



**NOGCA**

National Oesophago-Gastric  
Cancer Audit



**NATCAN**

National Cancer Audit  
Collaborating Centre

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# National Oesophago-Gastric Cancer Audit Quality Improvement Plan – September 2024





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HQIP

Healthcare Quality  
Improvement Partnership

The National Cancer Audit Collaborating Centre (NATCAN) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). NATCAN delivers national cancer audits in non-Hodgkin lymphoma, bowel, breast (primary and metastatic), oesophago-gastric, ovarian, kidney, lung, pancreatic and prostate cancers. HQIP is led by a consortium of the Academy of Medical Royal Colleges and the Royal College of Nursing. 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. <https://www.hqip.org.uk/national-programmes>

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# Executive Summary

The National Oesophago-Gastric Cancer Audit (NOGCA) has been commissioned to evaluate the quality and outcomes of care for patients diagnosed with oesophageal or gastric (OG) cancer in England and Wales.

It aims to help NHS organisations to benchmark their OG cancer care against measurable standards, to identify unwarranted variation in care, and to provide tools to help services improve quality of care for people with OG cancer.

The NOGCA Quality Improvement Plan sets out the scope, care pathway, five quality improvement goals and ten performance indicators for the Audit. To inform the development of this Quality Improvement Plan, the NOGCA Project Team held several meetings with stakeholders (in March 2023, August 2023 and February 2024), and circulated key documents (Scoping Document, draft improvement goals, indicators) for consultation. Stakeholders included those representing key clinical specialties, cancer data services in England and Wales, patient organisations, quality improvement experts, NHS England, NHS Wales, National Quality Improvement and Clinical Audit Network (NQICAN), NATCAN and HQIP, as well as members of the NOGCA Project Team.

Based on this work, NOGCA proposes to include all NHS patients with a histologically confirmed diagnosis of invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach in England and Wales. The Audit will evaluate OG cancer care from the point of diagnosis through to the completion of primary treatment delivered in hospital settings, including surgery, systemic anti-cancer therapy, radiotherapy and endoscopic therapies with curative and non-curative intent. This will cover diagnostic and staging processes including routes to diagnosis and use of staging investigations.

The following quality improvement goals have been identified for NOGCA:

1. Reduce rates of emergency and late stage diagnosis of OG cancer
2. Reduce the percentage of patients with OG cancer waiting more than 62 days from referral to first treatment
3. Increase the percentage of people with OG cancer who have access to a clinical nurse specialist (CNS)
4. Improve outcomes of potentially curative treatment for people with OG cancer
5. Improve completion and reduce complications of palliative chemotherapy for people with OG cancer.

NOGCA has identified ten performance indicators, mapped to these five quality improvement goals and clinical guidelines. This Quality Improvement Plan sets out improvement methods, improvement activities and approaches to evaluation of these goals and activities.

# 1. Introduction

## 1.1 Aim and objectives of the Quality Improvement Plan

The National Oesophago-Gastric Cancer Audit (NOGCA) Quality Improvement Plan builds on the previous [Quality Improvement Plan](#) and recent [Scoping Exercise](#), which set out the Audit's scope and coverage of the care pathway, and identified key quality improvement priorities.

The Quality Improvement Plan develops this further to define five quality improvement goals and identify ten performance indicators which map to the goals, national guidelines and standards. These performance indicators will be used by NOGCA to monitor progress towards its quality improvement goals and to stimulate improvements in oesophageal and gastric cancer care.

The Quality Improvement Plan describes the development of the Audit's quality improvement goals and performance indicators. In addition, it aims to set out the improvement methods and activities that will support implementation of the plan, including strategies for reporting and disseminating results, in addition to describing the approaches to evaluation.

The NOGCA Quality Improvement Plan was developed in consultation with key stakeholders, including people with lived experience of OG cancer, and will be reviewed on an annual basis.

## 1.2 The National Cancer Audit Collaborating Centre

NOGCA is part of the [National Cancer Audit Collaborating Centre \(NATCAN\)](#), a new national centre of excellence which aims to strengthen NHS cancer services by looking at treatments and patient outcomes across England and Wales. It was set up on 1st October 2022 to deliver six new national cancer audits, including kidney, ovarian, pancreatic, breast cancer (two separate audits in primary and metastatic disease) and non-Hodgkin Lymphoma. Existing audits in [prostate](#), [lung](#), [bowel](#), and [oesophago-gastric](#) cancers moved into NATCAN in 2023. The centre is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England and the Welsh Government.

The aims of the ten NATCAN Audits are to:

1. Provide regular and timely evidence to cancer services of where patterns of care in England and Wales may vary.
2. Support NHS services to increase the consistency of access to treatments and help guide quality improvement initiatives.
3. Stimulate improvements in cancer detection, treatment and outcomes for patients, including survival rates.

Further information about NATCAN and key features of its approach to audit can be found in the appendix.

## 2. Background on oesophageal and gastric (OG) cancer

Oesophageal and gastric cancers are the fifth most common type of cancer in the UK, with around 13,000 people diagnosed each year in England and Wales.

