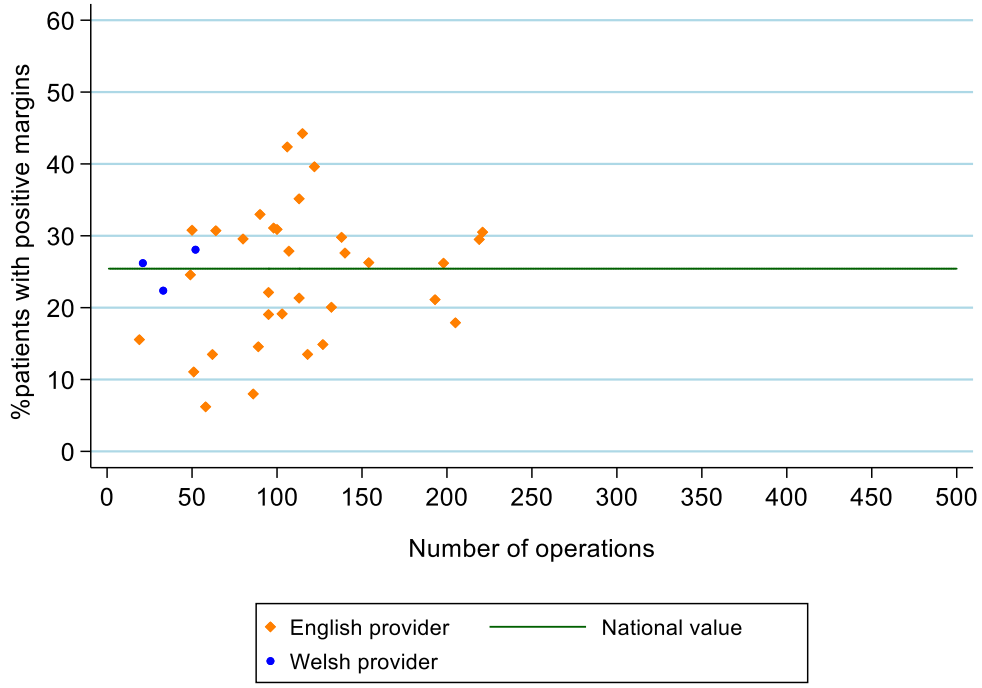
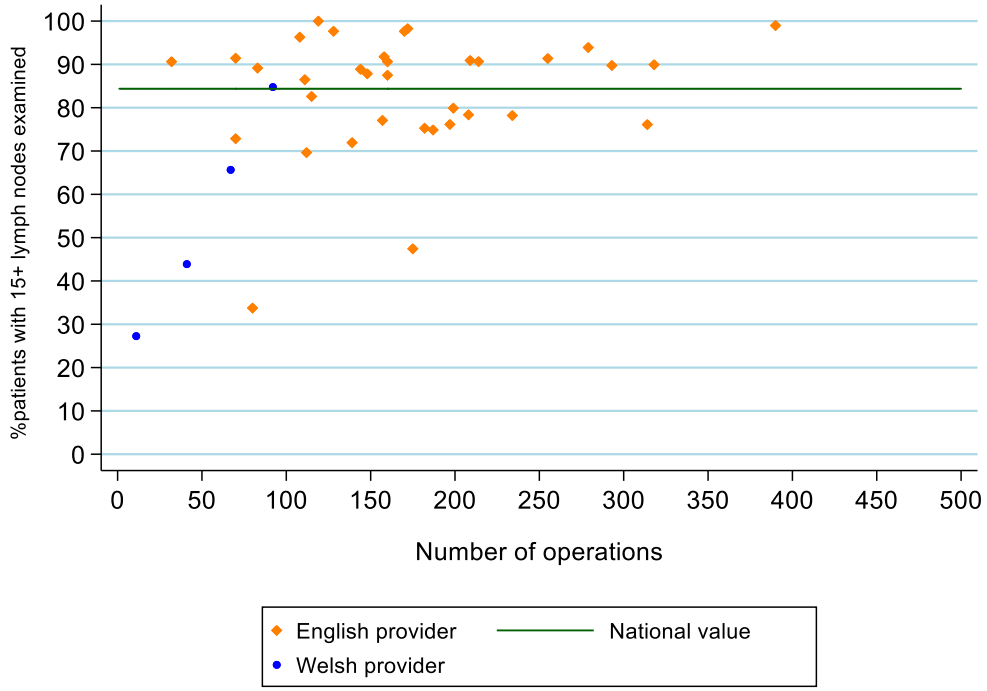