### 2.1 Main issues in OG cancer care and outcomes

Recommendations on the delivery of high-quality care by OG cancer services have been published by NICE in its Guidance [NG83]<sup>1</sup> and Quality Standards [QS176]<sup>2</sup> on the management of oesophageal and gastric cancer, and by professional medical associations.<sup>3,4,5</sup> Service development is also informed by the strategies published by NHS England<sup>6</sup> and NHS Wales.<sup>7</sup>

Recent [NOGCA reports](#) have identified several improvements in the quality of care delivered to people with OG cancer, including significant improvements in survival after curative surgery, since the Audit began in 2012.

Areas of concern highlighted in recent [Audit reports](#) include:

- Marked regional variation in rates of diagnosis following an emergency admission, even after adjusting for characteristics such as age, sex, deprivation, site of cancer and presence of comorbidities.
- Long waiting times through care pathways after referral and diagnosis to the start of treatment.
- Regional variation in surgical-pathology indicators, specifically positive resection margin rates and number of lymph nodes examined.
- 16% of people who had palliative chemotherapy for OG cancer died within 90 days of starting treatment.
- Regional variation in the use of evidence-based regimens for palliative radiotherapy and use of modified regimens.

### 2.2 Care pathways

Several routes can lead to a diagnosis of OG cancer. An individual may be referred after presenting to their general practitioner (GP) with symptoms or referred by a hospital consultant following outpatient review. Diagnosis can also follow an emergency admission to hospital, with individuals experiencing acute symptoms that are often the result of late-stage disease.

Following a diagnosis of OG cancer, a person may undergo a number of different staging investigations, depending on the site and extent of disease (see Box 1).

Box 1: Recommended staging investigations for oesophageal and gastric cancer

#### [NICE Guideline on OG cancer: Assessment and management in adults \(2018\):](#)

- 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 curative 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.

#### [RCR Guideline on Evidence-based indications for the use of PET-CT in the UK 2022:](#)

- Consider a PET-CT scan in people with gastric cancer if it will help guide ongoing management, including for staging and re-staging of confirmed gastric cancer if there is curative intent.

Similarly, treatment options for people with OG cancer depend on several factors, including clinical stage, patient fitness and individual preferences. For people with localised disease who are relatively fit, the recommended treatment is generally surgery, with or without oncological therapy (see Box 2). For those with squamous cell carcinoma of the oesophagus, definitive chemo-radiotherapy is also an option. Endoscopic treatment may be suitable for those whose tumours are limited to the mucosa, with little risk of spread to the lymph nodes.

For people with metastatic OG cancer, or those who are too unwell for curative treatment, chemotherapy can improve survival. Therapies for managing symptoms such as dysphagia include endoscopic or radiological interventions, such as stents, and radiotherapy.

<sup>1</sup> [Overview | Oesophago-gastric cancer: assessment and management in adults | Guidance | NICE](#)

<sup>2</sup> [Overview | Oesophago-gastric cancer | Quality standards | NICE Provision-of-Services-June-2016.pdf \(augis.org\)](#)

<sup>3</sup> [Radiotherapy dose fractionation, Fourth edition | The Royal College of Radiologists \(rcr.ac.uk\)](#)

<sup>5</sup> [Evidence-based indications for the use of PET-CT in the United Kingdom 2022 | The Royal College of Radiologists \(rcr.ac.uk\)](#)

<sup>6</sup> [NHS Long Term Plan](#)

<sup>7</sup> [executive.nhs.wales/functions/networks-and-planning/cancer/cancer-improvement-plan-docs/summary/](#)

**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.
- Perioperative chemotherapy (pre and post-operative) can also be recommended as it increases survival for junctional tumours.
- Nivolumab is recommended for adjuvant treatment of completely resected oesophageal or GOJ cancer in adults who have residual disease after previous neoadjuvant chemoradiotherapy (NICE 2021).

**Gastric cancer:**

- Perioperative 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.

In England, cancer services have the aim of ensuring at least [85% of people begin treatment within 62 days of referral](#). In Wales, the target is for treatment to begin within [62 days from the point of suspicion of cancer](#).

## 2.3 Guidelines on the management of OG cancer

Several guidelines relating to the management of OG cancer are available. Key UK clinical guidelines are summarised in Table 1.

Table 1: UK clinical guidelines relating to management of OG cancer

Organisation	Guideline	Year
NICE	NG83: "Oesophago-gastric cancer assessment and management in adults"	2018 [updated 2023]
NICE	NG12: "Suspected cancer: recognition and referral"	2015 [updated 2023]
NICE	QS176: "Oesophago-gastric cancer Quality Standard"	2018
AUGIS	The Provision of Services for Upper Gastrointestinal Surgery	2016
RCR	Radiotherapy Dose Fractionation. Fourth Edition.	2024

### 3. Approach to developing the Quality Improvement Plan

The NOGCA Quality Improvement Plan builds on NOGCA’s previous [Quality Improvement Plan](#) and recent [Scoping Exercise](#), which set out the Audit’s scope and coverage of the care pathway (Section 4), and identified key quality improvement priorities.

The Quality Improvement Plan outlines ten performance indicators that have been mapped to clinical guidelines and the five quality improvement goals (Section 5). In Sections 6 and 7, improvement methods and improvement activities are outlined. Finally, Section 8 sets out the approaches to evaluation of the Quality Improvement Plan. This Quality Improvement Plan will be reviewed and updated on a regular basis.