Figure 8.4: Organisational rates of positive circumferential margin and lymph nodes examined for patients diagnosed in England and Wales between April 2015 and March 2018

Adjusted rate of positive circumferential margin after oesophagectomy



Unadjusted rate of lymph nodes examined after oesophagectomy & gastrectomy



9. Non-curative OG cancer treatment patterns and outcomes

Most patients with OG cancer are diagnosed with either incurable disease or are unsuitable for curative treatment, and are therefore managed with non-curative treatment intent, with the aim of controlling symptoms (eg, 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 9.1) but whether or not a patient receives a particular therapy will depend upon their condition and preference [Allum et al 2011].

Overall, palliative oncological therapies (chemotherapy, radiotherapy) are the most common treatment options, but the pattern is dependent upon the tumour site, the stage of disease and the patient's age (Figure 9.1). Among older (more frail) patients, many will have "best supportive care", which is characterised by no active treatment beyond the immediate relief of symptoms. Endoscopic or radiologic palliative therapies (ERPT) are predominantly used for patients with oesophageal cancer.

Box 9.1: Non-curative treatment options for people with OG 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 improve quality of life in people expected to live more than 3 months.

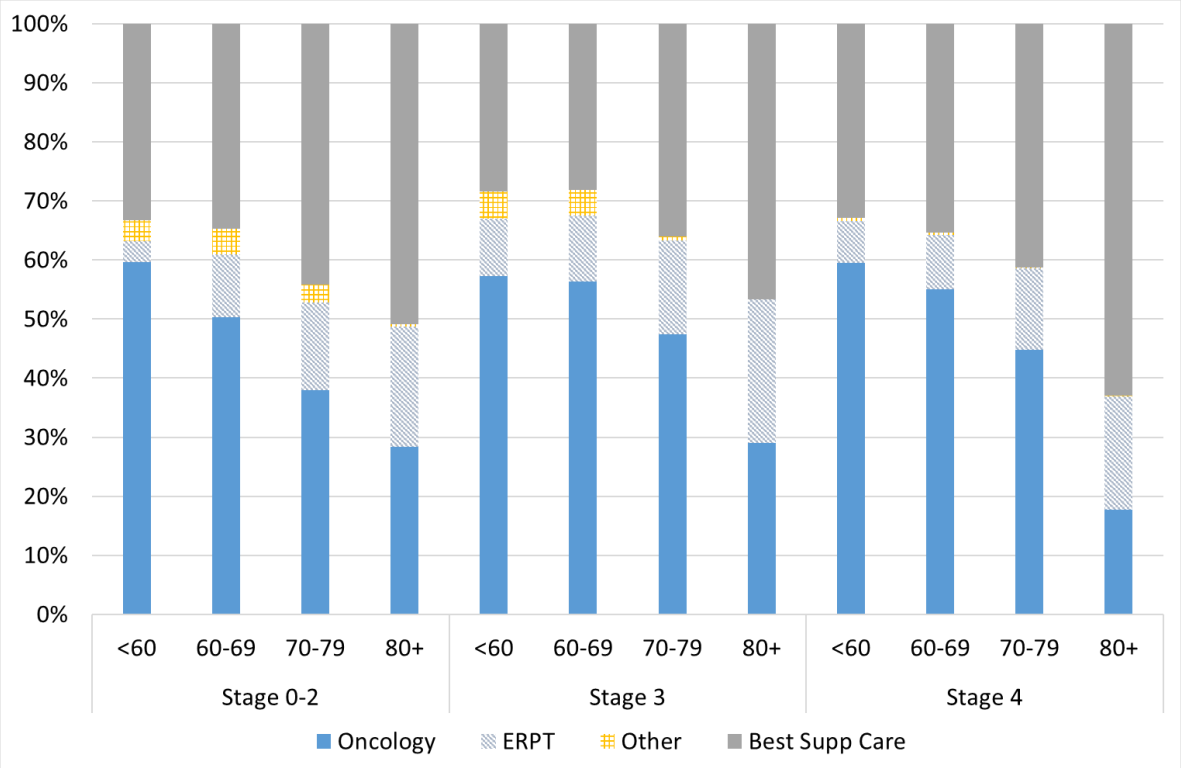
Endoscopic / radiological palliative therapy

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

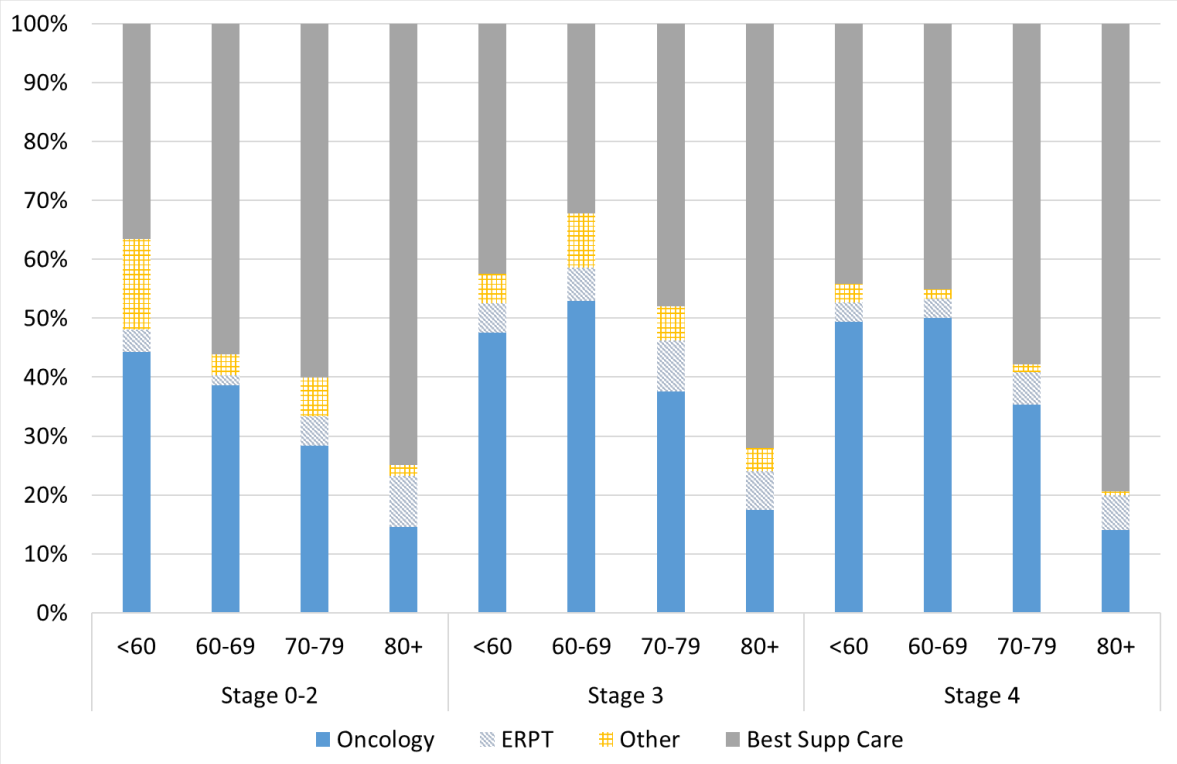
Laser therapy and *argon plasma coagulation* (APC) can both be used to relieve dysphagia particularly when it is due to tumour overgrowth after a stent has been inserted.