#### 3.1 Approach to developing the Audit scope

To inform the development of the Audit scope, NOGCA hosted a meeting with stakeholders in March 2023. Specifically, the aims of the meeting were to:

- Discuss the implications of different models of Audit and data provision, including review of results of initial analyses of routine OG cancer data.
- Review the existing scope of NOGCA and discuss potential changes to the scope under the NATCAN contract (from 1 June 2023).
- Identify short- and longer-term priorities for NOGCA.

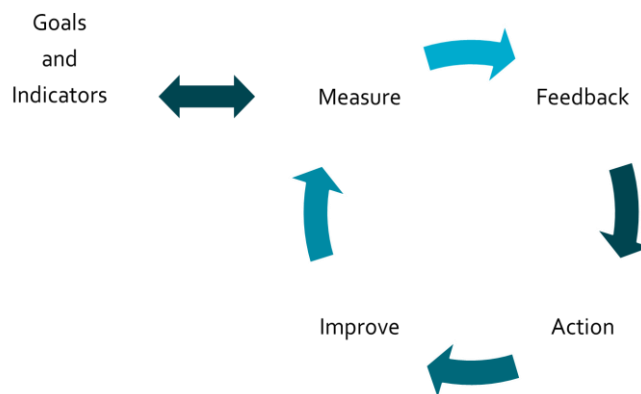
In attendance at the meeting were stakeholders representing key clinical specialties, cancer data services in England and Wales, patient organisations, quality improvement experts, NHS England, NHS Wales, NQICAN, NATCAN and HQIP, as well as members of the NOGCA Project Team.

Details of the scoping exercise, including the initial review of routine OG cancer data and meeting discussion points, can be found in the [NOGCA Scoping Document](#).

### 3.2 Approach to prioritising performance indicators

Clinical Performance Feedback Intervention Theory (CP-FIT)<sup>8</sup> states that developing improvement goals and performance indicators are the first steps in the audit and feedback cycle (Figure 1).

Figure 1: The audit and feedback cycle



Based on the scoping exercise and previous Quality Improvement Plan, NOGCA developed a list of candidate performance indicators. Prioritisation of ten indicators from this list of candidates was informed by the following set of key principles.

The Audit and feedback cycle is only as strong as its weakest link: to enhance NOGCA’s ability to inform improvements in care, its performance indicators must have three properties:

- **Measurable** so that they can be the basis of credible feedback about performance. This property means that the indicators can be defined with available data in a valid, reliable, and fair manner that allows performance to be attributed to a specific unit.<sup>9</sup>
- **Actionable** so that feedback translates into action to improve care. Indicators should therefore be important and address a specific pathway of care that is clear to all stakeholders. Stakeholders should understand the drivers of variation in performance within this pathway and control the levers for change. These changes should be evidence-based and address policy priorities.

<sup>8</sup> Brown B, Gude WT, Blakeman T, van der Veer SN, Ivers N, Francis JJ, et al. Clinical Performance Feedback Intervention Theory (CP-FIT): a new theory for designing, implementing, and evaluating feedback in health care based on a systematic review and meta-synthesis of qualitative research. *Implement Sci* 2019;14:40.

<sup>9</sup> Geary RS, Knight HE, Carroll FE, Gurol-Urganci I, Morris E, Cromwell DA, van der Meulen JH. A step-wise approach to developing indicators to compare the performance of maternity units using hospital administrative data. *BJOG* 2018;125:857-65.



- **Improvable** so that actions have the desired effect on patient care. There should therefore be clear scope for improvement (low baseline levels or large unwarranted variation) in a large population and a receptive context, with no unintended consequences. Some interventions may have demonstrated improvements to certain indicators in existing literature.

Some of these properties are difficult to know in advance of selecting and investigating a performance indicator (such as existing levels of performance, the drivers of low performance, or interventions that can improve care). In addition, clinical practice and its context may change over time so that properties of indicators also change (such as whether they relate to a policy priority). Therefore, NOGCA's goals and performance indicators are likely to evolve over time too. Recommendations will also evolve and become more focused as NOGCA learns through the audit and feedback cycle.

### 3.3 Data provision

NOGCA will utilise information from routine national healthcare datasets. These datasets capture details on the diagnosis, management and treatment of every person who is newly diagnosed with OG cancer in England and Wales. Further details on data acquisition can be found in the appendix.

### 3.4 Data limitations

For accurate and timely benchmarking, it is essential that data used by NOGCA:

1. Includes all the data items required to measure and risk-adjust performance indicators
2. Is timely
3. Has a high-level of case-ascertainment
4. Has high levels of data completeness
5. Is accurate.

For people treated in England, Rapid Cancer Registration Data (RCRD) linked to other national healthcare datasets will be used for reporting. This dataset is mainly compiled from Cancer Outcomes and Services Dataset (COSD) records and is made available more quickly than the gold standard National Cancer Registration Data (NCRD). The speed of production means that case ascertainment and data completeness are lower, and the range of data items in the RCRD is limited. This may restrict the extent to which risk adjustment can be applied to performance indicators used for reporting. For patients treated in Wales, no equivalent of RCRD is currently available.

Until 2023, NOGCA used its bespoke dataset to collect information on nutrition support for people diagnosed with OG cancer and the use of enhanced recovery after surgery (ERAS) for those who have a surgical resection. Data items on

nutrition and ERAS are not currently in the national cancer datasets, and these aspects of care will not be examined under the new model of data provision.

### 3.5 Stakeholder involvement

NOGCA is provided through a partnership that combines clinical leadership, methodological expertise, project management and a secure environment for data analysis, representing the following organisations: Association of Upper Gastrointestinal Surgery of Great Britain and Ireland (AUGIS), Royal College of Radiologists (RCR), British Society of Gastroenterology (BSG), and NATCAN.

The Audit team is supported by twice-yearly meetings of stakeholders in its Clinical Reference Group (CRG), which includes clinicians from across the patient pathway, patient representatives, commissioners and funder representatives. NOGCA also has a Patient and Public Involvement (PPI) Forum that meets twice a year, whose members represent people with lived experience of OG cancer and several patient organisations.

Further details about stakeholder representation in the CRG and PPI Forum can be found [here](#).

### 3.6 Service provision

OG cancer services in England and Wales are organised on a regional basis to provide an integrated model of care. In England, 20 Cancer Alliances are responsible for coordinating cancer care and improving local outcomes, with 32 specialist centres providing surgery for OG cancer. In Wales, three centres provide specialist surgical and oncology services for OG cancer across three regions: Swansea Bay, Betsi Cadwaladr (North Wales) and South Wales region.

## 4. Audit scope

### 4.1. Patient inclusion criteria

All NHS patients with a histologically confirmed diagnosis of invasive epithelial cancer of the oesophagus, gastro-oesophageal junction (GOJ) or stomach (C15 or C16) in England and Wales will be eligible for inclusion in NOGCA.

### 4.2. Care pathway

The Audit will evaluate OG cancer care from the point of diagnosis to the completion of primary treatment delivered in a hospital setting.

The Audit will cover treatments with curative intent as well as non-curative therapies. The treatment modalities included in the Audit will be: surgery, systemic anti-cancer therapy, radiotherapy and endoscopic therapies (endoscopic mucosal resection, stent insertion, etc). Information on the diagnostic and staging process will include: the route to diagnosis and use of (recommended) staging investigations.

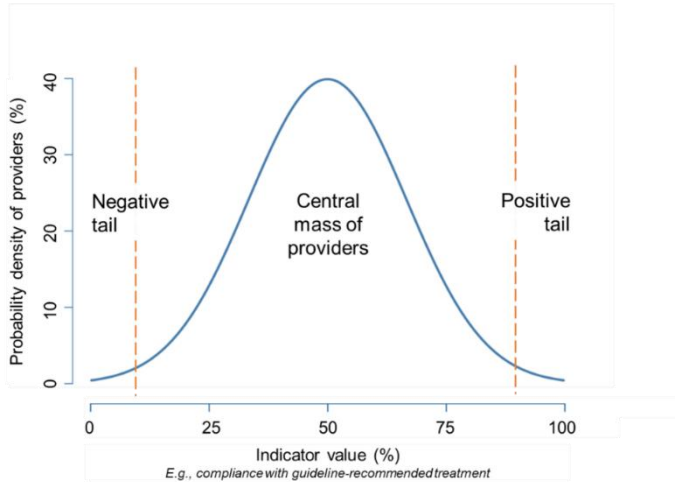
## 5. Quality Improvement Goals and Performance Indicators

Quality Improvement Goal	Performance Indicators*	National Guidance/Standards
Reduce rates of emergency and late-stage diagnosis of OG cancer	Percentage of people with a diagnosis of OG cancer who are diagnosed after an emergency admission	<a href="#">NHS Long Term Plan</a> : the proportion of cancers diagnosed at stages 1 & 2 will rise to three-quarters of cancer patients (2028). <a href="#">Wales Cancer Network, A Cancer Improvement Plan for NHS Wales</a> : reducing emergency presentation and 1 <sup>st</sup> presentation with advanced disease
	Percentage of people with a diagnosis of OG cancer who are diagnosed at stage 4 or with unknown stage	
Reduce the percentage of patients with OG cancer waiting more than 62 days from referral to first treatment	Median time (days) and IQR from urgent suspected cancer GP referral to first treatment for OG cancer	<a href="#">NHS England</a> : ≥85% patients begin treatment within 62 days of referral. <a href="#">NHS Wales</a> : ≥75% patients begin treatment within 62 days of suspected cancer.
Increase the percentage of people with OG cancer who have access to a clinical nurse specialist (CNS)	Percentage of people with a diagnosis of OG cancer who were seen by a CNS	NICE Quality Statement ( <a href="#">QS176</a> ) 1. Adults with OG cancer should have access to an OG CNS
Improve outcomes of potentially curative treatment for people with OG cancer	Percentage of people undergoing curative surgical resection for OG cancer who had adequate lymph nodes examined after surgery	<a href="#">AUGIS Provision of Services for Upper GI Surgery (2016)</a> outcome standards: 1. ≥15 lymph nodes removed and examined 2. Longitudinal resection margin positivity rate for oesophagectomies <5% 3. Circumferential resection margin positivity rate for oesophagectomies <30% 4. Margin positivity rate for gastric resection <5%
	Percentage of people undergoing curative surgical resection for OG cancer who had positive surgical resection margin rates (risk adjusted)	
	Adjusted 90-day mortality rate after curative treatment (any treatment modality)	N/A
	Adjusted 1-year and 2-year mortality rates after curative treatment (any treatment modality)	N/A
Improve completion and reduce complications of palliative chemotherapy for people with OG cancer	Percentage of people beginning palliative chemotherapy for OG cancer who complete their chemotherapy regimen as planned	N/A
	Percentage of people undergoing palliative chemotherapy for OG cancer who have a hospital admission for severe acute toxicity during or within 8 weeks of any chemotherapy administration	