Figure 9.1: Pattern of recorded palliative therapies (including best supportive care) among patients with oesophageal and stomach tumours in audit period 2016-18

Patients with oesophageal tumours (including Siewert I / II)



Patients with stomach tumours (including Siewert III)



9.1 Endoscopic / Radiologic Palliative therapies (ERPT)

Various endoscopic and radiological non-curative procedures were recorded for patients in the 2016-18 audit period, but the dominant therapy was stent insertion, corresponding to 95% of all procedures recorded (Table 9.1). Stent insertion has the advantage of rapid symptom relief, but brachytherapy is an equally effective treatment and its effects can be longer lasting [Sinha et al 2019]. However, it is rarely used.

There are various reasons for this, notably that it is more complex to deliver than the insertion of a stent, with the procedure requiring both an endoscopist and 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 9.1: Summary of palliative endoscopic and radiological treatments received by patients diagnosed with OG cancer between April 2016 and March 2018, by Audit year. Only patients with a non-curative intent included

	OES SCC	OES ACA Upper/Mid	OES ACA Lower (w SI,SII)	Stomach (w SIII)
Total patients	2,430	1,050	5,593	4,222
ERPT records	619	236	1,116	295
% patients w ERPT record	24.5%	21.2%	19.2%	6.8%
Stent insertions	596	223	1,075	285
% stent of all ERPT	96.3%	94.5%	96.3%	96.6%

KEY: Oes – oesophageal, SCC – squamous cell carcinoma, ACA – adenocarcinoma, SI, SII, SIII - Siewert classification of the gastro-oesophageal junction (GOJ).

9.2 Palliative oncology

Among patients with a planned treatment modality of palliative oncology and an oncological record in the Audit, chemotherapy was the most frequent oncological modality for both oesophageal and gastric cancers (Table 9.2). 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, particularly for patients with gastric cancer.

Completion rates were consistently high for radiotherapy over the 2016-18 audit period. The proportion of patients completing chemotherapy was comparatively low, being on average 54.9% over the same period. Of patients unable to complete chemotherapy, progressive disease during chemotherapy was the most frequently cited reason (14.7%) for not completing the prescribed course, followed by acute chemotherapy toxicity (8.9%). A slightly lower proportion of people with metastatic disease completed their chemotherapy treatment (Stage 1-3 = 58.9 vs Stage 4 = 52.6).

Table 9.2: Palliative oncological treatment received by OG cancer patients diagnosed between April 2016 and March 2018, by tumour location

	OES SCC	OES ACA Upper/Mid	OES ACA Lower (w SI,SII)	Stomach (w SIII)	Overall
Chemotherapy	496 (51%)	238 (63%)	1,620 (71%)	974 (78%)	3,328 (68%)
Radiotherapy	406 (42%)	129 (34%)	633 (27%)	268 (21%)	1,436 (29%)
Chemo-radiotherapy	63 (7%)	11 (3%)	45 (2%)	12 (1%)	131 (3%)
Outcome of chemotherapy					
% Completed	53.2%	60.5%	55.5%	53.5%	54.9%
% Patient died	7.8%	7.9%	7.6%	9.5%	8.2%
% Progressive disease	16.5%	16.4%	14.8%	13.5%	14.7%
% Acute toxicity	9.2%	6.2%	8.9%	9.5%	8.9%
% Other	13.3%	9.0%	13.3%	13.9%	13.2%
Outcome of radiotherapy					
% Completed	95.4%	92.6%	97.2%	96.5%	96.2%

9.3 Use of palliative chemotherapy regimens

Patients having non-curative chemotherapy may receive either a triplet regimen (including a platinum-based agent, a fluoropyrimidine and an anthracycline) or a doublet regimen (including a platinum-based agent and a fluoropyrimidine). Current guidelines recommend the use of triplet regimens as a first line option as these have been shown to improve overall survival compared to a doublet regimen. However, this benefit needs to be weighed against the risk of greater toxicity [Wagner et al 2017].