\*Details of the five Quality Improvement Goals and the associated ten Performance Indicators are outlined in the table above. Where appropriate, the performance indicators will be presented for specific patient groups as well as for the whole patient population. The Audit will publish the performance indicators in its annual State of the Nation report and, where appropriate, in quarterly reports. The publication of indicators is aligned with data availability and the completion of robust, methodological development work including appropriate risk-adjustment models.

## 6. Quality Improvement Methods

The figure below shows a hypothetical example of how a performance indicator may be distributed across NHS providers nationally at a single time point. This distribution can be separated into three domains: the negative tail (suggestive of worse performance), the central mass (centred on the national average, for example), and the positive tail (suggestive of better performance).



Each domain is associated with a different set of methods for improving healthcare:

### Negative tail

*Example methods: Regulation and public reporting of outliers*

- Clinical audit has traditionally focused on the negative tail to improve healthcare. This approach implies that some NHS providers are doing something systematically wrong that can be resolved through direct intervention. Such intervention may be necessary to assure minimum standards of care and to reduce inequality between the best and worst performing NHS providers. Cancer audits that pre-date NATCAN have formally reported negative outliers (see Appendix).

### Central mass

*Example methods: Statistical process control and iterative testing of interventions*

Most providers exist in the central mass of the distribution (by definition) which may present the greatest scope for improving average levels of care nationally. Methods in this domain suggest that all providers can improve their performance, regardless of baseline levels. Longitudinal monitoring provides feedback about whether improvements occur or not.

### Positive tail

*Example methods: Positive deviance*

- Some NHS providers perform exceptionally well despite similar constraints to others, which presents opportunities to learn how this is achieved. 'Positive deviance' approaches assert that generalisable solutions to better performance already exist within the system. Such solutions are therefore more likely to be acceptable and sustainable within existing resources. These approaches aim to identify local innovations and spread them to other settings (see Appendix).

NOGCA will select which methods to implement to improve oesophago-gastric cancer care after investigating the distributions of its performance indicators (outlined in section 5). This includes the distribution of performance indicators between providers at a given time point and within providers over time. It also includes investigation of variation at the patient, hospital, and regional levels to see where most variation exists and which variables help to explain it (see Appendix for more detail).

## 7. Improvement activities

Improvement activities and outputs of NOGCA will be aligned to the Quality Improvement Plan. The Audit will: (1) engage in key collaborations, (2) align with other initiatives in OG cancer care, and (3) provide outputs to support quality improvement at the national, regional and local level.

The principal strategies for reporting NOGCA results will be the production of:

- A short ‘State of the Nation’ (SotN) report for NHS Trusts/Health Boards in England and Wales. This annual report will publish five key recommendations and will highlight where services should focus quality improvement activities. These recommendations will be at the Cancer Alliance level where applicable and be formed between Audit teams, clinical reference groups and major national stakeholders.
- A quarterly dashboard will facilitate benchmarking and the monitoring of performance at regular intervals so improvements can be tracked over time.

## 7.1 National and Regional

NOGCA undertakes various activities that directly support national stakeholders and regional NHS organisations to tackle system-wide aspects related to the delivery of quality OG cancer services. These include:

Stakeholder	NOGCA activity
<i>NATIONAL</i>	
NHS England / Welsh Cancer Network	Identify issues and make recommendations on the organisation and delivery of OG cancer services which might involve large-scale investment, national leadership or service reorganisation.
Care Quality Commission (CQC)	Provide CQC with information to support local inspections of NHS providers and highlighting areas of concern identified after an organisation is flagged as a potential outlier on a NOGCA performance indicator.
Professional societies	Identify issues and make recommendations regarding the delivery of OG cancer services that fall within the remit of the professional associations.
National multi-professional groups	Engage with national groups such as the United Kingdom and Ireland Oesophago-gastric Cancer Group (UKIOG) to disseminate recommendations and promote improvement activities.
<i>REGIONAL</i>	
Cancer Networks / Alliances / Vanguard	Support the monitoring role of Welsh Cancer Networks and the English Cancer Alliances / Vanguard by publishing results for their region/area.

At a national level, the NOGCA team will also provide the National Cancer Registration and Analysis Service (NCRAS) Data Improvement Leads (in England) and the Wales Cancer Network with information to help them support their NHS organisations to improve the quality of their routine data submissions.

## 7.2 Local

NOGCA supports local NHS cancer services in the provision of quality care to people with OG cancer in the following ways:

NOGCA feedback activity	Description
Annual "State of the Nation" reports	State of the Nation reports that allow NHS organisations in England and Wales to benchmark themselves against clinical guideline recommendations and the performance of their peers.
Web-based dashboard	Presents results for individual NHS organisations that allows the user to compare the results of a selected provider against a peer organisation.
Local Action Plan template	Allows NHS organisations to document how they will respond to the State of the Nation report recommendations.
Organisational Data Viewer	Results presented for individual NHS organisations using information from the State of the Nation data tables that allows the user to compare the results of selected providers.
Outlier reporting	Reporting of NHS provider values that are more than three standard deviations from the expected level of performance (i.e. deemed a potential outlier). NOGCA will support outliers to identify areas for improvement.
Composite indicator	Summarises the performance of OG cancer specialist centres across a range of indicators published in the State of the Nation report.
Interactive online result pages	Webpages that present organisational level information on the performance of the provider for different aspects of the care pathway.
Slide sets summarising State of the Nation report results	A slide set that allows NHS organisations to insert their own figures and present their results at local staff meetings.

## 7.3 Improvement tools

The NATCAN website includes a [Quality Improvement Resources page](#) with links to the RCSEng website and other web-based material that direct healthcare providers to various quality improvement tools including:

- 'How to' guides including quality improvement methodology
- Links to existing resources
- Links to training courses for quality improvement
- Good practice repository with contact information where possible.

## 7.4 Improvement workshops

NOGCA has supported a range of [improvement activities](#), which have been aligned to national meetings and quality improvement initiatives of relevant professional bodies.

For example, NOGCA hosted a quality improvement workshop on the topic of postoperative nutritional management at the AUGIS 2022 Annual Scientific Meeting. More recently, members of the Audit team presented NOGCA findings at the 2023 Royal College of Radiologists Clinical Oncology Quality Improvement Audit Forum.

## 7.5 Designing a National Quality Improvement Initiative

Linked to the publication of its State of the Nation report, NOGCA will design a national Quality Improvement initiative aiming "to close the audit cycle" following an approach commonly referred to as the "plan-do-study-act" method.<sup>10</sup>

This will involve the identification of priority areas for quality improvement, based on analysis of rapid cancer registry data, and working with stakeholders to develop appropriate design and methodology to underpin the initiative. The initiative will be launched shortly after the publication of the State of the Nation report, alongside details of the development and consultation process.

## 7.6 Patient and Public Involvement

Patient representatives are regularly consulted on the design of the Audit and the communication of its results, via the NOGCA Patient and Public Involvement (PPI) Forum. Members of several patient organisations are represented: Heartburn Cancer UK, Oxfordshire Oesophageal and Stomach Organisation, Action Against Heartburn, Guts UK. Elected members of the PPI Forum also act as patient representatives

<sup>10</sup> Taylor MJ, McNicholas C, Nicolay C, Darzi A, Bell D, Reed JE. Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Qual Saf.* 2014 Apr;23(4):290-8. doi: 10.1136/bmjqs-2013-001862.

on the Clinical Reference Group to advise on Audit priorities and participate in the development and review of key Audit outputs. The PPI Forum:

- Undertakes a key advisory role in developing the design and function of the Audit website to ensure that patients and the public can easily access the information they are seeking,
- Contributes to the design and content of patient information materials and NOGCA reports for the public,
- Provides input into the development of the Audit's quality improvement goals, activities and outputs to ensure they reflect priorities from the patient perspective, and
- Helps to disseminate and publicise NOGCA and its outputs via their organisations.

## 7.7 Communication and dissemination activities

NOGCA communicates regularly with stakeholders, providers, patients and the public in several ways, including:

- The Audit website, which is regularly updated and posts information about publications and key resources, including tools to support quality improvement
- Regular distribution of newsletters via the Audit's mailing list
- Communications via the networks of the professional bodies and patient associations working in partnership with the Audit, such as AUGIS, BSG, RCR, Heartburn Cancer UK, Action Against Heartburn and Guts UK
- Presentation of Audit results at national conferences of relevant professional bodies
- Publication of articles in medical journals and other media.

## 8. Evaluation

NOGCA will report year-on-year progress against improvement goals to the Audit's Clinical Reference Group and in the State of the Nation reports on an annual basis. This will focus on describing how values of performance indicators have changed over time at a national level.

To evaluate the impact of specific NOGCA or other national interventions on the performance of NHS providers, quasi-experimental methods (when allocation of providers to certain groups cannot be controlled) or experimental methods (when group allocation can be controlled) will be used.

NOGCA will examine the opportunities for and strengths and limitations of quasi-experimental and experimental evaluation methods once it is more fully established.

# Appendix

## 1. National Cancer Audit Collaborating Centre (NATCAN)

NOGCA is part of the National Cancer Audit Collaborating Centre ([NATCAN](#)), a national centre of excellence launched on 1st October 2022 to strengthen NHS cancer services by looking at treatments and patient outcomes in multiple cancer types across England and Wales. The centre was commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England and the Welsh Government with funding in place for an initial period of three years.