We examined patterns of palliative chemotherapy over the five year period, for 7,522 patients diagnosed between April 2013 and March 2018. Overall, triplet and doublet regimens accounted for 64.7% and 16.1% of the regimens, respectively. The remaining patients had trastuzumab (7.9%), taxane-based regimen (1.8%) or another regimen (9.5%).

The proportion of patients receiving doublet regimens was influenced by their characteristics, most strongly by whether the tumour was a squamous cell carcinoma or adenocarcinoma. Doublet regimens were more common among patients with squamous cell carcinomas and their use increased among older patients for both patient subgroups (Figure 9.2). Doublet regimens also became more common among patients with adenocarinomas with worse physical fitness.

There were some regional differences in the use of doublet regimens for patients with adenocarcinomas, with the differences becoming more obvious among older patients (Figure 9.2). This variation might in part reflect the chemotherapy regimen being tailored to the characteristics of the individual patient, their disease and their values. Nonetheless, the variation suggests there is more work required to generate a consensus about the implementation of practice

guidelines on palliative chemotherapy regimens as well as a need for research to answer uncertainties about which regimens are best suited to different circumstances.

The small number of patients with squamous cell carcinomas means that a regional analysis was not possible for this patient group.

Figure 9.2: Use of doublet regimens for patients having palliative chemotherapy by type of tumour

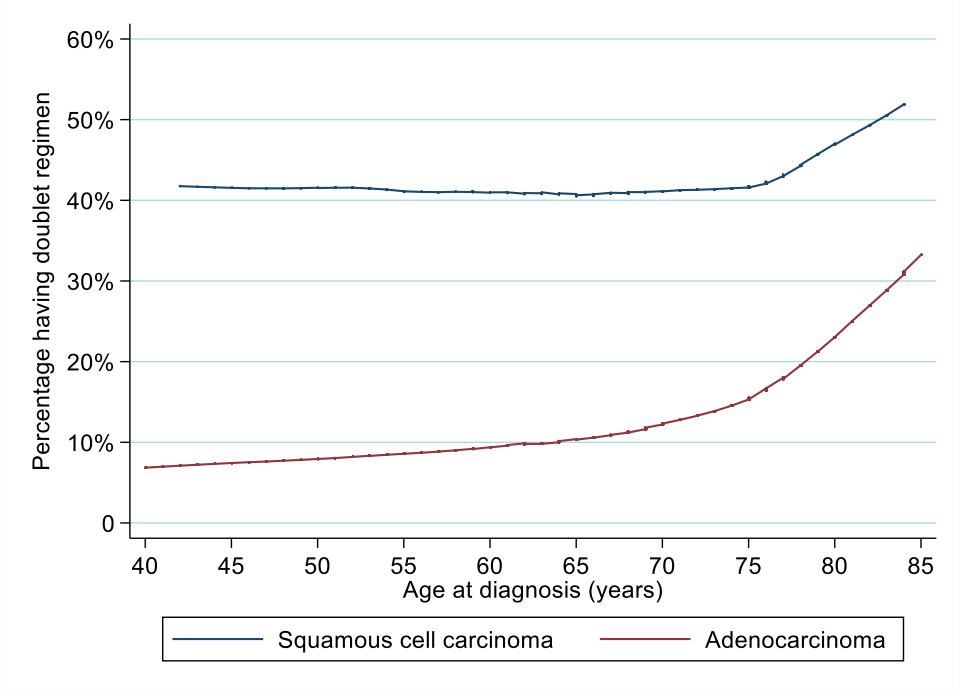
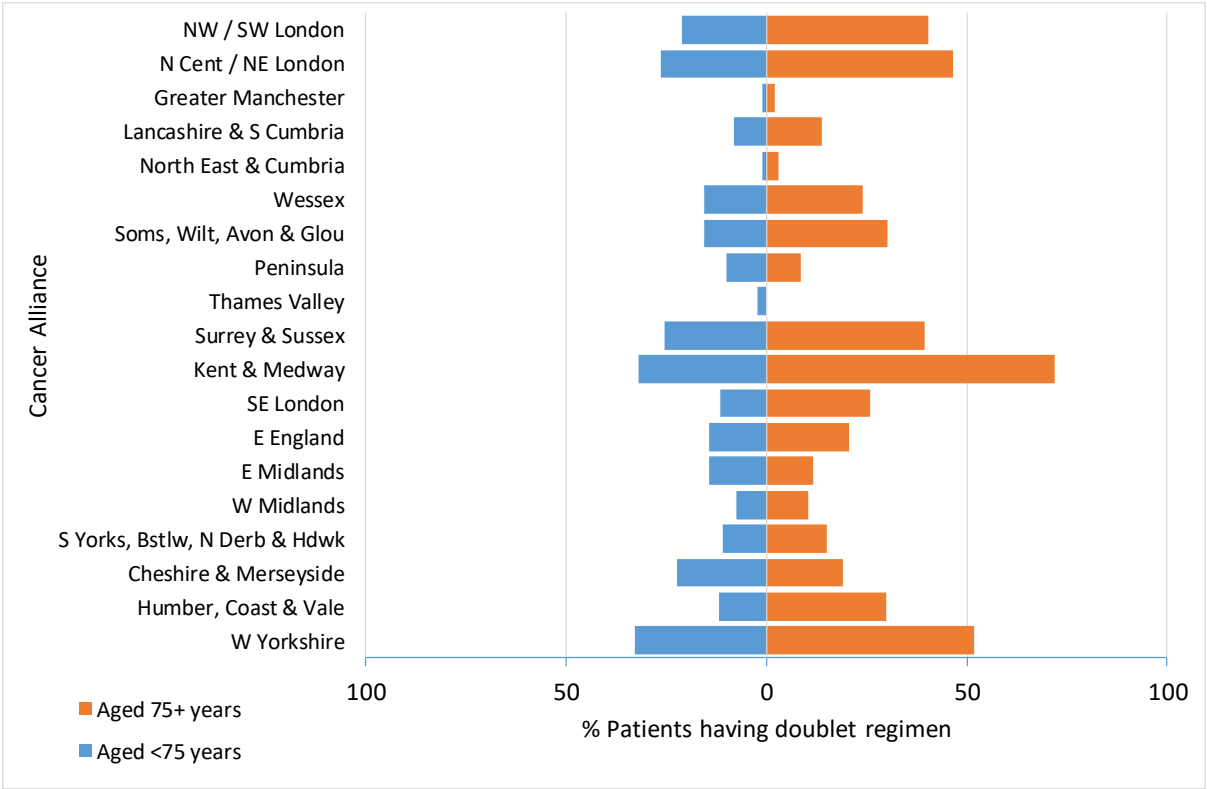