NATCAN is based within the Clinical Effectiveness Unit ([CEU](#)), the academic partnership between the Royal College of Surgeons of England (RCS Eng) and the London School of Hygiene & Tropical Medicine. The CEU is recognised as a national centre of expertise in analytic methodology and the development of administrative and logistic infrastructure for collating and handling large-scale data for assessment of healthcare performance.

NATCAN was set up on 1st October 2022 to deliver six new national cancer audits, including kidney, ovarian, pancreatic, breast (two separate audits in primary and metastatic disease) and non-Hodgkin Lymphoma. Existing audits in [prostate](#), [lung](#), [bowel](#), and [oesophago-gastric](#) cancers moved into NATCAN in 2023. This critical mass of knowledge and expertise enable it to respond to the requirements of the funders and stakeholders.

The aim of the ten NATCAN Audits is to:

1. Provide regular and timely evidence to cancer services of where patterns of care in England and Wales may vary.
2. Support NHS services to increase the consistency of access to treatments and help guide quality improvement initiatives.
3. Stimulate improvements in cancer detection, treatment and outcomes for patients, including survival rates.

Key features of NATCAN's Audit approach

The design and delivery of the Audits in NATCAN has been informed by the CEU's experience delivering national Audits, built up since its inception in 1998. Key features of all Audit projects within the CEU include:

- Close clinical-methodological collaboration
- Use of national existing linked datasets as much as possible
- Close collaboration with data providers in England (National Disease Registration Service [NDRS,

NHSE] and Wales (Wales Cancer Network [WCN], Public Health Wales [PHW])

- A clinical epidemiological approach, informing quality improvement activities
- "Audit" informed by "research".

All these features will support NATCAN's focus on the three "Rs", ensuring that all its activities are clinically relevant, methodologically robust, and technically rigorous.

Organisational structure of NATCAN

### *Centre Board*

NATCAN has a multi-layered organisational structure. [NATCAN's Board](#) provides top-level governance and oversees all aspects of the delivery of the contract, ensuring that all audit deliverables are produced on time and within budget and meet the required quality criteria. The Board also provides the escalation route for key risks and issues. It will also consider NATCAN's strategic direction. The Board meets at six-monthly intervals and receives regular strategic updates, programme plans, and progress reports for sign-off. Risks and issues are reported to the NATCAN Board for discussion and advice.

### *Executive Team*

[NATCAN's Executive Team](#) is chaired by the Director of Operations (Dr Julie Nossiter) and includes the Clinical Director (Prof Ajay Aggarwal), the Director of the CEU (Prof David Cromwell), the Senior Statistician (Prof Kate Walker), and the Senior Clinical Epidemiologist (Prof Jan van der Meulen) with support provided by NATCAN's project manager (Ms Verity Walker). This Executive Team is responsible for developing and implementing NATCAN's strategic direction, overseeing its day-to-day running, and coordinating all activities within each of the cancer audits. This group meets monthly. The Executive Team provides six-monthly updates to NATCAN's Board.

### *Advisory Groups*

The Executive Team is supported by two external groups. First, the Technical Advisory Group, including external senior data scientists, statisticians, and epidemiologists as well as representatives of the data providers (NDRS, NHSD and WCN, PHW), co-chaired by NATCAN's Senior Statistician and Senior Epidemiologist, advises on national cancer data collection, statistical methodology, development of relevant and robust performance indicators to stimulate QI, and communication to practitioners and lay audiences.

Second, the Quality Improvement Team includes national and international experts who have extensive experience in QI and implementation research. This team provides guidance on the optimal approaches to change professional and organisational behaviour. It is chaired by NATCAN's Clinical Director and managed by the Director of Operations.

This set-up provides a transparent and responsive management structure allowing each audit to cater for the



individual attributes of the different cancer types, while also providing an integrated and consistent approach across the NATCAN audits. The integrated approach will result in efficient production of results through sharing of skills and methods, a common “family” feel for users of audit outputs, and a shared framework for policy decisions and project management.

#### *Audit Project Teams*

Audit development and delivery is the responsibility of each Project Team. The [Project Team](#) works in partnership to deliver the objectives of the audit and is responsible for the day-to-day running of the audit and producing the deliverables. It will lead on the audit design, data collection, data quality monitoring, data analysis and reporting.

Each cancer audit Project Team is jointly led by at least two Clinical Leads representing the most relevant professional organisations, and senior academics with a track record in health services research, statistics, data science and clinical epidemiology, affiliated to the London School of Hygiene and Tropical Medicine. In addition, each Audit will have a clinical fellow, who contributes to all aspects of the Audits, reinforcing the Audits’ clinical orientation and contributing to capacity building.

The delivery of the audit is coordinated by an audit manager who is supported by NATCAN’s wider infrastructure. Data scientists with experience in data management and statistics and methodologists with experience in performance assessment and QI work across Audits.

#### *Audit Clinical Reference Groups*

Each Audit has a [Clinical Reference Group](#) representing a wide range of stakeholders. This group acts as a consultative group to the Project Team on clinical issues related to setting Audit priorities, study methodology, interpretation of Audit results, reporting, QI, and implementation of recommendations.