Figure 9.3: Use of doublet palliative chemotherapy regimens by age category and Cancer Alliance of diagnosis, for patients with adenocarcinoma diagnosed between April 2013 and March 2018



10. Quality improvement activities of NHS OG cancer services

In 2018, the Audit surveyed the Medical Directors of NHS OG cancer services in England and Wales about how the NOGCA Annual Reports supported them with their quality assurance activities and, in particular, what quality improvement initiatives it had supported.

The survey responses highlighted that the Annual Report was disseminated among various groups within NHS trusts / local health boards. The primary group was the organisation's Upper GI Cancer Multi-Disciplinary Team, or departmental GI surgical clinical governance team, who reviewed and discussed their results in various forums. NHS trusts / local health boards mentioned that audit results were presented at various events that allowed detailed discussion about areas of improvement, including:

- Upper GI MDT annual general meetings
- OG cancer team away days
- "Divisional Day" meetings that were attended by clinicians from all sites within the NHS trust

One or more of these groups were often responsible for reporting back to the organisation's Quality Governance Committee (or equivalent) that the results had been formally reviewed. This might also be formalised in an "actions or no actions" report that was shared with the Committee.

The information was shared with various individuals including:

- Clinical Director of general surgery
- Relevant clinical and managerial leads within Upper GI surgeons, specialist nurses for upper GI, ICU consultants, oncologists, and the team responsible for patient risk and outcomes
- Accountable Cancer Network
- Trust executive team
- Local patient support groups

The table overleaf summarises the various ways in which NHS trusts / local health boards have responded to the findings in the NOGCA Annual Report, and how they opted to tackle them.

Table 10.1: Summary of responses from NHS OG cancer services on how the NOGCA Annual Report led to local quality improvement actions

Issue	Comment
Case ascertainment	Cross site learning has taken place to ensure data entry and validation processes are robust across all sites at the Trust
Data quality	Introducing changes to reduce the number of patients with "unknown" route to diagnosis
Data quality	Introduced changes to improve collection of performance status and clinical staging
HGD Diagnosis: Coordination of specialist and local MDT	The outcome for our HGD patients from the central MDT is now documented in our local MDT plan to achieve consistency and reflect our figures more accurately
HGD Diagnosis: Tracking patients	We believe that a patient with a HGD diagnosis potentially has underlying cancer and should be tracked as a cancer patient. We worked with the histopathology department on coding protocols so that all HGD patients could be monitored easily.
HGD Diagnosis: Tracking patients	Introduced a separate code for HGD to ensure all cases are picked up for audit. Improved communication with specialist MDT
HGD Diagnosis: Tracking patients	Working with hospital endoscopists to ensure the Upper GI MDT is notified of all patients diagnosed with HGD
HGD Diagnosis: Tracking patients	We are establishing a Barrett's surveillance database
HGD treatments	We created a business plan for an RFA service development in endoscopy
OG cancer diagnosis:	We worked with CCGs to identify factors leading to a diagnosis after emergency presentation, with the aim of reducing these events
OG cancer diagnosis:	Plan to improve timeliness with introduction of same day CT scan as day of diagnosis. Looking to expand CNS capacity
Curative treatment: surgery	Introduced changes aimed at reducing surgical complication rates, notably leak-related complications
Curative treatment: surgery	QI projects with anaesthetists on pre-assessment and optimisation prior to surgery
Curative treatment: surgery	Plan to expand our enhanced recovery programme & use of minimally invasive surgery for gastrectomy. NOGCA showed programme for oesophagectomy functions well
Curative treatment: surgery	We are planning to improve the provision of ERAS and develop a pre-habilitation service
Non-curative treatment: Chemotherapy	Reviewed practice as NOGCA showed more local patients had palliative chemotherapy than the national average. The results showed patients had median survival of 15 months (compared with 12 months in publications) so patient selection looks appropriate.
Non-curative treatment: Stent insertion	We examined follow-up arrangements for people with palliative disease including stents and now have a nurse-led clinic for patients to access on a regular as well as urgent basis

Annex 1: Organisation of the Audit

The National OG Cancer Audit is one workstream of the National GastroIntestinal Cancer Audit Programme, alongside the National Bowel Cancer Audit. The Programme is overseen by a single Project Board to ensure it fulfils the scope of the work commissioned by HQIP.

In addition, the NOGCA 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.

Members of Clinical Reference Group for OG cancer workstream

Jan van der Meulen	London School of Hygiene & Tropical Medicine, Chair
Sam Ahmedzai	Palliative Care
William Allum	National Cancer Action Team
Adam Christian	Royal College of Pathologists
David Eaves	OPA Patient Representative
Bernadette Fairley	CNS Representative
Jamie Franklin	Radiologist
James Gossage	AUGIS
Fiona Huddy	British Dietetic Association Oncology Group
Hywel Morgan	Deputy Director - Wales Cancer Network
Caroline Rogers	HQIP - Associate Director
Richard Roope	RCGP/CRUK Clinical Lead for Cancer
John Taylor	OPA Patient Representative
Sarah Walker	HQIP - Project Manager

with members of the project team.

Members of Project Board for the National GI Audit Programme

Neil Mortensen	Senior Council Member of RCS, Chair
Robert Arnott	Patient Representative (ACP)
Chris Dew	Programme head, NHS Digital
Martyn Evans	Welsh Representative
Richard Hardwick	AUGIS Representative
Hywel Morgan	Deputy Director - Wales Cancer Network
Alison Roe	Ops Manager - NHS Digital
Caroline Rogers	HQIP - Associate Director
Diana Tait	RCR Representative
Sarah Walker	HQIP - Project Manager
James Wheeler	ACPGBI Executive Lead for COP

with members of the OG cancer project team and Bowel Cancer 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.