Effective collaboration within the centre and across audits facilitates the sharing of expertise and skills in all aspects of the delivery process, notably: designing the audits, meeting information governance requirements, managing and analysing complex national cancer data to produce web-based performance indicator dashboards / state of the nation reports, and supporting quality improvement.

This organisation creates “critical mass” and Audit capacity that is able to respond to the requirements of the funders (NHS England and Welsh Government) and the wider stakeholder “family”.

#### *Audit PPI Forums*

Patients and patient charities are involved in all aspects of the delivery of the cancer audits. Each audit has a standalone Patient and Public Involvement (PPI) Forum to provide insight from a patient perspective on strategic aims and specific audit priorities. This includes shaping the development of each audit’s quality improvement initiatives by ensuring this work is relevant from a patient perspective. A key activity of the PPI Forums is to actively participate in the production of patient-focused audit outputs (including patient and public information, patient summaries of reports, infographics and design and function of the NATCAN website), guiding on how to make this information accessible.

## 2. Data provision

The NATCAN Executive Team has worked closely with data providers in England (NDRS, NHSE) and in Wales (WCN, PHW) to establish efficient “common data channels” for timely and frequent access to datasets, combining data needs for all cancers into a single request in each Nation and only using routinely collected data, thereby minimising the burden of data collection on provider teams.

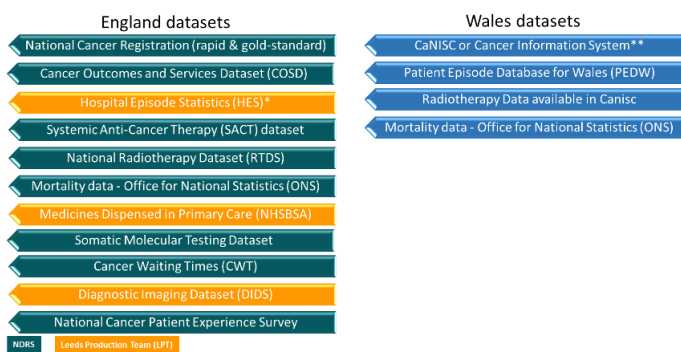
### Annual and quarterly data

NATCAN will utilise two types of routinely collected data in England. First, an annual “gold-standard” cancer registration dataset, released on an annual basis with a considerable delay between the last recorded episode and the data being available for analysis, and second, a “rapid” cancer registration dataset (RCRD), released at least quarterly with much shorter delays (three months following diagnosis). The CEU’s recent experience with English rapid cancer registration data, in response to the COVID pandemic has demonstrated the latter’s huge potential,<sup>11</sup> despite a slightly lower case ascertainment and less complete staging information.

NATCAN will utilise these data across all cancers linked to administrative hospital data (Hospital Episode Statistics/Systemic Anti-Cancer Therapy/Radiotherapy Data Set/Office for National Statistics among other routinely collected datasets, see Figure 1) for describing diagnostic pathway patterns, treatments received and clinical outcomes.

An equivalent data request will be made to the Wales Cancer Network (WCN)/Public Health Wales (PHW).

Figure 1. National datasets available to NATCAN



\* Includes inpatient and outpatient data and Emergency care Dataset (ECDS).

\*\* NHS Wales will use Welsh registry information for the initial years data for the Audit. NATCAN submitted a request for historical data from the Welsh Cancer Registry in Q4 2023. From 2022 data submissions will be from either Canisc or the new cancer dataset forms.

<sup>11</sup> Nossiter J, Morris M, Parry MG, Sujenthiran A, Cathcart P, van der Meulen J, Aggarwal A, Payne H, Clarke NW. Impact of the Covid-19 pandemic on the diagnosis and treatment of men with prostate cancer. *BJU Int.* 2022; doi: 10.1111/bju.15699

## 3. Quality Improvement Framework – Supplementary information

### Negative tail

#### Regulation and public reporting of outliers

National cancer Audits that pre-date NATCAN have used a formal process for reporting outliers publicly. This process includes contacting outliers before publication to: (1) verify the data, (2) identify the reasons for the low level of performance identified, and (3) determine what corrective interventions have been put in place. The findings are reported publicly and may inform care practices in other NHS providers.

### Central mass

#### Statistical process control and iterative testing of interventions

Most providers exist in the central mass of the distribution (by definition). Just because something is common it does not mean that it is alright: performance may be systematically below an achievable standard nationally for example (such as 75% of eligible patients receiving a particular treatment). We recommend that individual providers verify their performance data and undertake internal Audits to assess areas for improvement and consider evaluation of their processes of care.

### Positive tail

#### Positive deviance

Positive deviants may perform consistently better than comparators over time or demonstrate a clear upward trend in performance between two time points. It may be possible to learn from these providers to identify practices of care that have driven high levels of performance. This could include care protocols or factors related to system organisation which may inform quality improvement amongst providers in the negative tail and central mass of performance.

### Determinants of variation

To support targeting of improvement interventions and recommendations, the Audit will analyse particular patient, hospital and regional factors associated with variation in processes and outcomes of care. For example, for the utilisation of a particular evidence-based treatment, factors associated with utilisation may include advanced age, social deprivation and frailty, clinician preferences, and regional policies. Findings may be reported at an aggregated national or regional (alliance) level and can support NHS providers to target interventions or evaluation at particular patient populations.