Data collection

All NHS acute 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 data sets

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

The Audit dataset was linked to extracts from the:

- Registration and 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.

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 for 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 (eg, 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 figures for each NHS surgical centre for the 30-day and 90-day mortality indicators and the longitudinal and circumferential margin indicators. The rates were adjusted to take into account differences in the case mix of patients treated at each centre using multivariable logistic models. The models were used to estimate the likelihood of the outcome (eg, death, a

positive margin) for each individual having surgery, and these probabilities were then summed to calculate the predicted number of events for each NHS trust. The regression models were developed from the following patient characteristics: age at diagnosis, sex, co-morbidities, performance status, T stage, number of positive nodes, site of tumour and ASA grade.

The risk-adjusted outcomes after curative surgery are presented 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 NOGCA outlier policy (available on www.nogca.org.uk website). This is based on the HQIP "Detection and Management of Outliers" policy (www.hqip.org.uk/resource/detection-and-management-of-outliers-for-national-clinical-audits) and involves giving the organisation an opportunity to review their data and ensure the submitted records are 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

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	University Hospitals of Derby and Burton 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 University Hospital NHS Foundation Trust
	RC1	Bedford Hospital NHS Trust
	RCX	The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
	RGN	North West Anglia 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
	RAJ	Southend University Hospital NHS Foundation Trust
	RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust
	RDE	East Suffolk and North Essex NHS Foundation Trust
	RQ8	Mid Essex Hospital Services NHS Trust
Greater Manchester	R0A	Manchester University 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
	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

Cancer Alliance/Vanguard or Welsh Region	NHS Trust / Health Board code	NHS Trust/Health Board name
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
North Central and North East London	RAL	Royal Free London NHS Foundation Trust
	RAP	North Middlesex University Hospital NHS Trust
	RKE	Whittington Health 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	University Hospitals Plymouth NHS Trust
Somerset, Wiltshire, Avon & 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, North Derbyshire and Hardwick	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

Cancer Alliance/Vanguard or Welsh Region	NHS Trust/ Health Board code	NHS Trust/Health Board name
Surrey and Sussex	RA2	Royal Surrey County Hospital NHS Foundation Trust
	RDU	Frimley Health 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 Foundation 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
North West and South 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 University Hospitals NHS Foundation Trust
	RVR	Epsom and St Helier University Hospitals NHS Trust
West Midlands	RBK	Walsall Healthcare NHS 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
West Yorkshire and Harrogate	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

Cancer Alliance/Vanguard or Welsh Region	NHS Trust/ Health Board code	NHS Trust/Health Board name
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

** The Christie NHS Foundation Trust and the Clatterbridge Cancer Centre NHS Foundation Trust are specialist cancer centres which treat but do not diagnose OG cancer patients.

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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).

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 in-patients treated within NHS trusts in England. This includes details of admissions, diagnoses and those treatments undergone.

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

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

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

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

Metastases – Metastases are deposits of cancer that occur when the cancer has spread from the place in which it started to other parts of the body. These are commonly called secondary cancers, and 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.

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. Neoplasms may be benign (not cancerous), or malignant (cancerous).

NHS Digital - is a special health authority that provides facts and figures to help the NHS and social services run effectively. The Clinical Audit and Registries Management Service (CARMS) is one of its key components.

NICE – The National Institute for Health and Clinical 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.

Open-and-shut procedure – a planned procedure to remove a tumour was found to be infeasible after the initial surgical incision was made. The incision was therefore closed without the surgery proceeding further.

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 (also called non-curative 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.

PEDW - Patient Episode Database for Wales (PEDW) is an administrative database that contains data on all in-patients treated within NHS hospitals in Wales.

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.

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 is 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 expands and relieves the blockage when inserted into the affected area.

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.